EDWARD J. ALLEN

EDUCATION

- Ph.D., Mathematics--Numerical Analysis, August, 1983, University of Tennessee, Knoxville.
- M.S., Nuclear Engineering, December, 1972, University of Wisconsin, Madison.
- B.S., Nuclear Engineering, August, 1971, University of Wisconsin, Madison.

PROFESSIONAL EXPERIENCE

- Professor, Department of Mathematics and Statistics, Texas Tech University, Lubbock, Texas, September 1998-present.
- Associate Professor, Department of Mathematics, Texas Tech University, Lubbock, Texas, August 1991-August 1998.
- Assistant Professor, Department of Mathematics, Texas Tech University, Lubbock, Texas, August 1985-August 1991.
- Assistant Professor, Mathematics Department, University of North Carolina at Asheville, August 1982-August 1985.
- Nuclear Engineer, Oak Ridge National Laboratory, Oak Ridge, Tennessee, January 1974-August 1980.

AREAS OF INTEREST

- Numerical analysis, stochastic differential equations, mathematical modeling, neutron transport, population biology.

PUBLICATIONS

Papers In Refereed Journals

- **E. J. Allen** and C. M. Thompson, A stochastic differential equation model for charged-particle energy straggling, *Dynamics of Continuous, Discrete and Impulsive Systems Series B: Applications and Algorithms*, 10, 19-27 (2003).
- Armando Arciniega and **Edward Allen**, Rounding error in numerical solution of stochastic differential equations, *Stochastic Analysis and Applications*, 21, 281-300 (2003).
- Wyatt D. Sharp and **Edward J. Allen**, Development and Analysis of Quadrature and Galerkin Methods for Approximate Solution to the Integral Formulation of Volterra's Population Equation with Diffusion and Noise, *International Journal of Pure and Applied Mathematics*, 4, 457-486 (2003).
- **E. J. Allen** and H. D. Victory, Jr., Modelling and simulation of a schistosomiasis infection with biological control, *Acta Tropica*, 87, 251-267 (2003).
- Armando Arciniega and **Edward Allen**, Extrapolation of difference methods in option valuation, *Applied Mathematics and Computation*, 153, 165-186 (2004).
- Armando Arciniega and **Edward Allen**, Shooting methods for numerical solution of stochastic boundary-value problems, *Stochastic Analysis and Applications*, 22, 1-20 (2004).
- L. J. S. Allen and **E. J. Allen**, A comparison of three different stochastic population models with regard to persistence time, *Theoretical Population Biology*, 68, 439-449 (2003).
- J. S. Severino, **E. J. Allen**, H. D.Victory, Jr., Acceleration of quasi-Monte Carlo approximations with applications in mathematical finance, *Applied Mathematics and Computation*, 148, 73-187 (2004).

- M. Kinard and **E. J. Allen**, Efficient numerical solution of the point kinetics equations in nuclear reactor dynamics, *Annals of Nuclear Energy*, 31, 1039-1051 (2004).
- **Edward J. Allen**, Jump-diffusion model for the global spread of an amphibian disease, *International Journal of Numerical Analysis and Modeling*, 1, 173-187 (2004).
- **E. J. Allen**, L. J. S. Allen, H. Schurz, A comparison of persistence-time estimation for discrete and continuous stochastic population models that include demographic and environmental variability, *Mathematical Biosciences*, 196, 14-38 (2005).
- J. G. Hayes and **E. J. Allen**, Stochastic point-kinetics equations in nuclear reactor dynamics, *Annals of Nuclear Energy*, 32, 572-587 (2005).
- Rachel Koskodan and **Edward Allen**, Extrapolation of the stochastic theta numerical method for stochastic differential equations, *Stochastic Analysis and Applications*, 24, 475-487 (2006).
- Drew, **E. J. Allen**, and L. J. S. Allen, Analysis of Climatic and Geographic Factors on the Presence of Chytridiomycosis in Australia, *Diseases of Aquatic Organisms*, 68, 245-250 (2006).
- **Edward Allen**, Ali Khoujmane, Mourad Krifa, Hakan Simsek, A stochastic differential equation model for cotton fiber breakage, *Neural, Parallel and Scientific Computations*, 15, 181-192 (2007).
- Rachel Koskodan and **Edward Allen**, Construction of consistent discrete and continuous stochastic models for multiple assets with application to option valuation, *Mathematical and Computer Modeling*, Volume 48, No. 11-12, 1775-1786, December 2008.
- **E. J. Allen**, L. J. S. Allen, A. Arciniega, P. Greenwood, Construction of equivalent stochastic differential equation models, *Stochastic Analysis and Applications*, 26, 274-297 (2008).
- **Edward J. Allen**, Derivation of stochastic partial differential equations, *Stochastic Analysis and Applications,* 26, 357-378 (2008).
- **Edward J. Allen**, Derivation of stochastic partial differential equations for size- and age-structured populations*, Journal of Biological Dynamics*, 3, No. 1, 73-86, January 2009.

Papers In Refereed Conference Proceedings

- L. J. S. Allen, **E. J. Allen**, and C. B. Jonsson, The impact of environmental variation on hantavirus infection in rodents, AMS Contemporary Mathematics Series, C. Castillo-Chavez, D. P. Clemence, and A. B. Gumel, Eds*., Proceedings of the Joint Summer Research Conference on Modeling the Dynamics of Human Diseases: Emerging Paradigms and Challenges*, Vol. 10, 1-16 (2006).

Textbooks

- **Edward Allen**, *Modeling With Ito Stochastic Differential Equations*, Springer, Dordrecht, The Netherlands (2007).
- S. Ackleh, **E. J. Allen,** R. B. Kearfott, P. Seshaiyer, *Classical and Modern Numerical Analysis: Theory, Methods and Practice,* CRC Press, Boca Raton, Florida (2009).

FUNDING ACTIVITY

Funded Proposals

- "Mathematical Modeling of Schistosomiasis", Principal Investigators: **E. J. Allen**, H. D. Victory, Jr., Advanced Research Program of the State of Texas, 7/02-6/04, $57,120.

- "Dynamics and Evolution of Emerging Diseases with Applications to Amphibians", L. J. S. Allen (Project Director), Co-Principal Investigators: **E. J. Allen**, S. T. McMurry, M. J. San Francisco, and L. M. Smith, NSF-DMS (Applied Mathematics), 6/02-6/05, $915,000.
- Texas Higher Education Coordinating Board, Advanced Research Program. "Metapopulation Models for the Playa Lakes of the Southern High Plains", L. J. S. Allen (Project Director), Collaborators: **E. J. Allen**, S. McMurry, L. Smith 5/2006-5/2008, $47,106
- Stochastic fiber-breakage modeling research of graduate student Hakan Simsek was funded by the International Textile Center at Texas Tech University, 1/2006 to 8/2006.
- National Science Foundation. "Stochastic Metapopulation Models Applied to Amphibians on the Southern High Plains", L. J. S. Allen (Project Director), Co-Principal Investigators: **E. J. Allen**, S. McMurry, and L. Smith. 9/2007-8/2010, $470,024.

PRESENTATIONS

Colloquia

- "Modeling With Stochastic Differential Equations", **E. J. Allen***, Invited colloquium talk at the Department of Mathematics, University of Wyoming, Laramie, Wyoming, March 2005. (Travel expenses were paid by the University of Wyoming.)
- "A Comparison of Different Stochastic Population Models With Regard to Persistence Time", **E.J. Allen***, (Invited seminar talk) and "Modeling With Stochastic Differential Equations", **E.J. Allen***, (Invited colloquium talk) at the Department of Mathematics, Southern Illinois University, Carbondale, Illinois, April 2005. (Travel expenses were paid by Southern Illinois University.)
- "Derivation of Stochastic Differential Equations", **E.J. Allen***, Presented as a colloquium talk at the University of Texas at San Antonio, January, 2008. (Travel expenses were paid by the University of Texas at San Antonio.)
- "Derivation of Stochastic Differential Equations in Biology and Physics", **E. J. Allen***, Presented as a colloquium talk at the University of Alberta in Edmonton, March, 2009. (Travel expenses were paid by the University of Alberta.

Conference Presentations

- "Persistence-time estimation for populations with demographic and environmental variability and a jump-diffusion model for the spread of amphibian diseases", **E. J. Allen***, Presented at the Fourth World Congress of Nonlinear Analysts held in Florida in July 2004. (Session organizer.)
- "Modeling Cotton Fiber Length Using Stochastic Differential Equations", **E. J. Allen***, Invited talk at the 2006 Joint AMS-MAA Meeting held in San Antonio in January 2006.
- "Modeling and Simulation of a Schistosomiasis Infection With Biological Control", **E. J. Allen*,** Invited talk at the SIAM Annual Meeting held in Boston in July 2006.
- "Modeling Cotton Fiber Breakage With Stochastic Difference Equations", **E. J. Allen*,** Invited talk at the 11th International Conference on Difference Equations and Their Applications held in Kyoto, Japan in July 2006. (Travel expenses were partially paid by the conference organizers.)
- "Construction of Equivalent Stochastic Differential Equation Models", **E. J. Allen***, Invited talk at the Third International Conference on Neural, Parallel and Scientific Computation held in Atlanta, Georgia in August 2006.
- "Derivation of Several Stochastic Partial Differential Equations", **E. J. Allen***, Presented at the Fifth International Conference on Dynamic Systems and Applications, Atlanta, Georgia, May 2007. (Invited presentation.)

- "Derivation of Stochastic Partial Differential Equations for Size- and Age-Structured Populations", **E. J. Allen***, Presented at the Joint AMS-MAA Mathematics Conference, San Diego, California, January 2008. (Invited presentation.)
- "Derivation of Stochastic Partial Differential Equations for Size- and Age-Structured Populations", **E. J. Allen***, Presented at the World Congress of Nonlinear Analysts WCNA-2008, Orlando, Florida, July 2008. (Session organizer.)
- "Derivation of Stochastic Partial Differential Equations for Structured Populations and for Reaction-Diffusion Systems", **E. J. Allen***, Presented at the SIAM Conference On The Applications Of Dynamical Systems, Snowbird, Utah, May 2009.

Short Course Presentations

- "An Intensive Course in Modeling Techniques and Numerical Methods for Stochastic Differential Equations", **E. J. Allen***, An eight-hour series of lectures presented at the National Center for Theoretical Sciences at the National Tsing Hua University, Hsinchu, Taiwan, August 2008. (Travel expenses were paid by the National Tsing Hua University.)
- "Introduction to Stochastic Differential Equations in Population Biology", **E. J. Allen*,** A short-course lecture presented in the MAA PREP 2009 program: Mathematical Modeling in Population Biology and Epidemiology, Texas Tech University, July 2009.

DISSERTATION AND THESIS DIRECTION

Directed Students

- Armando Arciniega, Ph.D., Dissertation*: Richardson extrapolation of difference methods in financial option valuation and the development and analysis of shooting methods for Stratonovich stochastic differential equation systems with boundary conditions*, August 2003.
- M. Kinard, M.S., Thesis: *Computational solution of the point kinetics equations in nuclear reactor dynamics*, December, 2003.
- Martines, M.S., Thesis: *Efficient numerical solution of functions of matrices*, May, 2004.
- T. Hopkins, M.S., Thesis: *Numerical solution of stochastic delay integro-differential equations in population dynamics,* May, 2004.
- J. Hayes, M.S., Thesis: *Derivation and computational solution of stochastic point kinetics equations in nuclear reactor dynamics*, December, 2004.
- Drew, M.S., Thesis: *An investigation of geographic limits on the spread of Chytrid fungus for amphibian populations*, co-advisor: L. J. S. Allen, December, 2004.
- R. Koskodan, Ph.D., Dissertation: *Extrapolation of implicit numerical methods for stochastic differential equations and development of a stock-price model with application to multi-asset option pricing*, August, 2006.
- H. Simsek, M.S., Thesis: *Stochastic and Monte Carlo Models For Fiber Breakage in Cotton Processing*, co-advisor: Mourad Krifa (International Textile Center), May, 2007.

Students Currently in Progress

- Chisum Huff, M.S., Thesis: *Derivation of a Stochastic Differential Equation Model for Sunspot Activity,* Expected Graduation Date: December 2009.
- Elife Dogan, Ph.D., Expected Graduation Date: August 2010; Dissertation*: Derivation, Analysis, and Application of Stochastic Partial Differential Equations for Reaction-Diffusion Systems,* Expected Graduation Date: August 2010.

- Ummugul Bulut, Ph.D., Expected Graduation Date: August 2011; Dissertation*: Derivation, Analysis, and Application of Stochastic Partial Differential Equations for Correlated Random Walk Models,* Expected Graduation Date: August 2011.

HONORS AND AWARDS

- Named Texas Tech Mathematics Graduate Professor for 2002-2003 by the Texas Tech University Chapter of the Society of Industrial and Applied Mathematics.
- Nominated by the Department of Mathematics and Statistics (TTU) for a Barnie E. Rushing Distinguished Faculty Research Award, November 2008. (Not awarded.)

PROFESSIONAL SERVICE

- I serve on the editorial board of *International Journal of Numerical Analysis and Modeling*, 2003-present.
- I serve as a reviewer for *Mathematical Reviews*, 1999-present. (I review about four to seven papers each year for *Mathematical Reviews.)*
- I refereed papers submitted to the following journals: *Nuclear Science and Engineering, Journal of Difference Equations, International Journal of Computer Mathematics, Acta Tropica, Journal of Biological Dynamics, SIAM Journal on Scientific Computing, Mathematical Biosciences and Engineering, Oikos, Journal of Computational and Applied Mathematics, Mathematical Biosciences, Journal of Theoretical Biology, Discrete and Continuous Dynamical Systems Series B, Journal of Statistical Planning and Inference, Canadian Journal of Botany, Journal of Computational Physics, Computers and Mathematics with Applications, Stochastics and Stochastics Reports, Stochastic Analysis and Applications, Mathematical and Computer Modelling, Electronic Journal of Differential Equations, Journal of Difference Equations and Applications, Applied Mathematical Modelling, Nuclear Engineering and Design, International Journal of Numerical Analysis and Modeling, SIAM Journal of Numerical Analysis.*

LINDA J. S. ALLEN

PROFESSIONAL EXPERIENCE

- Long Term Visitor, Mathematical Biosciences Institute, Ohio State University, Jan-April 2006.
- Professor, Mathematics, Texas TechUniversity, 1998-present.
- Adjunct Professor, TIEHH, Texas Tech University, 1999-present.
- Associate Professor, Mathematics, Texas Tech University, 1991-1998.
- Assistant Professor, Mathematics, Texas Tech University, 1985-1991.
- Assistant Professor, Mathematics, University of North Carolina at Asheville, 1982 - 1985.
- Visiting Assistant Professor, Mathematics, University of Tennessee, Knoxville, 1981-1982.
- Research and Teaching Assistant, Mathematics, University of Tennessee, Knoxville, 1975-1981.
- Technical Assistant, Environmental Sciences, Oak Ridge National Laboratory, Tennessee, 1977.

AREAS OF INTEREST

- Mathematical biology and epidemiology, stochastic processes.

PUBLICATIONS

Books

1. **L. J. S. Allen** . *An Introduction to Mathematical Biology*. 2007. Prentice Hall, Upper Saddle River, N.J.

Book Chapter

1. **L. J. S. Allen**. Chapter 3: An Introduction to Stochastic Epidemic Models. Mathematical Epidemiology, *Lecture Notes in Mathematics*. Vol. 1945 (2008). pp. 81-130, F. Brauer, P. van den Driessche, and J. Wu (Eds.) Springer.

Papers in Refereed Journals (33)

1. Ackleh, A. S. and **L. J. S. Allen**. 2003. Competitive exclusion and coexistence for pathogens in anepidemic model with variable population size. *Journal of Mathematical Biology*. 47: 153-168.
2. **Allen, L. J. S.** 2003. Risk of population extinction due to demographic stochasticity in population models. *Comments on Theoretical Biology*. 8: 433-454.
3. **Allen, L. J. S.,** M. Langlais, and C. J. Phillips. 2003. The dynamics of two viral infections in a single host population with applications to hantavirus. *Mathematical Biosciences*. 186: 191-217.
4. **Allen, L. J. S**. and E. J. Allen. 2003. A comparison of three different stochastic population models with regard to persistence time. *Theoretical Population Biology*. 64: 439-449.
5. **Allen, L. J. S**., N. Kirupaharan, and S. M. Wilson. 2004. SIS epidemic models with multiple pathogen strains. *Journal of Difference Equations and Applications*. 10: 53-75. [Named best paper in 2004.]
6. Roeger, L.-I. W. and **L. J. S. Allen**. 2004. Discrete May-Leonard competition models, I. *Journal of Difference Equations and Applications*. 10: 77-98.
7. Kirupaharan, N. and **L. J. S. Allen**. 2004. Coexistence of multiple pathogen strains in stochastic epidemic models with density-dependent mortality. *Bulletin of Mathematical Biology*. 66: 841-864.
8. Emmert, K. E. and **L. J. S. Allen**. 2004. Population persistence and extinction in a discrete-time, stage-structured epidemic model. *Journal of Difference Equations and Applications*. 10: 1177-1199.

9. **Allen, L. J. S.** and N. Kirupaharan. 2005. Asymptotic dynamics of deterministic and stochastic epidemic models with multiple pathogens. *International Journal of Numerical Analysis and Modeling*. 2(3): 329-344.
10. Ackleh, A. S. and **L. J. S. Allen**. 2005. Competitive exclusion in SIS and SIR epidemic models with total cross immunity and density-dependent host mortality. *Discrete and Continuous Dynamical Systems—Series B*. 5(2): 175-188.
11. **Allen, L. J. S.,** J. F. Fagan, G. Hognas, and H. Fagerholm. 2005. Population extinction in discrete-time stochastic population models with an Allee effect. *Journal of Difference Equations and Applications*. 11(4-5): 273-293.
12. Allen, E. J., **L. J. S. Allen**, and H. Schurz. 2005. A comparison of persistence-time estimation ,for discrete and continuous stochastic population models that include demographic and environmental variability. *Mathematical Biosciences*. 196: 14-38.
13. McCormack, R. K. and **L. J. S. Allen**. 2005. Disease emergence in deterministic and stochastic models for host and pathogen. *Applied Mathematics and Computation*. 168(2): 1281-1305.
14. Emmert, K. E. and **L. J. S. Allen**. 2006. Population extinction in deterministic and stochastic discrete-time epidemic models with periodic coefficients with applications to amphibians. *Natural Resource Modeling*. 19(2): 117-164.
15. Xu, D., Z. Feng, **L. J. S. Allen**, and R. K. Swihart. 2006. A spatially structured metapopulation model with patch dynamics. *Journal of Theoretical Biology*. 239(4): 469-481.
16. Drew, A. J., E. J. Allen, and **L. J. S. Allen**. 2006. An investigation of climatic and geographic factors on the presence of chytrid fungus on amphibian populations in Australia. *Diseases of Aquatic Organisms*. 68: 245-250.
17. **Allen, L. J. S.,** R. K. McCormack, and C. B. Jonsson. 2006. Mathematical models for hantavirus infection in rodents. *Bulletin of Mathematical Biology*. 68(3): 511-524.
18. **Allen, L. J. S.** and P. van den Driessche. 2006. Stochastic epidemic models with a backward bifurcation. *Mathematical Biosciences and Engineering*. 3(3): 445-458.
19. McCormack, R. K. and **L. J. S. Allen**. 2007. Disease emergence in multi-host epidemic models. *Mathematical Medicine and Biology*. 24: 17-34.
20. Ackleh, A. S., **L. J. S. Allen**, and J. Carter. 2007. Establishing a beachhead: A stochastic population model with an Allee effect applied to species invasion. *Theoretical Population Biology*. 71: 290-300.
21. McCormack R. K. and **L. J. S. Allen**. 2007. Multi-patch deterministic and stochastic models for wildlife diseases. *Journal of Biological Dynamics*. 1(1): 63-85.
22. **Allen, L. J. S.,** B. M. Bolker, Y. Lou, and A. L. Nevai. 2007. Asymptotic profiles of the steady states for an SIS epidemic patch model. *SIAM Journal of Applied Mathematics*. 67(5): 1283-1309.
23. Xu, Y., **L. J. S. Allen**, and A. S. Perelson. 2007. Stochastic model of an influenza epidemic with drug resistance. *Journal of Theoretical Biology*. 248: 179-193.
24. **Allen, L. J. S.,** B. M. Bolker, Y. Lou, and A. L. Nevai. 2008. Asymptotic prof*iles of the steady states for an SIS epidemic reaction-diffusion model. Discrete and Continuous Dynamical Systems-Series A*. 21(1): 1-20.
25. Allen, E. J., **L. J. S. Allen**, A. Arciniega, and P. Greenwood. 2008. Construction of equivalent stochastic differential equation models. *Stochastic Analysis and Applications*. 26: 274-297.
26. **Allen, L. J. S.** and P. van den Driessche. 2008. The basic reproduction number in some discrete-time epidemic models. Journal of Difference Equations and Applications. 14: 1127-1147.
27. Banerjee, C., **L. J. S. Allen**, and J. Salazar-Bravo. 2008. Models for an arenavirus infection in a rodent population: consequences of horizontal, vertical and sexual transmission. *Mathematical Biosciences and Engineering*. 5: 617-645.
28. **Allen, L. J. S.,** Y. Lou, and A. L. Nevai. 2009. Spatial patterns in a discrete-time SIS patch model. *Journal of Mathematical Biology*. 58: 339-375.
29. Ekanayake, A. J., J. -S. Tsai, **L. J. S. Allen,** L. M. Smith, J. Surles, and E. J. Allen. 2009. Estimating watershed area for playas in the Southern High Plains, USA. *Wetlands*. 29: 387-395.
30. Wesley, C. L. and **L. J. S. Allen**. 2009. The basic reproduction number in epidemic models with periodic demographics. *Journal of Biological Dynamics*. 3: 116-129.

31. **Allen, L. J. S.,** C. L. Wesley, R. D. Owen, D. G. Goodin, D. Koch, C. B. Jonsson, Y. -K. Chu, S. Hutchinson, and R. Paige. 2009. A Habitat-Based Model for the Spread of Hantavirus Between Reservoir and Spillover Species. *Journal of Theoretical Biology*. 260: 510-522.
32. Ekanayake, A. J. and **L. J. S. Allen**. Comparison of Markov Chain and Stochastic Differential Equation Population Models Under Higher-Order Moment Closure Approximations. *Stochastic Analysis and Applications*. In press.
33. Wesley, C. L., **L. J. S. Allen** and M. Langlais. Models for the spread and persistence of hantavirus infection in rodents with direct and indirect transmission. *Mathematical Biosciences and Engineering*. In press.

Papers in Refereed Conference Proceedings

1. McCormack, R. K. and **L. J. S. Allen**. 2006. Stochastic SIS and SIR multihost epidemic models. Proceedings of the Conference on Differential & Difference Equations and Applications. R. P. Agarwal and K. Perera, Eds., Hindawi Pub. Co., pp. 775-786.
2. **Allen, L. J. S**., E. J. Allen, and C. B. Jonsson. 2006. The impact of environmental variation on hantavirus infection in rodents. Contemporary Mathematics Series, 410, Proceedings of the Joint Summer Research Conference on Modeling the Dynamics of Human Diseases: Emerging Paradigms and Challenges. A. B. Gumel, C. Castillo-Chavez, R. E. Mickens, and D. P. Clemence, Eds. AMS, Providence, RI, pp. 1-15.
3. Wesley, C. L., **L. J. S. Allen**, C. B. Jonsson, Y.-K. Chu, and R. D. Owen. 2009. A discrete-time rodent-hantavirus model structured by infection and developmental stages. Proceedings of the International Conference on Difference Equations and Applications, Kyoto, Japan, July 2006. *Advanced Studies in Pure Mathematics*. 53: 1-12.

Book Reviews

1. Chaos in Ecology Experimental Nonlinear Dynamics by Cushing, Constantino, Dennis, Desharnais, and Henson, Academic Press Theoretical Ecology Series, 2003, Book Review: **L. Allen**. *Journal of Difference Equations and Applications*. (2007) 13 (1): 93-94.
2. A Course in Mathematical Biology: Quantitative Modeling with Mathematical and Computational Methods by Gerda de Vries, Thomas Hillen, Mark Lewis, Johannes Muller, Birgitt Schonfisch. SIAM, Philadelphia. Book Review: **L. Allen**. *SIAM Review*. (2007) 49 (2): 329-331.

FUNDING ACTIVITY

Proposals Funded

1. National Science Foundation. ``Dynamics and Evolution of Emerging Diseases with Applications to Amphibians". PI: **L. J. S. Allen**. Co-PI: E. Allen, S. McMurry, M. San Francisco, L. Rollins-Smith, L. Smith. 6/2002-6/2007, Amount: $915,000.
2. Fogarty International Center, NIH-NSF Ecology of Infectious Diseases. ``The Impact of Rapid Anthropogenic Land Cover Change in the Chaco and Interior Atlantic Forest in Paraguay on Hantavirus Ecology". PI: C. Jonsson, Co-PI: R. Owen, **L. J. S. Allen**, Y. Chu, D. Goodin, S. Hutchinson, E. Pontelli, D. Ranjan, S. Tran, M. Almiron. 3/2004-4/2008, $1,857,996.
3. Texas Higher Education Coordinating Board, Advanced Research Program. ``Metapopulation Models for the Playa Lakes of the Southern High Plains". PI: **L. J. S. Allen**. Consultants: E. Allen, S. McMurry, L. Smith. 5/2006-5/2008, $47,106.
4. National Science Foundation. ``Stochastic Metapopulation Models Applied to Amphibians on the Southern High Plains." PI**: L. J. S. Allen**. Co-PI: E. Allen, S. McMurry, and L. Smith. 9/2007-8/2010, $470,024.
5. MAA Professional Research Enhancement Program. ``Mathematical Modeling in Population Biology and Epidemiology", PI: S. Jang. Co-PI: **L. J. S. Allen** and L. Roeger. Summer 2009. $15,000

6. MAA Professional Research Enhancement Program. ``Mathematical Modeling in Population Biology and Epidemiology", PI: S. Jang. Co-PI: **L. J. S. Allen** and L. Roeger. Summer 2010. $21,000.

Proposals Not Funded

1. NSF. CREST: Center for Research Excellence in BioInformatics and Computational Biology. Project Director: D. Ranjan, New Mexico State University. Co-PI and Senior Associates: C. Jonsson, R. Owen, **L. Allen,** and others. 2003
2. NSF. Undergraduate Mentoring in Environmental Biology: ``Evaluating Biological Responses to Natural and Anthropogenic Stressors" PI: S. McMurry. Co-PI: **L. Allen**, J. M. Burns, G.P. Cobb, L.M. Smith, and others, 2004.
3. NSF. Preproposal in Frontiers in Integrative Biological Research Program: ``Anthropogenic Gates in Ecosystems". PI: D. Goodin, Co-PI: C. Jonsson, R. Owen, **L. Allen**, S. Hutchinson, and others, 2004.
4. NSF. Environmental Biology. ``Influences of agricultural cultivation on movements and population persistence of amphibians." PI: M. Gray, Co-PI: N. McIntyre and **L. Allen**. 2004.
5. National Science Foundation. Mathematical Biology. ``Mathematical Models for the Biological Control of Saltcedars through
6. Competition with Cottonwoods and Control by an Asian Leaf Beetle". 6/01/05-5/31/08. PI: L. Roeger, Co-PIs: **L. Allen**, L. Smith. 2005.
7. NSF Ecology of Infectious Diseases. ``Modeling Machupo virus-host dynamics along gradients of anthropogenic land cover disturbance in Bolivia". PI: Jorge Salazar-Bravo. Co-PI: **L Allen**, C Jonsson, S Klein, D Goodin, and others. 2006.
8. NSF. ``Undergraduate Mentoring in Environmental Biology (UMEB): Evaluation of Natural and Anthropogenic Stressors in Playa Wetlands." PI: S. B. Cox, N. E. McIntyre. Co PI: L. Smith, S. McMurry, E. Allen, **L. Allen** and others. 2006.
9. NSF Ecology of Infectious Diseases. ``Collaborative Research: Modeling anthropogenic change on the persistence and transmission of Machupo virus in Calomys." PI: D Goodin. Co-PI: S Klein, C Jonsson, J Salazar-Bravo, **L Allen**, and others. 2006.
10. NIH. ``Modeling hantaviral dynamics in reservoir and nonreservoir hosts". PI: C Jonsson. Co-PI: **L Allen**, R Owen, A Arias. 2007.
11. NSF Ecology of Infectious Diseases: ``Collaborative Research: Ecological Modeling of Zoonotic Diseases Across Multiple Landscape Scales". Director: D Goodin, Kansas State University. Co-PIs: **L Allen**, R Owen, Texas Tech University; C Jonsson, YK Chu, Southern Research Institute. 2007.
12. Texas Tech University Fall 2007 Research Development Grant Proposal, \$1 Million Competition: ``Predicting Zoonotic Outbreaks in Natural Populations: Synthesis of Molecular Genetics, Life History Traits, Virology, and Mathematical Modeling". PI: R Strauss. Co-PIs: R Bradley, S Rice, **L Allen**, 2007.
13. NSF Ecology of Infectious Diseases: ``Collaborative Research: Ecological Modeling of Zoonotic Diseases Across Landscape Scales". Director: D Goodin, Co-PIs: **L Allen,** R Owen, R Paige, C Jonsson, YK Chu,; Antoineta Arias. 10/2008-11/2012.
14. NSF Ecology of Infectious Diseases: ``Collaborative Research: Environmental Drivers of Susceptibility to Infection: Hormones, Mice and Viruses". Director: S Klein, John Hopkins University. Co-PIs: **L Allen**, G Glass, John Hopkins University; R Parmenter, I Khan, 9/2008-10/2013.
15. EPA Star Grant Proposal: ``Modeling the Effect of Persistent Human Disturbance on Hantavirus Prevalence in Great Smoky Mountains National Park: a Landscape-Based Approach". PI: D Goodin. Co-PIs: **L Allen**, J Salazar-Bravo, Texas Tech University; C Jonsson and YK Chu, SRI, 2008.
16. NSF ``REU Multidisciplinary Summer Undergraduate Research Program in Modeling, Computation and Control of Biological Systems". PI: R Iyer. Co-PI: B Williams. Senior Investigators: L Schovanec, **L Allen**, E Allen, A Ibraguimov, M Toda, E Aulisa, and others. 5/2008-9/2009.
17. NSF Ecology of Infectious Diseases: ``Modeling of Long-term Dynamics of Catarina virus in Neotoma micropus Based on Genetics, Life History, and Virology". PI: R Bradley. Co-PIs: **L Allen**, S Rice, R Strauss, C Fulhorst (UTEP). 9/1/2009 – 8/31/2012.

18. EPA Star Grant Proposal: ``Assessing the impact of an amphibian pathogen using population models and climate change predictions", PI: M SanFrancisco. Co-PIs: **L Allen**, J Carr, K Hayhoe, N McIntyre. 1/1/2009 - 1/31/2011.
19. NSF UBM Institutional: Integrating Mathematics and Biology on the South Plains (IMBSP). PI: J Dwyer. Co-PIs: N McIntyre, L Schovanec, and others. Senior Personnel: **L Allen** and others, 2009.

Proposals Pending

1. Norman Hackerman Texas ARP Pre-Proposal. "Stochastic viral quasispecies models in emerging diseases." PI: **L. J. S. Allen**.
2. Five-Day Workshop at Banff International Research Station, Banff, Canada in 2011. "Mathematical modeling of wildlife and viral zoonoses". Organizers: **L. J. S. Allen**, C. Jonsson, and P. van den Driessche.
3. REU Supplement to NSF grant: ``Stochastic Metapopulation Models Applied to Amphibians on the Southern High Plains." PI: **L. Allen**, Co-PIs: E Allen, S. McMurry, LM Smith.

PRESENTATIONS AND MEETINGS ATTENDED

Short Course

1. L. J. S. Allen*. ``An Intensive Course in Stochastic Processes and Stochastic Differential Equations in Mathematical Biology", Invited series of lectures for two weeks at the National Center for Theoretical Sciences of the National Tsing Hua University in Taiwan, August 2008.

Colloquia

1. **L. J. S. Allen*.** ``The risk of population extinction in models with demographic stochasticity." University of Louisiana at Lafayette. October 2003.
2. **L. J. S. Allen*.** ``Models for two emerging wildlife diseases: Hantavirus in Rodents and Chytridiomycosis in Amphibians". Purdue University. November 2004.
3. **L. J. S. Allen*.** ``Multi-host and multi-patch models for an emerging disease of wildlife: hantavirus". Mathematical Biosciences Institute, Ohio State University. March 2006.
4. **L. J. S. Allen*.** ``Mathematical models for two emerging diseases of wildlife: Hantavirus and Chytridiomycosis." Florida Gulf Coast University. March 2007.
5. **L. J. S. Allen*.** ``Emerging zoonotic diseases in wildlife: metapopulation models with multiple pathogens and multiple hosts." University of Nevada, Las Vegas. November 2007.

Invited Hour Talks

1. **L. J. S. Allen*.** ``An Introduction to Epidemic Modeling", MAA PREP Workshop: Mathematics Meets Biology: Epidemics, Data Fitting, and Chaos, University of Louisiana, Lafayette, May 26-29, 2004, Invited Lecturer.
2. **L. J. S. Allen*.** ``An Introduction to Stochastic Epidemic Models-Parts I, II, III", PIMS-MITACS-MSRI Special Program on Infectious Diseases Summer School, Banff International Research Station, Alberta, Canada. June 19-27, 2004. Invited Lecturer.
3. **L. J. S. Allen*.** ``Extinction in Discrete-Time Stochastic Population and Epidemic Models. Effect of Dispersal, Structure, and Allee Threshold". Ninth International Conference on Difference Equations and Applications, Los Angeles, CA. August 2-6, 2004. Plenary Speaker.
4. **L. J. S. Allen*.** ``Emerging Wildlife Disease Modeling". Workshop on Mathematical Epidemiology. Banff International Research Station, Alberta, Canada. August 20-25, 2005. Invited Lecturer.

5. **L. J. S. Allen*.** ``An Introduction to Stochastic Epidemic Models, I, II". 2006 Summer School on Mathematical Modeling of Infectious Diseases. York University, Toronto, Canada. June 10-20, 2006.
6. **L. J. S. Allen*.** ``Emerging Diseases of Wildlife." Public Lecture. Fields Institute. Toronto, Canada. June 14, 2006.
7. **L. J. S. Allen*.** Workshop: ``Integrating Biological Applications in the Mathematics Curriculum", Texas Section Meeting of the MAA, Tarleton State University, April 3, 2008, Invited Lecturer.
8. **L. J. S. Allen*.** ``Introduction to Stochastic Epidemic Models, Parts I and II", 2008 Summer School on Mathematical Modeling of Infectious Diseases, University of Alberta, Edmonton, Canada, May 1-11, 2008. Invited Lecturer.
9. **L. J. S. Allen*.** ``Models for the spread of an infectious disease in a population: influenza, hantavirus, and chytridiomycosis", UGROW Presentation at Midwestern State University, Wichita Falls, May 29, 2008.
10. **L. J. S. Allen*.** ``Stochastic models of invasions and epidemics", 2009 Summer School on The Mathematics of Invasions in Ecology and Epidemiology, Banff Centre, Alberta, Canada, May 10-17, 2009. Invited Lecturer.
11. **L. J. S. Allen*.** ``Zoonotic Diseases Carried by Rodents: Seasonal Fluctuations", 24th Annual Shanks Lecture and Conference Vanderbilt University, May 18-21, 2009. Plenary Speaker.
12. **L. J. S. Allen*.** "Stochastic Processes with Applications to Epidemiology", 2009 China-Canada Colloquium on Modeling Infectious Diseases, Xi'an Jiaotong University, Shaanxi Province, People's Republic of China, June 7-12, 2009. May 18-21, 2009. Plenary Speaker.
13. **L. J. S. Allen*.** "Modeling a Zoonotic Disease: Multiple Hosts, Spatial Heterogeneity, and Seasonal Variation". November 13, 2009. University of Texas at Arlington.

Conference Presentations

1. **L. J. S. Allen*** and N. Kirupaharan. ``Stochastic Differential Equation Models for Epidemics with Multiple Pathogens," Joint AMS Central and Western Section Meeting, Boulder, CO, October 2-4, 2003.
2. **L. J. S. Allen*** and E. J. Allen. ``A Comparison of Three Different Stochastic Population Models with Regard to Persistence Time", Thirty-third Annual Lloyd Roeling/University of Louisiana at Lafayette Mathematics Conference, October 24-26, 2003.
3. **L. J. S. Allen*.** ``The dynamics of two viral infections in a single host population with applications to hantavirus", National MAA/AMS Meeting, Pheonix, Arizona, January 2004, Invited presentation.
4. **L. J. S. Allen*** and R. K. McCormack. ``Stochastic Epidemic Models for the Spread of Hantavirus in Rodents", SIAM Conference on Applications of Dynamical Systems. Snowbird, Utah. May 22-26, 2005, Invited presentation.
5. **L. J. S. Allen*** and R. K. McCormack. ``Deterministic and Stochastic Models for an Emerging Wildlife Disease: Hantavirus" AMS-IMS-SIAM Summer Research Conference, Modeling the Dynamics of Human Diseases: Emerging Paradigms and Challenges. Snowbird, Utah. July 17-July 21, 2005, Invited presentation.
6. **L. J. S. Allen*** and P. van den Driessche. ``Stochastic epidemic models with a backward bifurcation". AMS-MAA National Meeting, San Antonio, Texas. AMS-SIAM Special Session on Theory and Application of Stochastic Differential Equations, January 12-15, 2006.
7. **L. J. S. Allen*** and R. K. McCormack. ``Deterministic and stochastic models of an emerging wildlife disease: hantavirus". Workshop on Mathematics in Biology and Medicine. Arizona State University. February 3, 2006.
8. **L. J. S. Allen*.** ``Epidemic Models with Multiple Pathogen Strains." SIAM Annual Meeting, Boston, MA. June 10-14, 2006.
9. **L. J. S. Allen*** and P. van den Driessche. ``The Basic Reproduction Number in Discrete-Time Epidemic Models for Wildlife Diseases". International Conference on Difference Equations and Applications. Kyoto University, Kyoto, Japan. July 24-28, 2006. Invited presentation.
10. **L. J. S. Allen*.** ``Existence of a disease-free equilibrium in an SIS epidemic patch model when the rate of susceptible dispersal approaches zero." April 21-22, 2007. AMS Sectional Meeting. Tuscon, Arizona.

11. **L. J. S. Allen*** and K. Mallawaarachi. ``Gender and age structured models for amphibian populations". Conference on Mathematical Modeling and Analysis of Populations in Biological Systems- In Honor of Jim Cushing. University of Arizona, October 5-7, 2007.
12. **L. J. S. Allen*,** A. J. D. Ekanayake} and C. L. Wesley. ``Stochastic Metapopulation Models of Patch Occupancy and Stochastic Metapopulation Models for the Spread of Hantavirus In Wild Rodents", WCNA-2008, Orlando, Florida, July 2-9, 2008.
13. **L. J. S. Allen*** and A. J. D. Ekanayake. ``Comparing the dynamics of stochastic population models". 2008 AMS Fall Southeastern Meeting, Huntsville, Alabama, October 24-26, 2008.
14. **L. J. S. Allen*** and C. L. Wesley. ``Models for hantavirus infection in rodents with indirect transmission to humans and with spillover infection". Differential Equations and Applications in Ecology and Epidemiology - in Honor of 60th Birthday of Horst R. Thieme. Purdue University, December 8-10, 2008.
15. **L. J. S. Allen*.** ``Stochastic Metapopulation Models", Workshop: Stochastic and deterministic spatial modeling in population dynamics. American Institute of Mathematics, Palo Alto, California, May 4-8, 2009. Invited participant.
16. Amy J. Drew Ekanayake* and **L. J. S. Allen**. ``A metapopulation model: Comparisons between deterministic and stochastic models", Texas Section Meeting of MAA, Tarleton State University, April 2008.
17. Don Kumudu Mallawaarachchi* and **L. J. S. Allen**. ``Stability and persistence in gender and stage structured population models for the boreal toad", Texas Section Meeting of MAA, Tarleton State University, April 2008.
18. A. J. Drew Ekanayake* and **L. J. S. Allen**. ``A comparison of the distributions of two stochastic metapopulation models", January 2009. SIAM Minisymposium on Mathematical Modeling of Natural Resources, Joint Mathematical Meetings, Washington, D.C., January 2009.
19. Don Kumudu Mallawa Arachchi* and **L. J. S. Allen**. Poster Presentation: ``Stability and Permanence in Stage-Structured Population Models for the Boreal Toad", 2008 MBI Workshop for Young Researchers in Mathematical Biology, Ohio State University, September 2008.
20. Amy J. Drew* and **L. J. S. Allen**. Contributed Presentation at Joint Mathematics Meeting, New Orleans, January 5-8, 2007.
21. Amy J. Drew* and **L. J. S. Allen**. Poster Presentation: "Metapopulation Models for the Playa Lakes on the Southern High Plains" Achievement Rewards for College Scientists, 2006.
22. Robert McCormack* and **L. J. S. Allen**. Contributed Presentation at 2005 Spring Central Section Meeting of AMS, Lubbock, TX, April 8-10, 2005.
23. Kiyomi Kaskela* and **L. J. S. Allen**. Contributed Presentation at 2005 Spring Central Section Meeting AMS, Lubbock, TX, April 8-10, 2005.
24. Robert McCormack* and **L. J. S. Allen**. Contributed Presentation at Conference on Differential & Difference Equations and Applications August 2005, Melbourne, Florida.
25. Robert McCormack* and **L. J. S. Allen**. Poster Presentation, 2006 MBI Workshop for Young Researchers in Mathematical Biology, Ohio State University, April 2006.
26. Keith Emmert* and **L. J. S. Allen**. Contributed Presentation at National MAA/AMS Joint Mathematics Meeting, Phoenix, Arizona, January 2004.
27. Stephen B. Cox*, Richard A. Erickson, **Linda J. S. Allen**, Kevin R. Long, and Steven Presley. 94th ESA Annual Meeting August 2009, Albuquerque, New Mexico.

Local Presentations

1. Ph.D. and M.S. students: Keith Emmert, Robert McCormack, Curtis Wesley, Amy Drew Ekanayake, Chandrani Banerjee have given at least one Biomathematics Seminar or Applied Mathematics Seminar in the Department of Mathematics and Statistics during the time they were graduate students at TTU (**> 8** presentations). Robert McCormack also gave a seminar in the Biological Sciences Department.
2. **L. J. S. Allen***. Biomathematics Seminar Presentations. At least one presentation per year, 2004-2009.

Sessions Chaired

1. Session:``Structured Population and Epidemic Models: Periodicity, Chaos, and Extinction," for the Joint AMS Central and Western Section Meeting,Boulder, CO, Oct. 2-4, 2003. Co-Chairs: **L. J. S. Allen** and S. R. Jang.
2. Session: ``Extinction, Periodicity and Chaos in Population and Epidemic Models," for the AMS Spring Central Sectional Meeting, mLubbock, TX, April 8-10, 2005. Co-Chairs: **L. J. S. Allen**, S. R. Jang and L. Roeger.
3. Session: ``Recent Advances in Mathematical Biology and Epidemiology", for the AMS-MAA Joint National Meeting, San Antonio, TX, January 12-15, 2006. Co-Chairs: **L. J. S. Allen**, S. R. Jang and L. Roeger.
4. Session: ``Recent Advances in Mathematical Biology, Ecology, and Epidemiology", for the AMS-MAA Joint Mathematics Meeting, New Orleans, LA, Jan. 5-8, 2007. Co-Chairs: **L. J. S. Allen**, S. R. Jang and L. Roeger.
5. Session: ``Recent Advances in Mathematical Biology, Ecology, and Epidemiology", for the AMS-MAA Joint National Meeting, San Diego, CA, Jan. 6-9, 2008. Co-Chairs: **L. J. S. Allen**, S. R. Jang and L. Roeger.

Meetings Attended

1. Attended the Workshop on Spatial Heterogeneity in Biotic and Abiotic Environment: Effects on Species Ranges, Co-evolution, and Speciation, Mathematical Biosciences Institute, Ohio State University, February 6-10, 2006.
2. Attended the tutorial for Workshop: Spatial Ecology, Reaction - Diffusion Models. Speaker: Chris Cosner, Mathematical Biosciences Institute, Ohio State University, March 9-10, 2006
3. Attended the Workshop: Spatial Ecology. Discussion leader on landscape ecology in breakout sessions. Mathematical Biosciences Institute, Ohio State University, March 13-17, 2006.
4. Attended the DIMACS Workshop on Immuno-Epidemiology, Rutgers University, Piscataway, December 10-12, 2006.

DISSERTATION, THESIS AND REPORT DIRECTION

Graduate Students Directed

1. Keith Emmert. Dissertation: ``Deterministic and Stochastic Discrete-Time Epidemic Models with Applications to Amphibians". Ph.D., August 2004.
2. Robert McCormack. Dissertation: ``Multi-host and multi-patch mathematical models of disease emergence with applications to hantavirus in wild rodent populations". Ph.D., August 2006.
3. Curtis L. Wesley. Dissertation: ``Discrete-Time and Continuous-Time Epidemic Models with Applications to the Spread of Hantavirus in Wild Rodents and Human Populations". Ph.D.,August 2008.
4. Amy Drew Ekanayake. Dissertation: ``Stochastic Metapopulation Models and Watershed Estimates for Playas on the Southern High Plains." Ph.D., August 2009.
5. Niranjala Perera. Thesis: ``Deterministic and Stochastic Models of Virus Dynamics", M.S., December 2003.
6. Kiyomi Kaskela. Thesis: ``Deterministic and stochastic structured population models", M.S., August 2004.
7. Robert McCormack. Thesis ``Deterministic and stochastic host-pathogen genetics models", M.S., August 2004.
8. Amy Drew. Thesis: ``An investigation of climatic and geographic factors on the growth and spread on amphibian populations in Australia", M.S., December 2004. Co-Advisors: E. Allen and L. Allen.
9. Yaji Xu. Thesis: ``Analysis and modeling of an influenza epidemic with drug resistance", M.S. August 2006.
10. Chandrani Banerjee. Thesis: ``The Dynamics of mathematical models for Machupo viral infection in rodent populations." M.S. December 2007.

Undergraduate Students Directed

1. Jennifer Tang. Research Project: ``Simulation of Amphibian Populations on the Llano Estacado." Co-Advisors: E. J. Allen and L. J. S. Allen. 2008-2009.

Current Graduate Students

1. Don Kumudu Mallawa Arachchi. Dissertation: ``Stability and Permanence in Gender- and Stage-Structured Discrete-Time Models for the Boreal Toad in Single or Multiple Habitats, and a Stochastic Model for the Hydroperiod of Playas on the Southern High Plains". Ph.D., December 2009.
2. Yuan Yuan. MS Thesis Topic: A model for viral quasispecies evolution.
3. Sukhitha Vidurupola. MS Thesis Topic: A stochastic model for early HIV-1 infection.
4. Chelsea Lewis. MS Student.

Graduate Committees

1. Shannon M. Torrence, Ph.D. in Wildlife Sciences. August 2005. Advisor: Loren M. Smith.
2. Tim Hopkins, M.S. in Mathematics. May 2004. Advisor: Edward Allen
3. Rachel C. Koskodan. Ph.D. in Mathematics. August 2006. Advisor: Edward Allen.
4. Elizabeth White McGinnis. M.A. in Mathematics. August 2007. Co-Advisors: Padmanabhan Seshaiyer and Eugenio Aulisa.
5. Hakan Simsek. M.S. in Mathematics. Advisor: Edward Allen.
6. Angela Swerdlove Moss. Ph. D. in Biological Sciences. December 2009. Advisor: Michael SanFrancisco.
7. Richie Erickson. MS. in Environmental Toxicology. August 2009. Advisor: Stephen Cox.

HONORS AND AWARDS

Research Awards

1. College of Arts and Sciences Nominee for the Paul Whitfield Horn University Professorship, 2008-2009.
2. Barnie E. Rushing, Jr. Faculty Distinguished Research Award, Texas Tech University, 2007.

Other Distinctions

1. Taylor & Frances Best Paper Award 2005 for ``SIS epidemic models with multiple pathogen strains", *Journal of Difference Equations and Applications* (2004) by L. J. S. Allen, N. Kirupaharan and S. M. Wilson.

PROFESSIONAL SERVICE

Editorships (8)

1. Senior Advisory Board, Natural Resource Modeling, 2007-present.
2. Editorial Board, SIAM Journal of Applied Mathematics, 2007-present.
3. Editorial Board, Journal of Difference Equations and Applications, 2007-present.
4. Editorial Board, Journal of Biological Dynamics, 2008 - present.
5. Editorial Board, Journal of Theoretical Biology, 2006 - present.
6. Editorial Board, Mathematical Biosciences, 2005-present.
7. Book Review Co-Editor, Journal of Difference Equations and Applications. 2004 - present.
8. Editorial Board, Discrete and Continuous Dynamical Systems Series B.2002 - 2007.

Edited Volumes

1. Difference Equations and Discrete Dynamical Systems. Proceedings of the 9th International Conference. } World Scientific Publishing, 2005. **L. J. S. Allen**, B. Aulbach, S. Elaydi, and R. Sacker (Editors).

2. Special Issue of {\it Journal of Biological Dynamics}. Proceedings of a Special Session at the American Mathematical Society Meeting,New Orleans, January 2007. Volume 1, Issue 4, 2007. **L. J. S. Allen**, S. Jang, L. Roeger (Editors).
3. Special Issue of Mathematical Biosciences and Engineering. In honor of the 70th Birthday of Thomas G. Hallam. Volume 5, Issue 4, 2008. A. S. Ackleh, **L. J. S. Allen,** G. Canziani, S. M. Henson, J. Li, and Z. Ma (Editors).

Refereeing

1. Referee for an invited volume ``Mathematical and Statistical Estimation Approaches in Epidemiology", Springer.

2. Refereed >70 manuscripts submitted for publication to the following 27 journals, 2004-2009:
   1. American Journal of Epidemiology
   2. American Midland Naturalist
   3. Applied Mathematics Letters
   4. Bulletin of Mathematical Biology
   5. Discrete and Continuous Dynamical Systems- Series B
   6. Ecological Modelling
   7. Evolution
   8. Indian Journal of Pure and Applied Mathematics
   9. International Journal of Mathematics and Mathematical Sciences
   10. International Journal of Numerical Analysis and Modeling
   11. Iranian Journal of Science and Technology
   12. Journal of Biological Dynamics
   13. Journal of Biological Systems
   14. Journal of Difference Equations and Applications
   15. Journal of Mathematical Analysis and Applications
   16. Journal of Theoretical Biology
   17. Journal of the Royal Society Interface
   18. Linear Algebra and Its Applications
   19. Mathematical Biosciences
   20. Mathematical Biosciences and Engineering
   21. Mathematical and Computer Modelling
   22. Mathematical Population Studies
   23. Proceedings of the Royal Society
   24. SIAM Journal of Applied Mathematics
   25. Stochastic Analysis and Applications
   26. Stochastic Models
   27. Vector-Borne and Zoonotic Diseases

Reviewing

1. Reviewed >10 NSF Proposals for Divisions of Mathematical Sciences and Environmental Biology and other programs, 2003-2009.
2. Mathematics of Information Technology and Complex Systems (MITACS) of Canada.2005, 2008
3. National Science and Engineering Council (NSERC) of Canada, 2006, 2007, 2008.
4. Proposal to University of Antwerpen Research Council, Belgium, 2007.
5. Proposal to State of Louisiana LA EPSCoR program, 2008.
6. Proposal to The Fields Institute, Toronto, Canada, for Thematic Program, 2008.
7. Proposal to the Marsden Fund of the Royal Society of New Zealand, 2008.
8. Tenure and Promotion Files for about 10 Assistant or Associate Professors being considered for tenure and/or promotion in the United States, 2004-2009.

Meetings Organized

1. Conference: ``Over the Fence: Mathematicians and Biologists Talk about Bridging the Curricular Divide," Mathematical Biosciences Institute, Ohio State University. Chair: J. Galovich. Co-Chairs: **L. J. S. Allen**, S. Deckelman, and E. Marschall, June 1-2, 2007.

Reviewing Panels for Funding Agencies

1. NSF Panel: Population Biology, 2003.
2. NIH/NSF Panel: Ecology of Infectious Diseases, 2004.
3. NSF Panel: Integrated Graduate Education and Research Training Program (IGERT), 2007.
4. NSF Panel: Mathematical Biology, 2008, 2009.
5. Centers for Disease Control and Prevention (CDC) Panel, 2007.

Organization Offices Held

1. 10th Bellman Prize Committee, {\it Mathematical Biosciences}, 2004
2. SIAM Activity Group (SIAG) on Life Sciences Nominating Committee, 2008.
3. Scientific Advisory Committee, Mathematical Biosciences Institute, The Ohio State University, 2009-2011.
4. Nominating Committee Member for SIAM Activity Group on Life Sciences, 2008.
5. Organizing Committee, Mathematical Biosciences Institute, The Ohio State University, "Year in Stochastics", 2009-2011.
6. Scientific and International Organizing Committee, Third Conference on Computational and Mathematical Population Dynamics (CMPD3), Bordeaux, France, to be held May 31-June 4, 2010.

Memberships in Organizations

1. Society of Industrial and Applied Mathematics.
2. Association for Women in Mathematics
3. Mathematical Association of America
4. Society for Mathematical Biology
5. International Society of Difference Equations

EUGENIO AULISA

EDUCATION

- Ph.D. in Energetic, Nuclear and Environmental Control Engineering, University of Bologna, Italy (2005).
- M.S. in Nuclear Engineering, University of Bologna, Italy (2002).
- High School, Instituto Salesiano Don Bosco, Taranto, Italy (1994).

PROFESSIONAL EXPERIENCE

- **2007-Today:** Assistant Professor, Department of Mathematics and Statistics, Texas Tech University.
- **2005-2007:** Visiting Assistant Professor, Department of Mathematics and Statistics, Texas Tech University.
- **2003-2004:** University of Bologna, Teaching Assistant

Courses and Labs Taught: Numerical Analysis (graduate), Introduction to Numerical Analysis (undergraduate), Ordinary Differential Equations, Calculus 1-2-3, Analytical Geometry, Computer Science for Physics Majors, Thermodynamics for Electrical Engineering Majors and Nuclear Systems for Nuclear Engineering Majors.

AREAS OF INTEREST

Primary research interests are:

- Computational Fluid Mechanics, including modeling and simulation of multiphase flows and fluid-structure interaction problems;
- Non-linear analysis of fluid flow filtration in porous media;
- Multigrid solvers and domain decomposition methods.

PUBLICATIONS

Refereed Journals

- **E.Aulisa**, L.Bloshanskaya, L.Hoang, A.Ibragimov. *Analysis of Generalized Forchheimer Flows of Compressible Fluids in Porous Media*. Accepted for publication in the Journal of Mathematical Physics (2009).
- **E.Aulisa**, A.Ibragimov, J.R.Walton. *A new method of evaluating the productivity index for non-linear flows.* SPE Journal, SPE-108984-PA (2009).
- **E.Aulisa**, A.Ibragimov, P.P.Valko, J.R.Walton. *Mathematical Framework of the Well Productivity Index for fast Forchheimer (Non-Darcy) Flows in Porous Media.* Journal of Mathematical Models and Methods in Applied Sciences (M3AS), Vol. 19(8), pp.1241-1275 (2009).
- **E.Aulisa**, A.Cervone, S.Manservisi, P. Seshaiyer. *A Multilevel Domain Decomposition Approach for Studying Coupled Flow Application.* Communications in Computational Physics, Vol. 6 (2009), pp. 319-341.
- **E.Aulisa**, A.Ibragimov, M.Toda. *Geometric Framework for Modeling Nonlinear Flows in Porous Media, and Its Applications in Engineering.* Accepted in Journal of Non-linear Analysis - Real Word Application, in press online (2009).
- A.Idesman, H.Samajder, **E.Aulisa,** P.Seshaiyer. *Benchmark problems for wave propagation in elastic materials.* Computational Mechanics, online (2008).

- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A multilevel domain decomposition approach to solving coupled applications in computational fluid dynamics.* Int. J. Numeric. Meth. Fluids Vol. 56(8) (2008), pp. 1139-1145.
- **E.Aulisa**, S.Manservisi, R.Scardovelli, S.Zaleski. *Interface reconstruction with least-squares fit and split advection in three dimensional Cartesian geometry.* Journal of Computational Physics, Vol. 225(2), pp. 2301-2319 (2007).
- **E.Aulisa**, A.Cakmak, A.Ibragimov, A.Solynin. *Variational Principle and Steady State Invariants for Non-Linear Hydrodynamic Interactions in Porous Media.* Dynamics of Continuous, Discrete and Impulsive Systems, A Supplement, Advances in Dynamical Systems, Vol. 14(S2), pp. 148-155 (2007).
- **E.Aulisa**, S.Manservisi, R.Scardovelli. *A novel representation of the surface tension force for two-phase flows with reduced spurious current.* Computer Methods in Applied Mechanics and Engineering, Vol. 195-44/47 (2006), pp. 6239-6257.
- **E.Aulisa**, S.Manservisi P.Seshaiyer. *A computational multilevel approach for solving 2D Navier-Stokes equations over non-matching grids.* Computer Methods in Applied Mechanics and Engineering, Vol. 195-33/36 (2006), pp.4604-4616.
- F.Aubert, **E.Aulisa**, S.Manservisi, R.Scardovelli. *Interface tracking with dynamically-redistributed surface markers in unstructured quadrangular grids.* Computers & Fluids, Vol. 35-10 (2006), pp. 1332-1343.
- **E.Aulisa**, S.Manservisi. *A multigrid approach to the optimal velocity tracking problem for Navier-Stokes flows.* Robust Optimization-Directed Design, Non-convex Optimization and Its Applications, Springer, New York, Vol. 81 (2006), pp. 5-26.
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A non-conforming computational methodology for modeling coupled problems.* Nonlinear Analysis, Vol. 63-5/7 (2005), pp. 555-584.
- **E.Aulisa**, S.Manservisi, V.Marra, R.Scardovelli. *A FEM Navier-Stokes solver coupled to a front tracking algorithm for two-phase flows.* Computational fluid and solid mechanics (2005), Elsevier, pp.751-754.
- **E.Aulisa**, A.Barletta, M.Gallipoli, A.Terenzi, E.Zanchini. *CFD Analysis and Overheating Control of a Turbine.* International Journal of Thermal Sciences, Vol. 43 (2004), pp. 1119-1124.
- **E.Aulisa**, S.Manservisi, R.Scardovelli. *A surface marker algorithm coupled to an area-preserving marker redistribution method for three-dimensional interface tracking.* Journal of Computational Physics, Vol. 197-2 (2004), pp. 555-584.
- **E.Aulisa**, S.Manservisi, R.Scardovelli, S.Zaleski. *Geometrical area-preserving Volume-of-Fluid advection method.* Journal of Computational Physics, Vol. 192-1 (2003), pp 355-364.
- **E.Aulisa**, S.Manservisi, R.Scardovelli. *A mixed marker and volume-of-fluid method for the reconstruction and advection of interfaces in two-phase and free-boundary flows.* Journal of Computational Physics, Vol. 188-2 (2003), pp 611-639.

Refereed Conference Proceedings

- **E.Aulisa**, A.Ibragimov, Y.Kaya, P.Seshaiyer. *A Stability Estimate for Fluid Structure Interaction Problem with Non-Linear Beam.* Proceeding of the Seventh AIMS International Conference on Dynamical Systems (2009).
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A Computational Domain Decomposition Approach for solving Coupled Flow-Structure-Thermal Interaction Problems.* Seventh Mississippi State-UAB Conference on Differential Equations and Computational Simulations. Electron. J.Diff. Eqns., Conference 17 (2009), pp. 13-31.
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A Multilevel Domain Decomposition Methodology for Solving Coupled Problems in Fluid-Structure-Thermal Interaction.* Proceedings of ECCM 2006, Lisbon, Portugal (2006).

- L.Ferguson, **E.Aulisa**, P.Seshaiyer. *Computational modeling of highly flexible membrane wings in micro air vehicles.* Proceedings of the 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference Newport, RI (2006).
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A FEM Navier-Stokes solver coupled to a front tracking algorithm for two-phase flows.* Proceedings of the Third M.I.T. Conference on Computational Fluid and Solid Mechanics, MIT, Cambridge, pp.1-6 (2005)
- **E.Aulisa**, S.Manservisi, V.Marra, R.Scardovelli. *Front tracking with an area-preserving marker redistribution algorithm: kinematic and dynamic tests.* Proceedings of ECCOMAS 2004, Computational Methods, Jyvaskyla, Finland (2004), Invited Talk.
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A non-conforming finite element method for fluid simulations.* Proceedings of ECCOMAS 2004, Computational Methods, Jyvaskyla, Finland (2004).
- **E.Aulisa**, S.Manservisi, P.Seshaiyer. *A non-conforming computational methodology for modeling coupled problems.* Proceedings of the 4th World Congress of Nonlinear Analysis, Orlando, Florida, USA (2004).
- F.Aubert, **E.Aulisa**, S.Manservisi, V.Marra, R.Scardovelli. *A coupled marker and local area conservation method for interface tracking.* MACSI-net Workshop, Industrial challenges in the numerical simulation of evolving interfaces, Brussels, Belgium (2003), Invited Talk.

Conference Proceedings

- **E.Aulisa**, A.Ibragimov, P.Valko, J.Walton. *COMSOL Multi-physics machinery as a tool for developing an analytical method for computation of the productivity index of the well for high velocity non-Darcy flow.* Proceedings of COMSOL Users Conference 2006, Boston (2006).
- **E.Aulisa**, A.Barletta, M.Gallipoli, A.Terenzi, E.Zanchini. *Thermal analysis of a turbine stack.* Proceedings of the Advanced Computational Methods in Heat Transfer VIII, Lisbon, Portugal (2004).
- **E.Aulisa**, S.Manservisi, V.Marra, R.Scardovelli. *Modeling two-phase flow with a FEM method and a new hybrid marker-VOF algorithm.* Proceedings of Workshop 2003, Montecuccolino Laboratory, Bologna, Italy (2003).
- **E.Aulisa**, S.Manservisi, R.Scardovelli. *Three-dimensional reconstruction for incompressible and compressible two-phase flow.* Proceedings of the 21th UIT National Heat Transfer Conference, Udine, Italy (2003).
- **E.Aulisa**, S.Manservisi, V.Marra, R.Scardovelli. *Numerical investigation and design of phase and pressure distributions in pipeline systems with CFD-VOF methods.* Proceedings of Workshop 2003, Montecuccolino Laboratory, Bologna, Italy (2003).

FUNDING ACTIVITY

Funded

- **NSF-DMS 0931596:** 2009-2010 - *Mini-Symposium on Nonlinear Analysis, PDE, and Applications. Applied Mathematics,* National Science Foundation ($221,626). **E.Aulisa** (CoPI; organizer), L.Hoang (PI) and R.Kirby (CoPI).
- **NSF-DMS 0908177**: 2009-2012 - *Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications,* Applied Mathematics, National Science Foundation ($221,626). **E.Aulisa** (CoPI; modeling and simulations), L.Hoang (CoPI) A.Ibragimov (PI) and M.Toda (CoPI).
- **ARP 021244C399**: 2006-2009 - *Multidisciplinary Research Program in Computation and Control of Biological Systems.* Advanced Research Program-Mathematics, Texas Higher Education Coordinating Board, PI ($79,000). **E.Aulisa** (PI; modeling, simulations and education), A.Idesman (CoPI).

- **NSF-DMS 0813825**: 2007-2009 - *Mathematical and Computational Modeling of Fluid-Structure-Control Interactions with Multidisciplinary Applications in Science and Engineering.* Computational Mathematics, National Science Foundation ($108,152). **E.Aulisa** (Senior Personnel; modeling and simulation) and P.Seshaiyer (PI). PI of the NSF subcontract from George Mason University ($19,817).
- **NSF-DMS 0610026**: 2006-2007 - *Mathematical and Computational Modeling of Fluid-Structure-Control Interactions with Multidisciplinary Applications in Science and Engineering,* Computational Mathematics, National Science Foundation ($92,312). **E.Aulisa** (Senior Personnel; modeling and simulation), S.Manservisi (CoPI) and P.Seshaiyer (PI).
- **American Turbine**: 2008-2009 - consulting/research project: *Data analysis of the hydraulic pump efficiency*, ($7,000). **E.Aulisa (**PI, data analysis and modeling), M.Roth.

Not funded

- **IGERT 0903699:** 2009-2014 – *IGERT: Molecules to Systems – Multiscale Materials Science and Engineering,* DGE-IGERT full proposal, National Science Foundation ($3,200,000). **E.Aulisa** (Senior Personnel, interdisciplinary education), S.Sindee (PI), others.
- **REF:** 2008-2009 - *Non-linear Studies in Applied and Computational Mathematics* ($35,000). **E.Aulisa** (Co-PI, modeling and simulations), M.Toda (CoPI).
- **NSF-DMS 0807461:** 2008-2011 - *Non-linear analysis of flows in heterogeneous porous media and applications to reservoir engineering*. Applied Mathematics, National Science Foundation($489,417). **E.Aulisa** (Co-PI, modeling and simulations), A.Ibragimov (PI), A.Solynin (CoPI), M.Toda (CoPI).
- **NSF-REU:** 2008-2009 - *Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological Systems* ($250,000). **E.Aulisa** (Senior Personnel, education), R.Iyer (PI), others.
- **ARP-ATP 003644-0051:** (Pre-proposal 2007) - *Texas Center for Non-Linear Studies in Biological Systems* ($109,000). **E.Aulisa** (PI, modeling and simulations), A.Ibragimov (CoPI), M.Toda (CoPI), J.Walton (CoPI).
- **REF:** (Research Enhancement Fund Competition, TTU, 2007) - *Nonlinear Problems in Computational Biology and Mathematical Physics* ($34,996). **E.Aulisa** (COPI, modeling and simulations), A.Ibragimov (PI), others
- **NSF-DMS 0708064:** 2007-2010 - M*athematical Modeling, Analysis and Simulation of Non-linear Flow in Porous Media, with Application to Reservoir Engineering,* Applied Mathematics, National Science Foundation ($636,211). **E.Aulisa** (CoPI), A.Ibragimov (PI), others.
- **NSF-DMS:** 2006-2009 *A New Mathematical Framework for Reservoir Engineering***.** Science Foundation ($,717). **E.Aulisa** (Senior Personnel, modeling and simulation), A.Ibragimov (PI), others.

Pending

- **ARP-ATP 003644-0055:** (Pre-proposal 2009) - *Higher Education Center of Non-Linear Flows in Porous Media* ($140,000). **E.Aulisa** (PI, modeling and simulations), L.Hoang (CoPI), M.Toda (CoPI).

PRESENTATIONS AND MEETINGS ATTENDED

Conference presentations

- SIAM Conference on Mathematics for Industry: Challenges and Frontiers (MI09). *Large Mathematical model of well productivity index for generalized Forchheimer flows and application.* San Francisco, CA, October 2009. **E.Aulisa**, L.Bloshanskaya*, L.Hoang, A.Ibragimov.
- Seventh AIMS International Conference on Dynamical Systems. *Non-linear Flows and Steady State Invariants in Porous media.* Arlington, Texas May, 2008. **E.Aulisa**, A.Cakmak*, A.Ibragimov.
- Seventh AIMS International Conference on Dynamical Systems. *A Stability Estimate for Fluid Structure Interaction Problem with Non-Linear Beam.* Arlington, TX, May 2008. **E.Aulisa**, Y.Kaya*, A.Ibragimov.
- Seventh AIMS International Conference on Dynamical Systems. *An up-scaling alghrithm for non-Darcy flow in heterogeneous porous media.* Arlington, TX, May 2008. **E.Aulisa**, A.Ibragimov*, M.Toda.
- SPE Annual Technical Conference and Exhibition. *A new method of evaluating the productivity index for non-linear flows.* Anaheim, California, November 11-14, 2007. **E.Aulisa***, A.Ibragimov, P.Valko, J.Walton.
- 7th Mississippi State Differential Equation & Computational Simulations. *A Computational Domain Decomposition Approach for Solving Coupled Flow-Structure-Thermal Interactions.* Birmingham AL, November, 2007. **E.Aulisa**, S.Manservisi, P.Seshaiyer*.
- SIAM-NSF Conference on Mathematics for Industry: Challenges and Frontiers (MI07). *Geometrical Frame-Work for Modeling Non-Linear Flows in Porous Media, and Its Applications in Engineering.* Philadelphia, October 2007. **E.Aulisa,** A.Ibragimov, M.Toda*.
- International Conference On Spectral and High Order Methods. *A Multilevel Domain Decomposition Approach for Studying Coupled Flow Application.* Institute of Computational Mathematics, Chinese Academy of Sciences, June 2007. **E.Aulisa,** S.Manservisi, P.Seshaiyer*.
- 22nd International Conference of Moscow State University in honor of I. G. Petrovskii Differential Equations and Related Topics. *Variational Modeling of Transient Non Linear Flows.* Moscow, May 2007. **E.Aulisa,** A.Ibragimov*, M.Toda.
- Numerical Methods for Fluid Dynamics. *A multilevel domain decomposition approach for solving coupled applications in computational fluid dynamics.* University of Reading, UK March 26-27, 2007. **E.Aulisa,** S.Manservisi*, P.Seshaiyer.
- VIII Congresso Nazionale della Societa' Italiana di Matematica Applicata e Industriale (SIMAI VIII). *An overview of front tracking methods for two-phase flows*. Sommari del Baia Samuele (RG), Italy, May 2006. **E.Aulisa**, S.Manservisi, R.Scardovelli*.
- The 5th International Conference On Deferential Equations and Dynamical Systems. *Variational principle and steady state invariants for non-linear hydrodynamic interactions in porous media.* Edinburg, Texas, December 2006. **E.Aulisa** , A.Cakmak, A.Ibragimov*, A. Solynin.
- Numerical Simulation of Multiphase Flow with Deformable Interfaces, Euromech. *Interface reconstruction with least squares fit and split advection in three-dimensional Cartesian geometry.* Scheveningen, Netherlands, August 2006. **E.Aulisa**, S.Manservisi, R.Scardovelli*.
- COMSOL Users Conference. *COMSOL Multi-physics machinery as a tool for developing an analytical method for computation of the productivity index of the well for high velocity non-Darcy flow.* Boston, October 2006. **E.Aulisa**, A.Ibragimov*, P.Valko, J.Walton.
- ECCM 2006*, A Multilevel Domain Decomposition Methodology for Solving Coupled Problems in Fluid-Structure-Thermal Interaction.* Lisbon, Portugal, June 2006. **E.Aulisa***, S.Manservisi, P.Seshaiyer.

- Third M.I.T. Conference on Computational Fluid and Solid Mechanics, MIT, Cambridge, USA, June, 2005. *A FEM Navier-Stokes solver coupled to a front tracking algorithm for two-phase flows.* **E.Aulisa**, S.Manservisi*, V.Marra, R.Scardovelli.
- Third international Conference on Structural Stability and Dynamics, Kissimmee, Florida, June 19-22, 2005. *A computational multilevel approach for solving flow structure applications tuned to parallel implementation.* **E.Aulisa,** S.Manservisi, P.Seshaiyer*.

Invited talk

- *Modeling two-phase flows with a FEM solver of the Navier-Stokes equations.* Department of Mathematics and Statistics, Texas A&M University April 2006, **E.Aulisa***.
- *Non-linear Flows in porous media and application to multi-phase filtration,* ICES, University of Texas, Austin, March 2008. **E.Aulisa***.

Colloquia

- A *Multilevel Domain Decomposition Methodology for Solving Coupled Problems.* Department of Mathematics and Statistics, Texas Tech University February 2007. **E.Aulisa***.

Meetings attended

- 2009 AMS Fall Central Section Meeting. Baylor University, October 2009.

DISSERTATION, THESIS AND REPORT DIRECTORS

Directed students

- Adem Cakmak. Qualifying Exam & Ph.D. Final Exam on "Analysis of nonlinear Darcy-Forchheimer flows in porous media". Chair of the Committee (June 2009).
- Dahwei Chang. M.S. Defense on "*Peaceman's Numerical Productivity Index for Non-Linear Flows in Porous Media*". Chair of the Committee (June 2009).
- Elizabeth White McGinnis. M.A. Defense on "*Mathematical Modeling and Simulation of Fluid Structure Interaction for a High School Classroom*". Co-Chair (July 2007).

Student currently advised

Ph.D.: Emine Yasemen Kaya, Zeynep Kose, Lidia Bloshanskaya.
Master: JanithaGunatilake.

Graduate committees served on

- Joon-Yeoun Cho. Qualifying Exam & Ph.D. Final Exam on "*Finite element modeling of martensitic phase transformations*" Member of the Committee, Mechanical Engineering Department (May 2009).
- Shelly McGee, Qualifying Exam and Ph.D. Final Exam on "*Computational Modeling of Chemical Transport in Flow structure interaction in Porous Media*". Member of the Committee (June 2007).
- Wayne McGee, Qualifying Exam and Ph.D. Final Exam on "*h-p-k Least Squares Finite Element Methodology and Implementation for Fluid Structure Interactions*". Member of the Committee (August 2007).
- Yu Su, M.S. Defense on "*A High-Order Space-Time Formulation for Beam Structural Models and Application*". Member of the Committee (July 2007).
- Ranjeet Rajanala. M.S. Defense on "*Hydrodynamic Fluid Structure Interaction for Wave Carpet Simulation and Implementation*" Member of the Committee (July 2007).

- Abioudun Matthew Amao. M.S. Defense on "*Mathematical Model for Darcy Forchheeimer Flow with Applications to Well Performance Analysis*". Petroleum Engineering Department, Member of the Committee (July 2007).
- Simeon Eburi Losoha. Master Defense on "*Mathematical Modeling, Analysis and Simulation of the Productivity Index for Non-Linear Flow in Porous Media with Applications in Reservoir Engineering*". Petroleum Engineering Department. Member of the Committee (June 2007).
- Lauren Ferguson. M.S. Thesis on "*A Computational Model for Flexible Wing Based Micro Air Vehicles*". Member of the Committee (June 2006).
- Larry Jean. M.S. Thesis on "*Modeling Intracellular Calcium Ion Propagation*". Member of the Committee (April 2006).

HONORS AND AWARDS

2008-2009, SIAM Graduate Professor of the Year, Department of Mathematics and Statistics, Texas Tech University

PROFESSIONAL SERVICE

Editorships

Member of the Editorial Board of the *First International Conference on Parallel, Distributed and Grid Computing for Engineering*. Pecs, Hungary, April 2009.

Reviewing

Referee for the International Journal of Advances in Engineering Software.

Meetings organized

- Co-Organizer of the 2009 Red Rider Mini-Symposium: *Non-linear analysis, PDEs and applications*. Texas Tech University, October 29-31, 2009.
- Co-Organizer of the Mini-symposium "*Domain Decomposition Techniques for Coupled Problems in Science and Engineering Organizers*" in the 9*th* US National congress on Computational Mechanics, San Francisco, CA, July 23-26, 2007.
- Co-Organizer of the 7th Emmy Noether High School Mathematics Days, Texas Tech University, Department of Mathematics and Statistics May 2008.
- Co-Organizer of the 6th Emmy Noether High School Mathematics Days, Texas Tech University, Department of Mathematics and Statistics May 2007.

OTHER RELEVANT ACTIVITIES

2007-2009 SIAM Chapter Advisor.

ROGER WILSON BARNARD

EDUCATION

- Ph.D. U. of Maryland, 1971, (Advisor: William Kirwan)
- M.A. Kent St. U. 1986
- B.S. Kent St., U. 1965

PROFESSIONAL EXPERIENCE

- November-December 2007, (four weeks), Visiting Professor, U. of South Florida
- November 2007 (two weeks), Visiting Professor, U. of Tennessee
- October 2007 (three weeks), Visiting Professor, U. of Cincinnati
- September 2007 (four weeks), Visiting Professor, U. of Michigan
- May-August 2006, Giovanni-Prodi Chair Holder, U. of Würzburg, Germany.
- 1998-Present, Member Rocky Mountain Consortium Board since 1998 serving as Secretary 1998, Vice President 1999, President 2000 and 2001.
- July 1991-May 1993, Director of Graduate Studies, Mathematics.
- May 1993-August 1993, Visiting Scholar, Universitat at Würzburg, Würzburg, Germany.
- January-June 1987 and January-June 1988, Visiting Scholar, U. of California-San Diego.
- September 1986-present, Professor, Texas Tech University.
- Spring 1985, Visiting Research Professor, Indiana U.
- September 1979-August 1986, Associate Professor, Texas Tech University.
- September 1977-June 1978, summer 1980, and fall 198, Visiting Associate Professor, U. of Kentucky Lecturer
- July 1973-August 1975 and Assistant Professor, September 1975-August 1979, Texas Tech University.
- August 1971-June 1973, Postdoctorate, (NSF) U. of Kentucky.

AREAS OF INTEREST

- Primary: Complex Analysis (Geometric Function Theory)
- Secondary: Special Functions of Mathematical Physics

PUBLICATIONS (from the last six years, from total of 67 since 1973)

Refereed Journals (PhD Students underlined)

1. "Iceberg-type Problems: Estimating Hidden Parts of a Continuum from the visible Parts," accepted in *Mathematische Nachrichten* (**R.W. Barnard**, K. Pearce and A.Y. Solynin).
2. "A proof of Campbell's subordination conjecture," *Complex Variables and Elliptic Equations* 54, No 2 (2009), pp 103-117, (**R.W. Barnard** and K. Pearce).
3. "Iteration of complex functions and Newton's method," *Australian Senior Mathematics Journal* 23, No 1 (2009), pp 9-16, (**R.W.Barnard** and J. Dwyer).
4. "A note on Turan-type and mean inequalities for the Kummer function," *Journal of Math Analysis and Applications* 349, No 1 (2009), pp 259-263, (**R.W. Barnard**, M.B. Gordy and K.C. Richards).
5. "On Inequalities for Hypergeometric Analogues of the Arithmetic-Geometric Mean," accepted in *Journal of Inequalities in Pure and Applied Math* 8, No 3 (2007), Article 65, 5 pages (**R.W. Barnard** and K. Richards).

6. "Preservation of local dynamics when applying central difference methods: Application to SIR model," *Journal of Difference Equations and Applications*, Vol. 13, No 4 (2007) pp. 333-340 (**R.W. Barnard** and L. Roeger).
7. "A note on minimal are problem for non-vanishing functions," *Quasiconformal Mappings and their Applications* (2007), pp 1-9 (**R.W. Barnard**, C. Richardson and A.Y. Solynin).
8. "Some results on Spaces of Packable Riemann Surfaces", The *Journal of Analysis*, Vol. 15, (2007), pp 1-17.
9. "A sharp bound on the Schwarzian derivative of hyperbolically convex functions," *Proc. London Math. Soc.* **93** (2006) pp 395-417 (**R.W. Barnard**, L. Cole, K. Pearce and G.B. Williams).
10. "A minimum area problem for non-vanishing functions," *Algebra I Analiz* **18** (2006), no. 1, pp 21-36 (**R.W. Barnard**, C. Richardson and A.Y. Solynin).
11. "A variational method for hyperbolically convex functions," (**R.W.Barnard**, G.L. Ornas and K. Pearce) *Complex Variables and Eliptic Equations,* 51, (2006), pp. 313-327. (Accepted).
12. "The Poincare metrics and isoperimetric inequalities for hyperbolic functions," (**R.W. Barnard**, P. Hadjicostas and A.Y. Solynin) *Trans. AMS* Vol 357, No. 10 (2005) pp 3905-3932.
13. "Concentration of area in half-planes," (**R.W. Barnard**, C. Richardson and A.Y. Solynin) *Proc. AMS* Vol. 133, No. 7 (2005) pp. 2091-2099.
14. "Univalency of weighted integral transforms of certain functions," (**R.W. Barnard**, S. Naik and S. Ponnusamy) *Analysis (Munich)* Vol. 24 (2004), No. 1, pp 71-94.
15. "Local variations and minimal area problems," (**R.W. Barnard** and Alex Solynin) *Indiana J. of Math* Vol. 53 (2004) pp 135-167.
16. "Two parameter family of close-to-convex functions and convolution theorems," (**R.W. Barnard**, S. Naik, M. Obradovic and S. Ponnusamy) *Analysis (Munich)* Vol. 24 (2004) pp71-94.
17. "Three Extremal Problems for Hyperbolically Convex Functions," (**R.W. Barnard**, K. Pearce and G.B. Williams) *Computational Methods and Functions Theory* Vol. 4 (2004) pp 97-109.

Refereed Conference Proceedings

1. "Some results on spaces of packable Riemann surfaces," *Journal of Analysis* Vol 15 (2007), pp1-16 (**R.W.** Barnard, E. Murphy and G.B. Williams).
2. "The Verification of an Inequality," *Journal of Analysis* Vol 15 (2007), pp 17-42 (**R.W. Barnard** and K. Pearce).

FUNDING ACTIVITY

Funded

1. REU Grant, "Multidisciplinary Summer Undergraduate Research Program in computation and control of Biological and Biologically Inspired Systems," Department of Defense and National Science Foundation, (Senior Personnel), $20,000 for Summer 2006-2007.
2. Giovanni-Prado Chair, $22,000, summer 2006, DAAD, Germany.
3. NSF Grant for $47,500 to support an international workshop and conference on Quasiconformal Mappings, India, Dec. 27, 2005-Jan. 7, 2006 (with G. B. Williams co-Principal Investigator).
4. Summer Dissertation/Thesis Award for $2;000 for my PhD Student, C. Hume, for summer 2005.

Pending

1. "Applications of complex analysis and discrete conformal geometry," NSF, $393,245, 2010-13, (**R.W. Barnard**, G.B. Williams)
2. "Imaging Application of Discrete Conformal Geometry," NHARP, $140,000, 2010-11, (**R.W. Barnard** and G.B. Williams).

Not Funded

1. "Compulational Methods from Conformal Geometry and Special Functions with Applications" NSF, $299,569, 2009-11, (**R.W. Barnard**, G.W. Williams,).
2. "Applications of Circle Packing to Imaging and Visualization" ARP, $92,000, 2008-10, proposal accepted, forwarded, but ARP cancelled program last minute.
3. "Multidisciplinary summer undergraduate research program in computational and control of biologically inspired systems" REU, NSF, 2006-08, $302,081 (Senior Personal 2%).
4. "Discrete Conformal Mapping, Applications, and Function Theory" NSF, $174,390, 2006-09, (R.W. Barnard, **G.B. Williams).**
5. "Collaborative Research: Recruiting, mentoring mathematics students at Texas Tech University and Colorado School of Mines Collaborative" NSF, $252,300, 2006-10, (5% Senior Personel).
6. "Analysis, Geometry, and Applications" NSF, $317,829, 2005-07, (R.W. Barnard, **G.W. Williams).**
7. "Biological Application of Conformal Mapping" ARP, $72,440, 2006-08, (**R.W. Barnard**, G.W. Williams).
8. "Problems and Techniques in Conformal Geometry and Complex Analysis" NSF, $273,045, 2006-08, (R.W. Barnard, **G.W. Williams**).
9. "Proposal in Complex Analysis" DFG (Deutsche Forschungsyemeinshuft) Proposal for Visiting Mercator Professorship 2005 (Postponed until 2006).

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- San Diego State, Feb. 2008
- University of South Florida, Dec. 2007
- University of Tennessee, Nov. 2007
- University of Illinois, Oct. 2006
- City University of New York, May 2005
- Virginia Polytechnic Institute and State University, Feb. 2005
- College of William and Mary, Feb. 2005
- University of Arkansas, Feb. 2005
- University of Cincinnati, April 2004

One Hour Talks

- U. of Cincinnati, Oct 2007 (two talks)
- U. of Mich., Sept. 2007 (three talks)
- U. of Würzburg, Summer 2006 (series of five talks on different topics)
- Stella-Maris College (Endorsement Lecture), Jan. 2006, Chennai, India

Invited Conferences and Special Sessions of AMS

1. Special Session on "Special Functions and Orthogonal Polynomials" at AMS-PIMS Meeting, Vancouver, B.C., October 2008, (chaired a session).
2. Conference on "Complex Function Theory" honoring B. Twomey's retirement, April 2008, at U. College Cork, Ireland (chaired a session).
3. Conference on "One and Several Complex Variables" at U. of Kentucky, May 2008. (chaired a session)

4. Participation in Classical Analysis Conference at U. of North Carolina, Sept. 2007. (chaired a session).
5. Special Session on "Complex Analysis" at the CMS-MITACS Joint Conference, Winnipeg, Manitoba, June 2007. (chaired a session)
6. "Tag de Functiontheorie" at RWTH, Aachen, Germany, June 2006.
7. "International Conference on Complex and Harmonic Analysis" at Aristole U. of Thessalonki, Greece, May 2006. (chaired a session)
8. Special Session on "Special Functions and Polynomials" at Regional AMS Meeting at U. of Notre Dame, April 2006.
9. Key Note Address, "A survey of solutions to distortion theorems in hyperbolic geometry" at International Conference on Geometric Functions Theory, Special Functions and Applications. January 2006, Chennai, India. (chaired a session)
10. Plenary talk at "Recent Advances in Operator Related Function Theory," honoring Peter Duren's 70th birthday, Madrid, Spain, October 2005. (chaired a session)
11. "Computational Methods and Function Theory V," Joensu, Finland, June 2005. (chaired a session)
12. Plenary talk at "Analysis Conference on the Interplay of Complex Variable, Probability and Partial Differential Equations," honoring Al Baernstein's 65th birthday, Washington U., St. Louis, Missouri, May 2005.
13. Mathematisches Forschungainstitut, Funktionentheorie, Oberwolfach, Germany, February 2004.

Local Presentations

1. Gave 15 minute presentations at each SIAM Mini Symposium, 2004-09, TTU.
2. Gave several hour talks at Analysis Seminar, TTU, 2004-09.
3. Gave half hour talk at Dayawansa's "Memorial Conference," April 2007.
4. Gave one hour talk on "Mathematics and the college student" at the Native American Summer Bridge Institute (NASBI), TTU, July 2009.

DISSERTATION, THESIS AND REPORT DIRECTORS

PhD Students

1. Casey Hume (co-chair with G.B. Williams), "Generalized quadrilateral circle patterns," 2006.
2. David Martin (co-chair with G.B. Williams), "Maximizing the generalized Fekete-Szego functional over a class of hyperbolically convex functions," 2006.
3. Eric Murphy, (co-chair with G.B. Williams), "Discrete conformal approximation of complex Earthquake Maps," 2005.

M.S. Students

1. Atul Dixit (co-chair with A.Y. Solynin), "Ramanujan's inequalities and monotonicity properties of the Theta Functions," 2006.
2. Alex Williams, (co-chair with K. Pearce), "Power series coefficients of some classical functions," 2006.

Current Students

PhD Students

1. Alex Williams (co-directing with A.Y. Solynin), expected 2010.

2. Matt Lochman, (co-directing with A.Y. Solynin), expected 2010.
3. Arunabha Biswas, (co-directing with C. Monico), expected 2012.
4. Joseph Gilbert, (co-directing with C. Monico), expected 2013.

M.S. Students

1. John Austin, expected 2010.
2. Levi Johnson, (co-directing with A.Y. Solynin), expected 2010.
3. Joseph Gilbert, (co-directing with C. Monico), expected 2010.

HONORS AWARDED

- Mathematics Department nominee for "President's Academic Achievement Award" 2009
- Honoree of "Roger Fest, Red Raider Mini Symposium" honoring R.W. Barnard's 60th Birthday, Nov. 2007.
- Recipient of Giovanni-Prodi Chair for outstanding research and teaching, under the auspices of the German DAAD, Summer 2006, University Of Würzburg, Germany
- College of Arts and Sciences, Texas Tech University, "Outstanding Researcher Award" 2005
- KMU Professor of the Year, 2004

PROFESSIONAL SERVICE

Editorship

1. Associate Editor for *Computational Methods and Function Theory.*
2. The Complex Analysis and Special Function Theory Editor for the *Rocky Mountain Journal of Mathematics.*
3. Associate Editor for *International Journal of Computational and Applied Math.*
4. Editor for *Journal of Analysis.*

Refereeing

1. Abstract and Applied Analysis
2. Applied Numerical Mathematics
3. Applied Math Letters
4. Bulletin of the Institute of Math, Academia, Sinica
5. Colloquium Mathematicam
6. Complex Variables and Integral Equations
7. Computers and Mathematics and Applications
8. Houston Journal of Math
9. Italian Journal of Pure and Applied Math
10. Journal of Approximation Theory
11. Journal of Ineqaulities in Pure and Applied Math
12. Journal of Math Analysis and Applications
13. Mathematical and Computer Modeling
14. Mathematische Nachrichten
15. Proceedings of the American Mathematical Society
16. Publications de'Institute Mathematique
17. Publications Mathematicae
18. Ramanujan Journal

19. Rendiconti Luncei Mathematica E Applicajioni (RLM)

Reviewer

Mathematical Reviews

1. Internal Reviewer for Vice Presidents for Research Panel, 2008.
2. Outside reviewer for S. Ponusamy's Book "Foundations of Complex Variables," 2005
3. Outside reviewer for PhD Thesis of P. Vasundhra Instatute of Technology, Madras, India, 2004
4. Internal Reviewer for REF Proposals, 2001-5.

Meetings Organized

1. AMS Special Session on "Contemporary Complex and Special Functions Theory" at Baylor University, Waco, TX, Oct 2009, (with K. Pearce, K. Richards, A.Y. Solynin, G.B. Williams).
2. Advisory Committee and Plenary Speaker: "International Conference on Geometric Function Theory, Special Functions and Applications," Pondicherry, India, January 2006.
3. Advisory Committee and Plenary Speaker: "International Workshop on Quasiconformal Mapping," Chennai, India, December 2005.
4. AMS Special Session on "Recent Developments in Geometric Function Theory," Lubbock, Texas, April 2005.

Memberships and Offices Held

1. American Mathematical Society
2. Rocky Mountain Mathematics Consortium Board

ADDITIONAL CONTRIBUTIONS

1. Papers are reviewed in 12 subcategories in "Mathematical Reviews."
2. Gave a short course on "Applications of symmetrization and polarization to problems in problems in Geometric Function Theory" consisting of eight 1 ½ hour lectures at University of South Florida, Nov.-Dec. 2007.
3. Gave course on "Special Functions of Mathematical Physics" at University of Würzburg, Germany, summer 2006, as Giovanni-Prodi Chair.
4. On the Mathematical Association of America Visiting Lecturer's Panel.
5. On panel of Visiting Lecturers for Rocky Mountain Consortium.

HAROLD BENNETT

EDUCATION

B.S.	Idaho State University	1963
M.S.	Arizona State University	1965
Ph.D.	Arizona State University	1968

ACADEMIC EXPERIENCE

Spring 1968	Visiting Assistant Professor, Arizona State University
Fall 1968-73	Assistant Professor, Texas Tech University
Fall 1973-80	Associate Professor, Texas Tech University
Spring 1980-present	Full Professor, Texas Tech University

RECENT PUBLICATIONS

1. "The Big Bush Machine" (with D. Lutzer), submitted.
2. "A note on monotonically metacompact spaces" (with D. Lutzer and K.P. Hart), accepted by General Topology and its Applications, to appear.
3. "Strong completeness properties in topology" (with D. Lutzer), Questions and Answers in General Topology, to appear.
4. "Measurements and G-delta subsets of domains", (with D. Lutzer), Canadian Mathematical Bulletin, to appear.
5. "Domain-Representable Spaces and Completeness", (with D. Lutzer), Topology Proceedings, to appear.
6. "Subcompactness and Domain Representability in GO-spaces on Real Numbers" (with D. Lutzer), Topology and its Applications, 156 (2009), 939-950.
7. "Domain representability of Cp(X)" (with D. Lutzer), Fundamenta Mathematicae, 200 (2008), 185-199.
8. "Domain representability of certain function spaces" (with D. Lutzer), Topology and its Appl., 156 (2009), 1937-1942.
9. "Scott representability of some spaces of Tall and Miskin" (with D. Lutzer), Applied General Topology, 9 (2008), 281-292.

10. "Selected ordered space problems" (with D. Lutzer), pp. 3-9 in "Open Problems in Topology, II," ed. by E. Pearl, Elsevier, New York, 2007.
11. "Domain-representability and the Choquet game in Moore and BCO spaces" (with D. Lutzer and G.M. Reed), Topology and its Applications, 155 (2008), 445-458.
12. "A countably-based domain representation of a non-regular Hausdorff space" (with D. Lutzer), Topology Proceedings, 30 (2006), 83-93.
13. "Domain-representability of certain complete spaces" (with D. Lutzer), Houston Journal of Mathematics, 34 (2008), 753-772.
14. "Compact G-delta sets" (with D. Lutzer and R. Byerly), Topology and its Applications, 153 (2006), 2169-2181.
15. "Domain-representable spaces" (with D. Lutzer), Fundamenta Math., 189 (2006), 255-268.
16. "On a question of Maarten Maurice" (with D. Lutzer), Topology and its Applications, 153 (2006), 1631-1638.
17. "Quarter-stratifiability in ordered spaces" (with D. Lutzer), Proc. Amer. Math.Soc., 134 (2006), 1835-1847.
18. "The beta-space property in generalized ordered and monotonically normal spaces" (with D. Lutzer), Topology and its Applications, 153 (2006), 2218-2228.
19. "The monotone Lindelof property and separability in ordered spaces" (with D. Lutzer and M. Matveev), Topology and its Applications, 151 (2005), 180-186.
20. "Spaces with $< \omega$-weakly uniform bases," (with D. Lutzer), Topology Proceedings, 27 (2003).
21. "Metrically fibered generalized ordered spaces," (with D. Lutzer), Topology and its Applications, 130 (2003), 283-290.
22. "Lines, trees, and branch spaces," (with D. Lutzer and M.E. Rudin), ORDER, 19 (2002), 367-384.

23. "Linearly ordered and generalized ordered spaces," (with D. Lutzer), pp. 326-330 in Encyclopedia of General Topology, ed. by K.P. Hart, J. Nagata, and J. Vaughan, Elsevier, Amsterdam, 2004.

INVITED PRESENTATIONS

1. Compact G-delta Sets, 2005 Spring Topological and Dynamical Systems Conference, Berry College, Mount Berry, Georgia.

ROBERT EDWIN BYERLY

EDUCATION

- S. B. Massachusetts Institute of Technology, 1973
- M.A., State University of New York at Buffalo, 1975
- Ph.D., State University of New York at Buffalo, 1979

PROFESSIONAL EXPERIENCE

- 1974, Instructor, Millard Fillmore College, SUNY Buffalo
- 1978-78, Teaching Assistant, Department of Mathematics, SUNY Buffalo
- 1978-80, Lecturer, Department of Mathematics, Ohio State University
- 1980-86, Assistant Professor, Department of Mathematics, Texas Tech University
- •1986-present, Associate Professor, Department of Mathematics and Statistics, Texas Tech University
- 2008-2009, Interim Associate Chair, Department of Mathematics and Statistics, Texas Tech University
- 2009-, Associate Chair, Department of Mathematics and Statistics, Texas Tech University

AREAS OF INTEREST

- Logic
- Computability Theory
- Theoretical Computer Science
- Computer-aided instruction

PUBLICATIONS

Refereed Journals:

- "Observability of permutations and stream ciphers", **Robert Byerly,** L. Drager, and J. Lee, *IEEE Transactions on Information Theory,* vol. 49, No. 12, Dec. 2003, pp. 3326-3330.
- "Compact G-delta sets", H. Bennett, **Robert Byerly**, and D. Lutzer, *Topology and its Applications,* 153(2006), pp 2169-2181.

FUNDING ACTIVITY

- Funded: "The WebWork system for learning Mathematics", Texas Tech University TLTC, Faculty Incentive Grant. (**Robert Byerly**,Principal investigator), 2005-2006, $8437.

PRESENTATIONS AND MEETINGS ATTENDED

- "The WeBWorK system for learning Mathematics", TLTC round-table discussion, Texas Tech University, September 2005.
- AIM Workshop "Enhancing the problem-solving capabilities of WeBWorK", August 2007. Presentation: "Enhancing the Linear Algebra interface to WeBWorK" (**Robert Byerly**, Karen Clark, Tom Hagedorn*), Palo Alto, CA.
- "Linear Algebra in WeBWorK", WeBWorK Mini-symposium (MathFest 2008), August 2008, Madison, WI.

DISSERTATION, THESIS AND REPORT DIRECTORS

<u>Graduate students directed</u>

- Natevidad Casas (M.A.) (co-chair with Carl Seaquist)

Graduate students in progress

- Alma Potter (M.A.)

Graduate committees served on

- Shawna Allen (M.A.) 2003
- Daniel Hermann (M.S.) 2003
- Sherri Wilson (M.S.) 2004
- Brad Lutes (M.S.) 2004
- Keyi Wang (PhD) 2006
- Huilan Jiang (M.S.) 2006
- Ke Yan (PhD) 2007
- Tod Kennaugh (PhD) 2008
- Adem Ozyavas (PhD, Computer Science, in progress).

PROFESSIONAL SERVICE

Refereeing

- *Texas College Mathematics Journal*

Reviewing

- Tomastik's *Calculus*, Thompson Publishing. 2006.
- Larson's *Trigonometry*, Houghton-Mifflin
Memberships in organizations
- Association for Symbolic Logic

LARS WINTHER CHRISTENSEN

EDUCATION

Ph.D. (Mathematics)	University of Copenhagen, Denmark	1999
M.Sc. (Mathematics)	University of Copenhagen, Denmark	1996
B.Sc. (Math. and Physics)	University of Copenhagen, Denmark	1995
Captain (Army Reserve),	Royal Danish Defense College	1995
Lieutenant (Reconnaissance)	Danish Army	1990

PROFESSIONAL EXPERIENCE

2006-	Texas Tech University (on leave 2006-7)	Assistant Professor
2004-2007	University of Nebraska-Lincoln	Visiting Professor
2001-2004	Cryptomathic, Denmark and France	Product manager
1999-2001	Nokia Networks &D, Denmark	Software designer and release manager
1996-1997	Royal Danish Military Academy	Assistant Professor
1995-1996	Royal Danish Military Academy	Lecturer
1990-1995	Danish Army	Unit and staff positions in Reconnaissance and electronic warfare

AREAS OF INTEREST

Homological and homotopical algebra with applications to ring theory.

PUBLICATIONS

Refereed journals

- **L.W. Christensen**, H.-B. Foxby and H. Holm, *Beyond totally reflexive modules and back*, to appear in "Commutative Algebra: Noetherian and non-Noetherian perspectives", Springer-Verlag, 44 pp.
- **L.W. Christensen**, J. Striuli and O. Veliche, *Growth in the minimal injective resolution of a local ring,* J. Lond. Math. Soc., to appear, 21 pp.
- **L.W. Christensen** and S. Sather-Wagstaff, *Transfer of Gorenstein dimensions along ring homomorphisms*, J. Pure Appl. Algebra, online October 2009, 8 pp.
- **L.W. Christensen** and H. Holm, *Algebras that satisfy Auslander's condition on vanishing of cohomology,* Math. Z., online March 2009, 20 pp.
- **L.W. Christensen** and S. Sather-Wagstaff, *Descent via Koszul extensions,* J. Algebra, **322** (2008), 3026–3046.
- **L.W. Christensen** and H. Holm, *Ascent properties of Auslander categories,* Canad. J. Math., **61** (2009), 76–108.
- **L.W. Christensen** and S. Sather-Wagstaff, *A Cohen-Macaulay algebra has only finitely many semidualizing modules,* Math. Proc. Cambridge Philos. Soc., **145** (2008), 601–603.
- **L.W. Christensen**, G. Piepmeyer, J. Striuli, and R. Takahashi, *Finite Gorenstein representation type implies simple singularity,* Adv. Math. **218** (2008), 1012–1026.
- **L.W. Christensen** and O. Veliche, *A test complex for Gorensteinness,* Proc. Amer. Math. Soc. **136** (2008), 479–487.
- **L.W. Christensen** and O. Veliche, *Acyclicity over local rings with radical cube zero,* Illinois J. Math. **54** (2007), 1439–1454.
- **L.W. Christensen** and S. Iyengar, *Gorenstein dimension of modules over homomorphisms,* J. Pure Appl. Algebra **208** (2007), 177–188.

- **L.W. Christensen**, A. Frankild and H. Holm, *On Gorenstein projective, injective and flat dimensions—A functorial description with applications,* J. Algebra **302** (2006), 231–279.
- **L.W. Christensen**, *Sequences for complexes II,* Math. Scand. **91** (2002), 161–174.
- **L.W. Christensen**, H.-B. Foxby and A. Frankild, *Restricted homological dimensions and Cohen–Macaulayness,* J. Algebra **251** (2002), 479–502.
- **L.W. Christensen**, *Sequences for complexes,* Math. Scand. **89** (2001), 161–181.
- **L.W. Christensen**, *Semi-dualizing complexes and their Auslander categories,* Trans. Amer. Math. Soc. **353** (2001), 1839–1883.
- **L.W. Christensen**, *Gorenstein Dimensions*, Lecture Notes in Math. vol. 1747, Springer-Verlag, Berlin, 2000, xiii + 204 pp.

FUNDING ACTIVITY

Funded

- *Studies in the cross field between commutative ring theory, algebraic geometry, and homological algebra,* Danish Natural Science Research Council, $79,500, 2004-2005, **L.W. Christensen** (Principal Investigator)
- *Studies in the cross field between commutative ring theory, algebraic geometry, and homological algebra,* Carlsberg Foundation, $90,000, 2005-2007, **L.W. Christensen** (Pincipal Investigator)

Not funded

- *Studies in the cross field between commutative ring theory, algebraic geometry, and homological algebra,,* Villum Kann Rasmussen Foundation, $85,000, 2005-2007, **L.W. Christensen** (Principal Investigator)
- *Homological Aspects of Ring Theory,* National Science Foundation, $108,635, 2008-2011, **L.W. Christensen** (Principal Investigator)
- *Computational homological algebra,* Texas Higher Education Coordinating Board, $98,000, 2008-2010, **L.W. Christensen** (Principal Investigator)
- *Cohomology of Algebras and Modules,* National Science Foundation, $98,496, 2009-2012, **L.W. Christensen** (Principal Investigator)
- *Cohomology of Algebras and Modules,* National Security Agency, $27,413, 2010-2012, **L.W. Christensen** (Principal Investigator)

Pending

- *Homological and homotopical algebra in module categories,* National Science Foundation, $128,138, 2010-2013, **L.W. Christensen** (Principal Investigator)
- *Representation theory of totally reflexive modules,* Texas Higher Education Coordinating Board, $148,500, 2010-2012, D.A. Jorgensen (Principal Investigator) and **L.W. Christensen** (co-Principal Investigator)

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- **L.W. Christensen***, NYC College of Technology, Brooklyn NY, Oct. 2009

- **L.W. Christensen***, Nanjing University, P.R. China, July 2008
- **L.W. Christensen***, University of Missouri, Columbia MO, Mar. 2008
- **L.W. Christensen***, University of Nebraska, Lincoln NE, Feb. 2008
- **L.W. Christensen***, North Dakota State University, Fargo ND, Nov. 2007
- **L.W. Christensen***, Osaka Prefecture University, Osaka, Japan, May 2007
- **L.W. Christensen***, Okayama University, Japan, May 2007
- **L.W. Christensen***, Shinshu University, Matsumoto, Japan, May 2007
- **L.W. Christensen***, Shizuoka University, Japan, May 2007
- **L.W. Christensen***, University of Missouri, Kansas City MO, March 2007
- **L.W. Christensen***, Kent State University, Kent OH, Feb. 2007
- **L.W. Christensen***, Cal Poly State University, San Luis Obispo CA, Jan. 2007
- **L.W. Christensen*,** University of Kentucky, Lexington KY, Nov. 2005
- **L.W. Christensen***, University of Nebraska, Lincoln NE, Nov. 2005
- **L.W. Christensen***, University of Copenhagen, Denmark, Feb. 2004

Invited hour talks

- **L.W. Christensen***, *The Enigma Machine*, public lecture at Fairfield University, Fairfield CT, Mar. 2009
- **L.W. Christensen***, *Gorenstein homological algebra* (8 one-hour lectures), Summer School on Homological Algebra, Nanjing University, P.R. China, July 2008
- **L.W. Christensen***, *The Ultra Secret, breaking the Enigma cipher machine*, public lecture at University of Missouri, Kansas City MO, March 2007
- **L.W. Christensen***, *Forced isomorphisms and two conjectures of Auslander*, KUMUNU VII, Lawrence KS, Nov. 2006

Conference presentations

- **L.W. Christensen*** and S. Sather-Wagstaff, *A Cohen-Macaulay algebra has only finitely many semidualizing modules,* Special Session on Commutative Algebra and Applications to Algebraic Geometry at AMS Meeting #1052, University Park PA, Oct. 2009
- **L.W. Christensen***, *Simple hypersurface singularities via totally reflexive modules,* Fifth International Fez Conference on Commutative Algebra and Applications, Fez, Morocco, June 2008
- **L.W. Christensen***, *Finite Gorenstein representation type implies simple singularity,* International Conference on Representations of Algebras and Related Topics, Woods Hole MA, April 2008
- **L.W. Christensen*** and S. Sather-Wagstaff, *Descent via Koszul extensions*, Special Session on Free Resolutions at AMS Meeting #1030, Chicago IL, Oct. 2007
- **L.W. Christensen*** and J. Striuli, *Finite Gorenstein representation type implies simple singularity*, Commutative Algebra and its Interaction with Algebraic Geometry, Banff International Research Station, Banff AB, Canada, June 2007
- **L.W. Christensen***, *Descent via Koszul extensions*, Advances in Algebra and Geometry, Mathematical Sciences Research Institute, Berkeley CA, April 2007
- **L.W. Christensen*** and O. Veliche, *Acyclicity of complexes detects Gorensteinness of rings*, Special Session on Commutative Algebra at AMS Meeting #1019, Salt Lake City UT, Oct. 2006
- **L.W. Christensen***, *Natural transformations detect finiteness of homological dimensions,* Conference on Triangulated Categories, Leeds, U.K., Aug. 2006

- **L.W. Christensen***, *Acyclicity over local rings with* $\boldsymbol{m}^3=0$*,* Summer School on Monomial Resolutions and Hilbert Functions, Cornell University, Ithaca NY, May 2006
- **L.W. Christensen*** and O. Veliche, *Short rings with long complexes*, Special Session on Resolutions and Hilbert Functions at AMS Meeting #1018, San Francisco CA, April 2006
- **L.W. Christensen*** and H. Holm, *When are evaluation homomorphisms invertible?*, Special Session on Homological Aspects of Commutative Algebra, at AMS Meeting #1009, Annandale-on-Hudson NY, Oct. 2005
- **L.W. Christensen***, *Stable cohomology*, Minnowbrook Workshop on Commutative Algebra, Syracuse University Conference Center, Minnowbrook NY, Aug. 2005
- **L.W. Christensen***, *New formulas of the Auslander-Buchsbaum type,* Nebraska Commutative Algebra Conference: WiegandFest, Lincoln NE, May 2005
- **L.W. Christensen*** and S. Iyengar, , Special Session on Homological Algebra and Its Applications at AMS Meeting #1006, Lubbock TX, April 2005
- **L.W. Christensen***, A. Frankild, and H. Holm, *Adjoint functors and Gorenstein dimensions*, Special Session on Homological Algebra of Commutative Rings at AMS meeting #998, the Sixth International Joint Meeting of the AMS and the Sociedad Matematica Mexicana, Houston TX, May 2004

Local presentations

- **L.W. Christensen***, CUNY Graduate Center, New York City, Oct. 2009
- **L.W. Christensen***, Yale University, New Haven CT, Oct. 2009
- **L.W. Christensen***, University of Copenhagen, Denmark, June 2009
- **L.W. Christensen***, University of Osnabrück, Germany, June 2009
- **L.W. Christensen***, University of Paderborn, Germany, June 2009
- **L.W. Christensen***, University of Texas, Arlington, April 2009
- **L.W. Christensen***, University of Nebraska, Lincoln, April 2009
- **L.W. Christensen***, CUNY Graduate Center, New York City, Feb. 2009
- **L.W. Christensen***, Texas A&M University, College Station, Feb. 2009
- **L.W. Christensen***, University of Colorado, Denver, Jan. 2009
- **L.W. Christensen***, University of Utah, Salt Lake City, Jan. 2009
- **L.W. Christensen***, University of Copenhagen, Denmark, Dec. 2008
- **L.W. Christensen***, Nanjing Normal University, P.R. China, July 2008
- **L.W. Christensen***, University of Missouri, Columbia , Mar. 2008
- **L.W. Christensen***, University of Nebraska, Lincoln, Feb. 2008
- **L.W. Christensen***, University of Copenhagen, Denmark, Dec. 2007
- **L.W. Christensen***, University of Aarhus, Denmark, July 2007
- **L.W. Christensen***, Okayama University, Japan, May 2007
- **L.W. Christensen***, Nagoya University, Japan, May 2007
- **L.W. Christensen***, Meiji University, Tokyo, Japan, May 2007
- **L.W. Christensen***, University of Utah, Salt Lake City, March 2007
- **L.W. Christensen***, Cal Poly State University, San Luis Obispo CA, Jan. 2007
- **L.W. Christensen***, University of Copenhagen, Denmark, Dec. 2006
- **L.W. Christensen***, University of Copenhagen, Denmark, Jan. 2006
- **L.W. Christensen***, University of Utah, Salt Lake City, Dec. 2005
- **L.W. Christensen***, Northeastern University, Boston MA, Nov. 2005
- **L.W. Christensen***, University of Copenhagen, Denmark, May 2005
- **L.W. Christensen***, University of Aarhus, Denmark, May 2005
- **L.W. Christensen***, University of Utah, Salt Lake City, March 2005

- **L.W. Christensen***, Syracuse University, Syracuse NY, March 2005
- **L.W. Christensen***, University of Nebraska, Lincoln, Oct. 2003

Meetings attended

- KUMUNU X, Lincoln NE, Sep. 2009
- Triangulated categories and singularities, University of Paderborn, Germany, May 2009
- KUMUNU IX, Lincoln NE, Sep. 2008
- KUMUNU VIII, Lincoln NE, Sep. 2007
- Workshop on Syzygies and Hilbert Functions, Banff International Research Station, Banff AB, Canada, Oct. 2006
- KUMUNU VI, Lawrence KS, Sep. 2004
- Summer School on Interactions between Homotopy Theory and Algebra, University of Chicago, July–Aug. 2004

DISSERTATION, THESIS AND REPORT DIRECTORS

Students currently in progress

- Daniel S. Laraway

Graduate committees served on

- Raymond Dick, TTU
- Anja Hovgaard, University of Aarhus, Denmark

HONORS AND AWARDS

- *Mathematical Association of America Professor of the Year 2009*, awarded by the MAA Student Chapter at Texas Tech University

PROFESSIONAL SERVICE

Editorships

- Guest editor of J. Commut. Algebra **1** (3), a special issues with *Proceedings from two special sessions on Commutative Algebra Sponsored by AMS*

Refereeing

- 2 books for Springer-Verlag
- 62 papers for Advances in Mathematics, American Journal of Mathematics, Amer. J. Math., Algebras and Representation Theory, Canadian Mathematical Bulletin., Journal of Algebra, Journal of the European Mathematical Society, Journal of Pure and Applied Algebra, Manuscripta Mathematica, Mathematische Zeitschrift, Math. Z., Notices of the American Mathematical Society, Proceedings of the American Mathematical Society, Quarterly Journal of Mathematics, Q. J. Math., and other journals

Reviewing

- 21 papers for Mathematical Reviews

Meetings organized

- (with L. Fouli and D. Jorgensen), Special Session on Commutative Algebra: Module and Ideal Theory at AMS Meeting #1051, Waco TX, Oct. 2009
- (with M. Chardin, S. Iyengar, R. Wiegand, and S. Wiegand) Commutative Algebra: Connections with Algebraic Topology and Representation Theory, a conference on the occasion of Luchezar Avramov's 60th birthday, Lincoln NE, May 2008
- (with S. Sather-Wagstaff and J. Striuli) Special AMS Session on Progress in Commutative Algebra at the Joint Mathematics Meetings, San Diego CA, Jan. 2008
- (with S. Iyengar and S. Sather-Wagstaff) Special Session on Commutative Algebra, at AMS Meeting #1011, Lincoln NE, Oct. 2005

Memberships in organizations

- American Mathematical Society
- Danish Mathematical Society

OTHER RELEVANT ACTIVITIES

Paid research sojourns

- Research in Pairs (two weeks, with H.-B. Foxby and H. Holm) at Mathematisches Forschungsinstitut Oberwolfach, Germany; Oct.–Nov. 2008
- Research in Teams (one week, with H. Holm), at Banff International Research Station, Banff AB, Canada; June 2008

Travel grants

- Julie Dams' Studiefond, $2,000, 2004
- Texas Tech University, Extramural Research Promotion Award, $1,000, 2008

LANCE D. DRAGER

EDUCATION

Ph.D.	Brandeis University	1978	Mathematics
M.A.	Brandeis University	1973	Mathematics
B.A.	University of Minnesota, Minneapolis	1972	Mathematics

PROFESSIONAL EXPERIENCE

Associate Professor, Texas Tech University	1989 – Present
Assistant Professor, Texas Tech University	1985 – 1989
Visiting Assistant Professor, Texas Tech University	1983 – 1985
Assistant Professor, Georgia Institute of Technology	1980 –1983
Visiting Member, Courant Institute of Mathematical Sciences, New York University	1979 – 1980
Assistant Professor, St. Francis College, Loretto, PA	1978 – 1979
Visiting Instructor, Worcester Polytechnic Institute	1977 – 1978

AREAS OF INTEREST

Geometric Analysis, Differential Geometry, Ordinary, Partial and Functional Differential Equations, Mathematical Physics, Mathematical Control Theory, Scientific Computing

PUBLICATIONS

Refereed Journals

- Robert E. Byerly, **Lance D. Drager,** Jeffrey M. Lee, Observability of Permutations and Stream Ciphers. *IEEE Transactions on Information Theory,* Vol. 49, No. 12, December 2003, 3326 – 3330
- **Lance D. Drager**, Jeffrey M. Lee, Clyde F. Martin, On the Smallest Circle Enclosing a Finite Set of Points, *J. Franklin Inst.,* **344** (2007), No. 7, 929 – 940

- **Refereed Conference Proceedings**
  - Lance D. Drager, Jeffrey M. Lee, Clyde F. Martin, The Maximal Number of Pairwise Communicating Stations under Limitations of Maximal and Minimal Communication Distance, Proceedings of the 46th IEEE Conference on Decision and Control, December 2007.

FUNDING ACTIVITY

- **Funded**

  - **Lance D. Drager,** Razvan Gelca, Jeffrey M. Lee, Magdalena Toda, Texas Tech Organizers for the Texas Geometry and Topology Conference helped the P.I. Prepare the proposal to the NSF to renew the funding for the conference series. The funding was renewed. 2007
  - **Lance D. Drager**, Razvan Gelca, Jeffrey M. Lee, Magdalena Toda, Texas Tech Organizers for the Texas Geometry and Topology Conference helped the P.I. Prepare the proposal to the NSF to renew the funding for the conference series. The funding was renewed. 2005

- **Not Funded**

  - Splines on Homogeneous Spaces by Geometric Control, proposal to Texas Tech Research Enhancement Funds Program, $35,000, Principal Investigator: Jeffrey M. Lee, Co-Principal Investigator: **Lance D. Drager,** 2008**.**
  - Control Theoretic Splines on Curved Spaces, proposal toe Texas Advanced Research Program, $125,000, Principal Investigator: Lance D. Drager, Co-Principal Investigator: Jeffrey M. Lee, 2007.
  - Splines on Homogeneous Spaces by Geometric Control, proposal toe Texas Tech Research Enhancement Funds Program, $35,000, Principal Investigator: Jeffrey M. Lee, Co-Principal Investigator: **Lance D. Drager**, 2007.
  - Collaborative Research: Recruiting and Mentoring Mathematics Students: A Texas Tech and Colorado School of Mines Collaborative., NSF, $2.2 million, Principal Investigators: L. Schovanec, P. Seshaiyer, J. Dwyer. Senior Personnel: **Lance D. Drager,** 2006.

- **Pending**

  - Interpolation by Control Theoretic Splines on Curved Spaces, Pre-proposal to Texas Norman Hackerman Advanced Research Program, $150,000, Principal Investigator: **Lance D. Drager**, Co-Principal Investigator: Jeffrey M. Lee, September 2008**.**

PRESENTATIONS AND MEETINGS ATTENDED

- **Invited Talks**

  - **Lance D. Drager***, Intrinsic Symbol Calculus, Special Session on Mathematical Aspects of Spectral Problems Related to Physics, 2009 Fall Central Sectional Meeting of the AMS, Baylor University, Waco, Texas, October 2009.
  - **Lance D. Drager***, Jeffrey M. Lee, Clyde F. Martin, The Geometry of the Smallest Circle Enclosing A Finite Set of Points, Special Session on Differential Geometry and Its Applications, 2005 Spring Central Meeting of the AMS, Texas Tech University, April 2005.

- **Conference Presentations**

  - **Lance D. Drager***, Jeffrey M. Lee, Clyde F. Martin, The Maximal Number of Pairwise Communicating Stations under Limitations of Maximal and Minimal Communication Distance, 46th IEEE Conference on Decision and Control, New Orleans, December 2007.

- **Sessions Chaired**

  - **Lance D. Drager**, chaired a session at 46th IEEE Conference on Decision and Control, New Orleans, December 2007.

- **Meetings Attended**

  - RedRaider Mini-symposium, Geometry of Physics, Texas Tech University, October 2008
  - Workshop on Exterior Differential Systems and the Method of Equivalence, MSRI, May 2008.
  - Texas Geometry and Topology Conference, Texas Tech University, Feb 2008
  - RedRaider Mini-symposium, Conformal Mapping, Circle Packing and Applications Texas Tech University, and the workshop on Complex Analysis and Special Functions, Texas Tech University, October 2007
  - Texas Geometry and Topology Conference, Texas A&M University, October 2007.
  - Workshop on Emerging Frontiers in Control Theory: Research and Innovative Applications, Texas Tech University, April 2007.
  - Texas Geometry and Topology Conference, Texas Christian University, March 2007.
  - Texas Geometry and Topology Conference, University of Houston, February 2006.
  - Texas Geometry and Topology Conference, University of Texas at Austin, October 2005.
  - Texas Geometry and Topology Conference, Texas Tech University, February 2005.
  - Workshop on Semiclassical Approximation and Vacuum Energy, Texas A&M University, January 2005.
  - Texas Geometry and Topology Conference, Texas A&M University, October 2004.
  - Texas Geometry and Topology Conference, Texas Christian University, February 2004.
  - New Directions and Applications in Control Theory, Texas Tech University, November 2003.

DISSERTATION, THESIS AND REPORT DIRECTION

- **Graduate Committee Membership**

  - Sam Al-Hashmi, Master's Thesis, Fall 2007. Chairman: Clyde Martin
  - Bahtiyar Babanazarov, Master's Thesis, Fall 2006. Chairman: Clyde Martin

PROFESSIONAL SERVICE

- **Refereeing**
    - Conference on Decision and Control, European Control Conference
- **Reviewing**
    - Reviewed at least six textbooks for publishers, including Wiley and Houghton Mifflin
- **Meetings Organized**
    - The 39th Meeting of the Texas Geometry and Topology Conference met at Texas Tech University in February 2008. This is a continuing conference series funded by the NSF and a consortium of Texas Universities. The organizers at Texas Tech are **Lance D. Drager,** Razvan Gelca, Jeffrey M. Lee and Magdalena Toda.
    - The 33rd Meeting of the Texas Geometry and Topology Conference met at Texas Tech University in February 2005. The organizers at Texas Tech were **Lance D. Drager,** Razvan Gelca, Jeffrey M. Lee and Magdalena Toda.

OTHER SERVICE

- **Texas Tech Summer Mathematics Academy**
    - Gave lectures and worked with students, 2004 – 2009
- **Phi Beta Kappa**
    - Assisted with installation of new chapter at Texas Tech.
    - Member of Committee on Members in Course, selecting students for Phi Beta Kappa, 2006-2009.
- **Faculty Senator**
    - 2004 – 2007 and 2008 – Present
- **Lauro Cavazos and Ophelia Powell-Malone Mentoring Program (MentorTech)**
    - 2004

JERRY DWYER

EDUCATION

PhD	National University of Ireland	Applied Mathematics	1986
MSc	National University of Ireland	Computer Science	1982
BA	National University of Ireland	Mathematical Science	1980

PROFESSIONAL EXPERIENCE

Texas Tech University	Associate Professor of Mathematics	2009-
Texas Tech University	Assistant Professor of Mathematics	2003-2009

AREAS OF INTEREST

Mathematics for elementary school teachers
Service learning
Complex dynamics
Numerical PDE's in mechanics

PUBLICATIONS

(Refereed Journals)

1. **J Dwyer**, R. Barnard, D. Cook, and J. Corte. Iteration of Complex Functions and Newton's Method. *Australian Senior Mathematics Journal.* 23(1), 2009. 9-16.
2. Sherrod, S., **Dwyer, J**., & Narayan, R. Developing science and math integrated activities for middle school students. *International Journal of Mathematical Education in Science and Technology, 40*(2), 2009. 247-257.
3. **J. Dwyer**, M. Keating and S. Sherrod. The Koch Snowflake. *Mathematics Teaching 207,* March 2008. 33-34.
4. T. Stevens, Y. To, G. Harris, and **J. Dwyer**. The LOGO Project: Designing an Effective Continuing Education Program for Teachers. *Journal of Computers in Mathematics and Science Teaching, 27(2)*, 2008.
5. S. A. Furlich and **J. Dwyer**, *Student Motivation and Instructor Immediacy in Community College Mathematics Classes*. *The Mathematics Educator (Singapore) 10(2), 2007. 55-70*.
6. **J. Dwyer**, B. Duke, B Moskal, and Jennifer Wilhelm. Complex Variables in Secondary School. *Mathematics Teaching 201,* March 2007. 32-34.
7. **J. Dwyer**, B Moskal, and L. Chenault. College Faculty in the High School Mathematics Classroom. *The International Journal of Interdisciplinary Social Sciences,* 2(1**)** 2007.
8. B. J. Duke; **J. F. Dwyer**; J. Wilhelm; B. Moskal. *Complex variables in junior high school: the role and potential impact of an outreach mathematician, Teaching Mathematics and its Applications*, *27(1), 2008.*
9. **J. Dwyer**. Confidence Gained from Middle School Girls Mathematics Clubs. AWM Newsletter, 36(1), 2006. 12-13
10. **Dwyer, J. F**., Rachel Cline, and Tracie Mclemore Salinas, Lessons Learned in Creating Middle School Girls Mathematics Clubs – MAA FOCUS, Jan 2006. 26(1), 20-21.
11. **Dwyer, J.F**., K-12 Math Tutoring as a Service-Learning Experience for Elementary Education Students, in *Mathematics in Service to the Community*, MAA Notes, 2005
12. Heid, K., Brancamp, D., **Dwyer, J**., Hoff, D., and Rubillo, J., Grade 11: Process and Standards - Algebra II, Precalculus, in *Standards & Curriculum, A view from the Nation,* A Joint Report by NCTM and ASSM, Park City, Utah, July 2004

13. Conway, J.B., R. Davis, and **J.F. Dwyer**, Engagement in Tennessee Mathematics, *Journal of Higher Education Outreach and Engagement,* 8 (2), pp 151-162, 2003

FUNDING ACTIVITY

All proposals had multiple investigator teams. Primary collaborators include Lawrence Schovanec, Gary Harris, Monty Strauss, Brock Williams, Victoria Howle, Magdalena Toda, Ram Iyer, Jim Brown, Jeff Lee (Mathematics), Dominick Casadonte (Chemistry), David Lamp (Physics), Mark McGinley, Nancy McIntyre (Biology), Jaclyn Canas, Stephen Cox (TIEHH), Mary Baker, Brian Nutter, Tanja Karp (Engineering), Michael O'Boyle (Human Sciences), Tara Stevens, Jennifer Wilhelm, Zenaida Aguirre-Munoz (Education), Barbara Moskal (Colorado School of Mines).

Funded

- Co-PI on Integrated Stem Initiative on the South Plains. NSF $990,000 2009-2013
- PI on Texas Tech Noyce Scholars supplement. NSF $148,000 2009-2013
- Co-PI on MAA/TENSOR-SUMMA "High School Days for Mathematics" $6,000, 2009
- PI on CH foundation TexPREP grant $15,000, 2009
- PI on Helen Jones foundation TexPREP grant $15,000, 2009
- Co-PI on West Texas Middle School Mathematics Partnership. NSF $6.1m 2008-2013
- PI on Texas Tech Noyce Scholars program. NSF $740,000 2008-2013
- Co-PI on "Middle School Math and Science $(MS)^2$: Understanding by Design". Greater Texas Foundation $3.0m 2008-2011
- PI on CH foundation TexPREP grant $15,000, 2008
- PI on Helen Jones foundation TexPREP grant $15,000, 2008
- Co-PI on MAA/TENSOR-SUMMA "Texas Tech University Women's Summer Math Academy" $5,000, 2008
- Co-PI on MAA/TENSOR-SUMMA "High School Days for Mathematics" $6,000, 2008
- PI on MAA/Tensor Foundation grant "The Joy of Thinking" $3,500, 2007-2008
- PI on South Plains Mathematics Scholars, NSF-DUE, $571,580 – 2007-2012
- PI on CH foundation TexPREP grant $15,000, 2007
- PI on Helen Jones foundation TexPREP grant $15,000, 2007
- Co-PI. on "GK-12, Building Bridges: Integrating Mathematics, Engineering, and Science on the South Plains." NSF. $2,971,630, 2008-2012
- PI on CH foundation TexPREP grant $15,000, 2006
- PI on XCel Energy foundation TexPREP grant $10,000, 2006
- PI on Helen Jones foundation TexPREP grant $10,000, 2006
- Co-PI on "Texas Tech University Summer Mathematics Academy", AMS Epsilon Fund, $2,500, 2006
- Co-PI on TEA grant $108,000, Texas Dept. of Education. 2005-2006
- Senior Personnel on NSF grant: REU: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems. $170,707, 2005-2006
- PI on CH foundation TexPREP grant $15,000, 2005
- PI on XCel Energy foundation TexPREP grant $10,000, 2005
- PI on MAA/Tensor Foundation grant of $5,000 2005-2006. "The Joy of Thinking", program to enhance middle school girls' math skills

- Co-PI on MAA/Tensor Foundation grant of $4,000 2003-2004. "The Joy of Thinking", program to enhance middle school girls' math skills
- PI on College of Arts & Sciences (Texas Tech) REF funds $3415 “College Math in high school – why not?” 2004-2005
- PI on CH foundation grant of $10,000, TexPREP-Lubbock, 2004
- PI on XCel Energy foundation grant of $10,000, TexPREP-Lubbock, 2004

Not funded

- 2009 Co-PI on UBM Institutional: Integrating Mathematics and Biology on the South Plains. NSF $999,520.
- 2009 Co-PI on PRISM: Proactive recruitment of math students on the South Plains, NSF, $2,852,173

- 2008 PI on South Plains Women Do Math, Texas Tech University, VPR Educational Research Initiative, $107,154
- 2008 PI on Women Mentoring Women in the Mathematical Sciences. NSF $282,636
- 2008 PI on UBM Institutional: Integrating Mathematics and Biology on the South Plains. NSF $990,130.
- 2008 PI on GTF Scholars Program, Greater Texas Foundation. $150,000

- 2007 Co-PI. REU Site: Project CHIMERA: Chemistry at the Interface of Mathematics. NSF $654,572
- 2007 nior Personnel. REU: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems. NSF $329954
- 2007 on Betenbough Ministries, TexPREP proposal, $5,000
- 2007 PI on CSUMS: Undergraduate Research Teams In Interdisciplinary Computational Problems, NSF. $1,087,521.00

- 2006 Co-PI. Building Bridges: Integrating Mathematics, Engineering, and Science on the South Plains. Submitted to NSF June 2006. $2,868,235
- 2006 Co-PI. The Frontier Science Program (FSP): Catalyzing and Sustaining STEM Interest and Participation among Middle Level Students through Project-based Research and Learning Experiences. Submitted to NSF June 2006. $800,000
- 2006 Co-PI. The West Texas Partnership Institute for the Professional Development of Math and Science Teachers. Submitted to NSF May 2006. $3,733,996
- 2006 PI. Collaborative Research: Recruiting and Mentoring Mathematics Students: A Texas Tech and Colorado School of Mines Collaborative. Submitted to NSF June 2006. $891,147
- 2006 PI. South Plains Mathematics Scholars Program. Submitted to NSF April 2006. $500,000
- 2006 PI Curriculum Development for TexPREP, TLTC grant, $7,639

- 2005 PI on NSF proposal “Collaborative Research: Recruiting and Mentoring Mathematics Students: A Texas Tech and Colorado School of Mines Collaborative” $2.2m – pending
- 2005 PI on NSF CAREER proposal “Curriculum Matters” $500,000 – pending
- 2005 PI on AMS Epsilon Fund (summer academy) grant $15,000 – pending

- 2004 PI on College of Arts & Sciences REF funds $4930 “Investigation of Cognitive Changes to Participants in the TexPREP and Joy of Thinking Programs.” 2004-2005 – not funded

- 2004 PI on TLTC grant $9800 – not funded
- 2004 Co-PI on GEAR-UP for Education: Go Get It, proposal to US Dept. of Ed. $3.5m – not funded
- 2004 PI on NSF grant "Excellence in Mathematics and Science: Texas Tech Center for Mexican American Mathematics and Science Learning" $35m – not funded
- 2004 PI on Trull Foundation TexPREP grant $5,000 – not funded
- 2004 PI on NSF GK-12 Scholars proposal $1.7m – not funded
- 2004 PI on TLTC grant $9800 not funded
- 2004 PI on NSF grant "From the Canyons to College" $2.2m -

Pending

- Co-PI on NSF grant "Incorporating a Virtual Classroom-Based Procedural Model of Small Group Communication Problem Solving into the Undergraduate Mathematics Curriculum", $199,900
- Co-PI on NSF grant "Collaborative – Spanning the STEM Bridges on the South Plains, $2,076,453

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

Texas Tech University	Oct 2008
Texas Tech University	Oct 2009
Colorado School of Mines, Golden, CO	Feb 2005

Invited hour talks

Invited speaker, Korean teachers visit to Colorado School of Mines, Aug 2006
Invited speaker, MAA Texas Section Spring Meeting, Wichita Falls, TX, April 2006

Local presentations

Presented teacher/student workshops at Texas Tech Emmy Noether Day 2004-2009
LOGO workshop for Lubbock middle school teachers June 2006
Approximately 20 presentations at Mathematics Education seminar

Conference Presentations

1. Scholarship of Outreach, **J. Dwyer,** Presented at Community Engagement Conference Lubbock, TX, March 2009
2. An investigation into the use of case studies in the training of in-service and pre-service middle school math teachers. Gary Harris*, **Jerry Dwyer***, Zenaida Aguirre-Munoz, Tara Stevens, Warren Koepp, Juli D'Ann Ratheal*, Featured Workshop, Rocky Mountain Section MAA meeting, Golden, Colorado, April 2009
3. The Texas Tech Noyce Scholars Program, **Jerry Dwyer***, Dominick Casadonte, Lawrence Schovanec, Tara Stevens, and Monty Strauss, poster presented at the AAAS Noyce Scholars Conference, Washington, DC, July 2009
4. Calculus II Students' Motivation and Instructors' Teaching Styles, Erin Skjelstad and **Jerry Dwyer***, MAA Mathfest, Portland, OR, Aug 2009

5. Laura Franks* and **Jerry Dwyer**, "Joy of Thinking: Girls Math Clubs in West Texas", poster presented at the American Association of University Women (AAUW) 100th Anniversary Texas Biennial Convention, Dallas, TX, April 2008
6. **Jerry Dwyer** and Laura Franks*, "Joy of Thinking: Girls Math Clubs in West Texas", poster presented at the 24th Annual All-University Conference on The Advancement of Women in Higher Education, Texas Tech University, February 2008
7. **Dwyer, J***., Arizpe, O., & Stevens, T. Mathematical Self-Efficacy of Middle School Students Solving the Rubik Cube. Poster paper presented at *Cognitive Underpinnings of Engineering Education*, Conference, Lubbock, TX. Feb. 2008
8. Yanik, E., **Dwyer, J***., & Martin, C. How Many Ways Can We Divide the Freshman Calculus Class? Poster paper presented at *Cognitive Underpinnings of Engineering Education*, Conference, Lubbock, TX. Feb. 2008
9. Laura Franks* and **Jerry Dwyer**, "Joy of Thinking: Girls Math Clubs in West Texas", poster presented at The Joint AMS-MAA Meeting, San Diego, CA, January 2008
10. Cline, R., and **J.F. Dwyer***, No Boys Allowed: Assessing a Girls Only Math Club, Joint AMS-MAA Meetings, San Antonio, Jan 2006
11. **Dwyer, J.F**., Harris, G., Stevens, T., and G.B. Williams*, Empowering K-12 Teacher to Use Technology Wisely, Joint AMS-MAA Meetings, San Antonio, Jan 2006
12. **Dwyer, J.F***., Chenault, L., and Duke, B., College Math in High School: Why Not?, Joint AMS-MAA Meetings, San Antonio, Jan 2006
13. Latin Squares, **J. Dwyer*,** presented at Women Count conference, Albuquerque, NM Aug 2005

14. Cline, R., **Dwyer, J.F.***, and T. Salinas, Lessons learned in Creating Girls Math Clubs, Math Fest 2005, Albuquerque, NM, Aug 2005
15. Cline, R., **Dwyer, J.F***., and T. Salinas, poster session, Joint AMS-MAA Meetings, Atlanta, Jan 2005
16. Dwyer, J.F. and T. Mclemore-Salinas, Middle School Girls' Math Clubs - a Gender Perspective. Presented at All University Conference on the Advancement of Women in Higher Education 2004 Commitments and Conflicts: Constructing a Balance. Lubbock, Texas. April 2004
17. **Dwyer, J.F***. and K.E. Hitchcox , Science and Engineering Models in Middle School. Presented at ASEE Gulf Southwest Annual Conference. Lubbock, Texas, March 2004

Sessions chaired

- Organized and moderated panel discussion on Math Placement Testing, Joint AMS-MAA meeting, Washington, DC, January, 2009
- Organized and chaired panel discussion on outreach at Fall 2004 meeting of Texas mathematics chairs
- Organized and chaired panel discussion on service learning at AMS-MAA joint meetings Phoenix Jan 2004

Meetings attended

- Invited participant, Women Count conferences, Portland (2009), San Jose (2007), Albuquerque (2005), Boulder (2003)
- Invited participant, Minority Programs panel, MAA Mathfest, Aug 2007, San Jose
- Invited participant in "National Math View" panel discussion at Math Fest 2005, Albuquerque, NM, Aug 2005

- Invited participant in panel discussion on K-12 math curriculum at NCTM annual meeting, Anaheim, CA, April 2005
- Invited participant in panel discussion on teacher education at AMS sectional meeting Albuquerque, NM, Oct 2004

DISSERTATION, THESIS AND REPORT DIRECTORS

Directed

- MS 2009 Erin Skjelstad, Texas Tech University (The Influence of Teacher Practice on Calculus Students' Motivation)
- MS 2009 Ryan McCluskey, Texas Tech University (Teacher Immediacy and Learning Mathematics: Effects on Students with Divergent Mathematical Aptitudes)
- MA 2008 (Report), Laura Franks, Texas Tech University (Gender Biases: A Review of Women's Roles in Mathematics and Single-sex Schooling)
- MS 2006 Omar Arizpe, Texas Tech University (A Problem Solving Application In Mathematics Education)
- MS 2006 Jessica Parras-Cisneros, Texas Tech University (Numerical Methods in Elasticity)
- MA 2006 (Report) Andrew Ha, Texas Tech University (Alternative assessment in pre-service teachers' geometry course)
- MA 2006 (Report) Sonya Sherrod, Texas Tech University (Integrated math/science modules)
- MS 2005 Billy Duke, Texas Tech University (A College Approach to Fractals in Middle School)
- MS 2005 Terra Stout, Texas Tech University (Do College Proofs Work in High Schools?)
- MS 2005 Amanda Klein, Texas Tech University (The Effects of Computer Assisted Learning Software on College Algebra Students)
- MS 2005 Leah Chenault, Texas Tech University (Improving the Algebra and Geometry Skills of High School Students using Complex Variables and Complex Transformations)
- MA 2004 (Report) David Cook, Texas Tech University (Newton's method and fractals)

Current

MA Tammy Werner
MA Kensey Washington

Membership on Graduate Advisory Committees

Taylor Hollingsworth (MS) - Engineering Self-Efficacy in Upper Level Mathematics

HONORS AND AWARDS

- Texas Association of Partnerships in Education (TAPE) first place in state for collegiate partnership (awarded for girls' math club at Atkins Middle School) 2006
- MAA Professor of the Year (student recognition) 2006-2007
- MAA Professor of the Year (student recognition) 2007-2008
- Professing Excellence Award, 2009 – campus wide student housing recognition

PROFESSIONAL SERVICE

Societies

Member of American Mathematical Society
Member of Mathematical Association of America
Member of National Council of Teachers of Mathematics
Member of MAA-NCTM Joint Committee on Mutual Concerns (2005-2008)

Grant proposal reviews

Member of NSF S-STEM panel Jan 2008, Oct 2008, Nov 2009
Member of NSF Critical Site Visit panel – University of Wisconsin, Milwaukee, June 2005
Member of NSF Critical Site Visit panel – Michigan State University, June 2005
Member of NSF Instructional materials panel Oct 2002
Member of NSF teacher education review panel, Oct 2001

Journal reviews

Issues in the Undergraduate Mathematics Preparation of School Teachers
Notices of the AMS

OTHER RELEVANT ACTIVITIES

- Member of College Board Assessment team, January 2007
- Facilitator of pre-semester algebra camp for freshmen Engineering students 2006-2009
- Coordinator of service learning activities in several mathematics classes
- Faculty Fellow Mentor for Service Learning Texas Tech University 2006-2007
- Development of Mathematics Education component of the Mathematics PhD, Texas Tech University, 2005-2006
- Organizer of ten K-8 girls' math clubs (MAA/Tensor funding) 2003-2009
- Co-director of high school summer math academy Texas Tech University 2004-2009
- Director of summer TexPREP program Texas Tech University June/July 2004-2009
- Member of Mathematicians Study Group examining K-12 mathematics curriculum, Park City, Utah, July 2004
- Member of mathematics group at NCTM/ASSM study of K-12 state curricula, Park City, Utah, July 2004
- One hundred and twenty (120) K-12 school visits Lubbock, Texas 2003-2009
- Assistant Instructor, West Texas Middle School Math Partnership, Summer course, Texas Tech University, July 2009
- Assistant Instructor, West Texas Middle School Math Partnership, Summer course, Sul Ross State University, July 2009

RAZVAN GELCA

EDUCATION

Diploma of Merit in Mathematics, awarded by the Romanian Ministry of Education for the highest GPA in the country, University of Timisoara, Romania, 1989

MS, University of Bucharest, Romania,1990
Dissertation: Invariant subspaces for subdecomposable operators
Advisor: Florian-Horia Vasilescu

PhD, University of Iowa, 1997
Dissertation: Problems in topology and operator theory
Co-advisors: Charles Frohman, Raúl Curto

PROFESSIONAL EXPERIENCE

a. **Appointments**

- Researcher, Institute of Mathematics of the Romanian Academy 1990-1991
- Assistant Professor, University of Michigan, 1997-2000
- Assistant Professor, Texas Tech University, 2000-2006
- Associate Professor, Texas Tech University, 2006-present.

b. **Short Term Appointments**

- Coach of the US International Mathematical Olympiad Team, Mathematical Olympiad Summer Program, 1997, 1998, 2000, 2002, 2006, 2007, 2008, 2009.
- Visiting Professor, Universite de Nantes, May 1999.
- Coach of the International Mathematical Olympiad Team of India, Homi Bhabha Center of Science Education, Mumbai, India, 2004, 2005.
- Instructor, Awesome Math, Dallas, 2009.

AREAS OF INTEREST

Topology, Geometry, Mathematical Physics, Mathematics Competitions

PUBLICATIONS

a. **Refereed Journals**

1. Some results about the Kauffman bracket skein module of the twist knot exterior, with Fumikazu Nagasato , J. Knot Theory Ramif., 8(2006), 1095-1106.
2. El polinomio de Jones y la mecanica cuantica, Aportaciones Math. Comun, 36, Soc. Mat. Mexicana, Mexico, 2006, 85--99.
3. On the holomorphic point of view in the theory of quantum knot invariants, J. Geom. Phys., 56(2006), 2163-2176.
4. The computation of the noncommutative A-ideal for the figure eight knot, with Jeremy Sain, J. Knot Theory Ramif. 6(2004), Vol. 16, 1-24.
5. The Weyl quantization and the quantum group quantization of the moduli space of flat SU(2)-connections on the torus are the same, with Alejandro Uribe, Communications in Mathematical Physics, 233(2003), 493-512.

b. **Books**

1. Putnam and Beyond, with Titu Andreescu, Springer, 2007.
2. Mathematical Olympiad Challenges, with Titu Andreescu, Birkhauser, edition 2008.

FUNDING ACTIVITY

- NSF grant for the study of the quantization of the moduli space of flat SU(2)-connections on a surface, 2006-2009.
- NSF grant for organizing The Topology and Geometry of Physics Conference, 2008.

PRESENTATIONS

a. **Conference Talks**

1. The reduced Kauffman bracket skein algebra of the torus has a unique irreducible representation, 1037th Sectional Meeting of the AMS, Baton Rouge, March 2008.
2. The quantum group quantization of the moduli space of flat SU(2)-connections on a surface determines the Reshetikhin-Turaev representation of the mapping class group, First Joint Meeting of the American Mathematical Society and the Polish Mathematical Society, Warsaw, Poland, August 2007.
3. The quantum group quantization of the moduli space of flat SU(2)-connections on a surface determines the Reshetikhin-Turaev representation of the mapping class group, "A second time around the volume conjecture" conference, Baton Rouge, Louisiana, June 2007.
4. The computation of the basis of the Hilbert space of a certain quantum system, National Meeting of the American Mathematical Society, San Antonio, January 2006.
5. El polinomio de Jones y la mecanica cuantica, Congreso Nacional de la Sociedad Matematica Mexicana, Mexico City, October 2005.
6. On the holomorphic point of view in the teory of quantum knot invariants, 1002nd Sectional Meeting of the AMS, Pittsburgh, Pennsylvania, November 2004.
7. Towards the computation of the noncommutative A-polynomial of twist knots, 1000th Sectional Meeting of the AMS, Albuquerque, New Mexico, October 2004.
8. On the quantization of the moduli space of flat SU(2)-connections on the torus, 6th Joint meeting of the AMS and the SMM, Houston, May 2004.

b. **Seminar Talks**

1. On knots and linear operators, University of Texas at San Antonio, April 2008.
2. Nudos y mecanica cuantica, Universidad Nacional Autonoma del Estado de Mexico, Toluca, Mexico, September 2007.
3. Sobre la relacion entre la cuantizacion del espacio de moduli de conexiones planas de su(2) en una superficie y el functor modular, CINVESTAV, Mexico City, September 2007.
4. Teoria espectral y la cuantizacion del espacio de moduli de conexiones planas en una superficie, CINVESTAV, Mexico City, March 2007.
5. The Jones polynomial and quantum mechanics, Boise State University, Boise, November 2006 (Colloquium talk).
6. Computing the basis of a vector space arising in quantum physics, Indiana University, Bloomington, April 2005.
7. Some geometric aspects of quantum topology, Georgia Tech University, Atlanta, November 2004.
8. On the quantization of the moduli space of flat SU(2)-connections on the torus, Tata Institute for Fundamental Research, Mumbai, India, June 2004 (Colloquium talk).
9. Recursive relations for colored Jones polynomials, University of Texas at Dallas, January 2004 (Colloquium talk).
10. Recursive relations for colored Jones polynomials, Indiana University, Bloomington, November 2003.

GRADUATE STUDENTS AND COMMITTEES

- Jea Pil Cho, work in progress
- PhD Committee of Todd Kennaugh, Texas Tech University, 2009.

PROFESSIONAL SERVICE

a. **Editorship**

Mathematics Magazine (until 2007)

b. **Refereeing**

1 paper for Commentarii Mathematici Helvetici,
1 paper for Experimental Mathematics

c. **Conferences Organized**

8th Annual Red Raider Symposium - The Topology and Geometry of Physics Conference, October 2008.
Organizing Committee of Texas Geometry and Topology Conference, Spring 2005, Spring 2008.
Session organizer at the AMS sectional meeting 8-10 April 2005.
Session organizer at the AMS sectional meeting 22-23 April 2006.

d. **Reviewing Panels**

Panel for Low Dimensional Topology, NSF, 2008.

OTHER RELEVANT ACTIVITIES:

Deputy Leader of the US International Mathematical Olympiad Team, Madrid, Spain, 2008.
Member of the USA Mathematical Olympiad Advisory Panel.
Coach of the Texas Tech University Putnam Team.
Grader of the USA Mathematical Olympiad.
Talks on mathematical Olympiads presented at Texas Tech University Summer Math Academy, June 2006, Texas Tech University Research Experience for Undergraduates, June 2007, University of Toluca, September 2007, the Math Olympiad Training Program of the Estado de Mexico, September 2007, Dallas Metroplex Math Circle, November 2007 and March 2009, University of Texas at San Antonio, April 2008.

B.K. GHOSH

EDUCATION

B.Tech in Electrical Engineering, BITS Pilani, Rajasthan, India, '77.
M.Tech in Electrical Engineering, IIT Kanpur, India, '79.
PhD in Engineering, Harvard University, Cambridge, MA, USA, '83.

POSITIONS

Dick and Martha Brooks Regents Endowed Professor of Mathematics and Statistics, Texas Tech University, Lubbock. Jan. 2007 – present

Past academic positions at Washington University, St. Louis, Missouri

- Professor in Electrical and Systems Engineering, July 2002 – Dec. 2006.
- Affiliated Professor of Bio Medical Engineering, July 2000 to Dec. 2006.
- Director of the Center for BioCybernetics and Intelligent Systems, May 1998 to Dec. 2006.

Past and present visiting positions

- Visiting Professor at the Institut Mittag-Leffler, The Royal Academy of Sciences, Djursholm, Sweden, March 9 – April 6, 2003.
- Visiting Professor at the Royal Institute of Technology, Sweden, May 1 – May 31, 2005.
- Visiting Professor of Information Sciences Department, Tokyo Denki University, Saitama, Japan, Oct. 1997 – current.

RESEARCH INTERESTS

1 Micro Circuits in Turtle Retina
(*P. S. Ulinski, Univ. of Chicago, collaborator, Mervyn P. Ekanayake, PhD candidate*)
2 Micro Circuits in Turtle LGN
(*P. S. Ulinski, Univ. of Chicago, collaborator, Ron Anderson, PhD candidate*)
3 Bio Mechanics of Eye Movement and Target Tracking
(*Stefan Glasauer, Erich Schneider, Munich, Germany, collaborator, Indika Wijayasinghe, PhD candidate*)
4 Microarray Analysis
(*Dr. Dowd, collaborator, Trinadh Potina, Graduate Student*)
5 Regulatory Network Models and Analysis of Circadian Rhythm Activity in Cyanobacteria
(*H. Pakrasi, Washington Univ., Joe Miller, Univ. of Southern California, collaborator*)
6 Bifurcation Analysis of Oscillatory Systems
(*Yishao Zhao, Stockholm University, Sweden*)

SELECTED PUBLICATIONS

Books

1. Emergent Problems in Nonlinear Systems and Control, Springer Verlag, 2009. (coedited with Clyde F. Martin and Yishao Zhao)
Edited Collection in Memory of a Friend and Collaborator W. P. Dayawansa.

2. Three Decades of Progress in Control Sciences, Springer Verlag, 2009. (coedited with Xiaoming Hu, Ulf Jonsson and Bo Wahlberg)
   For Chris I. Byrnes and Anders Lindquist: Edited Collection Celebrating Two Milestones
3. Systems Theory and Dynamic Control Problems in Vision, Springer Verlag, 2010.

Edited Special Issues

1. Biochemical Networks and Cell Regulation, Special Issue of the IEEE Control Systems Magazine, vol. 24, no. 4, Aug. 2004. (with Olaf Wolkenhauer and Kwang-Hyun Cho)

Papers in Archival Journals and Edited Collections

Machine Vision, Sensor Fusion and Sensor Guided Dynamic Control

1. "Parameter Estimation under Perspective and Orthographic Projections using Laser Range Finder," Trans. of the Society of Instrument and Control Engineers, vol. 39, no. 2, pp. 1–7, 2003. (with S. Takahashi)
2. "Pose Estimation using Line Based Dynamic Vision and Inertial Sensors," IEEE Trans. on Aut. Cont., vol. 48, no. 2, pp. 186–199, Feb. 2003. (with H. Rehbinder)
3. "Nonlinear observers for perspective time-invariant linear systems," Automatica, vol. 40, no. 3, pp. 481–490, March 2004. (with R. Abdursul, H. Inaba)
4. "Real-time Integration of Sensing, Planning and Control in Robotic Work Cells," Control Engineering Practice, vol. 12, no. 6, June 2004, pp. 653–663. (with D. Xiao, M. Song, N. Xi, T. J. Tarn, Z. Yu)

Computational Neuroscience

5. "Propagating Waves in Visual Cortex: A Large Scale Model of Turtle Visual Cortex," Journal of Computational Neuroscience, 14, pp. 161–184, 2003. (with Z. Nenadic and P. Ulinski)
6. "Encoding and Decoding of Analog Signals with a Population of Neurons," Journal of Mathematical and Computer Modeling, vol. 39, pp. 181–196, 2004. (with Z. Nenadic)
7. "Encoding and Decoding Target Locations with Waves in the Turtle Visual Cortex," IEEE Trans. on Biomedical Engineering, vol. 52, no. 4, pp. 566–577, April 2005. (with X. Du and P. S. Ulinski)
8. "Two Cortical Circuits Control Propagating Waves in Visual Cortex," Journal of Computational Neuroscience, vol. 19, pp. 263–289, 2005 (with W. Wang, C. Campaigne and P. S. Ulinski)
9. "Encoding of Motion Targets by Waves in the Turtle Visual Cortex," IEEE Trans. on Biomedical Engineering, vol. 53, no. 8, pp. 1688–1695, Aug. 2006. (with X. Du and P. S. Ulinski)
10. "Generation of Receptive Fields of Subpial Cells in Turtle Visual Cortex," Journal of Integrative Neuroscience, vol. 5, no. 4, pp. 561–593, Dec. 2006. (with W. Wang, S. Luo and P. S. Ulinski)
11. "Synaptic Adaptation and Sustained Generation of Waves in a Model of Turtle Visual Cortex," IEEE Trans. on Biomedical Engineering, vol. 56, no. 5, pp. 1277–1286, May 2009. (with Z. Freudenburg and P. S. Ulinski)

Sensing and Motion Control in Biology

12. "Geometry and Control of Human Eye Movements," IEEE Trans. on Aut. Contr., vol. 52, no. 2, pp. 170–180, Feb. 2007. (with A. Polpitiya, W. P. Dayawansa and C. F. Martin)
13. "Bio-Inspired Sensor Networks in Formation Sensing, Multi-Sensor Fusion and Scene Recognition," Proceedings of the IEEE, Special Issue on Technology of Networked Control Systems, vol. 95, no. 1, pp. 188–214, Jan. 2007. (with W. Wang and A. Polpitiya)

14. "Modeling and Estimation Problems in the Visuomotor Pathway", *Modeling and Control of Complex Systems*, CRC Press, Taylor and Francis Group, P. A. Ioannou and A. Pitsillides Eds., pp. 367–405, 2007. (with W. Wang and Z. Freudenburg)

Biomics: Genomic Computations in Biology and Medicine

15. "Genetic Regulatory Networks and Coregulation of Genes: A Dynamic Model Based Approach," Proceedings of the New Directions in Control and Applications, Lecture notes in control and information sciences 321, W. P. Dayawansa, Y. Zhou and A. Lindquist (Eds.) Springer Verlag, pp. 291–304, 2005. (with A. D. Polpitiya and J. P. Cobb)
16. "Plasticity of the Systemic Inflammatory Response to Acute Infection During Critical Illness: Development of the Riboleukogram," PLoS ONE, vol. 3, no. 2, e1564, pp. 2–14, Feb. 2008 (with J. E. McDunn, K. D. Husain, A. D. Polpitiya, A. Burykin, J. Ruan, Q. Li, W. Schierding, N. Lin, D. Dixon, W. Zhang, C. M. Coopersmith, W. M. Dunne, M. Colonna, J. P. Cobb)
17. "Integration of Carbon and Nitrogen Metabolism with Energy Production is Crucial to Light Acclimation in the Cyanobacterium Synechocystis," Plant Physiology, vol. 148(1), pp. 467–478, Sept. 2008 (with A. K. Singh, T. Elvitigala, M. B. Pakrasi, R. Aurora and H. B. Pakrasi)
18. "The Genome of Cyanothece 51142, A Unicellular Diazotrophic Cyanobacterium important in the Marine Nitrogen Cycle," Proceedings of the National Academy of Science, vol. 105(39), pp. 15094–15099, Sept. 30, 2008 (with E. Welsh, M. Liberton, J. Stockel, T. Loh, T. Elvitigala, C. Wang, A. Wollam, R. S. Flton, S. W. Clifton, J. M. Jacobs, R. Aurora, L. A. Sherman, R. D. Smith, R. K. Wilson, H. B. Pakrasi)
19. "Arabidopsis Transcriptome Reveals Control Circuits Regulating Redox Homeostasis and the Role of an AP2 Transcription Factor," Plant Physiology, vol. 148, pp. 2050–2058, 2008 (with A. Khandelwal, T. Elvitigala, and R. Quatrano)
20. "Using Systems Biology to Simplify Complex Disease: Immune Cartography," Critical Care Medicine, vol 37(13)(Suppl.), pp. S2–S6, 2009 (with A. D. Polpitiya, J. E. McDunn, A. Burykin, J. P. Cobb)
21. "Identification and Modeling of Genes with Diurnal Oscillations from Microarray Time Series Data," IEEE Trans. on Bioinformatics and Computational Biology, 2009 (with W. Wang and H. B. Pakrasi)
22. "Dynamic Network Modeling of Diurnal Genes in Cyanobacteria," Emergent Problems in Nonlinear Systems and Control, Springer Verlag, Heidelberg, Germany, 2009. (T. Elvitigala, H. B. Pakrasi)
23. "Effect of continuous light on diurnal rhythms in Cyanothece ATCC 51142," BMC Genomics 10:226, 2009. (http://www.biomedcentral.com/1471-2164/10/226) (with T. Elvitigala, J. Stockel, H. B. Pakrasi)

Miscellaneous

24. "Quantized Principal Component Analysis with Applications to Low Bandwidth Image Compression and Communication," International Journal of Innovative Computing, Information and Control, vol. 1, no. 3, pp. 479–492, Sept. 2005. (with D. Wooden and M. Egerstedt)

Manuscripts submitted but not yet accepted

25. "A systems level analysis of the effects of light quality on the metabolism of a cyanobacterium," Plant Physiology, (with A. Singh, M. B. Pakrasi, T. Elvitigala, R. Aurora, H. B. Pakrasi)
26. "Strategy of cellular adaptations under perturbations in an oxygenic photosynthetic cyanobacterium," BMC Systems Biology. (with A. K. Singh, T. Elvitigala, J. C. Cameron, M. B. Pakrasi and H. B. Pakrasi)

Refereed Conference Papers, Posters and Presentations

1. "Decoding the position of a visual stimulus from the cortical waves of turtles," Proc. of the 2003 American Control Conference, June 4-6, 2003, pp. 477–482, The Adams Mark Hotel, Denver, Colorado, USA. (with X. Du)
2. "A Volterra approach to dynamic modelling of the visual cortex," Proc. of the 2003 American Control Conference, June 4-6, 2003, pp. 3579–3584, The Adams Mark Hotel, Denver, Colorado, USA. (with J. Jenner)
3. "Dynamical Systems Analysis of Propagating Waves in Turtle Visual Cortex," Siam Conference on Applications of Dynamical Systems, May 27-31, 2003. (with P. Ulinski, D. Senseman and K. Robbins.)
4. "Information theoretic analysis of turtle cortical waves," 42^{nd} IEEE Conference on Decision and Control, Dec. 9-12, 2003, pp. 6423–6428, Maui, Hawaii, USA. (with X. Du)
5. "Modeling the Dynamics of Oculomotor System in Three Dimensions," 42^{nd} IEEE Conference on Decision and Control, Dec. 9-12, pp. 6418–6422, 2003, Maui, Hawaii, USA. (with A. Polpitiya)
6. "Nonlinear Observers for Perspective Time-Invariant Linear Systems," 42^{nd} IEEE Conference on Decision and Control, Dec. 9-12, pp. 6319–6324, 2003, Maui, Hawaii, USA. (with R. Abdursul, H. Inaba)
7. "Generation and Control of propagating waves in the visual cortex," 42^{nd} IEEE Conference on Decision and Control, Dec. 9–12, pp. 6429–6434, 2003, Maui, Hawaii, USA. (with P. Ulinski, W. Wang)
8. "Mechanics of the eye movement: Geometry of the Listing space," Proc. of the 2004 American Control Conference, June 30-July 2, pp. 323–328, 2004, Boston Sheraton Hotel, Boston, MA, USA. (with A. D. Polpitiya, C. F. Martin and W. P. Dayawansa)
9. "Dynamic modelling of turtle cortex stimulated by natural input," Proc. of the 2004 American Control Conference, June 30-July 2, pp. 299–304, 2004, Boston Sheraton Hotel, Boston, MA, USA. (with J. Jenner)
10. "Cortical encoding of retinal output from natural scenes with sparse representation," Proc. of the 2004 American Control Conference, June 30-July 2, pp. 305–310, 2004, Boston Sheraton Hotel, Boston, MA, USA. (with W. Wang)
11. "Optimal Control of Ocular Dynamics," The 1^{st} *Center of Excellence* workshop on human adaptive mechatronics, Tokyo Denki University, Hatoyama-Machi, Hiki-Gun, Saitama 350-03, Japan, March 6, 2004. (with A. D. Polpitiya and W. P. Dayawansa)
12. "Turtle cortical activity captured by dynamic models" 43^{rd} IEEE Conference on Decision and Control, Dec. 14-17, pp. 136–141, 2004, Atlantis, Paradise Island, Bahamas, USA, Special session on 'Network based control in biology and engineering' organized by B. K. Ghosh and C. Martin (with J. Joseph)
13. "Natural target localization from activity waves in the turtle visual cortex," IEEE Conference on Decision and Control, Dec. 14-17, pp. 142–146, 2004, Atlantis, Paradise Island, Bahamas, USA, Special session on 'Network based control in biology and engineering' organized by B. K. Ghosh and C. Martin (with W. Wang)
14. "Nonlinear observers appearing in dynamical machine vision," Session on Nonlinear Observers at the 43^{rd} IEEE Conference on Decision and Control, Dec. 14-17, pp. 3903–3908, 2004, Atlantis, Paradise Island, Bahamas, USA. (with H. Inaba and R. Abdursul)
15. "Localization of point targets from cortical waves using ARMA models," Session on Bio-modeling and Control I, Proc. of the 2005 American Control Conference, June 8-10, pp. 400–404, 2005, Portland, Oregon, USA. (with W. Wang.)
16. "Motion estimation of plane polynomial curves," Session on Tracking, Proc. of the 2005 American Control Conference, June 8-10, pp. 1289–1294, 2005, Portland, Oregon, USA. (with M. Unel.)
17. "Bio-Inspired sensor design with an array of coupled lasers", Proc. 44^{th} IEEE Conference on Decision and Control and the European Control Conference, pp. 239–244, Dec. 2005.

18. "Localizing point targets in space using Kuramoto's models: Stability analysis," Proc. of the 3^{rd} COE workshop on Human Adaptive Mechatronics (HAM), Tokyo Denki University, Saitama, Japan, pp. 39–44, March, 2006.
19. "Modeling and estimation problems in the visual cortex," Proc. of the 4^{th} COE workshop on Human Adaptive Mechatronics (HAM), March 2-3, 2007, Tokyo Denki University, Japan, pp. 35–40. (with W. Wang and Z. V. Freudenburg)
20. "Redox homeostasis in plants: The Arabidopsis transcriptome in response to photosynthetic stress using high light and DCMU," Integrative Plant Physiology, Plant Biology and Botany 2007, Joint Congress, July 7–11, 2007, Chicago, Illinois, USA, (with Abha Khandelwal (abha@wustl.edu), Thanura Elvitigala (tre1@cec.wustl.edu) and Ralph S. Quatrano (rsq@wustl.edu))
21. "Kuramoto models, coupled oscillations and laser networks," Session in Nonlinear Control, SICE Annual Conference 2007 at the Kagawa Univ. in Takamatsu, Japan, pp. 130–135, Sep. 17–20, 2007. (with W. Wang)
22. "Systems approach divulges redox regulation of Arabidopsis transcriptome," The Eighth International Conference on Systems Biology ICSB 2007, Long Beach, CA, USA, Oct. 1–6, 2007. (Poster Presentation with Abha Khandelwal, Thanura Elvitigala and Ralph Quatrano)
23. "Identification and modeling of co-rhythmic genes from micro array time series data," The Eighth International Conference on Systems Biology ICSB 2007, Long Beach, CA, USA, Oct. 1–6, 2007. (Poster Presentation with Wenxue Wang, Thanura Elvitigala, Jana Stockel, Himadri B. Pakrasi)
24. "Computational Analysis of the redox stress response in organisms" The Eighth International Conference on Systems Biology ICSB 2007, Long Beach, CA, USA, Oct. 1–6, 2007. (Poster Presentation with Thanura Elvitigala, Abhay Singh, Abha Khandelwal, Maitrayee Bhattacharya-Pakrasi, Rajeev Aurora, Himadri Pakrasi, Ralph Quatrano)
25. "Motion coding in turtle retina," 2008 PI meeting for the NSF CRCNS program, University of Southern California, USA, June 1–3, 2008.
26. "Stability analysis on Kuramoto Model of Coupled Oscillators," 17^{th} IFAC World Congress, Seoul, Korea, Regular Session on Nonlinear Systems I, pp. 9695–9700, July 7, 2008.
27. "Identification and modeling of Co-Rhythmic Genes from Micro-Array Time Series Data," 17^{th} IFAC World Congress, Seoul, Korea, Poster Session on Bio and Social Systems, pp. 514–518, July 9, 2008.
28. "Generating structure-function correlation by ICA-based mapping of activation patterns on coregistered fMRI and FA-DTI," IEEE Asilomar Conference on Signals Systems and Computers, Biomedical Signal and Image Processing Track, Pacific Grove, California, October 26–29, 2008. (with S. Mitra, M. O'Boyle, F. Afrin, B. Nutter, M. Baker, R. Pal)
29. "Modeling diurnal rhythms with an array of phase dynamic oscillators," 10^{th} International Conference on Control, Automation, Robotics and Vision, Session FrA1 entitled 'Control and Modeling of Biological Systems', 19^{th} Dec., 2008, pp. 1391–1396, Proceedings of the ICARCV 2008, Hanoi, Vietnam. (with H. Pakrasi and W. Wang)
30. "Controlling diurnal rhythms by light," 10^{th} International Conference on Control, Automation, Robotics and Vision, Session FrA1 entitled 'Control and Modeling of Biological Systems', 19^{th} Dec., 2008, pp. 1367–1372, Proceedings of the ICARCV 2008, Hanoi, Vietnam. (with H. Pakrasi and T. Elvitigala)
31. "Modeling and simulation of diurnal Biological Processes in Cyanobacteria," Session on Biological Systems I, 2009 American Control Conference, St. Louis, June 10–12, 2009. (with T. Elvitigala and H. Pakrasi)
32. "Human eye movement with and without the Listing's constraint," Session on Biological and Bioinspired Systems, 2009 American Control Conference, St. Louis, June 10–12, 2009. (with R. Meegaskumbura and M. P. B. Ekanayake)
33. "Motion encoding and decoding in the turtle retina," European Control Conference, Aug. 23–26, 2009, Budapest, Hungary. (with M. P. B. Ekanayake and P. S. Ulinski)

34. "Optimal control and tracking with eye movement dynamics with and without the Listing's constraint," Decision and Control Conference, Dec. 16–18, 2009, Shanghai, China. (submission number 1068 with R. Meegaskumbura, M. P. B. Ekanayake)
35. "Bayesian network approach to the study of Biological processes in Cyanobacteria," Decision and Control Conference, Dec. 16–18, 2009, Shanghai, China. (with T. R. Elvitigala, A. K. Singh and H. B. Pakrasi)
36. "Dynamical Systems Modeling of Interactions in Cyanobacteria Diurnal Genes," Conference on 'Frontiers of Systems Biology in Engineering (FOSBE)', Aug. 9–12, 2009, Denver, Colorado. (with T. Elvitigala)

SPONSORED PROJECTS

NSF Grant EIA - 0218186 "How is information coded in turtle visual cortex? " 10/1/2002 to 9/30/2005, $176,926.00,Co-P.I.

NSF Grant 0307212 "FIBR Planning: A systems approach to study redox regulation of functions of photosynthetic organisms," 03/15/2003 to 03/14/2004, $50,000.00,Co-P.I.

NSF Grant ECS - 0323693 "Feedback control of visual appearance with maximally sensitive sensors for decentralized event detection and security," 08/01/2003 to 07/31/2006, $260,000.00, P.I.

NSF Grant 0425749 "FIBR: A systems approach to study redox regulation of functions of photosynthetic organisms," 09/01/2004 to 08/31/2009, $1,038,158.00, Co-P.I.

Battelle Pacific/DOE project 05/01/2005 to 04/30/2006, $81,687.00, Co-P.I.

NSF Grant 0523983 "BIC: Pattern generating circuits for computation and control" 07/15/2005 to 07/14/2008, $400,000.00, P.I.

DIRECTION OF GRADUATE STUDENTS

PhD thesis of graduate students at Washington Univ., St. Louis

1. **Ping Liu** Appearance methods of solving recognition and estimation problems in robotics, 2004.
2. **Ashoka Polpitiya** Geometry and control of human eye movements, 2004.
3. **Xiuxia Du** Modelling and signal processing problems in turtle visual cortex, 2005.
4. **Brian J. Fischer** A Barn Owl Auditory System Model, 2005. (jointly with C. H. Anderson).
5. **Joseph Jenner** Bioinspired encoding of images with spatiotemporal cortical activity waves and information recovery via dynamical modeling, 2006.
6. **Wenxue Wang** Dynamics of the turtle visual cortex and design of sensor networks, 2006.
7. **Thanura Elvitigala** "Modeling and identification of differentially regulated genes using transcriptomics and proteomics data " May 2009.

PhD thesis of graduate students at Texas Tech. Univ., Lubbock

1. **M. P. B. Ekanayaka** "Modeling and analysis of micro circuits in the turtle retina".
2. **Indika Wijayasinghe** "Tracking and control with the human eye".
3. **Ronald Anderson** "Modeling and analysis of micro circuits in the turtle lateral geniculate".

PROFESSIONAL ACTIVITIES

Conference related activities

1. Member of the Advisory Committee for *The 22nd Chinese Control Conference,* Yichang, P. R. China, July 21–25, 2003.
2. Member of the Advisory Committee for *The 23rd Chinese Control Conference,* Wuxi, P. R. China, August 10–13, 2004.
3. Member of the Program Committee for *FUSION 2004,* 7th International Conference on Information Fusion, Stockholm, Sweden, June 28 – July 1, 2004.
4. Member of the International Program Committee for *The Tenth IASTED International Conference on ROBOTICS AND APPLICATIONS RA 2004,* Honolulu, Hawaii, USA, August 23 – 25, 2004.
5. Member of the program committee for American Control Conference, 2005.
6. Member of the international program committee for FUSION 2008, The 11th international conference on information fusion, Cologne, Germany, June 30 – July 03, 2008.
7. Member of the international program committee for Mathematical Theory of Networks and Systems, Budapest, Hungary, 2010.

Workshops and Tutorials organized in conferences and universities

1. Modeling of RNA Expressions, Tutorial presented at the American Control Conference, Portland, Oregon, USA, 8th June, 2005. (with A. Polpitiya)
2. A celebration of the field of Systems and Control – Symposium on the occasion of two milestones in the careers of C. I. Byrnes and A. Lindquist, Stockholm, Sweden, 9th – 11th, Sept. 2009 (co-organized by X. Hu, U. Jonsson and B. Wahlberg)
3. Title to be decided, Mini course at the Mathematical Theory of Networks and Systems, 2010 (with Clyde F. Martin)

Plenary Presentations

1. Dynamic network models with neurons and genes
   IEEE International Symposium on Intelligent Control, The Grand Hotel, Taipei, Taiwan, Sept. 2, 2004.
2. Signal processing and control in Biological systems

6th Asian Control Conference, Inna Grand Bali Beach Hotel, Bali, Indonesia, July 20, 2006.

3. Modeling problems in animal vision and gaze control

   Sunahara Memorial Lecture at the 40th International Symposium on Stochastic Systems Theory and its Applications (SSS'08), Kyoto University, Nov. 14, 2008.

Invited sessions organized in conferences

1. Network Based Control in Biology and Engineering, CDC'04 43rd IEEE Conference on Decision and Control, 2004, Bahamas, USA. (with C. Martin, Texas Tech. Univ., Lubbock, USA)
2. Modeling and control of complex interaction: A network approach, CDC'09, 48th IEEE Conference on Decision and Control, 2009, Shanghai, China. (with C. Martin, Texas Tech. Univ., Lubbock, USA)(submission number 2035)

Invited Presentations

1. "Estimation with Retinal and Cortical Vision," April 5, 2002, Department of Electrical Engg., University of Texas, San Antonio, USA.

2. "Neural Coding and Decoding in the Visual Cortex of Freshwater Turtles," Workshop on Neural Coding, Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio, Feb. 13, 2003.
3. "Appearance Dynamics and Internal Models," Mittag-Leffler Workshop on *Vision from a Mathematical Perspective*, Mittag Leffler Institute, Stockholm, Sweden, March 12, 2003.
4. "Dynamics and Optimal Control for the Eye Movement," Department of Mathematical Engineering and Information Physics, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113 Japan, Oct. 14, 2003 and Tokyo Denki University, Hatoyama-Machi, Hiki-Gun, Saitama 350-03, Japan, Oct. 15, 2003.
5. "Signal Processing with Biological Neurons," Dept. of Biochemistry and Molecular Biology, Saitama University, October 17, 2003."
6. "Riccati Dynamics of Free Form Curves," Texas Tech University, Lubbock, Texas., Nov. 14, 2003.
7. "Network Models with Microarray Expression Data," presented at the EMSL Membrane Biology Grand Challenge, Systems Analysis of the Dynamics of Membrane Architecture, Composition and Function in Cyanobacteria, Pacific Northwest National Laboratory, Richland, Washington, USA, Dec. 7, 2004.
8. "Light Induced Gene Expression Dynamics in Cyanobacteria," presented at the 2^{nd} COE workshop on Human Adaptive Mechatronics (HAM), 2005, Organized by the Center of Excellence Project, Tokyo Denki University, Hatoyama-machi, Hiki-gun, Saitama 350-0394, Japan.
9. "Computation and control problems in the visual pathway," Seminar presented at the Dept. of Electrical Engg., McGill University, Quebec, Canada, March 24, 2005.
10. "Systems Modeling in Computational Biology," Special Session on Future Directions in Mathematical Systems and Control Theory, American Mathematical Society's 2005 Spring Central Section Meeting # 1006, Lubbock, Texas, April 9^{th}, 2005.
11. "Modeling and Identification in the Visual Cortex," KTH, Sweden, 13^{th} May 2005.
12. "Dynamic Modeling in the Gene Regulatory Network," NSF Workshop, Washington University, Saint Louis, MO, USA, June 1^{st} 2005.
13. "Modeling and Control Problems in the visuomotor pathway," Workshop on Modeling and Control of Complex Systems, Ayia Napa, Cyprus, June 30^{th} 2005.
14. "Bio inspired sensor networks in formation sensing," Department of Electrical Engineering, University of Missouri, Rolla, USA, 13^{th} October, 2005.
15. "Dynamics and Control Problems in Formation Sensing, Image Encoding and Memory," Department of Mathematics, Texas Tech University, Lubbock, Texas, USA, 10^{th} November, 2005.
16. "Dynamical Systems Approach to Gene Networking," Summer Workshop in Nove Hrady, Department of Biological Dynamics, Institute of Systems Biology & Ecology and Institute of Physical Biology, Zamek 136, 37333 Nove Hrady, Czech Republic, 31^{st} July, 2006.
17. "Modeling and estimation problems in the visual cortex," 4^{th} COE workshop on Human Adaptive Mechatronics, Tokyo Denki University, Hatoyama Machi, Saitama 350-0394, Japan, March 2, 2007.
18. "Control and estimation problems from Biology," Dept. of Mathematical Engineering and Information Physics, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113 Japan, Sep. 14, 2007.
19. "Coupled oscillation models in the study of Circadian Rhythms," RIKEN, BMC Research Center, Biological Control Systems Lab. 2271-130 Anagahora, Shimoshidami, Moriyama-ku, Nagoya, 463-0003 Japan, Sep. 15, 2007.
20. "Modeling and control in the turtle retina and the visual cortex," Colgate University, Hamilton, NY, USA, March 5^{th}, 2008.

21. "Optimal control problems in eye movement," Graduate School of Science and Engineering, Tokyo Denki University, Hatoyama-Machi, Hiki-Gun, Saitama 350-03 Tokyo, Japan, Nov. 12^{th}, 2008.
22. "Optimal control problems in eye movement and gaze control," Academy of Mathematics and System Sciences, Chinese Academy of Sciences, No. A1, Nansijie, Zhongguancun, Beijing 100080, P. R. China, Nov. 17^{th}, 2008.
23. "Vision and control from a turtle's point of view", Presented at the Plenary Panel Discussion on 'Control of Complex System', Dec. 18^{th}, 10^{th} International conference on Control, Automation, Robotics and Vision, ICARCV 2008, Hanoi, Vietnam.
24. "On the problem of moving eye optimally," Invited Presentation at the Royal Institute of Technology, Stockholm, Sweden, Feb 2, 2009.
25. "Some problems in optimal eye movement control" University of California at Santa Barbara, California
26. "Optimal Control Problems in Eye Mechanics", Univ. of Wurzburg, Germany.

Professional Affiliations

Member of the editorial board of "The IEEE Transactions on Computational Biology and Bioinformatics."

Member of the editorial board of "The Journal of Control Science and Engineering."

Elected to the Board of Governors of **IEEE Control Systems Society, Jan. 2004–Dec. 2006.**

Fellow of the **Institute of Electrical and Electronics Engineering.**

Past Committee Chair for the *Technical committee on SGMA* **'Sensor Guided Manipulation in Automation'** under the 'IEEE Robotics and Automation Society.'

Past Committee Chair for the *Technical committee on* **'BioSystems & Control'** under the 'IEEE Control Systems Society.'

Past Associate Editor of IEEE Transactions on Automatic Control under the 'IEEE Control Systems Society.'

AWARDS

American Automatic Control Council's Donald Eckman Award in 1988 Citation: *"In recognition of his outstanding contributions in the field of Automatic Control."*
United Nations Development Program's TOKTEN Consultant in 1993.
Japan Society for the Promotion of Science Invitation Fellowship Program for research in Japan in 1997.
Fellow of the Institute of Electronics and Electrical Engineering in 2000 Citation: *"For fundamental contributions to systems theory with applications to robust control, vision and multi sensor fusion."*

DAVID S. GILLIAM

EDUCATION

- B.S. Idaho State University 1969
- M.S. Idaho State University 1971
- Ph.D. University of Utah 1977

PROFESSIONAL EXPERIENCE

- 1990-present, Professor, Texas Tech University
- 2001, Visiting Professor, Washington University, St. Louis (Fall)
- 1993-1994, Visiting Professor, University of Texas at Dallas
- 1992, Visiting Professor, Washington University, St. Louis (Spring)
- 1989-present, Affiliate Professor, Washington University, St. Louis
- 1988, Visiting Associate Professor, Arizona State University
- 1986, Research Consultant, CWP, Colorado School of Mines
- 1985-86, Visiting Associate Professor, Colorado School of Mines
- 1984, Research Associate, RADC, Hanscom AFB
- 1984-1990, Associate Professor, Texas Tech University
- 1981-82, Visiting Assistant Professor, Arizona State University
- 1978-84, Assistant Professor, Texas Tech University
- 1977-78, Lecturer, Texas Tech University
- 1976-77, Associate Instructor, University of Utah

AREAS OF INTEREST

David Gilliam's research interests have been quite diverse. His dissertation and early research were in an area of abstract functional analysis with problems relating to the geometry of Banach and locally convex Topological vector space and the Radon-Nikodym property in these spaces. Soon after finishing graduate school he began to carry out research on problems in the theory of partial differential equations of mathematical physics. In 1986 he began working in distributed parameter systems and the solution of ill-posed inverse problems. His current main research interests are in the control of distributed parameter systems governed by linear and nonlinear partial differential equations. More specifically, my research involves the development of design methodologies for regulation of distributed parameter systems with special emphasis on boundary control systems.

PUBLICATIONS (Last six years. All years over 100 total)

- **Refereed Journals**

  - **D. Gilliam**, T. Hohage, X. Ji and F. Ruymgaart, The Fréchet-derivative of an analytic function of a bounded operator with some applications," *International Journal of Mathematics and Mathematical Sciences* Volume 2009, Article ID 239025, 17 pages.

  - **D. Gilliam**, F. Ruymgaart, A.C.M. van Rooij, "Fourier-Cesàro approximation in the Hausdorff metric with application to noisy deconvolution. Book Chapter to appear in *Advances in the GIBBS PHENOMENON with detailed introduction*, published by Sampling Publishin, New York, 2009, A.J. Jerri, Editor.

  - **D. Gilliam**, J. Cupidon, R. Eubanks, F. Ruymgaart, "Some properties of canonical correlations and variates in infinite dimensions," *Journal of Multivariate Analysis* , p 1083-1104, (2008).

  - **D. Gilliam**, J. Cupidon, R. Eubanks, F. Ruymgaart, "The delta-method for analytic functions of random operators with applications to functional data. *Bernoulli* 13, 1179-1194 (2007).

  - C.I. Byrnes, **D. Gilliam**, A. Isidori, V.Shubov, "Zero Dynamics Modeling and Boundary Feedback Design for Parabolic Systems," *Mathematical and Computer Modelling*, 44 (2006), no. 9-10, (co-authors), pp. 857–869.

- **Refereed Conference Proceedings**

  - C.I. Byrnes, **D. Gilliam**, Zero dynamics inverse design for asymptotic regulation of the heat equation: the non-colocated case, Proceedings 2009 American Control Conference, St. Louis, Mo. (2009).

  - E. Allen, J. A. Burns, **D. Gilliam**, "On the use of Numerical Methods for Analysis and Control of Nonlinear Convective Systems," Proceedings 47th IEEE Conference on Decision and Control, December 2008.

  - C.I. Byrnes, **D. Gilliam**, "Geometric Output Regulation for a Class of Nonlinear Distributed Parameter Systems," Proceedings 2008 American Control Conference, Seattle, Washington, June 2008 (co-author C.I. Byrnes).

  - C.I. Byrnes, **D. Gilliam**, "The Steady-State Response of a Nonlinear Control System, Lyapunov Stable Attractors, and Forced Oscillations," Proceedings of the 18th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2008), Virginia Tech, Blacksburg, Virginia (USA), 2008, (co-author C.I. Byrnes).

  - C.I. Byrnes, **D. Gilliam**, "Approximate Solutions of the Regulator Equations for Nonlinear DPS," Proceedings of the 46th IEEE Conference on Decision & Control, December 2007, (co-author C.I. Byrnes).

- C.I. Byrnes, **D. Gilliam**, "Bifurcations and Attractors for a Boundary Feedback Controlled Burgers' Equation," *Proceedings of European Control Conference* 2007, Kos, Greece, 5037 - 5043, (co-authors C.I. Byrnes, J. Dockery).

- C.I. Byrnes, **D. Gilliam**, C. Hu, "Set-point Boundary Control for the Kuramoto-Sivashinsky Equation," 45th *IEEE Conference on Decision and Control*, 2006.

- C.I. Byrnes, **D. Gilliam**, A. Isidori, "Interior Point Control of a Heat Equation Using Zero Dynamics Design," *Proceedings of 2006 American Control Conference* 2006.

- C.I. Byrnes, **D. Gilliam**, J. Dockery, "Bifurcations and Attractors for a Controlled Burgers' Equation," *Proceedings of MTNS* 2006, Kyoto, Japan.

- **D. Gilliam**, C. Mickel, V.I. Shubov, E. Vugrin, "Generalized Donaldson-Sullivan Model of a Vortex Flow," Proceedings of 11th International Conference on Wind Engineering (with) (2005).

- C.I. Byrnes, **D. Gilliam**, A. Isidori and V. I. Shubov, Set-point boundary control for a viscous Burgers equation, *New directions and applications in control theory*, 43–60, Lecture Notes in Control and Inform. Sci., 321, Springer, Berlin, 2005.

- C.I. Byrnes, **D. Gilliam**, A. Isidori and V.I. Shubov, "Static and Dynamic Controllers for Boundary Controlled Distributed Parameter Systems," *Proc. 43nd IEEE Conference on Decision and Control*, December 2004, pp 3324-3325.

- C.I. Byrnes, **D. Gilliam**, A. Isidori and V.I. Shubov, "Set-point boundary control for a nonlinear distributed parameter system," *Proceedings 42nd IEEE-CDC*, pp 312-317, Dec 9-12, 2003, Maui, Hawaii.

- C.I. Byrnes, **D. Gilliam**, A. Isidori, J. Ramsey, "On the Steady-State Behavior of Forced Nonlinear Systems," New Trends in Nonlinear Dynamics and Control and Their Applications, *New trends in nonlinear dynamics and control, and their applications*, volume 295 of *Lecture Notes in Control and Inform. Sci.*, pages 119–143. Springer, Berlin, 2003.

- C.I. Byrnes, **D. Gilliam**, V.I. Shubov, "Geometric theory of output regulation for linear distributed parameter systems," *Frontiers Appl. Math.*, (27) 139–167. SIAM, Philadelphia, PA, 2003.

FUNDING ACTIVITY (Over past 6 years) (Over all years more than $500,000 in funding)

- AFOSR Grant through Washington University St. Loiuis, "Nonlinear Control Systems," Principal Investigator C.I. Byrnes, Senior Personnel **David Gilliam**. Period from 1988 – Present, 3/2 Months

Summer Support.

- Consultant in summer research Principal Investigator Frits Ruymgaart's NSF Grant, Summer 2006, $1,200.
- Consultant in summer research Principal Investigator Frits Ruymgaart's NSF Grant, Summer 2007, $1,000.
- (Participant) NIST Grant, Civil Engineering TTU (Funded), Principal Investigator Kishor Mehta.
- Pre-proposal to Texas ARP entitled "Dynamics of coal dust airflows with application to coal-fired power plants." Selected for submission of full proposal. (Not Funded).
- Travel Grant from the Fields Institute Workshop on Infinite-Dimensional Systems held in Waterloo, Canada (2005), $1,500 (Funded).

PRESENTATIONS AND MEETINGS ATTENDED

Given by D. Gilliam

- **David Gilliam*,** Chris Byrnes, Invited Talk "Zero Dynamics Interior Point Control for a Viscous Burgers' Equation" at the AMS National Meeting in San Antonio, TX January 2006.
- **David Gilliam*,** Chris Byrnes, Invited talk "Approximate Solutions of the Regulator Equations for Nonlinear DPS" at the 46th IEEE CDC Conference, San Antonio, TX in December 2007.
- **David Gilliam*,** Chris Byrnes, Invited talk "Interior Point Control of a Heat Equation Using Zero Dynamics Design" at the ACC Conference in June 2006.
- **David Gilliam*,** Chris Byrnes, Invited talk "Set-point Boundary Control for the Kuramoto-Sivashinsky Equation" at the 45th IEEE CDC Conference, San Diego, CA in December 2006.
- **David Gilliam*,** Chris Byrnes, Invited talk "Zero Dynamics Design for Partial Differential Boundary Control Systems" at the Joint SIAM National/Control Theory and Applications Meeting (2005) New Orleans, LA.
- **David Gilliam*,** Chris Byrnes, Invited talk "Zero Dynamics Design for a Boundary Controlled Viscous Burgers' Equation" Workshop on Infinite-Dimensional Systems held in Waterloo, Canada (2005).
- **David Gilliam*,** Chris Byrnes, "Invited talk "Static and Dynamic Controllers for Boundary Controlled Distributed Parameter Systems" 43rd IEEE CDC at Paradise Island the Bahamas, December 2004.
- **David Gilliam*,** Chris Byrnes, Invited talk Small-Scale Spatial Mollifiers with Application to Output Regulation for Distributed Parameter Systems, presented at the Mittag-Leffler Institut in Sweden, (2003).
- **David Gilliam*,** Chris Byrnes, V.I.Shibov, Nonequilibrium Output Regulation for Distributed Paramater Systems, Computation, Control and Biological Systems VIII Bozeman, MT (2003).

Chaired/Organized Session

- **David Gilliam*,** W.P. Dayawansa, Co-Orgainized and Co-Chaired Session at AMS Regional Meeting at Texas Tech University (2005).
- **David Gilliam*,** Chaired a special session at 43rd IEEE CDC Pardise Island the Bahamas, December 2004.

Given by Co-Author

- David Gilliam**, Chris Byrnes***, "Comments on the Dynamics of Forced and Unforced\\ Boundary Controlled Viscous Burgers' Equation," Invited talk at the Workshop on Infinite-Dimensional Systems held in Waterloo, Canada (2005).
- David Gilliam**, Chris Byrnes***, "Zero dynamics inverse design for asymptotic regulation of the heat equation: the non-colocated case," American Control Conference, St. Louis, Mo. (2009).
- Ed Allen, **John Burns***, David Gilliam, "On the use of Numerical Methods for Analysis and Control of Nonlinear Convective Systems," Invited talk 47th IEEE Conference on Decision and Control, December 2008, Cancun, Mexico.
- David Gilliam**, Chris Byrnes***, Invited talk "Geometric Output Regulation for a Class of Nonlinear Distributed Parameter Systems," American Control Conference, Seattle, Washington, June 2008.
- David Gilliam**, Chris Byrnes***, Invited talk "The Steady-State Response of a Nonlinear Control System, Lyapunov Stable Attractors, and Forced Oscillations," 18th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2008), Virginia Tech, Blacksburg, Virginia (USA), 2008.
- David Gilliam**, Chris Byrnes***, Jack Dockery, Invited talk "Bifurcations and Attractors for a Boundary Feedback Controlled Burgers' Equation," European Control Conference, 2007, Kos, Greece.
- David Gilliam**, Chris Byrnes***, Invited talk "Set-point boundary control for a nonlinear distributed parameter system," 42nd IEEE-CDC, Dec., 2003, Maui, Hawaii.
- David Gilliam**, Chris Byrnes***, Jack Dockery, Invited talk "Bifurcations and Attractors for a Boundary Feedback Controlled Burgers' Equation," 17th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2006), Kyoto, Japan.
- D. Gilliam, C. Mickel, **V.I. Shubov***, E. Vugrin, "Generalized Donaldson-Sullivan Model of a Vortex Flow," 11th International Conference on Wind Engineering, 2005, Lubbock, TX.

Local Talks

- **David Gilliam*,** Speaker in SIAM Student Symposium (2003), "Non-equilibrium output regulation."
- **David Gilliam*,** Speaker in SIAM Student Symposium (2005), "Zero Dynamics Design for Interior Point Control of Distributed Parameter Systems."
- **David Gilliam*,** Speaker in SIAM Student Symposium (2008), "Regulator Equations and Tracking."
- **David Gilliam*,** Speaker in REU mini-symposium (2006), "Geometric Regulator Theory in Control Engineering."
- **David Gilliam*,** Chris Byrnes, Invited talk at the AMS Regional Meeting at Texas Tech University

(2005).

- **David Gilliam*,** Speaker in Applied Math Seminar (2004), "Geometric Theory of Output Regulation Parts I, II, III."

DISSERTATION, THESIS AND REPORT DIRECTORS

- **Thesis Direction**

  - Rachel Koskodan (MS 2004) "Approximation Methods for Output Regulation of Nonlinear Systems"
  - Matt Walker (MS 2005) "Output regulation of boundary controlled systems using zero-dynamics feedback design."
  - Vijay Moses Johnson (MS 2005) (co-directed with Padhu) "Geometric Control for Waves and Beams."
  - Marinos Bagdati (MS 2005) "Boundary control for the two dimensional rectangle."

- **Member of Committee**

  Member of MS Committee Vikas Kaul student of Dayawansa
  Member of PhD Committee Xiao-Yi Ji student of Frits Ruymgaart.
  Member of Ms Committee Christina Ho student of Xiaoning Gilliam.
  Dean's representative on PhD defense Ivan G. Guardiola in Industrial Engineering

HONORS AND AWARDS

Awarded Kappa Mu Epsilon Professor of the year.

PROFESSIONAL SERVICE

- **Refereeing/Reviewing**

  - IEEE, Trans. Auto. Control.
  - Systems and Control Letters.
  - Journal of Math. Physics.
  - Journal of Systems, Estimation and Control.
  - Journal of Integral and Differential Equations.
  - National Science Foundation
  - Air Force Office of Scientific Research
  - International Federation of Automatic Control
  - Automatica
  - IEEE Conference on Decision and Control
  - Mathematics of Control, Signals, and Systems.
  - Quarterly of Applied Math

- IFAC
- ACC
- Math and Computer Modelling
- Journal of Mathematical Physics
- Journal of Dynamic Systems, Measurement, and Control.
- Applied Mathematics Letters.

- **Organization offices held**

  Secretary/Treasurer of the SIAM Activity Group Control and Systems Theory.

- **Memberships in organizations**

  - Society of Industrial and Applied Mathematicians
  - IEEE & IEEE Systems and Control Society
  - American Mathematical Society
  - Local Student Chapter SIAM

XIAONING (KATHLEEN) LI GILLIAM

EDUCATION

Ph.D. Mathematics, Texas Tech University, May 1998

M.S. Mathematics, Texas Tech University, May 1992

M. ED Wayland Baptist University, May 1990

PROFESSIONAL EXPERIENCE

2002-present, Instructor/Adjunct Faculty, Department of Mathematics and Statistics, Texas Tech University

1998-present, Research Associate, Wind Science and Engineering, Texas Tech University

1998-present, Graduate Faculty, Texas Tech University

AREAS OF INTEREST

Xiaoning Gilliam has an active research program in modeling and analysis of random time series and fields. Much of her research is related to modeling of coherent phenomena in time series and fields using wavelets and modern signal processing techniques. As a statistician, her research interests also include applications of parametric and non-parametric analysis to study of wind fields and principle component analysis of pressure fields.

PUBLICATIONS

Refereed Journals

1. He, H., Ruan, D., Mehta, K,. **Gilliam, X.**, and Wu, F., "Nonparametric independent component analysis for detecting pressure fluctuation induced by roof corner vortex", *J. Wind Engineering and Industrial Aerodynamics*, Vol. 95, Issue 6, 2007, Pg 429-443.

2. **Gilliam, X.**, Dunyak, J., Smith, D., and Wu, F., "Using projection pursuit and proper orthogonal decomposition to identify independent flow mechanisms", *J. Wind Engineering and Industrial Aerodynamics*, Vol. 92, 2004, Pg 53-69.

Refereed Conference Proceedings

1. Ho, C., **Gilliam, X.** and Basu, S. "Detecting intermittent turbulence using advanced signal processing techniques", *Proceedings of the 47th AIAA Aerospace Sciences Meeting*, Orlando, FL, January 5-8, 2009.

2. Ho, C., **Gilliam, X.**, Phillipson, J. and Basu, S. "The empirical mode decomposition and intermittent turbulence", *Proceedings of the 88th annual American Meteorological Society Meeting*, New Orleans, LA, Jan 20-24, 2008.
3. Phillipson, J. and Basu, S. and **Gilliam, X**. "Identifying differences in polar and mid-latitude turbulence bursting events in the stably stratified atmospheric boundary layer", *Proceedings of the 88th annual American Meteorological Society Meeting*, New Orleans, LA, Jan 20-24, 2008.

4. **Gilliam, X.**, Basu, S., and Ho, C. "Detection of intermittent turbulence in the stable boundary layer using empirical mode decomposition", *NG548-06, AUG, Joint Assembly*, Acapulco, Mexico, May 22-25, 2007.

5. **Gilliam, X.**, Smith, D., "A physical interpretation of the dominant POD mode for full-scale pressure fields", *Proceedings of the 10th Americas Conference on wind Engineering,* May 30-June 2, Louisiana, 2005.

6. **Gilliam, X.**, Nagle, S., "The effects of La Nina and El Nino on Tornado outbreaks", *Proceedings of the 10th Americas Conference on wind Engineering*, May 30-June 2, Louisiana, 2005.

7. Long, F., Smith, D., Zhu, H. and **Gilliam, X.**, "Uncertainties associated with the full-scale to wind tunnel pressure coefficient extrapolation", *Proceedings of the 10th Americas Conference on wind Engineering,* May 30-June 2, Louisiana, 2005.

8. **Gilliam, X.,** Dunyak, J., and Smith, D., "Characterizing coherent phenomenon in Atmospheric boundary layer using wavelet", *Proceedings of the Eleventh International Conference on Wind Engineering,* Lubbock, TX, June 2-5, 2003, Pg 2037-2044.

9. Tiglioglu, T. **Gilliam, X.**, Krues, J., "A qualitative possibility theory approach for an illustrative example: The hurricane evacuation decision", *Proceedings of the Eleventh International Conference on Wind Engineering,* Lubbock, TX, 2003, June 2-5, Pg 1349-1356.

FUNDING ACTIVITY

Funded

1. "Characterization and simulation of turbulence in stably stratified atmospheric boundary layers", (PI: Basu, S., Co-PI: **Gilliam, X.**), Amount: $ 86,000, ARP, 2006-2008.

2. "IGERT: Multidisciplinary Program in wind Science and Engineering", (PI: Mehta, K, **Gilliam, X**. --IGERT Faculty), Amount: $2,000,000, NSF, 2003-2007.

3. "Windstorm Mitigation," (PD: Mehta, K., Co-PIs: **Gilliam, X.** et.al.), Amount: $301,550 (4% of $7,538,750), National Institute of Standards and Technology, 2002-2007.

4. "Machine Learning: A Multidisciplinary Graduate Computer Engineering Program", (PI: Mitra, S., Co-PI: Pyeatt, L., **Gilliam, X.),** Amount: $493,762, NSF, 2001-2004.

Not Funded

"Extreme and fatigue loads of large wind turbines under Non-Gaussian and Non-Stationary winds", (PI: Chen, X., Co-PI: Zuo, D. and **Gilliam, X.**), Amount: $115,000, invited for full proposal, ARP, 2008.

Pending

"Using remote sensing and multi-scale tools to quantify the effects of wind turbines on micro-climate," (PI: Basu, S., Co-PI: **Gilliam, X.**), Amount: $150,000, pre-proposal, ARP, 2009.

PRESENTATIONS AND MEETINGS ATTENDED

Conference Presentations

1. "Detecting intermittent turbulence using advanced signal processing techniques", Ho, C., **Gilliam, X.** and Basu, S. (Presenter), The 47th AIAA Aerospace Sciences Meeting, Orlando, FL, January 5-8, 2009.

2. "The empirical mode decomposition and intermittent turbulence", Ho, C., **Gilliam, X.**, Phillipson, J. and Basu, S. (Presenter), The 88th annual American Meteorological Society Meeting, New Orleans, LA, Jan 20-24, 2008.

3. "Identifying differences in polar and mid-latitude turbulence bursting events in the stably stratified atmospheric boundary layer", Phillipson, J. (Presenter), Basu, S. and **Gilliam, X**., The 88th annual American Meteorological Society Meeting, New Orleans, LA, Jan 20-24, 2008.

4. "Detection of intermittent turbulence in the stable boundary layer using empirical mode decomposition", **Gilliam, X.**, Basu, S. (Presenter), and Ho, C., Joint Assembly, Acapulco, Mexico, May 22-25, 2007.

5. "A physical interpretation of the dominant POD mode for full-scale pressure fields", **Gilliam, X.** (Presenter), Smith, D., The 10th Americas Conference on wind Engineering, Louisiana, May 30-June 2, 2005.

6. "The effects of La Nina and El Nino on Tornado outbreaks", **Gilliam, X.** (Presenter), Nagle, S., The 10th Americas Conference on wind Engineering, Louisiana, May 30-June 2, 2005.

7. "Characterizing coherent phenomenon in Atmospheric boundary layer using wavelet", **Gilliam, X.** (Presenter), Dunyak, J., and Smith, D., The Eleventh International Conference on Wind Engineering, Lubbock, TX, June 2-5, 2003.

8. "A qualitative possibility theory approach for an illustrative example: The hurricane evacuation decision", Tiglioglu, T. **Gilliam, X. (**Presenter), Krues, J., The Eleventh International Conference on Wind Engineering, Lubbock, TX, June 2-5, 2003.

9. "Using projection pursuit and orthogonal decomposition to identify flow mechanisms", **Gilliam, X. (**Presenter), Dunyak, J., Smith, D., and Wu, F., Computation, Control and Biological Systems VIII Bozeman, MT (2003).

Local Presentations

1. Pesented two Workshops entitled "signal processing" at the 3rd Emmy Noether High School Mathematics Day at Texas Tech, 2005.

2. Presented "NOD Method for Pressure field" for the NIST Annual Review, 2005.

3. Presented "Signal Processing in wind Engineering" for the NIST Annual Review, 2004.

DISSERTATION, THESIS AND REPORT DIRECTORS

Thesis Directed

Christina Ho (MS 2008), "Analyzing intermittent turbulence in stable boundary layer using EMD method."

Member of Graduate Committee

1. Kirsten Gast, PhD, (in progress), Department of Civil Engineering.

2. Chris Patterson, PhD, (in progress), Department of Civil Engineering.
3. Becca Edwards,PhD, (2009), Department of Civil Engineering.
4. Julia Philipson, MS, (2008), Department of Geosciences.
5. Guoqing Huang, PhD, (2008), Department of Civil Engineering.
6. Rolando Vega, PhD, (2008), Department of Civil Engineering.
7. Xiaohong Hu, PhD, (2007), Department of Civil Engineering.
8. Hongchao Zhu, PhD, (2007), Department of Civil Engineering.
9. Nan Zhou, PhD, (2006), Department of Civil Engineering

PROFESSIONAL SERVICE

1. Served as a referee for proposals from the NSF in Wind Engineering.
2. Referred papers for IEEE Conference of Decision and Control.
3. Referred papers for the 10th Americas Conference on wind Engineering.
4. Served on the Career Panel “Becoming a Mathematician” at the 2nd Emmy Noether High School Mathematics Day at Texas Tech, 2004.

PETROS HADJICOSTAS

EDUCATION

(i) B.S. in Mathematics (with University Honors), 1990, Carnegie Mellon University.

(ii) M.S. in Mathematics, 1990, Carnegie Mellon University.

(iii) M.S. in Statistics, 1991, Carnegie Mellon University.

(iv) Ph.D. in Statistics, 1995, Carnegie Mellon University.

PROFESSIONAL EXPERIENCE

(i) 1990-1995 – Carnegie Mellon University, Department of Statistics: I worked as a teaching assistant, grader and teaching instructor while I was a graduate student.

(ii) 1995-1996 – University of Cyprus, Department of Public and Business Administration: Visiting assistant professor.

(iii) 1996-1999 – University of Cyprus, Department of Public and Business Administration: Lecturer.

(iv) 1999-2001 -- SUNY Brockport, Department of Mathematics: Assistant Professor.

(v) 2001-2007 – Texas Tech University, Department of Mathematics and Statistics: Assistant professor.

(vi) 2007-2009 – Texas Tech University, Department of Mathematics and Statistics, Associate Professor.

AREAS OF INTEREST

Logistic regression, Simpson's paradox, data envelopment analysis, theory of production, probabilistic and analytic inequalities, analysis of sorting algorithms.

PUBLICATIONS IN REFEREED JOURNALS (since 2003)

(i) **Petros Hadjicostas** (2003), "Consistency of Logistic Regression Coefficient Estimates Calculated from a Training Sample," *Statistics and Probability Letters*, Vol. 62, pp. 293-303.

(ii) R.W. Barnard, **P. Hadjicostas**, and A. Yu. Solynin (2005), "The Poincaré Metric and Isoperimetric Inequalities for Hyperbolic Polygons," *Transactions of the American Mathematical Society*, Vol. 357, pp. 3905-3932.

(iii) **Petros Hadjicostas** and K.B. Lakshmanan (2005), "Bubble Sort with Erroneous Comparisons," *The Australasian Journal of Combinatorics*, Vol. 31, pp. 85-106.

(iv) **Petros Hadjicostas** and Andreas C. Soteriou (2006), "One-sided Elasticities and Technical Efficiency in Multi-output Production: A Theoretical Framework," *European Journal of Operational Research*, Vol. 168, pp. 425-449.

(v) **Petros Hadjicostas** (2006), "Maximizing Proportions of Correct Classifications in Binary Logistic Regression," *Journal of Applied Statistics*, Vol. 33, pp. 629-640.

(vi) Jonathan Sondow and **Petros Hadjicostas** (2007), "The Generalized-Euler-Constant

Function $\gamma(z)$ and a Generalization of Somos's Quadratic Recurrence Constant," *Journal of Mathematical Analysis and Applications*, Vol. 332, pp. 292-314.

(vii) H. Susitha I. Karunaratne and **Petros Hadjicostas** (2009), "Comparison of Location Estimators Using Banks' Criterion," *Mathematical Inequalities and Applications*, Vol. 12, pp. 455-472.

(viii) **Petros Hadjicostas** and Andreas C. Soteriou (2010), "Different Orders of One-sided Scale Elasticities in Multi-output Production," accepted for publication in *Journal of Productivity Analysis*.

(ix) **Petros Hadjicostas** and K. B. Lakshmanan (2010), "Measures of Disorder and Straight Insertion Sort With Erroneous Comparisons," accepted for publication in *Ars Combinatoria*.

FUNDING ACTIVITY

(i) Funded

(1) In Spring 2005, the following proposal was submitted to the Institute for University Research, Research Enhancement Fund (REF) of the College of Arts and Sciences at Texas Tech University: "Statistics, Data Envelopment Analysis and Multi-output production." The principal proposer was **Petros Hadjicostas**, and the amount requested (and awarded) was $3650.

(ii) Not funded

(1) The following proposal was submitted to "Statistics" program of the NSF Division of Mathematical Sciences in November 2003: "Statistics, Data Envelopment Analysis, and Multi-output production." The principal proposer was **Petros Hadjicostas**, and the amount requested was $101,949 (not funded).

(2) The following proposal was submitted to the "Algebra, Number Theory, and Combinatorics" program of the NSF Division of Mathematical Sciences in October 2004: "Combinatorial analysis of sorting algorithms with erroneous comparisons." The principal proposer was **Petros Hadjicostas**, and Dr. K.B. Lakshmanan was the co-proposer. The amount requested was $225,185 (not funded).

(3) The following proposal was submitted to the Institute for University Research, Research Enhancement Fund (REF) of the College of Arts and Sciences at Texas Tech University in Spring 2004: "Statistics, Data Envelopment Analysis and Multi-output production." The principal proposer was **Petros Hadjicostas**, and the amount requested was $4150 (not funded).

(4) The following pre-proposal was submitted for the 2006 THECB, Advanced Research Program Competition in October 2005: "Statistics, Data Envelopment Analysis, and Multi-output Production." The principal proposer was **Petros Hadjicostas**, and the amount requested was $52,000 (not funded).

(5) The following proposal was submitted to the "Statistics" program of the NSF Division of Mathematical Science in Fall 2006: "Statistics, data envelopment analysis, and multi-output production." The principal investigator was **Petros Hadjicostas,** and the amount requested was $75,731 (not funded).

(6) The following proposal was submitted to the National Security Agency in Fall 2006: "Measures of disorder and sorting algorithms." The principal investigator was **Petros Hadjicostas**, and the amount requested was $30,659 (not funded).

(7) The following proposal was submitted to the Statistics Program of the NSF Division of Mathematical Sciences in Fall 2007: "Statistics, data envelopment analysis, and multi-output production." The principal investigator was **Petros Hadjicostas**, and the amount requested is $117, 890 (not funded).

(8) The following proposal was submitted to the "Statistics" program of the NSF Division of Mathematical Sciences in Fall 2008: "Enhancing the statistical foundations of data envelopment analysis and multi-output production." The principal investigator was **Petros Hadjicostas**, and the amount requested was $118,810 (not funded).

(9) The following proposal was submitted to the NSA Mathematical Sciences Grant Program in Fall 2008: "Measures of disorder and sorting algorithms." The principal investigator was **Petros Hadjicostas**, and the amount requested was $33,338 (not funded).

PRESENTATIONS AND MEETINGS ATTENDED

(i) Colloquia

(1) **Petros Hadjicostas*** gave the following talk in the colloquium of the Department of Mathematics and Statistics at Texas Tech University in September 2006: "One-sided elasticities and efficiency in multi-output production" (joint work with A. C. Soteriou).

(ii) Conference presentations

(1) **Petros Hadjicostas*** gave two talks at the *2003 Annual meeting of the Texas Section of the Mathematical Association of America*: (a) "Proportion of Simpson subdivisions" (b) "Bubblesort with erroneous comparisons" (joint work with K.B. Lakshmanan). The meeting took place in Sam Houston State University, Huntsville, TX, in April 2003.

(2) **Petros Hadjicostas*** presented a talk in the *Session for Contributed Papers* at the *AMS Sectional Meeting #1006 at Texas Tech University, Lubbock, TX (2005 Spring Central Section Meeting)*: "The use of measures of disarray for comparing sorting algorithms with erroneous comparisons" (joint work with K. B. Lakshmanan). The meeting took place in Lubbock, TX, in April 2005.

(3) **Petros Hadjicostas*** gave the following talk at the *2007 meeting of the Classification Society of North America (CSNA)*: "One-sided elasticities and technical efficiency in multi-output production: A theoretical framework" (joint work with A. C. Soteriou). The meeting took place at the University of Illinois at Urbana-Champaign, IL, in June 2007.

(iii) Local presentations

(1) **Petros Hadjicostas*** presented the following topic in the *Statistics Seminar* in Spring 2003: "Data Envelopment Analysis" (joint work with A. C. Soteriou).

(2) **Petros Hadjicostas*** presented the following topic in the *Number Theory and Cryptography Seminar* in Fall 2003: "Fermat primes."

(3) **Petros Hadjicostas*** presented the following topic in the *Complex Analysis and Geometry Seminar* in Fall 2003: "Isoperimetric inequalities in hyperbolic geometry" (joint work with R. W. Barnard and A. Yu. Solynin).

(4) **Petros Hadjicostas*** presented the following topic in the *Statistics Seminar* in Spring 2004: "Introduction to Stylometry."

(5) **Petros Hadjicostas*** presented the following topic in the *Statistics Seminar* in Fall 2004: "Right-invariant metrics and their use in Non-parametric Statistics."

(6) **Petros Hadjicostas*** presented the following topic in the *Complex Analysis Seminar* in Fall 2004: "The zeta function."

(7) **Petros Hadjicostas*** gave the following talk in the *SIAM Mini-Symposium* in Fall 2006: "Nonparametric correlation coefficients and right invariant metrics."

(8) **Petros Hadjicostas*** presented the following talk in the *Analysis Seminar* in Fall 2006: "The generalized-Euler-constant function $\gamma(z)$ and a generalization of Somos's quadratic recurrence constant" (joint work with J. Sondow).

(9) **Petros Hadjicostas*** gave a series of lectures about the following topic in the *Analysis Seminar* in Spring 2007: "Quantum probability."

(10) **Petros Hadjicostas*** presented the following talk in the *Statistics Seminar* in Fall 2009*:* "Comparison of estimators using Banks' criterion" (joint work with H. S. I. Karunaratne).

DISSERTATION, THESIS AND REPORT DIRECTORS

(i) **Directed students** (who graduated with theses or report titles and years)

1. Donna E. Mills, "Authorship attribution applied to the Bible," August 2003, Master Thesis in Statistics, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. (Advisor: **Petros Hadjicostas.**)

2. H. Susitha I. Karunaratne, ``Comparison of location estimators using Banks' criterion," August 2004, Master Thesis in Statistics, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. (Advisor: **Petros Hadjicostas.**)

3. Benjamin Aaron Bailey, "Area of polygons in hyperbolic geometry," August 2004, Master Thesis in Mathematics, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. (Advisor: **Petros Hadjicostas.**)

4. R. Indika P. Wickramasinghe, "Topics in log-linear models," May 2009, Master Thesis in Statistics, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. (Advisor: **Petros Hadjicostas.**)

5. Uzair Muhammad, "Calculations of measures of risk using various probability distributions," August 2009, Master Thesis in Statistics, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. (He finished all the requirements for the thesis, but he still needs to pass two more courses to graduate.) (Advisor: **Petros Hadjicostas.**)

(ii) List of graduate committees served on

1. In Spring 2007, **Petros Hadjicostas** was a committee member of the Master's thesis in Mathematics by Yonggang Lu. The chairman of the committee was Dr. Frits Ruymgaart, and the title of the thesis was "Decomposition of a probability density function."

2. In Spring 2007, **Petros Hadjicostas** was a committee member of the Master's thesis in Statistics by Unawatuna Gamage Asiri Gunathilaka. The chairman of the committee was Dr. Frits Ruymgaart, and the title of the thesis was "Rank test of multivariate two-sample data using projection pursuit."

3. In Fall 2007, **Petros Hadjicostas** was a committee member (co-chair) of the Master's thesis in Mathematics by Brock Erwin. The chairman of the committee was Dr. Kent Pearce, and the title of the thesis was "The usefulness of non-university tests as substitutes for the Math Placement Exam."

4. In Spring 2008, **Petros Hadjicostas** was a committee member of the Master's thesis in Statistics by Xiaolin Wang. The chairman of the committee was Dr. Adao A. Trindade, and the title of the thesis was "An investigation of common estimators of financial risk under random sampling."

5. In Summer 2008, **Petros Hadjicostas** was a committee member of the Master's report in Statistics by Shuanglin Sun. The chairman of the committee was Dr. Adao A. Trindade, and the title of the report was "Comparing asymptotic relative efficiencies of tail mean vs. tail quantile."

6. In Summer 2008, **Petros Hadjicostas** was a committee member of the Master's report in Statistics by Jose A. Lopez. The chairman of the committee was Dr. James Surles, and the title of the report was "Mexican meat consumption: An application of seemingly unrelated regressions in stratified sampling."

7. In Spring 2008, **Petros Hadjicostas** was a committee member of the Ph.D. dissertation of Maria Mutuc, who was a Ph.D. candidate in the Department of Agricultural and Applied Economics at Texas Tech University. The title of her dissertation was "Expiring temporary safeguards in apparel trade: implications for U.S. cotton." The chairman of the committee was Dr. Samarendu Mohanty.

PROFESSIONAL SERVICE

(a) <u>Refereeing</u>

Petros Hadjicostas has refereed for the following journals:

1. The American Mathematical Monthly
2. The American Statistician
3. European Journal of Operational Research
4. Issues in the Undergraduate Mathematics Preparation of School Teachers
5. Journal of Applied Mathematics and Decision Sciences
6. Journal of Statistical Computation and Simulation
7. Mathematical Biosciences
8. Numerical Algorithms
9. Rocky Mountain Journal of Mathematics
10. Texas College Mathematics Journal

11. Communications in Statistics – Theory and Methods, A.

(b) Memberships in organizations

Petros Hadjicostas is a member of Member of the American Statistical Association, the American Mathematical Society, the Classification Society of North America, and the Mathematical Association of America.

GARY A. HARRIS

EDUCATION

1969	B. S. Mathematics and Physics	Carson Newman College Jefferson City, TN
1971	M. S. Mathematics	University of Kentucky Lexington KY
1977	Ph. D. Mathematics	University of Kentucky Lexington KY

PROFESSIONAL EXPERIENCE

1977-1978	Visiting Lecturer	Texas Tech University
1978-1983	Assistant Professor	Texas Tech University
1981-1982	Visiting Assistant Professor	Rice University
1983-1992	Associate Professor	Texas Tech University
1988	Visiting Professor	Middle Eastern Technical University, Ankara Turkey
1989	Visiting Scholar	University of Toronto
1992-present	Professor	Texas Tech University
1993-2005	Director of Undergraduate Programs Department of Mathematics and Statistics Texas Tech University	

AREAS OF INTEREST

- Complex Analysis of Several Variables
- Mathematics Education as it pertains to the mathematics preparation of teachers, including teaching assistants, and continuing professional development of in-service mathematics teachers.

PUBLICATIONS (since 2003)

Refereed Journals

Gary Harris, Patricia Schovanec, "College Mathematics for Elementary School Teachers: A Programme Model?" *New Zealand Journal of Mathematics, V 32* (Supplementary Issue, 97- 105), 2003. 97-105.

T. Stevens, **Gary Harris,** Y. To, J. Dwyer, "The Logo project: Designing an effective continuing education program for teachers," *Journal of Computers in Mathematics and Science Teaching, 27:2*. April, 2008. 195-219.

Gary Harris, J. Surles, J. Froman, "The Professional Development of Graduate Mathematics Teaching Assistants," *International Journal of Mathematical Education in Science and Technology,* 40 (01). January 2009. 157 – 172.

Tara Stevens, **G. Harris,** Z. Aguirre, L. Cobbs, "A case study approach to increasing teachers' mathematics knowledge for teaching and strategies for building students' maths self-efficacy," *International Journal of Mathematical Education in Science and Technology,* 40 (07) November 2009. 903-911.

Refereed Conference Proceedings

Gary Harris, "Technology in the Mathematics Preparation of Teachers: A workshop," Remarkable Delta: 03, Communications of the Fourth Southern hemisphere Symposium on

Undergraduate Mathematics and Statistics Teaching and Learning**,** International Delta Steering Committee, Queenstown, NZ, 2003. 129-136.

Gary Harris, "A Web Course for In-Service High School Mathematics Teachers," *Proceedings of the Sixteenth Annual International Conference on Technology in collegiate Mathematics,* Pearson Education, Upper saddle River, NJ, November 2004. 140-144.

Gary Harris, "The Use of Logo in Pre-Service Mathematics Teacher Courses," *Proceeding of the Seventeenth Annual International Conference on Technology in Collegiate Mathematics,* Pearson Education, Upper saddle River, NJ, November 2005.

Gary Harris, James Surles**,** "Reforming business mathematics: an attitude adjustment," *Proceedings of Kingfisher Delta'05* (Fifth Southern Hemisphere Conference on Undergraduate Mathematics and Statistics Teaching and Learning). Published by Centre for Statistics, School of Physical Sciences, University of Queensland, Brisbane. November 2005. 204-210.

Gary Harris, Jason Froman, James Surles, "A Professional Development Course for Mathematics Teaching Assistants," *Proceedings of Calafate Delta'07* (Argentina), November 2007. 67-76.

Technical Reports

WTMSMP preliminary progress report to NSF, August, 2009. (The report resulted in NSF early approval of $1,629,550 for the 2011 project year.)

WTMSMP annual progress report to NSF, October, 2009.

FUNDING ACTIVITY (since 2003**)**

Funded

"Improving Student Achievement in Mathematics through Professional Development Partnerships," Texas Education Agency, $108,913, August 2005 through September 2006. **G. Harris** (PI), Jerry Dwyer (CoPI), Tara Stevens(CoPi), and Brock Williams (CoPi).

"The West Texas Middle School Math Partnership," NSF-MSP grant # 0831420, $6,178,422, January 2009 through December 2013. **G. Harris** (Pi), Jerry Dwyer(CoPi), Tara Stevens(CoPi), Zenaida Aguirre (CoPi), Warren Koepp(CoPi). NSF-MSP.

Not funded

"The West Texas Partnership Institute for the Professional Development of Math and Science Teachers." NSF, $3,777,000, (unfunded). **G. Harris** (PI), Jerry Dwyer (CoPI), Tara Stevens(CoPi), Warren Koepp (CoPi), Lind Roundtree (CoPi for ESC Region 17), Pam Summers (CoPi for LISD).

PRESENTATIONS AND MEETINGS ATTENDED

Conference presentations

G. Harris*, "A Web Course for In-Service High School Mathematics Teachers," a 45 minute paper delivered to the 16th Annual International Conference of Technology in Collegiate Mathematics, Chicago, IL. October 2003.

G. Harris*, P. Schovanec**,** "College Mathematics for Elementary School Teachers: A Programme Model?" a 30 minute paper delivered to Fourth Southern Hemisphere Symposium on Undergraduate Mathematics and Statistics Teaching and Learning (Delta03), Queenstown, New Zealand. November 2003.

G. Harris,* "Mathematics with MAPLE: Arithmetic Through Linear Algebra," a two-hour workshop presented to the Fourth Southern hemisphere Symposium on Undergraduate Mathematics and Statistics Teaching and Learning**,** (Delta03), Queenstown, New Zealand. November 2003.

G. Harris*, "Computer Algebra systems in the Preparation of Middle School and High school Mathematics Teachers", a 50 minute presentation to the Special Session on Mathematics for Secondary Teachers: Curriculum and Assessment, AMS Meeting # 1000, University of New Mexico, Albuquerque, October, 2004.

G. Harris*, "Use of MSWLogo in Preservice Mathematics Teacher Courses," *a* contributed paper to the Seventeenth Annual International Conference on Technology in Collegiate Mathematics, New Orleans, LA. November, 2004.

G. Harris,* J. Froman, J Surles, "Reforming business mathematics: an attitude adjustment," paper presented to Kingfisher Delta'05. Kingfisher Bay, Fraser Island, Australia. November 2005.

G. Harris,* B. Barton* (University of Auckland, New Zealand), and R. Tsanwani* (University of Venda for Science and Technology, South Africa.). "How can we support the professional development of lecturers in Mathematics and Statistics." A two-hour Plenary Panel Kingfisher presented at Delta'05. Kingfisher Bay, Fraser Island, Australia. November 2005.

G. Harris*, J. Surles, J. Forman, "A professional development course for mathematics graduate student teaching assistants", Delta 07, El Calafate, Argentina, November 2007.

G. Harris*, Jerry Dwyer*, Juli Rathael*, T. Stevens, Z. Aguirre, "An Inveswtigation into the use of case studies in the training of in-service and pre-service middle school math teachers" a two hour featured workshop presented at the Rocky Mountain Section of the Mathematical Association of America, Golden Colorado, April 2009.

T. Stevens, **G. Harris*,** J. Rathael,* Z. Aquirre, "A continuing investigation into the use of case studies in the training of in-service and pre-service middle school maths teachers" a 90 minute workshop to be presented at Delta09, Gordon's Bay, South Africa. November 2009.

T. Stevens, **G. Harris***, Z. Aguirre, T. Cobbs, "A case study approach to increasing teachers' mathematics knowledge for teaching and strategies for building students' maths self-efficacy," a paper to be presented at Delta09, Gordon's Bay, South Africa. November 2009.

Meetings attended

"TA development using case studies: A workshop for faculty", a workshop presented by Soloman Friedberg, 939th AMS Meeting, University of Colorado, Boulder CO.October. 2003.

GeoSET (Geometric Structures for Elementary Teachers) NSF sponsored one week workshop, Oklahoma State University, June 20 – June 25, 2004.

NSF-MSP proposal development workshop (a one day workshop), Washington DC, March 2006.

Instrument Dissemination Workshop: Content Knowledge for Teaching Mathematics Measures (a one day workshop), University of Michigan, November 2008.

MSP Learning Network Conference (sponsored by NSF), Washington, DC, January, 2009.

DISSERTATION, THESIS AND REPORT DIRECTION

Students directed

Kristina Gill, "Implementation of Structure Change to MATH 1330 and 1331," Masters Report, Texas Tech University: 2004.

Mr. Jason Froman, "A Graduate Pedagogy Course for Mathematics Teaching Assistants," Masters Thesis, Texas Tech University: 2005.

Mr. Alan Williams, "Integrating Geometry, History, and Technology," Masters Report, Texas Tech University: 2006 (With Carl Seaquist)

Ms. Saralyn M. Murphy, "Math Anxiety: What It Is and What It Isn't," Masters Report, Texas Tech University: 2007.

Cesar Sanchez. MA. Report: "Effects of Learning Measurement while Manipulating Technology." 2008.

Taylor Hollingsworth. MS, Thesis: "Engineering Self-Efficacy in Upper Level Mathematics." 2008.

Graduate committees served on

AR Tsanwani. PhD Thesis: "Tracing factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools." University of Pretoria, SA. (External Examiner). 2008.

PROFESSIONAL SERVICE

Editorships

Editor of the electronic journal *Issues in the Undergraduate Mathematics Preparation of School Teachers: The Journal.[www.k-12prep.math.ttu.edu]*

Organizational offices held

Level III director on the executive board of Texas Section of Mathematical Association of America. January 2009 to date.

External Advisory Board for NSF STEP Grant (DUE # 0622442), West Texas A&M University, Canyon, Texas. 2006-2010.

OTHER RELEVANT ACTIVITIES

"Mathematics Expert" for the Undergraduate Core Curriculum Design team working on the curriculum design for Prince Mohammad bin Fahd University, Dammam, Saudi Arabia. A project of Texas International Education Consortium, Nick Poulton,President. 2004.

One of three members of the committee to conduct the six-year review of the Wind Science and Engineering Research Center. (Office of the Vice President for Research). 2008.

Member of Graduate School committee to conduct 5th year evaluation of graduate program in Architecture, 2009.

Served on the selection committee for the C.B. Thornton Professorship in the College of Engineering. 2009.

G. Graduate Faculty Information

"Mathematics Expert" for Algebra I and geometry End-of-Course (EOC) assessment content validation Panel (one of four math experts involved with the Texas Education Agency's content validation review of Texas' new end-of-course assessments for grades 9 -11 in Algebra 1 and Geometry) Austin, Dec. 19, 2007, November 17, 2008, December 15, 2009.

LUAN THACH HOANG

EDUCATION

- 2005, *Ph.D. in Mathematics*
  Texas A&M University, College Station, Texas
- 2000, *M.A. in Mathematics*
  Arizona State University, Tempe, Arizona
- 1997, *B.S. in Mathematics*
  National University, Hochiminh City, Vietnam
- 1997, *B.S. in Information Technology*
  National University, Hochiminh City, Vietnam

PROFESSIONAL EXPERIENCE

- 8.2008 – present, Texas Tech University, Lubbock, Texas

Assistant professor

- 9.2005 – 5.2008, University of Minnesota, Twin Cities, Minnesota

Dunham Jackson assistant professor

- 6.2004 – 12.2004, Texas A&M University, College Station, Texas

Teaching assistant

RESEARCH INTEREST

Partial differential equations, Navier–Stokes equations and fluid dynamics, asymptotic theory, dynamical systems for partial differential equations, turbulence, geophysical fluid dynamics.

PUBLICATIONS IN REFEREED JOURNALS

Appeared

1. *On the helicity in 3D Navier–Stokes equations II: The statistical case*, (**L. Hoang**, Ciprian Foias, Basil Nicolaenko), Comm. Math. Physics, Volume 290, Issue 2 (2009), 679-717. (doi: 10.1007/s00220-009-0827-z).
2. *The normal form of the Navier–Stokes equations in suitable normed spaces*, (**L. Hoang**, Ciprian Foias, Eric Olson, Mohammed Ziane), Annales de L'Institute Henri Poincaré - Analyse Non Linéaire, Volume 26, Issue 5, September–October 2009, 1635–1673. (doi: 10.1016/j.anihpc.2008.09.003).
3. *A basic inequality for the Stokes operator related to the Navier boundary condition*, (**L. Hoang**), J. of Diff. Equations, Volume 245, Issue 9, (1 November 2008), 2585–2594. (doi:10.1016/j.jde.2008.01.024).
4. *On the solutions to the normal form of the Navier–Stokes equations*, (**L. Hoang**, Ciprian Foias, Eric Olson, Mohammed Ziane), Indiana Univ. Math. J., Vol. 55, No 2 (2006) 631–686.
5. *On the helicity in 3D Navier–Stokes equations I: The non-statistical case*, (**L. Hoang**, Ciprian Foias, Basil Nicolaenko), Proc. London Math. Soc., Volume 94 Part 1 (January 2007) 53–90. (doi: 10.1112/plms/pdl003).

Accepted

1. *Incompressible fluids with Navier friction boundary conditions in thin domains*, (**L. Hoang**), Journal of Mathematical Fluid Mechanics, accepted.
2. *Analysis of generalized Forchheimer equations of compressible fluids in porus media*, (**L. Hoang**, E. Aulisa, L. Bloshanskaya, A. Ibragimov), J. of Math. Physics, 2009, accepted.

FUNDING ACTIVITY

Funded

- 2009-2012, NSF–DMS 0908177, ($221,626), Awarded. *Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications*, Applied Mathematics, National Science Foundation, E. Aulisa (Co-PI), **L. Hoang** (Co-PI), A.Ibragimov (PI) and M.Toda (Co-PI).
- 2009-2010, NSF–DMS 0931596, ($221,626), Awarded. *Mini-Symposium on Nonlinear Analysis, PDE, and Applications*, Applied Mathematics, National Science Foundation, E.Aulisa (Co-PI), **L. Hoang** (PI) and R.Kirby (Co-PI).

Not Funded

- 2006, NSF–DMS 0707236, ($443,758), Declined. *Dynamics of Navier–Stokes equations in thin domains*, Applied Mathematics, National Science Foundation, G. Sell (PI), **L. Hoang** (Co-PI) and M. Lewicka (Co-PI).

PRESENTATIONS AND MEETINGS ATTENDED

Conferences

- 12.2009, SIAM Conference on Analysis of Partial Differential Equations
  Miami, Florida, December 7-9, 2009
  TALK: Stability Analysis of Generalized Forchheimer Flows in Porous Media, **L. Hoang***
- 4.2009, AMS 2009 Spring Western Section Meeting
  San Francisco, CA, April 25-26, 2009
  TALK: Generalized Forchheimer equations in porous media, **L. Hoang***
- 5.2008, The 7th AIMS International Conference on Dynamical Systems and Differential Equations
  Arlington, TX, May 18 - 21, 2008
  TALK: Problems in oceanic dynamics and climate modeling, **L. Hoang***
- 12.2007, SIAM Conference on Analysis of Partial Differential Equations
  Mesa, AZ, December 10-12, 2007
  TALK: Incompressible fluids in thin domains with Navier friction boundary conditions, **L. Hoang***
- 11.2007, Nonlinear Dynamics and PDE Mini-Conference
  Arizona State University, Tempe, AZ, November 19-20, 2007
  TALK: Navier–Stokes equations: the normalization map, statistical solutions and fluid dynamics, **L. Hoang***
- 11.2007, AMS 2007 Fall Southeastern Meeting
  Murfreesboro, TN, November 3-4, 2007
  TALK: Global strong solutions of equations in geophysical fluid dynamics, **L. Hoang***
- 10.2007, Institute Seminar
  Department of mathematics, Indiana University
  TALK: Global strong solutions of equations in geophysical fluid dynamics, **L. Hoang***
- 5.2007, The 3rd Symposium on Analysis & PDEs
  Purdue University, West Lafayette, IN, May 27-30, 2007
  TALK: Regularity of the Stokes Operator in Thin Domains, **L. Hoang*** [Contributed Talk]
- 5.2007, US–Chile Workshop on New Developments in Partial Differential Equations I
  Carnegie Mellon University, Pittsburgh, PA, May 21-24, 2007
  TALK: Navier–Stokes equations with Navier boundary conditions in nearly flat domains, **L. Hoang*** [Contributed Talk]
- 3.2007, AMS 2007 Spring Central Section Meeting
  Oxford, OH, March 16-17, 2007

TALK: Statistical solutions to the Navier–Stokes equations and long time behaviors of fluid flows, **L. Hoang***

- 3.2007, AMS 2007 Spring Southeastern Section Meeting
  Davidson, NC, March 3-4, 2007
  TALK: Studying the normal form of the Navier–Stokes equations in suitable Banach spaces, **L. Hoang***
- 4.2005, PDE and Dynamical System Seminars
  School of Mathematics, University of Minnesota
  TALK: Asymptotic analysis of the helicity in 3D periodic Navier–Stokes equations, **L. Hoang***
- 3.2005, AMS 2005 Spring Southeastern Sectional Meeting
  Bowling Green, KY, March 18-19
  TALK: On the solutions to the normal form of the Navier–Stokes Equations, **L. Hoang***
- 12.2004, SIAM Conference on Analysis of Partial Differential Equations
  Houston, TX, December 6-8, 2004
  TALK: On the convergence of the asymptotic expansions of the regular solutions to the 3D-periodic Navier–Stokes equations and applications to asymptotic behavior of helicity. Parts I and II, **L. Hoang***
- 4.2004, AMS 2004 Spring Western Section Meeting
  Los Angeles, CA, April 3-4
  TALK: On the helicity in 3D Navier–Stokes equations, **L. Hoang***

Colloquia

- 11.2005, Colloquium
  Department of Mathematics, University of Nevada
  TALK: Asymptotic behavior of statistical solutions to the Navier–Stokes equations, **L. Hoang***

Seminars

- 9.2009, Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University
  TALK: Forchheimer equations in porous media - Part II, **L. Hoang***
- 3.2009, Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University
  TALK: Forchheimer equations in porous media - Part I, **L. Hoang***
- 9.2008, Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University
  TALK: Navier-Stokes equations in thin domains with Navier friction boundary conditions, Parts I and II, **L. Hoang***
- 4.2007, PDE and Dynamical Systems Seminars
  School of Mathematics, University of Minnesota
  TALK: Navier–Stokes equations with Navier boundary conditions in nearly flat domains, **L. Hoang***
- 4.2007, PDE Seminar
  School of Mathematics, University of Minnesota
  TALK: The normal form of the Navier–Stokes equations in suitable normed spaces, **L. Hoang***
- 12.2006, PDE and Dynamical Systems Seminars
  School of Mathematics, University of Minnesota
  TALK: On the Stokes and Laplacian operators in Navier–Stokes equations, **L. Hoang***
- 10.2005, PDE Seminar
  School of Mathematics, University of Minnesota
  TALK: Normalization maps and statistical solutions in Navier–Stokes equations, **L. Hoang***
- 10.2005, Dynamical Systems Seminar
  School of Mathematics, University of Minnesota
  TALK: A normal form for the Navier–Stokes equations, **L. Hoang***
- 1.2005, Applied Mathematics Seminar

Department of Mathematics, Texas A&M University
TALK: On the solutions to the normal form of the Navier–Stokes Equations, **L. Hoang***

- 3.2004, Applied Mathematics Seminar
  Department of Mathematics, Texas A&M University
  TALK: On the helicity in 3D Navier–Stokes equations, **L. Hoang***

Meetings, Workshops Attended

- 10.2009, 2009 Fall Central Section Meeting
  Waco, TX, October 16–18
- 7.2009, Summer Program: Nonlinear Conservation Laws and Applications
  The Institute for Mathematics and its Applications (IMA)
  Minneapolis, MN, , July 13–31, 2009
- 4.2008, The Eleventh Riviere-Fabes Symposium on Analysis and PDE
  School of Mathematics, University of Minnesota, April 11–13, 2008
- 4.2007, The Tenth Riviere-Fabes Symposium on Analysis and PDE
  School of Mathematics, University of Minnesota, April 20–22, 2007
- 4.2006, The Ninth Riviere-Fabes Symposium on Analysis and PDE
  School of Mathematics, University of Minnesota, April 7–9, 2006

AWARDS

- 2005, *L. F. Guseman Award,* Texas A&M University
- 2002 – 2005, *Departmental Graduate Fellowship,* Texas A&M University
- 2002, *AUF Fellowship,* Texas A&M University

PROFESSIONAL SERVICE

Meetings Organized

- 2009, Co-Organizer of The Ninth Red Raider Mini-Symposium (October 29–31, 2009)
  Department of Mathematics and Statistics, Texas Tech University
- Fall 2009, Co-Organizer of Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University
- Spring 2009, Co-Organizer of Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University
- Fall 2008, Co-Organizer of Applied Mathematics Seminars
  Department of Mathematics and Statistics, Texas Tech University

Refereeing

- Referee, Journal of Dynamics and Differential Equations

VISITS

- Summer 2005, Department of Mathematics, Indiana University

VICTORIA E. HOWLE

EDUCATION

Ph.D. in Applied Mathematics, Cornell University, 2001
M.S. in Applied Mathematics, Cornell University, 1998
B.A. in English Literature, Rutgers University, 1988

PROFESSIONAL EXPERIENCE

2007 – present	Texas Tech University, Lubbock, TX Assistant Professor, Department of Mathematics & Statistics
2000 – 2007	Sandia National Laboratories, Livermore, CA Senior Member of the Technical Staff, Computational Science & Mathematics Research Department

My research is in applied mathematics with a focus mainly on numerical linear algebra. My main research interests have been in physics-based preconditioning for incompressible fluid flow problems, developing iterative methods and preconditioners for the solution of highly ill-conditioned systems that arise in faulted electrical power networks, and fault-tolerant linear algebra.

PUBLICATIONS

Invited Book Chapters

- P. Hough and **V. Howle**, "Fault Tolerance in Large-Scale Scientific Computing," Invited chapter in book *Parallel Processing for Scientific Computing*, M. A. Heroux, P. Raghavan, and H. D. Simon, Eds., SIAM Press, 2006.

Refereed Journals

1. H. Elman, **V. Howle**, J. Shadid, R. Shuttleworth, and R. Tuminaro, "A Taxonomy and Comparison of Parallel Block Multi-level Preconditioners for the Incompressible Navier-Stokes Equations," *Journal of Computational Physics*, Vol. 227, Issue 3, 2008, pp. 1790 – 1808.
2. H. Elman, **V. Howle**, J. Shadid, D. Silvester, and R. Tuminaro, "Least Squares Preconditioners for Stabilized Discretizations of the Navier-Stokes Equations," *SIAM Journal on Scientific Computing*, Vol. 30, Issue 1, 2007, pp. 290 – 311.
3. H. Elman, **V. Howle**, J. Shadid, R. Shuttleworth, and R. Tuminaro, "Block Preconditioners Based on Approximate Commutators," *SIAM Journal on Scientific Computing*, Vol. 27, No. 5, 2006, pp. 1651 – 1668.
4. M. Heroux, R. Bartlett, **V. Howle**, R. Hoekstra, J. Hu, T. Kolda, R. Lehoucq, K. Long, R. Pawlowski, E. Phipps, A. Salinger, H. Thornquist, R. Tuminaro, J. Willenbring, A. Williams, and K. Stanley, "An Overview of the Trilinos Project," *ACM Transactions on Mathematical Software*, Vol. 31, No. 3, September 2005, pp. 397 – 423.
5. **V. Howle** and S. Vavasis, "An Iterative Method for Solving Complex-Symmetric Systems Arising in Electrical Power Networks," *SIAM Journal on Matrix Analysis and Applications*, Vol. 26, No. 4, 2005, pp. 1150 – 1178.

Refereed Conference Proceedings

1. S. Shontz, **V. Howle**, P. Hough, "Experience with Approximations in the Trust-Region Parallel Direct Search Algorithm," *Proceedings of the International Conference on Computational*

Science (ICCS), Vol. 5544, 2009, pp. 501 – 510.

Technical Reports

6. H. Elman, **V. Howle**, J. Shadid, R. Shuttleworth, and R. Tuminaro, "A Taxonomy and Comparison of Parallel Block Multi-level Preconditioners for the Incompressible Navier-Stokes Equations," Sandia Technical Report, SAND2007-2761, Sandia National Laboratories, Livermore, CA, 2007.

- **V. Howle**, J. Schroder, R. Tuminaro, "The Effect of Boundary Conditions within Pressure Convection--Diffusion Preconditioners," *Sandia Technical Report*, SAND2006-4466, Sandia National Laboratories, Livermore, CA, 2006.
- M. Heroux, R. Bartlett, **V. Howle**, R. Hoekstra, J. Hu, T. Kolda, R. Lehoucq, K. Long, R. Pawlowski, E. Phipps, A. Salinger, H. Thornquist, R. Tuminaro, J. Willenbring and A. Williams, "An Overview of Trilinos," *Sandia Technical Report,* SAND2003-2927, Sandia National Laboratories, Albuquerque, NM, August 2003.

FUNDING ACTIVITY

[I have only included funding activity while at TTU. At Sandia we were required to fund 100% of our salaries (plus 200% overhead) every year. I do not have a list of the many proposals submitted while at Sandia.]

Funded

- "Automated Intrusive Algorithms for Numerical Simulation of Partial Differential Equations Via Software-based Fréchet Differentiation," NSF Computing and Communication Foundations (CCF); $355K, 2008 – 2011, R. Kirby (PI), **V. Howle** (Co-PI), K. Long (Co-PI).
- "Texas Tech University Summer Mathematics Academy," MAA Tensor SUMMA, $6K, 2009, **V. Howle** (Director), J. Dwyer (Co-Director), T. Stevens (Co-Director).
- "Texas Tech University Women's Summer Mathematics Academy" MAA Tensor SUMMA, $6K, 2008, **V. Howle** (Director), J. Dwyer (Co-Director), T. Stevens (Co-Director).
- "Texas Tech Noyce Scholars Program," NSF, $740K, 2009 – 2013, J. Dwyer (PI) and other co-PI's, **V. Howle,** et al. (Senior Personnel).
- "Understanding by Design – MS^2," Greater Texas Foundation, $3.0M, 2009 – 2013, J. Dwyer et al. (Co-PI's), **V. Howle,** et al. (Senior Personnel).

Not Funded

- "REU: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems," NSF, $170K, 2005 – 2006, **V. Howle** (Senior Personnel).
- "UBM Institutional: Integrating Mathematics and Biology on the South Plains," NSF, $990K, 2009, **V. Howle** (Senior Personnel).
- "Realistic Simulation and Real-Time Control of Electrical Power Grid Bottlenecks and Blackouts, " TTU Research Development Grant, $69K, 2008, **V. Howle** (PI).
- "Realistic Simulation and Real-Time Control of Electrical Power Grid Bottlenecks and Blackouts," TTU Research Enrichment Fund, $32K, 2008, **V. Howle** (PI).
- "Women Mentoring Women in the Mathematical Sciences," NSF Human Resource Development (HRD), $282K, J. Dwyer (PI), M. Toda (Co-PI), 2008, **V. Howle** (Co-PI).
- "CSUMS: Undergraduate Research Teams In Interdisciplinary Computational Problems," NSF, $1M, 2007, J. Dwyer (PI) et al., **V. Howle** et al. (Senior Personnel)

Pending

- "Fault-Resilient Algorithms for High-Consequence Simulation," DOE Early Career Research Program, $802K, 2010 – 2014, **V. Howle** (PI).

- "Materials Science at the Nano-Scale: an Interdisciplinary Education and Research Program," NSF Graduate Education (DGE) IGERT, $3.2M, 2009 – 2014, Sindee Simon (PI) et al., **V. Howle** et al. (Senior Personnel).

PRESENTATIONS AND MEETINGS ATTENDED

[I do not generally keep track of presentations given by collaborators on our work together. I have included a few such presentations where I could remember them.]

Colloquia

- V. Howle*, "Preconditioners Based on Algebraic Commutators," Colloquium, *Texas Tech University, Department of Mathematics & Statistics* , Lubbock, TX, March 2007.

Invited hour talks

- **V. Howle***, "Preconditioners Based on Algebraic Commutators for Incompressible Navier-Stokes Equations," Seminar: *Simbios NIH Center for Biomedical Computation,* Stanford University, April 2007.

Conference presentations

- **V. Howle***, "The Two-Body Problem & Premature Twins," *AWM Workshop: A Balancing Act, SIAM Annual Meeting*, Denver, CO, July 2009.
- M. Heroux, P. Hough*, **V. Howle**, "Scalable Computing Challenges: An Overview," *SIAM Annual Meeting*, Denver, CO, July 2009.
- S. Shontz*, **V. Howle**, P. Hough, "Experience with Approximations in the Trust-Region Parallel Direct Search Algorithm," *International Conference on Computational Science*, Baton Rouge, LA, May 2009.
- M. Heroux, P. Hough*, **V. Howle**, "Implications of System Errors in the Context of Numerical Accuracy," *Workshop on Fault Tolerance for Extreme-Scale Computing*, Albuquerque, NM, March 2009.
- E. Durant*, **V. Howle**, H. Thornquist, "Evening the Odds: Preconditioning Linear Systems," *Nebraska Conference for Undergraduate Women in Mathematics*, Lincoln, NE, January 2009.
- **V. Howle***, R. Tuminaro, R. Shuttleworth, H. Elman, J. Shadid, D. Silvester, "Meros: Specialized Preconditioners for Problems with Coupled Simultaneous Solution Variables," *Copper Mountain Conference on Iterative Methods,* April 2008.
- **V. Howle***, R. Tuminaro, R. Shuttleworth, H. Elman, J. Shadid, D. Silvester, "Meros: Specialized Preconditioners for Problems with Coupled Simultaneous Solution Variables," *SIAM Conference on Parallel Processing,* March 2008.
- **V. Howle***, "AWM Essay Contest," Session on Unseen AWM Opportunities, *Joint Mathematics Meeting*, San Diego, CA, January 2008.
- R. Shuttleworth*, **V. Howle**, R. Tuminaro, "Meros," *Trilinos User's Group Meeting*, Sandia National Labs, Albuquerque, NM, November 2007.
- **V. Howle***, H. Elman, R. Tuminaro, "The Effect of Inner Solver Accuracy and Boundary Conditions on Pressure Convection-Diffusion Preconditioners for the Incompressible Navier-Stokes Equations," *SIAM Conference on Computational Science and Engineering*, Costa Mesa, CA, February 2007.
- **V. Howle***, R. Tuminaro, J. Schroder, "Algebraic Least Squares Preconditioner for Incompressible Navier-Stokes," *2006 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, April 2006.
- **V. Howle***, "An Overview of Meros," *Trilinos User's Group Meeting*, Sandia National Labs, Albuquerque, NM, November 2005.
- **V. Howle***, "Preconditioners Based on Algebraic Commutators," *2005 International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific And Industrial Applications*, Atlanta, GA, May 2005.

- **V. Howle***, "An Iterative Method for Solving Complex-Symmetric Systems Arising in Electrical Power Modeling," *SIAM Conference on Computational Science & Engineering*, Orlando, FL, February 2005.
- **V. Howle***, "Block Preconditioners for the Incompressible Navier-Stokes Equations," *2004 Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, March 2004.
- **V. Howle***, H. Elman, J. Shadid, R. Tuminaro, "Fault Tolerant Linear Algebra with Flexible Krylov Methods," *2004 SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, CA, February 2004.
- R. Shuttleworth*, H. Elman, **V. Howle**, J. Shadid, R. Tuminaro, "Block Preconditioning the Incompressible Navier-Stokes Equations," *2004 SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, CA, February 2004.
- **V. Howle***, "Career Development Opportunities in Mathematical Sciences: Sandia National Labs," *Society for Advancement of Chicanos and Native Americans in Science (SACNAS)* Annual Meeting, October 2003.

Local presentations

- **V. Howle***, "Graph Theory in Ill-Conditioned Network Problems," *Graph Theory Seminar,* Texas Tech University, Lubbock, TX, September 2009.
- **V. Howle***, "Counting and Optimization," *TTU Summer Mathematics Academy,* Texas Tech University, Lubbock, TX, June 2009.
- E. Durant*, **V. Howle**, H. Thornquist, "Multi-Level Solvers for Circuit Simulation," TTU Undergraduate Research Conference, April 2009.
- **V. Howle***, "Topics in Numerical Analysis and Scientific Computing," *SIAM Student Chapter Minisymposium,* Texas Tech University, Lubbock, TX, October 2008.
- **V. Howle***, "Counting and Optimization," *TTU Women's Summer Mathematics Academy,* Lubbock, TX, Plains, TX, and Cotton Center, TX, June 2008.
- **V. Howle***, S. Vavasis, "Efficient Iterative Methods for Ill-Conditioned Linear and Nonlinear Power Network Problems," *SIAM Student Chapter Minisymposium,* Texas Tech University, Lubbock, TX, October 2007.
- **V. Howle***, "Scalable Linear Solvers for Incompressible Flow Problems," *Dean R&D Seminar*, Sandia National Labs, Livermore, CA, May 2005.
- **V. Howle***, "Using Problem Structure to Improve the Performance of Linear Solvers," *Dean R&D Seminar*, Sandia National Labs, Livermore, CA, July 2004.

Sessions chaired

- 9th Copper Mountain Conference on Iterative Methods, Copper Mountain, CA, Session on Navier-Stokes Solvers, April 2006
- SIAM Parallel Processing Conference, San Francisco, CA, Session on Fault Tolerance in Large-Scale Scientific Computing, February 2004

Meetings attended

- SIAM Annual Meeting, July 2009
- SIAM Annual Meeting, July 2008
- Copper Mountain Conference on Iterative Methods, April 2008
- SIAM Conference on Parallel Processing, March 2008
- Joint Mathematics Meeting, San Diego, CA, January 2008
- Trilinos User's Group Meeting, Sandia National Labs, Albuquerque, NM, Nov. 2007
- SIAM Conference on Computational Science and Engineering, February 2007
- Biomedical Computation at Stanford (BCATS) Symposium, October 2006
- Copper Mountain Conference on Iterative Methods, April 2006
- SIAM Conference on Parallel Processing, February 2006
- Trilinos User's Group Meeting, Sandia National Labs, Albuquerque, NM, Nov. 2005
- International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific And Industrial Applications, May 2005
- SIAM Conference on Computational Science & Engineering, February 2005
- Copper Mountain Conference on Iterative Methods, April 2004
- SIAM Parallel Processing, 2004
- Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Annual Meeting, October 2003

DISSERTATION, THESIS AND REPORT DIRECTORS

Thesis

- Nicholas Murray, MS, August 2009, "Random Flow on Random Graphs: Amphibian Movement in the Playas"

Graduate Students in Progress

- Jerod Clopton, current MS student

Graduate committees

- Committee member for Dhawei Chang, MS, June 2009, "Peaceman's Numerical Productivity Index for Non-Linear Flows in Porous Media" (Chair, Eugenio Aulisa)
- Committee member for current student Lerong Li (Chair, Phil Smith)

Graduate Student Summer Interns (Sandia National Labs)

- Co-supervised Robert Shuttleworth, University of Maryland Ph.D. student, 2004 – 2007.
- Co-supervised Jacob Schroder, University of Illinois Ph.D. student, 2005.

Undergraduate Research Students

- Undergraduate research student Ellen Durant, funded through URF and Honors College, 2008 – 2009

HONORS AND AWARDS

- 2004 R&D 100 Award winner for Trilinos software project (as part of Trilinos development team)
- Super Computing 2004 HPC Software Challenge Award Winner for Trilinos software project (as part of Trilinos development team)

PROFESSIONAL SERVICE

Referee

- International Journal of Computer Mathematics, 2009
- International Journal for Numerical Methods in Fluids, 2008
- SIAM Journal on Numerical Analysis, 2008
- SIAM Journal on Scientific Computing, 2007
- (Referee for several similar journals while at Sandia National Labs. I no longer have that list.)

Meetings organized

- Organizer for Sandia seminar series, Computational Sciences Research Opportunities and Collaborations Seminar, 2006 – 2007
- Minisymposium co-organizer, "Fault Tolerance in Large-Scale Scientific Computing," *SIAM Parallel Processing*, 2004

Reviewing panels for funding agencies

- NSF review panel: Numerical Partial Differential Equations Panel, March 19-21, 2007.

Organizational offices held

- Secretary, SIAM Activity Group on Linear Algebra, 2007 – 2009
- Chair, Nominating Committee, SIAM Activity Group on Linear Algebra, 2009
- Nominating Committee, SIAM Special Interest Group on Supercomputing, 2009
- Association for Women in Mathematics Essay Contest Committee, Biographies of Contemporary Women in Mathematics 2001 – 2009 (Chair 2001 – 2008)
- AAUW Research Committee member for Biennial Convention poster selection, 2007
- Nominating Committee, Association for Women in Mathematics, 2005

Memberships in organizations

- Society for Industrial and Applied Mathematics (SIAM)
- Mathematical Association of America (MAA)
- Association for Women in Mathematics (AWM)
- Society for the Advancement of Chicanos and Native Americans in Science (SACNAS); serving on TTU SACNAS board.

AKIF IBRAGIMOV

EDUCATION

1985	Steklov Institute of Mathematics, Russia, Moscow *Doctor of Sciences in Physics and Mathematics*. Thesis: Some Qualitative Properties of Elliptic and Parabolic Equations.
1976	Moscow State University, *Candidate of Science*. Thesis: Qualitative Properties of degenerate parabolic equations of second order
1970 – 1975	Azerbaijan State Oil Academy (ASOA), Baku, Department of Applied Mathematics, and Moscow State University, Department of Computational Mathematics and Cybernetics, MS in Applied Mathematics.

PROFESSIONAL EXPERIENCE

Department of Mathematics and Statistics, Texas Tech, Lubbock	Professor	2004-
Mathematical Department, Texas A& M University, College Station	Visiting Professor	2003-2004
Knowledge Based System Inc, College Station	*Research Scientist*	2001-2004
Mathematical Department, Texas A&M University, College Station	Visiting Professor	2000-2001
Institute for Scientific Calculation, Texas A&M University, College Station	Visiting Professor	2000-2001
BP/Amoco, Reservoir Development Team	Senior Specialist in Reservoir Modeling	1998 – 2000
Russian Academy of Science, Oil and Gas Research Institute, Moscow (IPNG).	Leading Researcher	1989-1998
Azerbaijan Academy of Sciences Institute for Mathematics and Mechanics (IMM)	Head of the Department of PDE Senior Researcher, (1976-1985),	1985-1988

PUBLICATIONS (from the last six years)

1. E.Aulisa, L.Bloshanskaya, L.Hoang, **A.Ibragimov**. *Analysis of Generalized Forchheimer Flows of Compressible Fluids in Porous Media*. Journal of Mathematical Physics, 50, 1 2009,1-40.
2. E.Aulisa, **A.Ibragimov,** J.R.Walton. *A new method of evaluating the productivity index for non-linear flows*. SPE Journal, SPE-108984-PA (2009).
3. E.Aulisa, **A.Ibragimov,** P.P.Valko, J.R.Walton. *Mathematical Framework of the Well Productivity Index for fast Forchheimer (Non-Darcy) Flows in Porous Media*. Journal of Mathematical Models and Methods in Applied Sciences (M3AS), Vol. 19(8), pp.1241-1275 (2009).
4. E.Aulisa, **A.Ibragimov,** M.Toda. *Geometric Framework for Modeling Nonlinear Flows in Porous Media, and Its Applications in Engineering*. Accepted in Journal of Non-linear Analysis - Real Word Application, in press online (2009).

5. E.Aulisa, A.Cakmak, A.Ibragimov, A.Solynin. *Variational Principle and Steady State Invariants for Non-Linear Hydrodynamic Interactions in Porous Media*. Dynamics of Continuous, Discrete and Impulsive Systems, A Supplement, Advances in Dynamical Systems, Vol. 14(S2), pp. 148-155 (2007).
6. A.I. Ibragimov, D. Khalmanova, P. Valko, J. Walton "Mathematical model of the productivity index of a well from reservoir engineering", SIAM Journal on Applied Mathematics, 2005, Volume 65, Number 6, 1952 – 1980.
7. A.I. Ibragimov, L. Ritter, K. McNeil, J. Walton, "A mathematical model of atherogenesis as an inflammatory response" Mathematical Medicine and Biology 2005 22(4), 305-333;
8. A.I. Ibragimov; McNeal; Ritter; J. Walton "Stability analysis of a model of atherogenesis: an energy estimate approach"(II) Computational and Mathematical Methods in Medicine. 2009, 1–22.
9. A.I. Ibragimov; McNeal; Ritter; J. Walton "Stability analysis of a model of atherogenesis: an energy estimate approach"(I) Computational and Mathematical Methods in Medicine". June 2008 , pages 121 – 142.
10. Brice T. Hughes, Jordan M. Berg, Darryl L. James**, Akif Ibraguimov,** Shaorong Liu, "One dimensional model capturing the effects of surface charge…", Journal Microfluidics and Nanofluidics, April , 2008, pages 761–774.
11. A.I. Ibragimov, L. Ritter, K. McNeil, J. Walton, " A dynamic model of atherogenesis as an inflammatory response", Journal Dynamics of Continuous, Discrete and Impulsive Systems (Series A), Vol. 14(S2) pp 185—189.
12. Aulisa, E., **Ibragimov, A** , Kaya, Y, Seshaiyer, P, "A Stability Estimate for Fluid Structure Interaction Problem with Non-Linear Beam", American Institute of Mathematical Sciences , Proceedings, 2009, special volume.
13. Ibragimov, A; McNeal; Ritter, L ; Walton, J. "Stability analysis using an energy estimate approach of a reaction-diffusion model of atherogenesis" American Institute of Mathematical Sciences , Proceedings, 2009, special volume.
14. **E.Aulisa**, A.Ibragimov, P.Valko, J.Walton. *COMSOL Multi-physics machinery as a tool for developing an analytical method for computation of the productivity index of the well for high velocity non-Darcy flow*. ***Proceedings*** of COMSOL Users Conference 2006, Boston (2006),1-20.
15. A.I. Ibragimov, P. Koola "Wave carpet simulation using coupled hydro-elastic Femlab model", ***Proceeding*** , COMSOL Multi-physics Conference October 2005 Boston, 185-201.
16. E. Aulisa, **A. Ibragimov,** P.P. Valko, and J.R. Walton, A new method of evaluating the productivity index for non-linear flows**.** ***Proceeding*** SPE 108984 (2007),1-22.
17. Brice T. Hughes, Jordan M. Berg, Darryl L. James, **Akif Ibraguimov,** Shaorong Liu, "One dimensional model capturing the effects of surface charge…", ***Proceedings*** of IMECE2007 2007 ASME International Mechanical Engineering Congress and Exposition, November 11-15, 2007, Seattle, Washington, USA, IMECE2007-42752
18. A.I. Ibragimov, D. Khalmanova, P. Valko, J. Walton "Analytical Method of Evaluating Productivity Index for Constant Production Rate or Constant Wellbore Pressure", in the ***Proceedings***, of 2004 SPE Annual Technical Conference and Exhibition, Houston, 27-29 September, 2004., 1-25

FUNDING ACTIVITY

Funded

1. Multidisciplinary Summer Undergraduate Research Program in Computation and Control Biological and Biologically Inspired Systems, **Funding Agency and Program**: National Science Foundation (REU Program) and Department of Defense ASSURE Program),Covered Period: 06/12/06 – 08/04/06 and 06/11/06 – 08/03/07, $170,707, *Senior Personnel* **A.Ibragimov**
2. Multi-Spectral Feature Fusion (MSFF), Phase I, Knowledge Based Systems, Inc Sponsor Department of Defense, Missile Defense Agency, Contract No: FA8750-04-C-0175, $ 90.000, consultant.
3. •**NSF-DMS 0908177**: 2009-2012 - *Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications,* Applied Mathematics, National Science Foundation ($221,626). E.Aulisa (CoPI; modeling and simulations), L.Hoang (CoPI) A.Ibragimov (PI) and M.Toda (CoPI).

Not funded

1. "Mathematical Modeling, Analysis and Simulation of Non-linear Flow in Porous Media, with Application to Reservoir Engineering", Submitted to NSF/Applied Mathematics, Total Award Amount: 636,211, Covered Period: 636,211, Collaborative proposal with Texas A&M University. ***PI***: **A. Ibragimov**, **PI's**: E.Aulisa , A. Yu. Solynin (Department of Mathematics, Texas Tech University, J.Walton, Department of Mathematics,Texas A&M, P.Vako Department of petroleum engineering ,Texas A&M University. **Senior Personnel** M.Toda, P.Seshaiyer, Department of Mathematics Texas Tech University

2. "Reservoir Characterization and Flow Visualization using Micro Computerized Tomography" A pre-proposal submitted to the Office of Research Services for the Major Research Instrumentation Program (MRI) for Instrument Acquisition" ($1,200,000/5 years), ***PI*** Shameem Siddiqui, , Petroleum Engineering Department; ***Co-PI*** Peter Holterhoff, **,** Geosciences Department; ***Co-PI*** **Akif Ibraguimov**, Department of Mathematics and Statistics.

3. "A new mathematical framework for reservoir engineering", Submitted to NSF/Applied Mathematics, Total Award Amount: 471,717 , Covered Period: 06/01/06 - 05/31/09, ***PI***: A. Ibragimov, Co-PI's: P.Seshaiyer (Department of Mathematics), A.Solynin (Department of Mathematics) , Akanni S. Lawal (Department of Petroleum Engendering).

4. "Trojan horses and cardiovascular disease: Tracing the role of microorganism from hypotheses to analytical understanding" Submitted for VP for research, research development grant proposal, Total Award Amount: 352,610 , Covered Period: 36 months,. ***PI***: A. Ibragimov, Co-PI's: E.D Sinzinger (Computer science, TTU), H.F. Janssen (Orthopeadics, TTUHS).

5. Network centered data Fusion, jointly with KBSI inc, (Agency DoD)Total Amount $90,000, ,Consultant

6. Multidisciplinary Summer Undergraduate Research Program in Computation and Control Biological and Biologically Inspired Systems, Covered Period: 06/12/06 – 08/04/06 and 06/11/06 – 08/03/07, (Senior Personal)

7. Multi-Spectral Feature Fusion (MSFF), Invited for submission for Phase II, proposal submitted in December 15, 2004, jointly with KBSI Inc, Total Award Amount 800.000, Missile Defense Agency, Consultant.

8. Texas Tech University, Pre-Proposal for the 2006 THECB, Advanced Research Program Competition, Total Award Amount 20.000, (Status: Not FUNDED), Principle Investigator.

9. NSF-DMS 0807461: 2007-2009 - Non-linear analysis of flows in heterogeneous porous media and applications to reservoir engineering. Applied Mathematics, National Science Foundation, PI ($489,417). In collaboration with TAMU.

10. NSF-REU: 2008-2009 - Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological Systems. Senior Personnel ($250,000).

11. ARP-ATP 003644-0051: (Pre-proposal 2007) - Texas Center for Non-Linear Studies in Biological Systems. Co-PI ($109,000).

12. REF: (Research Enhancement Fund Competition, TTU, 2007) - Nonlinear Problems in Computational Biology and Mathematical Physics. PI ($34,996).

13. REF: Reservoir Rock and Porous Media Characterization using Micro Computerized Tomography (μ-CT). Co-PI (Jointly with Dr Siddiqui, Department of Petroleum engineering) ($500,000)

14. NSF, Directorate for Mathematical & Physical Sciences Division of Chemistry Division of Materials Research Division of Mathematical Sciences, CHE-DMR-DMS Solar Energy Initiative (SOLAR), 2008, Pre-proposal, III-Nitride Nano-Structures for Solar Energy Utilization, Co-PI, Jointly with Electrical Engineering and Bio-Chemistry, Departments

15. IGERT: Materials Science at the Nano-scale An Interdisciplinary Education and Research Program NSF: Graduate Education (DGE), 3,200,000, Senior Personal,
16. Jointly with Chemical, Mechanical, Electrical Engineering, and Biochemical, Departments

17. NSF, Directorate of Applied Mathematics, Analysis of Non-linear Flows in Heterogeneous Porous Media and Applications $359,861.00, PI.

NSF Pre-proposal: "MRI: Development of a Micro Computerized Tomography Instrument for Advancing Multi-Disciplinary Research at TTU", Co-PI, Jointly with Petroleum, Electrical Engineering, and Geosciences, Departments

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- TAMU, 2007
- TAMU, 2004
- SMU, Dallas, 2008
- UT Arlington, 2009
- University of Nevada, Reno, 2007.

- The Ohio State University, 2004.
- Azerbaijan Medical University, 2005
- Institute of Mathematics and Mechanics, Azerbaijan Academy of Science, 2004, 2007.

One Hour Talks

1. International Fluid Mechanics Symposium (SMU), Dallas," General Non-Linear Flows in porous Media"

Invited Conferences and Special Sessions.

2. Seventh AIMS International Conference on Dynamical Systems, 2008, Arlington, "Non-linear Flows and Steady State Invariants in Porous media" (Jointly with Aulisa, E. Cakmak);
3. Seventh AIMS International Conference on Dynamical Systems, 2008, Arlington, "Geometrical Modeling of Dynamics of Non-Linear Flows in Porous Media" (Jointly with Aulisa, Cakmak, E. Toda);
4. Seventh AIMS International Conference on Dynamical Systems, 2008, Arlington, An up-scaling algorithm for non-Darcy flows in inhomogeneous porous media
5. 22nd International Conference of Moscow State University in honor of I. G. Petrovskii Differential Equations and Related Topics, Moscow, May 21-27, 2007" Variational Modeling of Transient Non Linear Flows." Joint work with M.Toda and E.Aulisa.
6. SPE Annual, Technical Conference and Exhibition, Anaheim, California, November 11-14, 2007. "A new method of evaluating the productivity index for non-linear flows."
7. SIAM-NSF Conference on Mathematics for Industry: Challenges and Frontiers (MI07), Philadelphia, October 9-11, 2007,"Geometrical Frame-Work for Modeling Non-Linear Flows in Porous Media, and Its Applications in Engineering."
8. , Cardiovascular Symposium UK-Texas, Houston, April 2004
9. TX, Scot and White Clinic Cardiovascular System Seminar, May 2004, Moscow State University , and Mathematical Institute of Russian Academy of Science, International Conference PDE and application (Invited Speaker),
10. Annual SPE Conference and Exhibition, September 2004,
11. AMS, MAA, SIAM, Joint Mathematics Meetings, Atlanta, GA, co-Orgonaizer of the SectionJanuary 5-8, 2005, Meeting #1003 "A Mathematical Model of Atherogenesis". Jointly with, L. R. Ritter, C. J. McNeal, and J. R. Walton.
12. COMSOL, Boston, October 24-25, Conference 2005, : "Wave carpet simulation using coupled hydro-elastic Femlab model, Jointly with Paul Mario Koola.
13. COMSOL, Boston, October 24-25, Conference 2005, "Application of FEMLAB to modeling of selected problems in cell biology and medicine, Akif Ibragimov.
14. AMS Meeting, April 2005, Spring, Co-Orgonaizer of the Section, Central AMS sectional meeting #1006, Lubbock, TX, "Stability analyzes for chemotaxic models, and application".
15. 5th International Conference on Differential Equations and Dynamical Systems, University of Texas-Pan American, Chairmen on the section, Edinburg, Texas, USA, December 16-18. "A dynamic model of atherogenesis as an inflammatory response"
16. 5th International Conference on Differential Equations and Dynamical Systems, University of Texas-Pan American, Edinburg, Texas, USA, December 16-18 " Variational principle and steady state invariants for non-linear hydrodynamic interactions in porous media"

Local Presentations

5. Gave 15 minute presentations at SIAM Mini Symposium in 2004-08, TTU.
6. Gave several hour talks at Analysis, Applied Math, and Bio Math Seminars, TTU, 2004-09.
7. Gave several hour talks, in Petroleum department

DISSERTATION, THESIS AND REPORT DIRECTORS

Previous and Current Graduate Students (Last 6 years)

1. D.Khalmanova (PhD, TAMU, defended 2004),
2. A. Cakmak (PhD, TTU, defended in 2009),
3. E.Y. Kaya (PhD, TTU, Work in Progress),
4. Bloshanskaya (PhD, TTU, work in progress)
5. L. Jean (Ma, TTU, Defend in 2006),
6. K. Tate (Ma, TTU Defend in 2007),
7. A.M.Amao (Ma TTU, Defend in 2008
8. B. Callaway (Ma TTU, defend in 2005),
9. L., J. Gunatilake (PhD, TTU, work in progress).

PROFESSIONAL SERVICE

Editorship

1. Editorial Board, "International journal of mathematics and applied statistics".

Reviewer

5. Panel Reviewer for *U.S. Civilian Research and Development Foundation (CRDF) (July 2004,2006)*.

Meetings Organized

2. AMS Meeting, April 2005, Spring, Co-Organizer of the Section, Central AMS sectional meeting #1006, Lubbock, TX,
3. Chairmen, 5th International Conference on Differential Equations and Dynamical Systems, University of Texas-Pan American, Chairmen on the section, Edinburg, Texas, USA, December 16-18.2007.
4. AMS, MAA, SIAM, Joint Mathematics Meetings, Atlanta, GA, co-Organizer of the Section, August, 5-8, 2006, Meeting #1003

ADDITIONAL CONTRIBUTIONS

Departmental

1. Member of hiring committee.
2. Applied Mathematics seminar co-organizer.
3. Prelim for ODE-PDE writing and grading.
4. TA evaluations conducted during 2008.
5. Grading tests for Emmy Noether participants.

University

1. Panelist for REF.
2. Dean's representative for 5 dissertations, Petroleum Department, Mechanical Engineering.

RAM VENKATARAMAN IYER

EDUCATION

Ph.D. in Electrical Engineering, Feb 1999, University of Maryland, College Park, MD 20742
Title: Modeling and Adaptive Control of Magnetostrictive Actuators

M.S. in Electrical Engineering, May 1995, University of Maryland, College Park, MD 20742
Title: A Hybrid Motor

B.Tech in Electrical Engineering, August 1990, Indian Institute of Technology, Bombay, INDIA.

Inventions

- *Hybrid Motor :* **University of Maryland Disclosure PS-96-048**. Office of Technology Liaison,University of Maryland, College Park.

WORK EXPERIENCE

- May 2007 - present, Associate Professor (tenured), and Associate Graduate Advisor; Math. and Stat., Texas Tech University, Lubbock, TX.
- Aug 2001 - May 2007, Assistant Professor (tenure track), Math. and Stat.;Director - Robotics, Smart Structures, and Biomechanics Laboratory.
- Aug 2000 - Aug 2001: Research Scientist, Veridian Engineering, Dayton, OH.Worked at the Control Center of Excellence, AFRL, WPAFB OH.
- February 1999 to August 2000 - Post-Doctoral Research Associate, Institute for Systems Research, University of Maryland, College Park.
- July 1990 - August 1991 - Design Engineer, Electronics Design Group,Larsen and Toubro Limited, Bombay, INDIA.

Research Interests

My research interests are in the areas of systems and control theory, and their applications in aerospace, optics, magnetism, and medicine.
In the aerospace context, my interest is in studying problems related to hypersonics and unmanned air vehicles (UAVs). For hypersonic vehicles, I am interested in (a) developing fast algorithms for abort trajectory design, that can be implemented online in real time; and (b) control allocation. The trajectory design problem is complicated by the speeds at which hypersonic vehicles travel; the range of attitude and altitude changes these vehicles go through and the actuator constraints due to failures.
Another area of interest is the problem of motion parameters estimation for UAV's using a novel device inspired by insect vision. Specifically, we have shown that the problem of ego-parameter estimation for a UAV is well-posed when a simple apposition eye is used as the imaging device.
In the area of smart structures and material modeling, I am interested in the modeling and control of actuators that are based on smart materials. My contribution to this area includes model development from basic principles; development of the theory of approximate inversion for the Preisach model for hysteresis; developing efficient and fast system identification techniques, and control design over a wide range of operating frequencies.
An area of recent interest, is the development of custom designed contact lenses for keratoconic patients. This is joint work with Dr. Steven Matthews, O.D., Ph.D., and a graduate student.

PUBLICATIONS

Refereed Journal Papers

· R. Holsapple, **R. Venkataraman**, and D. Doman, "A New, Fast Numerical Method for Solving Two-point Boundary Value Problems", *Journal of Guidance, Control and Dynamics*, Vol. 27, No. 2, pp 301 – 304, March - April 2004.

· **R. V. Iyer**, and M. Shirley, "Hysteresis Parameter Identification with Limited Experimental Data", *IEEE Trans. on Magnetics*., Vol. 40, No. 5, pp 3227 – 3239, Sep 2004.

· **R. V. Iyer**, R. Holsapple and D. Doman, "Optimal Control Problems on Parallelizable Riemannian Manifolds: Theory and Applications", *ESAIM: Control, Optimisation and Calculus of Variations*, Vol. 12, pages 1 – 11, Jan. 2006.

· **R. V. Iyer**, and P. S. Krishnaprasad, "A low-dimensional model for bulk magnetostriction - I: ferromagnetism ", *Nonlinear Analysis: Theory, Methods and Application*, Volume 61, Issue 8, Pages 1447 - 1482, June 2005.

· **R. V. Iyer**, X. Tan and P. S. Krishnaprasad, "Approximate Inversion of Hysteresis with Application to Control of Smart Actuators", *IEEE Transactions on Automatic Control*, Vol. 50, Issue 6, pages 798 – 810, June 2005.

· **R. V. Iyer** and R. Paige, "On the Representation of Hysteresis Operators of Preisach type", *Physica B: Condensed Matter*, Vol. 372, Issues 1 – 2,pages 40 – 44, Feb 2006.

· **R. V. Iyer** and S. Manservisi, "On a low dimensional model for magnetostriction", *Physica B: Condensed Matter*, Vol. 372, Issues 1 – 2,pages 378 – 382, Feb 2006.

· R. Holsapple, **R. V. Iyer** and D. Doman, "Variable step-size selection methods for implicit integration schemes for ODEs", *International Journal of Numerical Analysis and Modeling*, 2007, volume 4, number 2, pages 212 - 242.

· R. McNeely, **R. V. Iyer** and P. Chandler, "Tour Planning for an Unmanned Air Vehicle under Wind Conditions", *Journal of Guidance, Control and Dynamics*, Vol. 30, No. 5, pp 1299 - 1306, Sep-Oct 2007.

· D. Ekanayake and **R. V. Iyer**, "Asymptotic behavior of a low dimensional model for magnetostriction for periodic input", *Physica B: Condensed Matter Physics*, Feb. 2008, vol. 403, Issues 2-3, pp 257 - 260.

· D. Ekanayake and **R. V. Iyer**, "Study of a Play-like operator", *Physica B: Condensed Matter Physics*, Feb. 2008, vol. 403, Issues 2-3, pp 456 - 459.

· **R. V. Iyer** and D. Ekanayake, "Extension of hysteresis operators of Preisach-type to real, Lebesgue measurable functions", *Physica B: Condensed Matter Physics*, Feb. 2008, vol. 403, Issues 2-3, pp 437 - 439.

· **R. V. Iyer**, J. Meixner and R. Buckalew, "On an optical inertial navigation system, Part - I", *IEEE Transactions on Automatic Control*, Nov. 2008, vol. 53, Number 8, pp 1850-1863.

· **R. V. Iyer**, M. Toda and R. Holsapple, "On an optical inertial navigation system, Part - II", *IEEE Transactions on Automatic Control*, Nov. 2008, vol. 53, Number 8, pp 1864-1875.

· J. Meixner and **R. V. Iyer** "Mathematical model of a multiple lens-single fiber system in a compound eye", *International Journal of Applied Electromagnetism and Mechanics*, 2008, vol. 28, Number 1-2, pp 73-78.

· X. Tan and **R. V. Iyer**, "Modeling and control of hysteresis", *IEEE Control Systems Magazine*, Feb. 2009, Vol. 29, No. 1, pp 26 - 29.

· **R. V. Iyer** and X. Tan, "Control of hysteretic systems through inverse compensation", *IEEE Control Systems Magazine*, Feb. 2009, Vol. 29, No. 1, pp 83 - 99.

Refereed Conference Proceedings

· D. Ekanayake, **R. V. Iyer**, "Robust Control fo magnetostrictive actuators with uncertain system" (2008), *Proc. ASME Smart materials, Adaptive structures, and Intelligent systems Conference*, October 2008, Ellicott City, MD.

· A. Trent, **R. V. Iyer** and D. Doman, "Trajectory Planning using a Modified Simple Shooting Method for a Reentry Vehicle under Failure Conditions" (2007), Invited Paper, *Proc. AIAA/IEEE American Control Conference*, July 2007, New York, NY.

· D. Ekanayake and **R. V. Iyer**, "Wide Band Modeling and Parameter Identification for Magnetostrictive Actuators" (2007), Invited Paper, *Proc. AIAA/IEEE American Control Conference*, July 2007, New York, NY.

· **R. V. Iyer**, Z. He and P. Chandler, " On the Computation of the Ego-Motion and Distance to Obstacles for a Micro Air Vehicle" (2006), Invited Paper, pp. 2554 - 2559, *Proc. AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· Z. He, **R. V. Iyer** and P. Chandler, "Vision-based UAV flight control and Obstacle Avoidance" (2006), Invited Paper, pp. 2166 - 2170, *Proc. AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· R. Holsapple, **R. V. Iyer** and D. Doman, "A Variable Step-size selection method for implicit integration schemes" (2006), pp. 3013 - 3018, *Proc. AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· **R. V. Iyer**, R. Holsapple and P. Chandler, "A New Method for the Computation of Motion from Image Sequences" (2005), Invited Paper, *Proc. AIAA/IEEE American Control Conference*, June 2005, Vol. 6, pages 4113 – 4118, Portland, OR.

· **R. Venkataraman**, M. Oppenheimer and D. Doman, "A New Control Allocation Method that accounts for Effector Dynamics" (2004), *Proc. IEEE Aerospace Conference*, Vol.4, pp. 2710 - 2715, Big Sky, Montana.

· A. Trent, **R. Venkataraman** and D. Doman, "Trajectory Generation Using A Modified Simple Shooting Method" (2004), *Proc. IEEE Aerospace Conference*, Vol.4, pp. 2723 - 2729, Big Sky, Montana.

Unrefereed Conference Proceedings

· **R. V. Iyer**, "Tensor SVD and distributed control" (2005), R. Smith ed., *Proc. SPIE Conf. Smart Structures and Materials 2005: Modeling, Signal Processing and Control in Smart Structures*, vol. 5757, pp 258 – 268, SPIE, Bellingham.

· **R. V. Iyer**, "Recursive Estimation of the Preisach Density Function for a Smart Actuator" (2004), R. Smith ed. *Proc. SPIE Conf. Smart Structures and Materials 2004: Modeling, Signal Processing and Control in Smart Structures*, vol. 5383, pp 202 – 210, SPIE, Bellingham.

FUNDING ACTIVITY

Not funded

1. NSF REU proposal $298,106.00, PI: **R. V. Iyer**, Co-PI: S. Rice (Biology), 2009 - 2010, Title: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems.
2. NSF UBM Proposal $990,130, PI: J. Dwyer, Co-PI: T. Stevens, Senior personnel: **R. V. Iyer**, 2008-2010, Title: UBM Institutional: Integrating Mathematics and Biology on the South Plains (IMBSP).
3. Senior personnel on NSF CSUMS Proposal $1,087,521, PI: J. Dwyer, Co-PI: D. Casadonte, Senior Personnel: **R. V. Iyer**, 2009-2010, Title: CSUMS: Undergraduate Research Teams in Interdisciplinary Computational Problems.

4. NSF REU proposal $302,081, PI: **R. V. Iyer**, Co-PI: G. B. Williams, 2008-2009, Title: Multidisciplinary Summer Undergraduate Research Program in Modeling, Computation and Control of Biological Systems.
5. TTU REF proposal $35,000, PI: **R. Iyer**, 2008, Title: A bio-inspired vision system for small unmanned vehicles
6. TTU REF proposal $35,000, PI: A. Ibraguimov, Co-PI: E. Aulisa, M. Toda, R. V. Iyer, Title: Nonlinear problems in computational biology and mathematical physics
7. Texas ARP proposal $150,000, PI: **R. V. Iyer**, 2008, Title: Development of a new, bio-inspired, inertial navigation and vision system for micro air vehicles.
8. NSF Division of Civil and Mechanical Systems, $139,000, 2007-2008, **PI: R. V. Iyer**, Title: Modeling, Model Identification and Control of Smart Structures.
9. NSF Division of Civil and Mechanical Systems, $253,415, 2006-2007, **PI: R. V. Iyer**, Title: Modeling, Model Identification and Control of Smart Structures.
10. TTU REF proposal, $15,000, 2006, PI: **PI: R. V. Iyer**, Title: Bioinspired Vision System for Unmanned Air Vehicles
11. Texas ARP pre-proposal, 2006, **PI: R. V. Iyer**, Title: Modeling, Model Identification and Control of Smart Actuators.
12. Energen Inc., Lowell, MA., $35000, **PI: R. V. Iyer**, Title: Hysteresis Modeling and Compensation.
13. TTU REF proposal, 2005, $4500, **PI: R. V. Iyer**, Title: Control of a network of Smart Actuators.

Funded

1. TTU REF proposal $27,332, PI: R. Iyer, 2009, Title: Customized rigid lenses for vision correction.
2. NSF REU and DoD ASSURE proposal $170,707, 2006-2007, PI: P. Seshaiyer, Co-PI: W. P. Dayawansa, Senior Personnel: **R. V. Iyer**, Title: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems.
3. Air Force Office of Scientific Research, $7,500, 2006, Title: Mathematical Modeling of Novel Materials and Devices.
4. Air Force Research Laboratory, WPAFB, OH, $12,000, PI: **R. V. Iyer**, 2005, Nonlinear Filter Development for UAVs.

PRESENTATIONS AND MEETINGS ATTENDED

Conference presentations

· "An inertial navigation system based on a simple apposition compound eye", **R. V. Iyer***, J. Meixner, R. Buckalew, R. Holsapple, M. Toda, *SIAM Conference on Control and its Applications*, Denver, CO., July 2009.

· "Robust Control of magnetostrictive actuators with uncertain system", D. Ekanayake*, **R. V. Iyer**, *ASME Smart materials, Adaptive structures, and Intelligent Systems Conference*, Oct 2008, Ellicott city, MD.

· "Study of a Play-like Operator", **R. V. Iyer***, *6th International Symposium on Hysteresis and Micromagnetism modeling*, Naples, Italy, June 6, 2006.

· "Extension of hysteresis operators of Preisach-type to essentially bounded Lebesgue measurable functions", **R. V. Iyer***, *6th International Symposium on Hysteresis and Micromagnetism modeling*, Naples, Italy, June 6, 2006.

· "On the Computation of the Ego-Motion and Distance to Obstacles for a Micro Air Vehicle", **R. V. Iyer***, Z. He and P. Chandler, *AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· "Vision-based UAV flight control and Obstacle Avoidance", **R. V. Iyer**, Z. He* and P. Chandler *AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· "A Variable Step-size selection method for implicit integration schemes", **R. V. Iyer***, R. Holsapple and D. Doman, *AIAA/IEEE American Control Conference*, June 2006, Minneapolis, MN.

· "On an Optical Inertial Navigation System ", **R. V. Iyer*** and R. Holsapple, *Memorial Conference in honor of Prof. W. P. Dayawansa*, TTU, Lubbock, April 2006.

· "Optimization of integration step-sizes for implicit integration schemes", **R. V. Iyer**, R. Holsapple and D. Doman, *SIAM Conference on Control and its Applications*, New Orleans, LA, July 12, 2005.

· "On the computation of optimal control for a rigid body", **R. V. Iyer***, R. Holsapple and D. Doman, *SIAM Conference on Control and its Applications*, New Orleans, LA, July 12, 2005.

· "A new method for the computation of motion from image sequences", **R. V. Iyer*** and R. Holsapple, *AIAA/IEEE American Control Conference*, Portland, OR, June 9, 2005.

· "On a Low Dimensional model for Magnetostriction", **R. V. Iyer*** and S. Manservisi, *5th International Symposium on Hysteresis and Micromagnetism modeling*, Budapest, Hungary, May 30, 2005.

· "On the Representation of Hysteresis Operators of Preisach type", **R. V. Iyer*** and R. Paige, *5th International Symposium on Hysteresis and Micromagnetism modeling*, Budapest, Hungary, May 30, 2005.

· "On the computation of Self-Motion for an Unmanned Air Vehicle from Image Sequences without Depth Information", **R. V. Iyer*** and R. Holsapple, *1006th AMS Meeting*, Texas Tech University, Lubbock TX, April 9, 2005.

· "Approximate Inversion of Hysteresis with Application to Control of Smart Actutators", **R. V. Iyer***, X. Tan and P. S. Krishnaprasad, *1006th AMS Meeting*, Texas Tech University, Lubbock TX, April 9, 2005.

· "Tensor SVD and Distributed Control", **R. V. Iyer***, *SPIE Conf. Smart Structures and Materials: Modeling, Signal Processing and Control in Smart Structures*, San Diego, CA, March 2005.

· "Recursive Estimation of the Preisach Density Function for a Smart Actuator", **R. V. Iyer***, *SPIE Conf. Smart Structures and Materials: Modeling, Signal Processing and Control in Smart Structures*, San Diego, CA, March 2004.

Colloquia

· "An inertial navigation system based on a simple apposition compound eye", **R. V. Iyer***, J. Meixner, R. Buckalew, R. Holsapple and M. Toda, Mechanical Engineering dept., Texas A & M University, Sep. 19, 2007.

· "An inertial navigation system based on a simple apposition compound eye", **R. V. Iyer***, J. Meixner, R. Buckalew, R. Holsapple and M. Toda, Electrical Engineering dept., Michigan State University, Sep. 11, 2007.

· "On an Optical Inertial Navigation System ", **R. V. Iyer***, J. Meixner, R. Buckalew and R. Holsapple, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 31, 2006.

· "Trajectory Planning for a Reusable Launch Vehicle", A. Trent*, **R. V. Iyer** and D. Doman, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 17, 2006.

· "Vision analysis and ego-motion computation for MAVs", Z. He, **R. V. Iyer*** and P. Chandler, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, May 23, 2006.

· "Tour planning for a micro air vehicle under wind conditions", R. McNeely, **R. V. Iyer*** and P. Chandler, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, May 23, 2006.

· "Tour planning for a micro air vehicle under wind conditions", R. McNeely*, **R. V. Iyer** and P. Chandler, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 12, 2005.

· "Range estimation to obstacles using a camera for UAV applications", **R. V. Iyer*** and Z. He, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 12, 2005.

· "A New Method for Motion Estimation from Image Sequences", R. Holsapple and **R. V. Iyer***, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 2004.

· "New Techniques for Trajectory Generation and Control Allocation", **R. V. Iyer***, M. Oppenheimer, and D. Doman, *Air Force Research Laboratory, Air-Vehicles Directorate*, WPAFB, OH, Aug 2003.

Invited Talks

· "Asymptotic behavior of a low dimensional model for magnetostriction for periodic input", D. Ekanayake and **R. V. Iyer***, *International Symposium on Electromagnetics and Mechanics*, Lansing, MI, Sep. 10, 2007.

· "Asymptotic behavior of a low dimensional model for magnetostriction for periodic input", D. Ekanayake and **R. V. Iyer***, *6th International Symposium on Hysteresis and Micromagnetism modeling*, Naples, Italy, June 4, 2006.

Local talks

· Presented a talk on trajectory planning for UAV's for the Emmy Noether's Day 2006 at TTU.

· Presented a talk on the mathematics of juggling (together with A. Ledet) for the Emmy Noether's Day 2008 at TTU.

Sessions chaired

1. Chaired one session on Applications to aircraft control and guidance, SIAM Conference on Control and its Applications, July 2009, Denver, CO.
2. Chaired one session for the Symposium on Hysteresis and Micromagnetism, Naples, Italy, June 4, 2007.
3. Chaired 2 sessions for the IEEE American Control Conference, New York on July 12 and 13, 2007, respectively.
4. Chaired 1 session for the ISEM Conference 2007, Michigan State University, Sep 11, 2007.
5. Chaired invited session: "Vision-based Control of Autonomous Aerial Vehicles", IEEE American Control Conference, St. Paul, MN, June 2006.
6. Chaired an Invited Session at the IEEE Automatic Control Conference 2005, Portland, OR, titled: "UAV's: Control, Estimation and Applications".
7. Co-Chaired of an Interactive Session at the IEEE Automatic Control Conference 2005, Portland OR, titled: "Co-operative Control with the MultUAV Simulation".
8. Chaired two 2 sessions at the 6th SIAM Conference on Control and its Applications 2005, New Orleans, LA, titled: "Numerical Methods for Control Design".
9. Chaired a session for the SPIE Smart Structures and Materials 2005: Modeling, Control and Signal Processing Conference, San Diego, CA, Mar 2005.

Meetings attended

· *Quantitative Biology: Curriculum and Institutions at the Math/Biology Interface*, HHMI headquarters, Chevy Chase, MD, July 21- 24, 2008.

MENTORING ACTIVITY

Students graduated

1. Ashley Trent, MS in Mathematics, 2004, "Trajectory generation using a modified simple shooting method".
2. Ravi Mahankali, MS in Electrical Engineeering (co-advisor: Prof. R. Gale), 2005.
3. Rachelle McNeely, MS in Mathematics, 2006, "Trajectory planning for micro air vehicles in the presence of wind".
4. Dinesh Ekanayake, MS in Mathematics (co-advisor: Prof. W. P. Dayawansa), 2006, "Wide band modeling and parameter identification for magnetostrictive actuators".
5. R. Holsapple, PhD in Mathematics, 2006, "Computational issues in the autonomous control of unmanned air vehicles".
6. X. Ren, MS in Mathematics, 2007.
7. C. Brazile, MS in Mathematics, 2009, "Multivariate multiresolution with multiwavelets".
8. D. Ekanayake, PhD in Mathematics, 2009, "Robust control of saturating, non-monotone hysteretic systems with nonlinear, frequency-dependent power losses".
9. J. Millhollon, MS in Mathematics (co-advisor: Prof. K. Long), 2009, "A study of numerical methods for ferromagnetic materials with dynamics boundary conditions".

Current students

1. Matthew Buyum, MS in Mathematics
2. Bhagya Athukorala, MS in Mathematics
3. Glen Pearson, Jr., MS in Mathematics
4. Tina Gaumond, PhD in Mathematics (co-advisor: Prof. L. Schovanec).

Graduate committee member

1. Robert Plant, MS in Mathematics, 2004, Thesis advisor: Prof. M. Shubov.
2. Lizhong Chen, PhD in Civil Engineering, 2005, Dissertation advisor: Prof. Mehta.
3. Ryan Casey, PhD in Electrical Engineering, 2005, Dissertation advisor: Prof. T. Carp.
4. Haining Dong, PhD in Industrial Engineering, 2006, Dissertation advisor: Prof. S. Hsiang.
5. Simion Tomiaga, MS in Mathematics, 2006, Thesis advisor: Prof. M. Toda.
6. Steven Lawless, MS in Mathematics, 2007, Thesis advisor: Prof. C. Monico.
7. Brian Appelbe, MS in Mathematics, Univ. of Cork, Ireland, 2007, Thesis advisor: Prof. A. Pokrovskii.
8. Zeynep Kose, PhD in Mathematics, Dissertation co-advisors: Prof. M. Toda and Prof. E. Aulisa.

AWARDS AND HONORS

· Professor of the Year, Phi Beta Kappa, Texas Tech Chapter, 2008.
· Elected Senior Member, American Institute of Aeronautics and Astronautics, 2008.
· Nominated to be Associate Fellow, American Institute of Aeronautics and Astronautics, 2008.
· Nominated for the Presidents Teaching Award, Texas Tech University, 2006.
· US Air Force Summer Faculty Fellowship Award, 2005, 2006.
· National Research Council Summer Faculty Fellowship Award, 2002, 2003, 2004.
· Travel Award to the IEEE Control and Decision Conference in Sydney, Australia, 2000.
· MCM Scholarship Award, Indian Institute of Technology, Bombay, 1986 - 1990.

PROFESSIONAL SERVICE

Editorship

- Guest editor for the IEEE Control Systems Magazine Special Issue on Hysteresis Modeling and Control (with X. Tan). This issue appeared in Feb. 2009.
- Associate Editor for IEEE American Control Conference, 2007.
- Associate Editor for special issue of Physica B: Condensed Matter Physics, Feb. 2008.

Referee

· Journals

IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Magnetics
Journal of Guidance, Control and Dynamics
Automatica
Journal of Magnetism and Magnetic Materials
IEEE Trans. Control Systems Technology
Journal of Intelligent and Smart Materials
Journal of Electronic Imaging
Sensors and Actuators A
Journal of Applied Physics
ASME Journal of Nonlinear and Computational Dynamics
Physica B: Condensed Matter Physics
IEEE Trans. Automatic Control
SIAM Journal of Control and Optimisation
IEEE Signal Processing Letters

IEEE/ACM Transactions on Computational Biology and Bioinformatics
IEEE Control Systems Magazine

· Conference proceedings

Guidance, Navigation and Control Conference 2005, 2007;
ISEM Conference 2007;
IEEE American Control Conference 2007;
IEEE Control and Decision Conference 2006;
IASTED Conference 2006;

Meeting organization

- Program Committee member for IEEE American Control Conference (ACC) 2007;
- Program Committee member for the Sixth International Symposium on Hysteresis and Micromagnetism, June 2007, Naples, Italy;
- Program Committee for the IASTED Conference on Control and its Applications, 2006;
- Organizer of the 2006 Red Raider Minisymposium titled "Mathematical Modeling of Novel Materials and Devices";
- On the Program Committee for the SPIE Conference on Smart Structures and Materials 2005: Modeling, Signal Processing and Control in Smart Structures, San Diego, CA, Mar 2005;
- On the Program Committee for the SPIE Conference on Smart Structures and Materials 2006: Modeling, Signal Processing and Control in Smart Structures, San Diego, CA, Mar 2006.
- Organized an Invited Session at the IEEE Automatic Control Conference 2005, Portland, OR, titled: "UAV's: Control, Estimation and Applications".
- Organized an Interactive Session at the IEEE Automatic Control Conference 2005, Portland OR, titled: "Co-operative Control with the MultUAV Simulation".
- Organized a miniSymposium with 2 sessions at the 6th SIAM Conference on Control and its Applications 2005, New Orleans, LA, titled: "Numerical Methods for Control Design".
- Organized two Invited Sessions at the IEEE Automatic Control Conference 2006, Minneapolis, Minnesota, titled: "Vision-based Control of Autonomous Aerial Vehicles".
- Organized an Invited Session at the IEEE Automatic Control Conference 2006, Minneapolis, Minnesota, titled: "Cooperative Control of Autonomous Air Vehicles".

Review for Funding Agencies

NSF proposal review 2005
NSF panel - June 2008
NSF panel - Nov. 2007
NSF panel - April 2009

Department and university service

1. Scholarship Committee member, 2006 - present
2. Assessment Committee member, 2007 - present.
3. Arts and Sciences Committee on Academic Programs member, 2007 - present.
4. Faculty Senate member, 2007 - present.
5. Associate Graduate Advisor, 2007 - present.

Current Participation in Professional Associations

American Institute of Aeronautics and Astronautics (AIAA);
International Society of Electrical and Electronics Engineers (IEEE);
Society for Industrial and Applied Mathematics (SIAM);
The International Society for Optical Engineering (SPIE).

SPECIAL EDUCATIONAL ACTIVITIES

· Mentor for Suzanne McDonald, EE major, Fall 2005 through Spring 2008; she was awarded the Barry Goldwater Scholarship for 2 years in April 2006, and the NSF graduate student fellowship in April 2009. She is now pursuing a PhD at University of Maryland, College Park.

· Mentor for Jessica Meixner, Math major, Summer 2006 through Spring 2008. She was nominated by TTU for the Barry Goldwater Scholarship 2007, and is now pursuing a PhD at University of Texas at Austin.

· Mentor for Julie Rice, Computer Science major, Fall 2007. She is now working for Shell Corp.

· Mentor for Richard Bucklew, Senior, Mathematics, Muskingum College, OH, during Summer 2006 as part of an NSF-REU program.

· Mentor for Sandy Tang as part of the SPMS program, Fall 2008 - present.

· Developed a proposal for new accelerated 150 hour Bachelors-Masters degree programs in Mathematics and Statistics with Prof. Carl Seaquist, which received approval from the Texas Higher Education Coordinating Board in Dec. 2007.

SOPHIA R-J JANG

EDUCATION

· B.S. Mathematics: Providence College, Taiwan, July 1982.

· M.S. Mathematics: Texas Tech University, May 1987.

· Ph.D. Mathematics: Texas Tech University, August 1990.

PROFESSIONAL EXPERIENCE

· Assistant Instructor: Providence College, Taiwan, 8/82–8/84.

· Teaching and Research Assistant: Texas Tech University, 8/84–8/90.

· Lecturer: Texas Tech University, 1/91–8/91.

· Associate Professor: Providence University, Taiwan, 8/91–8/92.

· Lecturer: Texas Tech University, 8/92–1/93.

· Lecturer: Texas Tech University, 1/96–8/02.

· Assistant Professor: University of Louisiana at Lafayette, 8/02–5/08.

(tenured in 2006 and promoted in 2008)

· Associate Professor: Texas Tech University, 8/08–present.

AREAS OF RESEARCH INTEREST

Mathematical Biology, Applied Mathematics.

PUBLICATIONS

· **Refereed Journal Publications**

1. **S. Jang**, S. Diamond, Population-level effects of density dependence in a size-structured fishery model, *Applied Mathematics and Computation*, **139**, 133-155, 2003.
2. **S. Jang**, J. Cushing, A discrete hierarchical model of intra-specific competition, *Journal of Mathematical Analysis and Applications*, **280**, 102-122, 2003.
3. **S. Jang**, J. Baglama, Persistence in variable-yield nutrient-plankton models with nutrient recycling, *Mathematical and Computer Modelling*, **38**, 281-298, 2003.
4. **S. Jang**, S. Elaydi, Difference equations from discretization of a continuous epidemic model with immigration of infectives, *Canadian Applied Mathematics Quarterly*, **11**, 93-105, 2003.
5. **S. Jang**, J. Cushing, Dynamics of hierarchical models in discrete-time, *Journal of Difference Equations and Applications*, **11**, 95-115, 2005.
6. **S. Jang**, J. Baglama, P. Seshaiyer, Intratrophic predation in a simple food chain with fluctuating nutrient, *Discrete and Continuous Dynamical Systems, Series B*, **5**, 335-352, 2005.
7. **S. Jang**, J. Baglama, Nutrient-plankton models with nutrient recycling, *Computers and Mathematics with Applications*, **49**, 375-387, 2005.

8. **S. Jang**, A discrete, size-structured chemostat model of plasmid-bearing and plasmid-free competition, *Journal of Difference Equations and Applications*, **11**, 619-634, 2005.
9. **S. Jang**, A. Ackleh, Discrete-time, discrete stage-structured predator-prey models, *Journal of Difference Equations and Applications*, **11**, 399-413, 2005.
10. **S. Jang**, J. Baglama, Droop models of nutrient-plankton interaction with intratrophic predation, *Applied Mathematics and Computation*, **169**, 1106-1128, 2005.
11. **S. Jang**, J. Baglama, J. Rick, Nutrient-phytoplankton-zooplankton models with a toxin, *Mathematical and Computer Modelling*, **43**, 105-118, 2006.
12. **S. Jang**, Allee effects in a discrete-time host-parasitoid model, *Journal of Difference Equations and Applications*, **12**, 165-181, 2006.
13. K. Blayneh, **S. Jang**, A discrete SIS-model for a vector-transmitted disease, *Applicable Analysis*, **85**, 1271-1284, 2006.
14. A. Ackleh, Y. Dib, **S. Jang**, Competitive exclusion and coexistence in a nonlinear refuge-mediated selection model, *Discrete and Continuous Dynamical Systems, Series B*, **7**, 683-698, 2007.
15. **S. Jang**, Allee effects in a discrete-time host-parasitoid model with stage structure in the host, *Discrete and Continuous Dynamical Systems, Series B*, **8**, 145-159, 2007.
16. A. Ackleh, **S. Jang**, A discrete two-stage population model: continuous versus seasonal reproduction, *Journal of Difference Equations and Applications*, **13**, 261-274, 2007.
17. **S. Jang**, S. Diamond, A host-parasitoid interaction with Allee effects on the host, *Computers and Mathematics with Applications*, **53**, 89-103, 2007.
18. A. Ackleh, Y. Dib, **S. Jang**, A three-stage discrete-time population model: continuous versus seasonal reproduction, *Journal of Biological Dynamics*, **1**, 291-304, 2007.
19. **S. Jang**, On a discrete West-Nile epidemic model, *Computational & Applied Mathematics*, **26**, 397-414, 2007.
20. **S. Jang**, J. Baglama, J. Rick, Plankton-toxin interaction with a variable input nutrient, *Journal of Biological Dynamics*, **2**, 14-30, 2008.
21. **S. Jang**, Coexistence in a discrete, size-structured chemostat model with an inhibitor, *Far East Journal of Applied Mathematics*, **32**, 337-359, 2008.
22. **S. Jang**, Backward bifurcation in a discrete SIS model with vaccination, *Journal of Biological Systems*, **16**, 479-494, 2008.
23. **S. Jang**, J. Baglama, Continuous-time predator-prey models with parasites, *Journal of Biological Dynamics*, **3**, 87-98, 2009.
24. **S. Jang**, D. Johnson, Dynamics of discrete-time larch budmoth population models, *Journal of Biological Dynamics*, **3**, 209-223, 2009.
25. **S. Jang**, Discrete host-parasitoid models with Allee effects and age structure in the host, *Mathematical Biosciences and Engineering*, to appear.
26. **S. Jang**, Discrete-time host-parasitoid models with Allee effects: density dependence versus parasitism, *Journal of Difference Equations and Applications*, to appear.
27. **S. Jang**, Dynamics of an age-structured population with Allee effects and harvesting, *Journal of Biological Dynamics*, to appear.

· **Refereed Conference Proceedings and Book Chapter**

1. **S. Jang**, B. Jang, Computer simulations of mathematical models arising in bioremediation. *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences*, 340-346, 2003.
2. **S. Jang**, A discrete, hierarchically-structured population model, *Proceedings on Dynamic and Applications*, Vol. 4, 403-408, 2004.
3. A. Ackleh, Y. Dib, **S. Jang**, A discrete Beverton-Holt competition model, *Proceedings of the 9th International Conference on Difference Equations and Applications*, 1-9, 2005.

4. **S. Jang**, Contest and scramble competition with a dynamic resource, Proceedings of the Fourth World Congress of Nonlinear Analysts, *Nonlinear Analysis: Theory, Methods & Applications*, **63**, e109-e118, 2005.
5. **S. Jang**, J. Baglama, Nutrient-plankton interaction with a toxin in a variable input nutrient environment, *Current Developments in Mathematical Biology, Proceedings of the Conference on Mathematical Biology and Dynamical Systems, Series on Knots and Everything*, **38**, 131-147, 2006.
6. **S. Jang**, J. Yu, Dynamics of a host-parasitoid interaction, *Proceedings of the Conference on Differential & Difference Equations and Applications*, 451-456, 2006.
7. **S. Jang**, Nonstandard finite difference methods and biological models, in *Advances in the Applications of Nonstandard Finite Difference Schemes*, edited by R. Mickens, Vol.**2**, 423-456, World Scientific, 2006.
8. **S. Jang**, S. Diamond, Stability analysis of a continuous-time model of populations of two host and two parasitoid interaction with a chemical response, Proceedings of the 6th International Conference on Differential Equations and Dynamical Systems, *Dynamics of Continuous, Discrete and Impulsive Systems, Series A Supplement*, 155-161, 2009.
9. **S. Jang**, Cannibalism in a discrete predator-prey model with an age structure in the prey, Proceedings of the 11th International Conference on Difference Equations and Applications, *Advanced Studies in Pure Mathematics*, **53**, 87-94, 2009.
10. **S. Jang**, J. Yu, Models of plant quality and larch budmoth interaction, Proceedings of the Fifth World Congress of Nonlinear Analysts, *Nonlinear Analysis: Theory, Methods & Applications*, to appear.

FUNDING ACTIVITY

· **Funded**

1. 4th Butler Memorial Conference on Differential Equations and Mathematical Biology, NSF-AWM Travel Grant, $1,253, 6/03.
2. Faculty Development Grant, University of Louisiana at Lafayette, $500, 10/03.
3. Mathematics Meets Biology: Epidemics, Data Fitting, and Chaos, Mathematical Association of America/Statistical and Applied Mathematical Sciences Institute, **S. Jang** (Co-PI), with A. Ackleh (PI), $18,500, 1/1/04-12/31/04.
4. Nonlinear dynamics of nutrient-plankton-toxin interaction, Summer Research Award, University of Louisiana at Lafayette, **S. Jang** (PI), $6,500, 6/1/04-7/31/04.
5. Fourth World Con-gress of Nonlinear Analysts, NSF-EPSCoR Travel Grant for Emerging Faculty, **S. Jang** (PI), $1,000, 7/04.
6. Mathematics Meets Biology: Competitive Exclusion, Coexistence and Data Fitting, Mathematical Association of America/Statistical and Applied Mathematical Sciences Institute, **S. Jang** (Co-PI), with A. Ackleh (PI), $18,500, 1/1/05-12/31/05.
7. Conference on Differential and Difference Equations and Applications, NSF-EPSCoR Travel Grant for Emerging Faculty, **S. Jang** (PI), $1,000, 8/05.
8. Nonlinear Dynamics of Nutrient-Plankton Models, LEQSF(2004-2007)-RD-A-32, Board of Regents Support Grant, Louisiana, **S. Jang** (PI), $58,000, 6/1/04-5/31/07
9. AMS-MAA Joint Annual Meeting, NSF-AWM Travel Grant, **S. Jang** (PI), $985, 1/08.
10. Mathematical Modeling in Population Biology and Epidemiology, MAA PREP Workshop, **S. Jang** (PI), with L. Allen (Co-PI) and L. Roeger (Co-PI), $20,700, 1/1/09-12/31/09.
11. MAA PREP Workshop, Mathematical Modeling in Population Biology and Epidemiology, **S. Jang** (PI), with L. Allen (Co-PI) and L. Roeger (Co-PI), $21,000, 1/1/10-12/31/10.
12. Visiting Scholar Fellowship, National Science Council, submitted by J. Yu (PI), $2,500, Taiwan, 12/15/09-1/8/10.

· **Not funded**

1. Nonlinear Dynamics of Nutrient-Plankton-Toxin Interaction, NSF, **S. Jang** (PI), with J. Rick (Co-PI), $130,220.
2. Collaborative Research, Difference Equations, Genetics and Ecology, NSF, **S. Jang** (PI), with J. Neigle (Co-PI), $302,000.
3. Mathematical Modeling of Outbreak and Invasion of Gypsy Moth, Collaborative Research, NSF, **S. Jang** (PI), D. Johnson (Co-PI), $250,000.
4. Mathematical Modeling of Outbreak and Invasion of Gypsy Moth, Internal Grant of University of Rhode Island, **S. Jang** (PI), with J. Baglama (PI of University of Rhode Island), $76,650.

· **Pending**

1. Integrating Mathematics and Biology on the South Plains, NSF-UBM Institutional, **S. Jang** (Senior Personnel), S. Cox (PI), J. Dwyer (Co-PI), L. Schovanec (Co-PI), February 2009, pending.
2. Proactive recruitment of math students on the South Plains, NSF-PRISM, **S. Jang** (Co-PI), with B. Williams (PI), J. Dwyer (Co-PI), February 2009.
3. Mathematical Modeling and Analysis of Red Snapper Population in the Gulf of Mexico, NHARP Pre-Proposal, **S. Jang** (PI), $100,000.

PRESENTATIONS

· **Colloquia**

1. **S. Jang***, Department of Applied Mathematics, Providence University, Taiwan, December 2005.
2. **S. Jang***, Dynamics of discrete-time larch budmoth population models, Department of Mathematics and Statistics, Texas Tech University, February 2008.
3. **S. Jang***, Dispersal in Population Dynamics I, Department of Applied Mathematics, Providence University, Taiwan, December 2009.
4. **S. Jang***, Dispersal in Population Dynamics II, Department of Applied Mathematics, Providence University, Taiwan, December 2009.

· **Invited Hour Talks**

1. **S. Jang***, Persistence and Extinction in Nutrient-Plankton Models, Special Session on Stochastic and Deterministic Methods with Applications, Fourth World Congress of Nonlinear Analysts, Orlando, July 2004.
2. **S. Jang***, Global stability and persistence in nutrient-plankton models with periodic forcing, Conference on Mathematical Biology and Dynamical Systems, University of Texas at Tyler, October 2005.
3. **S. Jang***, Persistence in nutrient-plankton models, Conference on Differential & Difference Equations and Applications, Florida Institute of Technology, August 2005.
4. **S. Jang***, Allee effects in discrete-time host-parasitoid interaction, Special Session on Biomathematics, Annual Meeting of the Mathematical Society of ROC, Institute of Mathematics, Academia Sinica, Taiwan, December 2007.

· **Conference Presentations**

1. **S. Jang***, Persistence in Nutrient-Plankton-Toxin Models, International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences, Las Vegas, June 2003.
2. **S. Jang***, Discrete Hierarchical Model of Intra-specific Competition, Fourth International Conference on Dynamical Systems and Applications, Morehouse College, May 2003.
3. **S. Jang***, Dynamics of Herbivore-Plant-Pollinator Models, Fourth Geoffrey J. Butler Memorial Conference on Differential Equations and Mathematical Biology, University of Alberta, Canada, June 2003.
4. **S. Jang***, Discrete Chemostat Models with Inhibition, Special Session on Structured Population and Epidemic Models, AMS Joint Central and Western Sectional Meeting, University of Colorado at Boulder, October 2003.
5. **S. Jang***, Difference Equations from Discretization of a Continuous Epidemic Model with Immigration of Infectives, Special Session on Discrete Dynamics and Difference Equations, AMS-MAA Joint Annual Meeting, Phoenix, January 2004.
6. **S. Jang***, Dynamics of Hierarchical Models in Discrete-time, 9th International Conference on Difference Equations and Applications, University of Southern California, August 2004.
7. **S. Jang***, A Size-Structured Chemostat Model with Inhibition, Special session on Extinction, Periodicity, and Chaos in Population and Epidemic Models, AMS Central Sectional Meeting, Texas Tech University, April 2005.
8. **S. Jang***, Discrete-time, Discrete Stage-Structured Predator-Prey Models, International Workshop on Differential Equations in Mathematical Biology, University of Le Havre, France, July 2005.
9. **S. Jang***, Allee effects in a Discrete-Time Host-Parasitoid Model with Age Structure in the Host, Special session on Nonautonomous Discrete Dynamics, AMS-MAA Joint Annual Meeting, San Antonio, January 2006.
10. **S. Jang***, Backward Bifurcation in a Siscrete SIS Model with Vaccination, The 11th International Conference on Difference Equations and Applications, Kyoto University, Japan, July 2006.
11. **S. Jang***, A Discrete West Nile Model, Special session on Differential Equations, Annual Meeting of the Mathematical Society of ROC, National Taiwan Normal University, Taiwan, December 2006.
12. **S. Jang***, On a Discrete West Nile Epidemic Model, Special session on Recent Advances in Mathematical Biology, Ecology, and Epidemiology, AMS-MAA Joint Annual Meeting, New Orleans, January 2007.
13. **S. Jang***, Backward Bifurcation in a Discrete Epidemic Model with Vaccination, Special session on Mathematical Modeling in Biology and Medicine, AMS Western Sectional Meeting, University of Arizona, April 2007.
14. **S. Jang***, A Discrete Host-Parasitoid Model with Allee Effects and Age Structure in the Host, Conference on Mathematical Modeling and Analysis of Populations in Biological Systems, University of Arizona (in honor of Jim Cushing), October 2007.
15. **S. Jang***, Continuous Time Predator-Prey Models with Parasites, Special session on Recent Advances in Mathematical Biology, Ecology, and Epidemiology, AMS-MAA Joint Annual Meeting, San Diego, January 2008.
16. **S. Jang***, Dynamics of discrete-time larch-moth models, Special session on Mathematical Modeling in Biology, AMS Southeastern Sectional Meeting, Louisiana State University, April 2008.
17. **S. Jang***, Dynamics of nutrient-plankton-toxin interaction, The 6th International Conference on Differential Equations and Dynamical Systems, Morgan State University, May 2008.

18. **S. Jang***, Random dispersal in predator-prey-parasite interaction, Special session on Mathematical Biology: Modeling, Analysis, and Simulations, AMS Southeastern Sectional Meeting, University of Alabama in Huntsville, October 2008.
19. **S. Jang***, Allee effects in host-parasitoid models: density dependence versus parasitism, The International Conference on Differential Equations and Applications to Ecology and Epidemiology (in honor of Horst Thieme), Purdue University, December 2008.
20. **S. Jang***, Allee effects in discrete-time host-parasitoid models, Special session on Dynamical Systems and Biomathematics, Annual Meeting of the Mathematical Society of ROC, National Tsing-Hua University, Taiwan, December 2008.
21. **S. Jang***, Dynamics of an age-structured population with Alee effects and harvesting, Second International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems, University of Alabama at Huntsville, October 2009.
22. **S. Jang***, Allee effects in age-structured host-parasitoid interaction, International Conference on Difference Equations and Applications, Estoril, Portugal, October 2009.

· **Local Presentations**

1. **S. Jang***, A Discrete-Time Chemostat Model with Inhibition, MAA Southeastern Regional Meeting, Southeastern Louisiana University, March 2004.
2. **S. Jang***, A Survey of HIV/TB Models, Biomathematics Seminar, Department of Mathematics and Statistics, Texas Tech University, September 2008.
3. **S. Jang***, Allee effects in Discrete-Time Population Models, Biomathematics Seminar, Department of Mathematics and Statistics, Texas Tech University, October 2008.
4. **S. Jang***, Mathematics and Population Biology, SIAM Mini-Symposium, Department of Mathematics and Statistics, Texas Tech University, September 2008.
5. **S. Jang***, A Discrete-Time West Nile Virus Epidemic Model, Applied Mathematics Seminar, Department of Mathematics and Statistics, Texas Tech University, October 2008.
6. **S. Jang***, Mathematics and Biology, Emmy Noether High School Mathematics Day, Texas Tech University, May 2009.
7. **S. Jang***, Allee Effects in Population Models, MAA PREP Workshop on Mathematical Modeling in Population Biology and Epidemiology, Texas Tech University, July 2009.
8. **S. Jang***, Discrete-Time Structured Population Models, Biomathematics Seminar, Department of Mathematics and Statistics, Texas Tech University, September 2009.

DISSERTATION, THESIS AND REPORT DIRECTORS

· **Directed**

Youssef Dib (May 2007), *Continuous and Discrete Models in Population Biology*, Co-directed with A. Ackleh, University of Louisiana at Lafayette.

· **Dissertation Committee Member**

University of Louisiana at Lafayette (2002-2008)
· Shuhua Hu (December 2004)
· Xubo Wang (August 2005)
· Siriporn Hongthong (May 2006)
· Yangping Xia (May 2007)
· Shubhabrata Mukherjee (May 2007)
· Jeremy Thibodeaux (May 2007)

Texas Tech University (2008-present)

· Kumudu Mallawn (December 2009)

PROFESSIONAL SERVICE

· **Editorship**

Guest editor, *Journal of Biological Dynamics*, special issue of AMS-MAA Annual Meeting, New Orleans, January 2007.

· **Referring**

1. Applied Mathematics Letters
2. Electronic Journal of Differential Equations
3. Journal of Difference Equations and Applications
4. International Journal of Mathematics and Mathematical Sciences
5. Discrete and Continuous Dynamical Systems, Series B
6. The American Naturalist
7. Mathematical Biosciences
8. Statistics & Probability Letters
9. Computers and Mathematics with Applications
10. Mathematical and Computer Modelling
11. Journal of Mathematical Analysis and Applications
12. Ecological Modelling
13. Proceedings of the 9th International Conference on Difference Equations and Applications
14. Natural Resource Modeling
15. Journal of Theoretical Biology
16. Discrete Dynamics in Nature and Society
17. Ecological Complexity
18. Applicable Analysis
19. Journal of Biological Dynamics
20. Journal of Biological Systems
21. SIAM Journal on Applied Dynamical Systems
22. Mathematics and Computers in Simulation
23. Applied Mathematical Modelling
24. Bulletin of Mathematical Biology
25. Mathematical Biosciences and Engineering
26. Proceedings of the Conference on Nonlinear Analysis and Optimization
27. Proceedings of the 7th AIMS Conference in Dynamical Systems and Differential Equations
28. Journal of Computational and Applied Mathematics
29. Applied Mathematics and Computation

· **Reviewing**

Mathematical Reviews (MR)

· **Book Reviews**

1. New Trends in Difference Equations: Proceedings of the Fifth International Conference on Difference Equations, edited by S. Elaydi et al., Taylor & Francis, 2002. *Journal of Difference Equations and Applications*, **10**, 117-118, 2004.

2. An Introduction to Ordinary Differential Equations and Their Applications, by J.M. Cushing, Prentice-Hall, 2002.
3. Differential Equations, by J. Polking, A. Boggess, D. Arnold, Prentice-Hall, 2004.
4. Mathematical Models in Biology: An Introduction, by E. Allman and J. Rhodes, Cambridge University Press. *Journal of Difference Equations & Applications*, **11**, 877-878, 2005.

· **Proposal Reviews**

1. NSF-Office of International Science and Engineering, 2003.
2. USGS National Wetlands Research Center, 2006.
3. Board of Regents RCS university internal review, University of Louisiana at Lafayette, 2006.
4. Panelist for review of grant proposals for NSF-DMS-Mathematical Biology: Ecology and Diseases, Washington, DC, April 2008.

· **Meetings Organized**

1. Co-organized the special session “Structured Population and Epidemic Models: Periodicity, Chaos, and Extinction," with L. Allen, at the AMS Joint Central and Western Sectional Meeting, University of Colorado, October 2003.
2. Co-organized MAA PREP Workshop: Mathematics Meets Biology, with A. Ackleh, University of Louisiana at Lafayette, May 2004.
3. Co-organized the MAA PREP Workshop reunion, with A. Ackleh, AMS-MAA Joint Annual Meeting, Atlanta, January 2005.
4. Co-organized the special session “Extinction, Periodicity, and Chaos in Population and Epidemic Models," with L. Allen and L.-I. Roeger at the AMS Central Sectional Meeting, Texas Tech University, April 2005.
5. Co-organized MAA PREP Workshop: Mathematics Meets Biology, with A. Ackleh, University of Louisiana at Lafayette, May 2005.
6. Co-organized the special session “Recent Advances in Mathematical Biology and Epidemiology," with L. Allen, L.-I. Roeger at the AMS-MAA Joint Annual Meeting, San Antonio, January 2006.
7. Co-organized the special session “Recent Advances in Mathematical Biology, Ecology, and Epidemiology," with L. Allen and L.-I. Roeger at the AMS-MAA Joint Annual Meeting, New Orleans, January 2007.
8. Co-organized the special session “Recent Advances in Mathematical Biology, Ecology, and Epidemiology," with L. Allen and L.-I. Roeger at the AMS-MAA Joint Annual Meeting, San Diego, January 2008.
9. Co-organized the MAA PREP workshop: Mathematical Modeling in Population Biology and Epidemiology, with L. Allen, L-I Roeger, Texas Tech University, July 2009.
10. Co-organizing the special session “Mathematical Modeling on Biology, Ecology, and Epidemiology," with L. Allen and L.-I. Roeger at the AMS-MAA Joint Annual Meeting, San Francisco, to be held January 2010.
11. Co-organizing the MAA PREP workshop: Mathematical Modeling in Population Biology and Epidemiology, with L. Allen, L-I Roeger, Texas Tech University, to be held June 2010.

· **Memberships in Organizations**

1. Society for Mathematical Biology
2. American Mathematical Society
3. Association for Women in Mathematics
4. International Society of Difference Equations

LOURDES JUAN

EDUCATION

- B.S. in Mathematics with honors (Titulo de Oro), University of Havana, 1991.
- M.A. in Mathematics, University of Oklahoma, 1997.
- Ph.D. in Mathematics, University of Oklahoma, 2000.

PROFESSIONAL EXPERIENCE

- 1991-1994: Adiestrada (Trainee), Department of Artificial Intelligence and Pattern Recognition, Institute of Cybernetics, Mathematics and Physics, Academy of Sciences of Cuba.
- 1994-1995: Aspirante a Investigador (Research Resident), Department of Artificial Intelligence and Pattern Recognition, Institute of Cybernetics, Mathematics and Physics, Academy of Sciences of Cuba.
- 1995-2000: Graduate Teaching Assistant, Department of Mathematics, University of Oklahoma.
- Fall '95, Spring '96, Spring '98: Research Assistant, Department of Mathematics, University of Oklahoma.
- 2000-2001: Postdoctoral Fellow, Mathematical Sciences Research Institute, Berkeley, California.
- 2001-2008: Assistant Professor, Department of Mathematics, Texas Tech University.
- **May 2007: Visiting Professor, Institut de Recherche Mathématiques de Rennes, Rennes, France.**
- March 2008: Member, Mathematical Sciences Research Institute, Berkeley, California.
- 2008-present: Associate Professor, Department of Mathematics, Texas Tech University.
- Fall 2009: Visiting Scholar, Department of Mathematics, University of Pennsylvania.

AREAS OF INTEREST

Algebraic theory of differential and difference equations, *Lie theory*, *computer algebra*.

PUBLICATIONS IN REFEREED JOURNALS

- Chinburg, Ted**; Juan, Lourdes**; Magid, Andy*; Picard-Vessiot extensions with specified Galois group*, ***Pacific Journal of Mathematics****, Vol. 243 (2009), No. 2, 233–242.*
- **Juan, Lourdes;** Magid, Andy; *Differential central simple algebras and Picard-Vessiot representations*, ***Proceedings of the American Mathematical Society***, *136 (2008), 1911-1918*.
- **Juan, Lourdes**; Ledet, Arne, *On generic differential SO_n-extensions,* ***Proceedings of the American Mathematical Society***, *136 (2008), 1145-1153.*
- **Juan, Lourdes**; Ledet, Arne, *On Picard-Vessiot extensions with group PGL_3,* ***Journal of Algebra****, 318 (2007), no. 2, 786-793.*
- **Juan, Lourdes**; Ledet, Arne, *Equivariant vector fields on non-trivial SO_n-torsors and differential Galois theory,* ***Journal of Algebra****, 316 (2007), no.2, 735-745.*
- **Juan, Lourdes***; Generic Picard-Vessiot extensions for connected-by-finite groups,* ***Journal of Algebra****, 312 (2007), no.1, 194-206.*

- **Juan, Lourdes;** Magid, Andy; *Generic rings for Picard-Vessiot extensions and generic differential equations,* ***Journal of Pure and Applied Algebra****, 209 (2007), no. 3, 793-800.*
- **Juan, Lourdes**; *Pure Picard-Vessiot extensions with generic properties,* ***Proceedings of the American Mathematical Society****, 132 (2004), no. 9, 2549-2556.*
- **Juan, Lourdes**; *Principal differential ideals and a generic inverse differential Galois problem for* GL_n**,** ***Communications in Algebra,*** *30 (2002), no. 12, 6071--6103.*
- **Juan, Lourdes**; *Some results about symmetric semigroups,* ***Communications in Algebra****, 21 (1993), 3637-3645.*

FUNDING ACTIVITY

Funded Proposals

- *Generic Picard-Vessiot extensions for linear algebraic groups*, **Juan, Lourdes**, Principal Investigator, Young Investigator Research Grant, National Security Agency, $29,000, 2002-2004.
- *Proposals for travel grants*, **Juan, Lourdes**, Principal Investigator, Association for Women in Mathematics:
  - $1,000 (2009)
  - $1,500 (2006)
  - $2,000 (2003)

Pending Proposals

- *Aspects of Differential and Difference Galois Theory,* **Juan, Lourdes (PI),** Ledet, Arne (co-PI), pre-proposal submitted for ARP grant in the amount of $150,000, Sept., 2009.

Proposals Not Funded

- *Generic constructions in differential Galois theory and related topics,* **Juan, Lourdes (PI),** Ledet, Arne (co-PI), submitted for NSF standard grant in the amount of $358,616, Nov., 2008.
- *Generic constructions in differential Galois theory and related topics,* **Juan, Lourdes (PI),** Ledet, Arne (co-PI), submitted for NSA standard grant in the amount of $97,789, Nov., 2008.
- *Applications of algebraic groups and their representation theory in differential Galois theory and the representation theory of discrete groups*, **Juan, Lourdes (PI),** Carrell, James (University of British Columbia), (co-PI), Lubotzky, Alexander (Hebrew University), (co-PI), Parshall, Brian (University of Virginia) (co-PI), van der Put, Marius (University of Groningen), (co-PI), Conference Proposal, submitted to the Banff Inernational Research Station, Canada, Sept., 2008.
- *Generic constructions in differential Galois theory and related topics,* **Juan, Lourdes (PI),** Ledet, Arne (co-PI), submitted for NSF standard grant in the amount of $340,225, Nov., 2007.
- *Generic constructions in differential Galois theory and related topics,* **Juan, Lourdes (PI),** submitted for NSA Young Investigator Grant in the amount of $30,000, Nov., 2007.
- *Applications of algebraic groups and their representation theory in differential Galois theory and the representation theory of discrete groups*, **Juan, Lourdes (PI),** Carrell, James (University of British Columbia), (co-PI), Lubotzky, Alexander (Hebrew University), (co-PI), Parshall, Brian (University of Virginia) (co-PI), Conference Proposal, submitted to the Banff Inernational Research Station, Canada, Sept., 2007.

- *Algorithms for the symbolic solution of differential equations*, **Juan, Lourdes (PI),** pre-proposal for ARP-ATP grant in the amount of $148,473, Sept., 2007.
- *Generic Picard-Vessiot extensions and related topics*, for NSF standard grant in the amount of $121,982, Oct., 2006.
- *Generic Picard-Vessiot extensions and related topics,* **Juan, Lourdes (PI),** for NSA Young Investigator Research Grant in the amount of $30,000, Oct., 2006.
- *Algebraic methods in differential equations,* **Juan, Lourdes (PI),** pre-proposal for ARP, $ 56,000, 20004.

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- **Juan, Lourdes (Speaker),** *Center for Communications Research, Institute for Defense Analyses*, Princeton, New Jersey, October, 2009.
- **Juan, Lourdes (Speaker),** Karcher Special Lecture**,** *Department of Mathematics, University of Oklahoma*, April, 2009.

Invited Hour Talks

- **Juan, Lourdes (Speaker),** Galois Theory Seminar, *Mathematics Department, University of Pennsylvania,* October, 2009.
- **Juan, Lourdes (Speaker),** Kolchin Seminar in Differential Algebra, *Graduate Center, City University of New York*, NY, October, 2009, two talks.
- **Juan, Lourdes (Speaker),** Algebra Seminar, *Mathematics Department*, *Rutgers University, Piscataway*, NJ, October, 2009.
- **Juan, Lourdes (Speaker),** Galois Theory Seminar, *Mathematics Department, University of Pennsylvania,* September, 2009.
- **Juan, Lourdes (Speaker),** Algebra Seminar, *Mathematics Department, Yale University,* New Haven, CT, September, 2009.
- **Juan, Lourdes (Speaker),** Séminaire d'Arithmétique, L*aboratoire d'Arithmétique et d'Algèbre, Université Jean Monnet*, Saint Etienne, France, June, 2007.
- **Juan, Lourdes (Speaker), Séminaire de Calcul formel et Complexité, *Institut de Recherche Mathématiques de Rennes*, Rennes, France, May, 2007.**
- **Juan, Lourdes (Speaker),** Workshop on Arithmetic and Differential Galois Groups, *Oberwolfach, Germany,* May, 2007.
- **Juan, Lourdes (Speaker),** Kolchin Seminar in Differential Algebra, *Hunter College and Graduate Center, City University of New York*, NY, May, 2006, three talks.
- **Juan, Lourdes (Speaker),** Kolchin Seminar in Differential Algebra, *Hunter College, City University of New York*, NY, October, 2005.
- **Juan, Lourdes (Speaker),** Algebra Seminar, Department of Mathematics, *University of Texas, Austin*, Texas, February, 2004.
- **Juan, Lourdes (Speaker),** Kolchin Seminar in Differential Algebra, *Hunter College, City University of New York*, NY, November, 2003, two hour talk.
- **Juan, Lourdes (Speaker),** Project CAFÉ Seminar**,** *Institut National de Recherche en Informatique et en Automatique / Centre de recherche Sophia Antipolis,* Nice, France, June, 2003.

Conference presentations:

- **Juan, Lourdes (Speaker),** *Satellite Workshop on Algebraic Theory of Difference Equations*, in association with the programme Discrete Integrable Systems at the Newton Institute in Cambridge, University of Leeds, UK, May 2009.
- **Juan, Lourdes (Speaker),** *Workshop on Representation Theory, Geometry and Combinatorics,* University of California, Berkeley, California, June, 2008.
- **Juan, Lourdes (Speaker*),*** *Special Session on Differential Algebra and related topics, AMS Eastern Section Meeting,* Stevens Institute of Technology, Hoboken, NJ, April, 2007.
- **Juan, Lourdes (Speaker*),*** *Special session on Classical and Differential Galois Theory, AMS Spring Central Section Meeting,* Lubbock, April, 2005.
- **Juan, Lourdes (Speaker*),*** *Special session on Differential Galois Theory, First Joint International Meeting between the American Mathematical Society (AMS) and the Real Sociedad Matematica Espanola (RSME), Seville, Spain, June, 2003.*

Local presentations

- Regular speaker at the algebra seminar of the Mathematics Department of Texas Tech University (at least one lecture each semester).
- Lecture at the Emmy Noether High School Day, May 2005.
- Lectures at the SIAM Mini-Symposium, Fall 2006 and Spring 2008.

Sessions chaired

- Half day session of the *Third International Workshop on Differential Algebra and Related Topics (DART III)*, Rutgers University at Newark, Newark, NJ, November, 2008.
- *Special session on Classical and Differential Galois Theory, AMS Spring Central Section Meeting,* Lubbock, April, 2005.

Meetings attended (not including those at which a presentation was given):

- Joint Mathematics Meetings, Washington DC, Jan., 2009.
- Third International Workshop on Differential Algebra and Related Topics, Rutgers University at Newark, November, 2008.
- Second International Workshop on Differential Algebra and Related Topics, Rutgers University at Newark, April, 2007.
- Arizona Winter School on Fundamental groups in arithmetic, Albuquerque, New Mexico, March, 2005.
- Groupes de Galois Arithmetiques et differentiels, CIRM, Luminy, France, 2004.
- Arizona Winter School on Logic and Number Theory, Tucson, Arizona, March, 2003.

DISSERTATION, THESIS AND REPORT DIRECTED

- Lutes, Brad, *A Survey of Grobner Bases and Their Applications,* Master's Report, 2004.
- Miller, Brian, Ph.D. Dissertation in progress
- Groves, Jason, Ph.D. Dissertation, in progress
- Jesse, Odin, Master's Thesis, in progress

Graduate committees served on

- Memet Bulut
- Darren Rasberry
- Bradley Beauchamp

PROFESSIONAL SERVICE:

Refereeing

Referee for the journals *Mathematics of Computation*, *Journal für die reine und angewandte Mathematik and International Journal of Mathematics and Mathematical Sciences*.

Reviewing

Reviewed twelve papers for *Mathematical Reviews*.

Meetings organized

- **Juan, Lourdes (co-organizer),** Ledet, Arne (co-organizer), Magid, Andy (co-organizer)

Memberships in organizations

American Mathematical Society, Association for women in Mathematics.

OTHER RELEVANT ACTIVITIES:

Member of the Committee on Human Rights of Mathematicians, American Mathematical Society, appointed by the president, 2003-2006.

ROBERT C. KIRBY

EDUCATION

- Ph.D. in Computational and Applied Mathematics, The University of Texas at Austin, 2000.
- M.S. in Computational and Applied Mathematics, The University of Texas at Austin, 1998.

•B.S. in Mathematics, Texas Tech University, 1996.

PROFESSIONAL EXPERIENCE

•Texas Tech University, Department of Mathematics and Statistics, Associate Professor, 2006-present.

•University of Chicago, Department of Computer Science, Assistant Professor, 2002-2006.

•University of Chicago, Department of Mathematics and Department of Computer Science, Dickson Instructor, 2000-2002.

AREAS OF INTEREST

•Computational mathematics

•Numerical analysis of partial differential equations

•Metanumerical computing

•Mathematical software

PUBLICATIONS:

•Refereed Journals

1M.E. Rognes, **R.C. Kirby**, and A. Logg, "Efficient assembly of H(div) and H(curl) conforming finite elements," accepted for publication in *SIAM J. Scientific Computing*.
2**R.C. Kirby**, "From functional analysis to iterative methods," accepted for publication in *SIAM Review*.
3**R.C. Kirby**, "Singularity-free evaluation of collapsed-coordinate orthogonal polynomials," accepted for publication in *ACM Transactions on Mathematical Software*.
4A.R. Terrell, L.R. Scott, M.G. Knepley and **R.C. Kirby**, "Automated FEM Discretizations of the Stokes equations," *BIT Numerical Mathematics*, 48(2):389--404 (2008).
5**R.C. Kirby** and A. Logg, "Benchmarking domain-specific compiler optimizations for variational forms," *ACM Trans. Math. Software* 35(2):1--18 (2008).
6**R.C. Kirby** and L.R. Scott, "Geometric optimization of the evaluation of finite element operators", *SIAM J. Scientific Computing* 29:827--841 (2007).
7**R.C. Kirby** and A. Logg, "Efficient compiR.C. Kirby and A. Logg, "A compiler for variational forms," *ACM Trans. Math. software*. 32:417-444 (2006).
8**R.C. Kirby**, A. Logg, L.R. Scott, and A. R. Terrel, "Topological optimization of the evaluation of finite element matrices," *SIAM J. Scientific Computing* 28:224-240 (2006).
9**R.C. Kirby**, "Optimizing FIAT with Level 3 BLAS," *ACM Trans. Math. Software*. 32:223--235 (2006).
10**R. C. Kirby**, M. G. Knepley, A. Logg, and L. R. Scott, "Optimizing the evaluation of finite element matrices," *SIAM J. Scientific Computing* 27:741-758 (2005).
11**R. C. Kirby**, "FIAT: A new paradigm for computing finite element basis functions," *ACM Trans. Math. Software*. 30:502-516 (2004).
12**R. C. Kirby**, "A new look at expression templates for matrix computation," *IEEE Computing in Science and Engineering*, 5:66-70 (2003).
13**R. Kirby**, "A Posteriori Error Estimates for the Mixed Hybrid Finite Element Method," *Computational Geosciences*. 7:197-214 (2003).
14**R. Kirby**, "On the convergence of high resolution methods with multiple time scales for

hyperbolic conservation laws", *Mathematics of Computation*. 72:1239-1250 (2003).
15C. Dawson and **R. Kirby**, "High resolution schemes for conservation laws with locally varying time steps", *SIAM J. Scientific. Computing*. 22:2256-2281 (2001).
16C. Dawson and **R. Kirby**, "Solution of parabolic equations by backward-Euler mixed finite elements on a dynamically changing mesh", *SIAM J. Numerical Analysis*. 37:423-442 (2000).

•Refereed Conference Proceedings

17C. Dawson, S. Bryant, and **R. Kirby**, "Dynamically adaptive upwind finite volume methods for contaminant transport," *Computational Methods in Water Resources* XII, vol. 2, 641-648 (1998).

•Technical Reports

1**R.C. Kirby**, M. Knepley, and L.R. Scott, "Evaluation of the Action of Finite Element Matrices," University of Chicago Department of Computer Science TR-2004-07.
2**R.C. Kirby**, "Arbitrary order mixed finite elements for second order scalar elliptic problems," University of Chicago Department of Computer Science TR-2002-11.
3**R.C. Kirby** and A.N.M. Imroz Choudhury, "TIRESIAS: A User Guide," University of Chicago Department of Computer Science TR-2002-11.

FUNDING ACTIVITY

•Funded

1 "Conference: Nonlinear anlysis, PDE, and applications," National Science Foundation Division of Mathematical Sciences, ($15k). October 2009. PI: Luan Hoang, Co-PI: Eugenio Aulisa.
2 "Automated intrusive algorithms for numerical simulation of partial differential equations via software-based Frechet differentiation," National Science Foundation-CISE Theoretical Foundations Cluster program in Numerical, Symbolic and Geometric computing ($270k). 1 October 2008 - 30 September 2011. Co-PIs Kevin Long and Victoria Howle
3 "Providing Intrepid with High-order basis Functions," contract from Sandia National Laboratories ($20k). 01/08/2008-09/30/2008 ($41,000). Renewal for 10/01/2008-09/30/2009 ($20,000). Renewal for 10/01/2009-09/30/2010 ($27,000).
4 "Automatic Parallel Finite Elements," Dept. of Energy Early Career PI Program in Applied Mathematics, Collaboratory Research, Computer Science, and High-Performance Networks, ($300,000). 15 September 2004-31 August2006, 15 June 2007- 14 June 2009.

•Not Funded

5"CSUMS: Undergraduate Research Teams in Interdisciplinary Computational Problems," National Science Foundation ($218k), October 2007. PI: Jerry Dwyer.

•Pending

6"RENEWAL: Automatic Parallel Finite Elements," Dept. of Energy Office of Science ($270k). 15 September 2004-31 August2006, 15 June 2009- 14 June 2012.

PRESENTATIONS AND MEETINGS ATTENDED:

•Colloquia and seminars

1 Baylor University Department of Mathematics, October 2009
2"Foundations of finite element computation," lecture series at Simula Research Laboratory (joint with M. Knepley and D. Karpeev of Argonne National Laboratory), August 2008.
3Tabulating finite element basis functions," Simula Research Laboratory, Norway, December

2007.
4"From functional analysis to preconditioning: connecting Hilbert space to matrix methods", Sandia National Laboratory, April 2007.
5“Linear-time finite element approximation of coercive operators,” University of Chicago, March 2007.
6“Algorithms and automation for finite element methods.” University of Texas at Austin, ICES Seminar, October 2006.
7“Algorithms and automation for finite element methods.” University of California Berkeley, Numerical Analysis Seminar, April 2006.
8Lawrence Livermore National Laboratory, August 2005.
9“Automation and Algorithmics for Finite Element Methods,” Columbia University Applied Math Colloquium, April 2005.
10"Automating finite element computation," Carnegie-Mellon Computer Science, October 2004.
11“Automatic Finite Elements,” Sandia Livermore National Laboratory, Division of Computational Sciences and Mathematics Research, April 2004.
12"The FEniCS Project: An introduction to Automatic Scientific Computing." Rice University Department of Computational and Applied Mathematics, November 2003.
13"Arbitrary Order Mixed Finite Element Methods for Second Order Elliptic Problems," Mathematics Department Colloquium, Texas A&M University, March 2002.
14"Arbitrary Order Mixed Finite Element Methods for Second Order Elliptic Problems," Mathematics Department Colloquium, Notre Dame University, February 2002.
15“Local time stepping for advection equations,” Applied Math Seminar, Notre Dame University, February 2002.
16"Arbitrary Order Mixed Finite Element Methods for Second Order Elliptic Problems," Mathematics Department Colloquium, Texas Tech University, November 2001.
17"Space-Time Adaptivity for Transport Applications," Computations in Science Seminar, The University of Chicago, March 2000.

•**Invited Conference presentations**

1“Constructing and transforming finite element bases,” at Compatible and Innovative Discretizations for Partial Differential Equations," at Norwegian Academy of Sciences and Letters, June 2009.
2"Finite element bilinear forms using simplicial Bernstein polynomials," at FEniCS'09, Scientific Computing in the New Millenium, Simula Research Laboratory, June 2009.
3"FIAT: Overview, applications and future trends," at the LSU Workshop on Automating the Development of Scientific Computing Software, March 2008.
4"How to not program finite element methods", Advances in Scientific Computing, Chicago, IL, October 2007.
5"From functional analysis to preconditioning", Center for Biomedical Computing Workshop at Simula Research Laboratory, Norway, June 2007.
6 Sixth Department of Energy ACTS Workshop, Berkeley CA, August 2005.
7"Advanced Algorithms for Finite Elements, Workshop on Domain Specific Languages for Numerical Optimization," Argonne National Laboratory, August 2004.

•**Other Conference presentations**

1"Deriving matrices for transforming finite elements," in Combinatorial Scientific Computing and CSE minisymposium at SIAM Conference on Computational Science and Engineering. March 2009.
2"Transforming finite element bases," 2008 Department of Energy Applied Mathematics Principal Investigator Meeting.
3"Combinatorial Structure in Finite Element Operators," SIAM Workshop on Combinatorial Scientific Computing, February 2007.
4"Program generation for polynomial transforms in unstructured finite element computation," with M. Pueschel (Carnegie-Mellon), FEMTEC 2006.
5"Enabling general finite elements with FIAT," US National Congress on Computational Mechanics, August 2005.

6"Computational Mathematics at the University of Chicago," SIAM Annual Meeting, July 2005.
7“FIAT: Computing general finite elements,” Parallel Computational Fluid Dynamics, 2004.
8"A general approach to nodal spectral finite elements", SIAM Annual Meeting, June 2003.
9“Run-time integration of nonconforming finite elements and visualization via scripting,” SIAM Conference on Applications of Dynamical Systems, May 2003 (with A.N.M. Imroz Choudhury).
10"Nodal and Modal Bases in H(div)", SIAM Conference on Mathematical and Computational Issues in Geosciences, March 2003.
11R. Kirby, "Variable Degree Mixed Methods," SIAM50 Annual Meeting, Philadelphia, PA, June 2002. (with Clint Dawson).
12"Local Discontinuous Galerkin and Mixed Finite Element Methods for Flow Problems," 6th SIAM Conference on Geosciences, Boulder, CO, June 2001. (with Clint Dawson [speaker], Bernardo Cockburn, and Paul Castillo.
13"High Resolution Advection Schemes with Spatially Varying Time Steps," Finite Elements in Flow, Austin, TX, April 2000 (with Clint Dawson).
14High Resolution Advection Schemes with Spatially Varying Time Steps," SIAM Annual Meeting, Puerto Rico, June 2000. (with Clint Dawson).

•**Local presentations**

- Several presentations in Texas Tech Applied Mathematics Seminar
- Texas Tech Mathematics Colloquium

DISSERTATION, THESIS, AND REPORT DIRECTION

•**Master's**

- Andy R. Terrel, “FEM Automation with a case study on the Stokes equations,” University of Chicago, 2007 (co-advised with L.R. Scott).

HONORS AND AWARDS

- CAM Graduate Fellow, the University of Texas at Austin, 1996-1999
- Top Undergraduate Math Major, Texas Tech University, 1996.

PROFESSIONAL SERVICE

- **Refereeing**

  - ACM Transactions on Mathematical Software,
  - JCISE (Computing and Information Science in Engineering)
  - Constructive Approximation
  - Discrete and Continuous Dynamical Systems (series B)
  - Mathematical Modeling and Numerical Analysis (MMAN/RAIRO)
  - Numerical Methods for PDE
  - Numerische Mathematik
  - Principles of Programming Languages
  - SIAM Journal on Scientific Computing
  - SIAM Journal on Numerical Analysis
  - SIAM Book Acquisitions

- **Reviewing**

  - Scientific Programming

- **Meetings organized**

  - "Nonlinear Analysis, PDE, and Applications," 2009 Red Raider Minisymposium, Texas Tech University, October 2009.

- **Reviewing panels**

  - National Science Foundation (CISE Directorate)
  - Department of Energy SciDAC

- **Memberships**

  - SIAM (Computational Science and Engineering Activity Group)

ARNE LEDET

EDUCATION

- Matriculation at the University of Copenhagen (Mathematics and Computer Science) in the summer of 1985.
- Examination for the Master's Degree in January 1991. Master's Thesis handed in in December 1991. Master's Degree obtained on January 2, 1992.
- Title of Master's Thesis: "Pro_endelige grupper og eksempler på disses realisering som Galoisgrupper". ("Pro_finite groups and examples of their realisation as Galois groups", Danish.) Thesis supervisor: Prof. C. U. Jensen, Copenhagen.
- I ntroductory stipend from the Faculty of Natural Sciences at the University of Copenhagen from April to July 1992.
- Received travel grant from Rejselegat for Matematikere ("Travelling scholarships for Mathematicians") in the spring of 1992. Grant used for visiting the University of Heidelberg, Germany, in the period October 1992 to July 1993.
- Obtained Ph.D._stipend at the University of Copenhagen for the period September 1993 to August 1996.
- Spent the period from February 2, 1995, to June 15, 1995, at the University of Tel_Aviv, Israel, as a visitor of Prof. M. Jarden.
- Obtained Ph.D. degree from the University of Copenhagen in September 1996.
- Title of Ph.D. thesis: "Galois Theoretical Embedding Problems with Cyclic Kernel of Prime Order". Thesis supervisor: Prof. C. U. Jensen, Copenhagen. Evaluation commitee: Prof. Dr. A. Prestel (Konstanz, Germany), Prof. J. B. Olsson (Copenhagen) and Dr. G. Brattström (Stockholm, Sweden).

PROFESSIONAL EXPERIENCE

- July 1997_June 1999: ARC Postdoctoral Fellow at the Department of Mathematics at Queen's University, Kingston, Ontario. Supervisors: Prof. R. Murty and Prof. N. Yui.
- August 1999_December 1999: Visitor at the Mathematical Sciences Research Institute in Berkeley, California, attending the research program "Galois Groups and Fundamental Groups".
- January 2000_June 2000: Postdoctoral Fellow at the Department of Mathematics at Queen's University, Kingston, Ontario, continuing work with Prof. N. Yui. The entire period August 1999 to June 2000 financed by the Danish Natural Science Research Council.
- August 2000_December 2000: General Member at the Mathematical Sciences Research Institute in Berkeley, California, attending the research program "Algorithmic Number Theory".
- January 2001_May 2001: Research fellow at Tokyo Metropolitan University, Japan, visiting Prof. Katsuya Miyake.
- July 2001_June 2002: Postdoctoral fellow at the University of Waterloo, Ontario. Supervisor: Prof. C. Stewart.
- September 2002_August 2008: Assistant professor at Texas Tech University.
- September 2008_: Associate professor at Texas Tech University.

AREAS OF INTEREST

Classical and differential Galois theory

PUBLICATIONS

Refereed journals

- On Dp_Extensions in Characteristic p, Proc. AMS 132 (2004), pp. 2557_2561
- PSL(2,2n)_extensions over F2n, Can. Math. Bull. 49 (2006), pp. 113_116
- The Monge Shuffle for Two_Power Decks, Math. Scand. 98 (2006), pp. 5_11
- Conformal mapping and ellipses (with Alex Yu. Solynin), Proc. AMS 134 (2006), pp. 3507_3513
- Finite groups of essential dimension one, J. Alg. 311 (2007), pp. 31_37
- Equivariant vector fields on non_trivial SOn_torsors and differential Galois theory (with Lourdes Juan), J. Alg. 316 (2007), pp. 735_745
- Faro Shuffles and the Chinese Remainder Theorem, Math. Mag. 80 (2007), pp. 283_289, as well as Math. Adv. Translation (Chinese) 2008 (4), pp. 328_334
- On Picard_Vessiot extensions with group PGL3 (with Lourdes Juan), J. Alg. 318 (2007), pp. 786_793
- On generic differential SOn_extensions (with Lourdes Juan), Proc. AMS 136 (2008), pp. 1145_1153.

Refereed conference proceedings

- On the essential dimension of p_groups, in Galois Theory and Modular Forms, pp. 159_172, Developments in Mathematics 11, Kluwer Academic Publishers, 2004
- On p_groups in characteristic p, in Algebra, Arithmetic and Geometry with Applications, pp. 591_600, Springer_Verlag, 2004

Conference proceedings

- Essential dimension, in Proceedings of the Workshop on Number Theory 2005, pp. 61_68, Institute of Mathematics, Waseda University, Tokyo

Monographs

- Brauer Type Embedding Problems. Fields Institute Monographs 21, American Mathematical Society, 2005

FUNDING ACTIVITY

Funded

2004:
- Applied for Research Enhancement Funds from the Institute for University Research. Project title: "Generic Polynomials". Original amount: $3,500. Revised amount: $2,000.

2005:
- Applied for Research Enhancement Funds from the Institute for University Research. Project title: "Essential Dimension". Original amount: $3,500. Revised amount: $2,500.

Not funded

2003:
- Applied for Research Enhancement Funds from the Institute for University Research. Project title: "Generic Polynomials". Amount: $3,500.
- Applied to the NSF, under the "Algebra, Number Theory and Combinatorics" program. Title: "Generic Polynomials". Amount: $103,041.

2004:
- Applied to the NSF, under the "Algebra, Number Theory and Combinatorics" program. Title: "Generic Polynomials". Amount: $122,160.

2005:
- Applied to the NSF, under the "Algebra, Number Theory and Combinatorics" program. Title: "Generic Polynomials". Amount: $130,300.

2006:
- Applied to the NSF, under the "Algebra, Number Theory and Combinatorics" program. Title: "Generic Polynomials". Amount: $131,196.

2007:
- Applied to the NSF as co_PI, with Lourdes Juan as PI, under the "Algebra, Number Theory and Combinatorics" program. Title: "Generic constructions in differential Galois theory and related topics". Amount: $340,225.

2008:
- Applied to the NSF as co_PI, with Lourdes Juan as PI, under the "Algebra, Number Theory and Combinatorics" program. Title: "`Generic constructions in differential Galois theory and related topics". Amount: $358,616.

Pending

2009:
- NHARP Pre_Proposal. Title: "Aspects of Differential and Difference Galois Theory". As co_PI, with Lourdes Juan as PI.

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- Generic polynomials. Algebra Seminar, University of Texas at Austin. September 23, 2003.
- Generic polynomials. Algebra and Geometry Seminar, University of Valenciennes, France. June 23, 2004.
- Generic polynomials. GTEM Seminar, University of Lille, France. June 25, 2004.
- Describing differential Galois extensions. Seminar, Université de Rennes. July 8, 2009.

Conference presentations

- Generic polynomials with one parameter. Pingree Park "Brauer Group" Meeting, Colorado State University. July 2, 2004.
- PSL(2,2n) as Galois group over GF(2n). C. U. Jensen Symposium, University of Copenhagen. September 3, 2004.
- Groups with essential dimension 1. Workshop on the Inverse Galois Problem and Galois Covers, Kochi University, Japan. November 2, 2004.
- The Monge shuffle for a deck with 2n cards. MAA General Contributed Papers Session, Joint Mathematics Meetings, Atlanta. January 8, 2005.
- Essential dimension. Number Theory Workshop, Waseda University, Tokyo. March 18, 2005.
- Essential dimension. Session on Classical and Differential Galois Theory, AMS Sectional Meeting, Texas Tech University. April 9, 2005.
- Generic polynomials. AMS Special Session on Division Algebras, Galois Theory, Cohomology and Geometry, Joint Mathematics Meetings, San Antonio. January 13, 2006.
- Quaternion groups as Galois groups. Special Session on Representation Theory and Galois Cohomology in Number Theory, AMS Sectional Meeting, Davidson College. March 4, 2007.

- PGL3 as a differential Galois group. Special Session on Differential Algebra, AMS Sectional Meeting, Stevens Institute of Technology. April 15, 2007.
- Differential Galois extensions with Galois group PGL2. Pingree Park "Brauer Group" Meeting, Colorado State University. July 4, 2008.
- PGLn as a differential Galois group. Third International Workshop on Differential Algebra and Related Topics (DART III), Rutgers University, Newark. November 14, 2008.
- Spin7 as a differential Galois group. Special Session on Brauer Groups, Quadratic Forms, Algebraic Groups, and Lie Algebras, AMS Sectional Meeting, North Carolina State University. April 4, 2009.

Meetings attended

- Attended the workshop "Arithmetic and differential Galois groups" at Oberwolfach, Germany, May 13_19, 2007.

DISSERTATION, THESIS AND REPORT DIRECTORS

Directed students

- Darren Rasberry, report: "Ordered groups and rings." May 2006.

Graduate committees served on

- Jason Bacon, "Systems of Parameters for Rings of Invariants of Finite Groups", summer 2008. Advisor: Mara Neusel.

PROFESSIONAL SERVICE

Refereeing

Mathematics of Computation (four times), Canadian Mathematical Bulletin (three times), Manuscripta Mathematica (twice), Proceedings of the American Mathematical Society (twice), Journal of Algebra (once), Crelle (once), JP Journal of Algebra, Number Theory and Applications (once), International Journal of Number Theory (twice), Mathematical Research Letters (once), Transformation Groups (once), Asian Journal of Mathematics (once), Nagoya Math. J. (once), J. Th. Nombres Bordeaux (once) and Mathematics Magazine (once).

Meetings organised

Co_organised and co_chaired (with Lourdes Juan and Andy Magid) the Special Session of Classical and Differential Galois Theory at the AMS Sectional Meeting at Texas Tech University, April 8_10, 2005.

Membership in Organisations

AMS and MAA

OTHER RELEVANT ACTIVITIES

Served as juror on the thesis evaluation committee for Emmanuel Andreo, University of Valenciennes, France, June 2004. Thesis title: "Dissociation des Extensions Algébriques de Corps par les Extensions Galoisiennes ou Galsimples non Galoisiennes." (Ph.D. Thesis.)

JEFFREY M. LEE

EDUCATION

August 1982 – April 1987 — University of California at Los Angeles
Ph.D., M.S. Mathematics
Advisor: S.Y. Cheng

September 1977 – April 1982 — Brigham Young University
B.A. Mathematics

ACADEMIC OR PROFESSIONAL POSITIONS

August 1996 – Present — Texas Tech University
Associate Professor

July 1990 – August 1996 — Texas Tech University
Assistant Professor

September 1988 – April 1990 — Purdue University
Research Assistant Professor

January 1988 – September 1988 — R&D Labs, Culver City CA.
Research Scientist

AREAS OF INTEREST

Differential Geometry, Geometric Analysis, Geometric Control Theory, Mathematical Physics, Outreach Mathematics.

PUBLICATIONS

Books

Manifolds and Differential Geometry, Graduate Studies in Mathematics, Vol. 107, Amer. Math. Soc. (2009)
*This book is a 688 page advanced graduate text and contains original research level material.

Supplement for Manifolds and Differential Geometry, 200 pages. This is an online web publication hosted at the AMS website.

Refereed Journals

1. On the geometry of the smallest circle enclosing a finite set of points, J. Franklin Inst. 344 (2007), no. 7, 929--940.
2. Observability of Finite Dynamical Systems, IEEE Transactions on Information Theory, (2003)
3. Nonparametric density estimation on homogeneous spaces in high level image analysis, in *Bioinformatics, Images and Wavlets;* Program and Abstracts. Aykroyd, Barber and Mardia (Eds.) (2004) pp. 37-40
4. Robert E. Byerly, Lance D. Drager, Jeffery M. Lee, Observability of Permutations and Stream Ciphers, *IEEE Transactions on Information Theory*, Vol.49, No.12, December 2003, pp.3326-3330.

Refereed Conference Proceedings

Lance D. Drager, Jeffrey M. Lee and Clyde F. Martin, "The Maximal Number of Pairwise Communicating Stations under Limitations of Maximal and Minimal Communication Distance," *Proceedings of the 46th IEEE Conference on Decision and Control*, New Orleans, Dec., 2007.

FUNDING AND GRANT PROPOSAL ACTIVITY

1. "Splines on Homogeneous Spaces by Geometric Control," proposal to Texas Tech Research Enhancement Funds Program, $35,000, April 2008, Principal Investigator: Jeffrey Lee, Co-Principal Investigator: Lance Drager. Not funded.
2. 2009 Senior personnel on PRISM: Proactive recruitment of math students on the South Plains, NSF, $2,852,17 Not funded.
3. "Control Theoretic Splines on Curved Spaces," proposal to Texas Advanced Research Program, $125,000, Principal Investigator: Lance Drager, Co-Principal Investigator: Jeffrey Lee. Not funded.
4. "Splines on Homogenous Spaces by Geometric Control," proposal to Texas Tech Research Enhancement Funds Program, $35,000, Principal Investigator: Jeffrey Lee, Co-Principal Investigator: Lance Drager. Not funded.
5. The Texas Tech TGTC organizers helped prepare the NSF proposal to renew funding for the series. The Texas Tech organizers for the Texas Geometry and Topology Conference (Drager, Gelca, Lee and Toda) helped the PI prepare an NSF proposal to renew the funding for this conference series. The proposal was funded. The Texas Geometry and Topology Conference will meet at Texas Tech in spring 2008.

PRESENTATIONS AT MEETINGS

Invited Conference Addresses

Presentation of joint work given by Co-author Lance Drager. Title: "The Geometry of the Smallest Circle Enclosing a Finite Set of Points" at the *Special Session on Differential Geometry and Its Applications*, 2005 Spring Central Sectional Meeting of the AMS, Texas Tech, April 2005. (Invited Address) This is joint work with L. Drager and C. Martin

Other

"Avoiding Things", Talk given at the fall 2006 SIAM MiniSymposium at Texas Tech University. This was a presentation of material in a submitted paper, "Avoidance and Targeting of Uniformly Moving Objects" submitted to *Communications in Information and Systems*. Lecture series, "Illuminating Geometry" for high school summer math academies at Texas Tech University, Plains High School, and Cotton Center High School. This series was comprised of approximately 20 hours of lectures and directed activities and was given three times at three locations over a period of 3 to 4 weeks and reaching a total of 60 hours worth of presentation.

PROFESSIONAL SERVICE

Refereeing

A complete record of refereeing activity is unavailable but Jeffrey Lee has refereed for the *Pacific Journal of Mathematics*. The title of one article refereed was "A Unified Approach to Universal Inequalities for Eigenvalues of Elliptic Operators".

Meetings Organized

The 33th Meeting of the Texas Geometry and Topology Conference was held at Texas Tech in February 2005. The organizers were L. Drager, R. Gelca, J. Lee and M. Toda. The Conference Report is available on the TGTC homepage.

G. Graduate Faculty Information

The 39th Meeting of the Texas Geometry and Topology Conference was held at Texas Tech in February 2008. The organizers were L. Drager, R. Gelca, J. Lee and M. Toda. The Conference Report is available on the TGTC homepage.

IRA WAYNE LEWIS

EDUCATION

University of Texas at Austin	Ph. D. (Mathematics) 1977
Texas A & M University	M. Sc. (Mathematics) 1974
University of Houston	B. Sc. (Mathematics) 1972

ACADEMIC EXPERIENCE

Professor	Texas Tech University	1989-present
Visiting Associate	Professor Auburn University	1984-85
Visiting Scientist	Banach Center, Warsaw	1984
Associate Professor	Texas Tech University	1983-89
Visiting Assistant	Professor University of Kentucky	1982
Visiting Assistant	Professor University of Alabama in Birmingham	1981
Visiting Scientist	Institute of Mathematics, Warsaw	1981
Visiting Assistant	Professor University of Texas at Austin	1980
Visiting Assistant	Professor Tulane University	1979-1980
Assistant Professor	Texas Tech University	1979-1983
Visiting Lecturer	Texas Tech University	1977-1979

AREAS OF RESEARCH INTEREST

Continuum Theory, Topological Dynamics, Geometric Topology, Knot Theory

RECENT PUBLICATIONS

Refereed Journal Publications

- Wayne Lewis and Piotr Minc, Drawing the Pseudo-Arc, Houston Journal of Mathematics (accepted, to appear).
- Wayne Lewis and Michael Levin, Some Mapping Theorems for Extensional Dimension, Israel Journal of Mathematics, 135 (2003) 61-76.
- Wayne Lewis, Homogeneous Continua, Aportaciones Matem_aticas, Sociedad Matematica Mexicana (submitted).

Refereed Book Chapter

- Wayne Lewis, Indecomposable Continua, invited chapter in book Open Problems in Topology, 2 edited by Elliott Pearl, published by Elsevier Publications, (2007) 303-317.

Edited Refereed Volume

- Wayne Lewis, Sergio Mac__as and Sam B. Nadler, Jr., editors, Continuum Theory: In Honor of Professor David P. Bellamy on the Occasion of His 60th Birthday, Aportaciones Matem_aticas, Investigaci_on 19, Sociedad Matem_atica Mexicana (2007) 1-148.

RECENT FUNDING ACTIVITY

Funded Proposals

- Spring Topology and Dynamical Systems Conference 2010, conference proposal submitted to Division of Mathematical Sciences, National Science Foundation. FUNDED.

$49,432 for October 1, 2009 - September 30, 2010. Andrew Paul Fabel (Principal Investigator), Wayne Lewis (Co-Principal Investigator) and Frederic Mynard (Co-Principal Investigator).

- Spring Topology and Dynamical Systems Conference 2003, conference proposal submitted to Division of Mathematical Sciences, National Science Foundation. FUNDED. $31,460 for November 1, 2002 - October 30, 2003. Wayne Lewis (Principal Investigator), Harold Bennett (Co-Principal Investigator), Razvan Gelca (Co-Principal Investigator) and Carl Seaquist (Co-Principal Investigator).

Unfunded Proposal

- Embeddings of Continua and Extensions of Homeomorphisms, research preproposal submitted to Advanced Research Program, Texas Higher Education Coordinating Board, June 2003. Funding for Advanced Research Program eliminated from state budget immediately after deadline for submitting preproposals. Wayne Lewis (Principal Investigator).

RECENT PRESENTATIONS AND CONFERENCE ACTIVITY

Colloquia And Related Activity

- Wayne Lewis*, invited colloquium talk on The Pseudo-Arc at Nipissing University, North Bay, Ontario, Canada, November 2004.
- Wayne Lewis*, invited featured participant at opening of interactive art and mathematics show Pseudo-Arc For The People at White Water Art Gallery, North Bay, Ontario, Canada. Presented recorded invited interview at show.

Invited Plenary Talks

- Wayne Lewis*, invited plenary talk on Atriodic Continua at 37th Annual Lloyd Roeling Conference on Mathematics, University of Louisiana, Lafayette, Louisiana, November 2009.
- Wayne Lewis*, invited plenary address on Homogeneous Embeddings of Continua at Third International Conference on Continuum Theory, Benem_erita Universidad Aut_onoma de Puebla, Puebla, M_exico, November 2007.
- Wayne Lewis*, invited plenary talk at 34th Annual Lloyd Roeling Conference on Mathematics, scheduled at University of Louisiana, Lafayette, Louisiana, November 2005. Conference cancelled in aftermath of hurricanes Katrina and Rita.
- Wayne Lewis*, invited plenary address on Whither Indecomposability? at Spring Topology and Dynamical Systems Conference 2004, University of Alabama, Birmingham, Alabama, March 2004.
- Wayne Lewis*, invited plenary address on Embeddings of Continua at Second International Conference on Continuum Theory, Benem_erita Universidad Aut_onoma de Puebla, Puebla, M_exico, July 2003.

Invited Short Courses

- Wayne Lewis*, invited Short Course on Indecomposable Continua at Second Student Workshop on Continuum Theory, Universidad Nacional Aut_onoma de M_exico, Curenavaca, Mexico, November 2007. (Three-day series of three talks plus three problem sessions.)
- Wayne Lewis*, invited Short Course on Homogeneous Continua presented at Instituto de Matem_aticas, Universidad Nacional Aut_onoma de M_exico, M_exico City, M_exico, January 2003. (Two week series of eight talks.)

Other Conference Presentations

- Wayne Lewis*, invited talk on Homeomorphisms of the Pseudo-Arc in Special Session

on Topology of Continua, Central Section Meeting of American Mathematical Society, Baylor University, Waco, Texas, October 2009.

- Wayne Lewis*, invited talk on Atriodic Continua in Special Session on Continuum Theory, Spring Topology and Dynamical Systems Conference 2009, University of Florida, Gainesville, Florida, March 2009.
- Wayne Lewis*, invited talk on Composants of the Pseudo-Arc at 12th Chico Topology Conference and 40th Cascade Topology Seminar, California State University, Chico, California, May 2008.
- Wayne Lewis*, invited talk on Atriodic Tree-Like Continua in Special Session on Continuum Theory, Spring Topology and Dynamical Systems Conference 2008, University of Wisconsin, Milwaukee, Wisconsin, March 2008.
- Wayne Lewis*, invited talk on Subchainable Hereditarily Indecomposable Continua in Special Session on Continuum Theory, Spring Topology and Dynamical Systems Conference 2007, University of Missouri, Rolla, Missouri, March 2007.
- Wayne Lewis*, invited talk on Characterizations of the Pseudo-Arc at 11th Chico Topology Conference, California State University, Chico, California, June 2006.
- Wayne Lewis*, invited talk on When P-Like Continua Are Also Q-Like in Special Session on ContinuumTheory, Sixth IberoAmerican Conference of Topology and Its Applications (CITA - 2005), Puebla, M_exico, July 2005.
- Wayne Lewis*, invited talk on Hereditary Indecomposability and Homogeneity in Sprecial Session on Continuum Theory, Spring Topology and Dynamical Systems Conference, Berry College, Rome, Georgia, March 2005.
- Wayne Lewis*, invited talk on Continua Which Are Like Every Graph at 10th Chico Topology Conference, California State University, Chico, May 2004.
- Wayne Lewis*, invited talk on Rigid Embeddings in the Plane in Special Session on Continuum Theory and General Topology (In Honor of David Bellamy's 60th Birthday) at Sixth Joint International Meeting of the American Mathematical Society and the Sociedad Matem_atica Mexicana, Houston, Texas, May 2004.

Recent Additional Meeting And Conference Participation

- Invited Participant, 12th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, July 2009.
- Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, Washington, D.C., January 2009.
- Invited Participant, 11th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, July 2008.
Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical

Association of America, San Diego, California, January 2008.

- Invited Participant, 10th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, April 2007.
- Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, New Orleans, Louisiana, January 2007.
- Invited Participant, 9th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, May 2006.
- Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, San Antonio. Texas, January 2006.
- Invited Participant, 8th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, May 2005.
- Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical Association of America, Atlanta, Georgia, January 2005.
- Invited Participant, 7th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, March 2004.
- Participant, Joint Mathematics Meetings, American Mathematical Society and Mathematical

Association of America, Phoenix, Arizona, January 2004.

- Invited Participant, 6th Annual Conference on Inquiry-Based Learning and Heritage of R. L. Moore, Educational Advancement Foundation, Austin, Texas, March 2003.

See additional listings under Recent Conference and Special Session Organization below.

DISSERTATION AND THESIS DIRECTION

Directed Students

- Christopher Todd Kennaugh, Dissertation: Complexity of Atriodic Continua, Ph. D. received May 2009.
- Kimberley Renee Peterson, Thesis: Continua Which Are G-Like For Multiple Graphs G, M. Sc. received May 2005.

Students In Progress

- Nadeeka De Silva, Doctoral work in progress.

Committee Membership

- Jea-Pil Cho, member of doctoral advisory committee.

PROFESSIONAL SERVICE

EDITING

- Member of Editorial Advisory Board for refereed journal Topology Proceedings

Refereeing

American Mathematical Monthly
Aportaciones Matematicas
Bulletin of London Mathematical Society

Bulletin of Mexican Mathematical Society
Canadian Mathematical Bulletin
Fundamenta Mathematicae
Houston Journal of Mathematics
Proceedings of the American Mathematical Society
Rocky Mountain Journal of Mathematics
Topology and Its Applications
Topology Proceedings
Transactions of the American Mathematical Society

Reviewing For Journals And Books

- Mathematical Reviews
- Zentralblatt fur Mathematik und Ihre Grenzgebiete
- Multivariable Calculus, text by Jon Rogawski, W. H. Freeman Company publishers (prepublication review of new text).
- Topology, text by Sheldon Davis, McGraw Hill Publishers (prepublication review of new text).

Reviewing For Funding Agencies

- Reviewer of research grant proposals and conference grant proposals for National Science Foundation.

Recent Conference And Special Session Organization

- Chair (2004 - present) of International Steering Committee for Spring Topology and Dynamical Systems Conferences. Coordinate planning of future conferences.
- Co-organizer of Spring Topology and Dynamical Systems Conference 2010, to be held at Mississippi State University, March 2010.
- Member of Advisory Committee for Spring Topology and Dynamical Systems Conference 2006, University of North Carolina, Greensboro, North Carolina, March 2006.
- Member of Travel Grants Committee for Spring Topology and Dynamical Systems Conference 2006, University of North Carolina, Greensboro, North Carolina, March 2006.
- Co-organizer (with Sergio Macias and Sam B. Nadler, Jr.) of Special Session on Continuum Theory, Spring Topology and Dynamical Systems Conference 2006, University of North Carolina, Greensboro, North Carolina, March 2006.
- Local co-organizer of Central Section Meeting of American Mathematical Society, Texas Tech University, April 2005.
- Organizer of Special Session on Topology of Continua, Central Section Meeting of American Mathematical Society, Texas Tech University, April 2005.
- Primary organizer of Spring Topology and Dynamical Systems Conference 2003, Texas Tech University, March 2003. Conference had 189 registered participants from at least 12 countries. Included nine one-hour plenary and ten 45-minute semi-plenary talks, with over 100 20-minute talks in six special sessions.

KEVIN LONG

EDUCATION

Princeton University
Ph.D. in Astrophysics, 1990
Thesis: *Kinematics and Dynamics of Barred Galaxies*
Advisor: David Spergel

University of Maryland
B.S. in Astronomy, 1986
Cum Laude, with High Honors in Astronomy
Honors Thesis: *Tidal Disruption of Open Star Clusters by their Parent Molecular Clouds*
Advisor: Leo Blitz

Prince George's County Community College
Attended 1981-82

POSITIONS HELD

Texas Tech University, Lubbock, TX
Department of Mathematics and Statistics
Associate Professor, Aug 2008-present
Visiting Assistant Professor, Aug 2007-Aug 2008

Sandia National Laboratories, Livermore, CA
Computational Sciences and Mathematics Research Department
Principal Member of the Technical Staff, 2004-2007
Senior Member of the Technical Staff, 2000-2004
Limited Term Technical Staff, 1998-2000

Beam Technologies, Ithaca, NY
Research staff, 1996-1998

SUNY at Brockport, Brockport, NY
Assistant Professor, Physics Department, 1992-1995

University of Massachusetts, Amherst, MA
Postdoc, Physics Department, 1990-1992

Princeton University, Princeton, NJ
Graduate Research Assistant, Astrophysics Department 1986-1990
Graduate Teaching Assistant, Astrophysics Department (Spring 1989)

University of Maryland, College Park, MD
Undergraduate Teaching Assistant, Physics Department, 1985-1986
Undergraduate Research Assistant, Physics Department (Summer 85,86)

National Bureau of Standards, (now **NIST**)
Gaithersburg, MD
Undergraduate Student Intern, Metallurgy Department, Summer 1984, Winter 1985

AREAS OF INTEREST

- Applied Mathematics

- Finite Element Methods
- Uncertainty Quantification in PDE Simulation
- PDE-Constrained Optimization
- Computational Physics

- Software for High-Performance Computing

REFEREED JOURNAL PUBLICATIONS

- R. Shuttleworth, H. Elman, K. Long, and J. Templeton, *Fast Solvers for Models of ICEO Microfluidic Flows*, accepted for publication in *International Journal for Numerical Methods in Fluids*, Jul 2009.
- H. Adalsteinsson, B. Debusschere, K. Long, and H. Najm, *Components for atomistic-to-continuum multiscale modeling of flow in micro- and nanofluidic systems*, *Scientific Programming* 2008, Volume 16, Number 4, Page 297.
- P. Boggs, K. Long, S. Margolis, and P. Howard, *Rapid Source Inversion for Chemical/Biological Attacks, Part 1: The Steady-State Case*, SIAM Journal on Optimization, Vol 17., No. 2, p. 430, 2006.
- M. Heroux, R. Bartlett, V. Howle, R. Hoekstra, J. Hu, T. Kolda, R. Lehoucq, K. Long, R. Pawlowski, E. Phipps, A. Salinger, H. Thornquist, R. Tuminaro, J. Willenbring, A. Williams, and K. Stanley, *An Overview of the Trilinos Project* ACM Transactions on Mathematical Software, Vol. 31, No. 3, September 2005.
- V. Akcelik, G. Biros, O. Ghattas, K. Long, and B. van Bloemen Waanders, *A Variational Finite Element Method for Source Inversion for Convective-Diffusive Transport*, Finite Elements in Analysis and Design, vol 39, p. 683, 2003.

CONFERENCE PROCEEDINGS

- A. R. Terrel and K. Long, *Evaluation of Level Set Topology Optimization Formulations for Design of Minimum-Dispersion Microfluidic Devices*, Proceedings of the Nanoscience, Engineering, and Computation Institute at Sandia, Sept 2006.
- J. P. Reese, K. Long, C. T. Kelley, W. G. Gray, and C. T. Miller, *Simulating Non-Darcy Flow Through Porous Media using Sundance*, in Proceedings of the XVI International Conference on Computational Methods in Water Resources, Copenhagen, Denmark, June 2006.
- K. Long, *Rapid Development of Efficient Codes for PDE Simulation and Optimization*, Sandia CIS External Review, Albuquerque, NM, August 2005
- K. Long, *Efficient Discretization and Differentiation of Partial Differential Equations through Automatic Functional Differentiation*, 4th International Conference on Automatic Differentiation, July 2004

TECHNICAL REPORTS

- B. Debusschere, M. Hickner, F. Zendejas, H. Adalsteinsson, H. Tran, K. Long, H. Najm, D. Chinn, M. Kent, and B. Simmons, *Computational and Experimental Study of Nanoporous Membranes for Water Desalinization and Decontamination*, 2008, Sandia National Laboratories Technical Report SAND2008-7603.

- B. van Bloemen Waanders, S. Altman, B. Carnes, J. Hill, K. Long, L. McGrath, and Y. Marzouk, *Decontamination of Water Networks: A Numerical and Experimental Investigation of Biofilms*, 2008, Sandia National Laboratories Technical Report SAND2008-8127.
- B. van Bloemen Waanders *et. al.*, *Algorithm and Simulation Support for Response Strategies for Contamination Events in Air and Water Systems*, Sandia National Laboratories Technical Report SAND2006-0074
- K. Long, *Sundance 2.0 Tutorial*, Sandia National Laboratories Technical Report SAND2004-4793

RECENT COLLOQUIA AND SEMINARS

- Applied Mathematics Seminar, Texas Tech, Nov 2008

- Scientific Computing Seminar, Texas Tech, Mar 2008
- Mathematics Colloquium, Texas Tech, Feb 2008
- Applied Mathematics Seminar, Texas Tech, Nov 2007
- Biomathematics Seminar, Texas Tech, Oct 2007
- Applied Mathematics Seminar, Texas Tech, Dec 2006
- Applied Mathematics Colloquium, Columbia University, Nov 2006
- High-Performance Computing Seminar, University of Southern California, Feb 2006
- Microfluidics Seminar, Sandia National Laboratories, Feb 2006
- Scientific Computing Seminar, Lawrence Livermore National Laboratory, November 2005
- Computer Science Colloquium, University of Chicago, Jan 2005

RECENT FUNDING HISTORY

- PI for *Uncertainty Quantification for Petascale Simulation of Carbon Sequestration through Fast Ultra-Scalable Stochastic Finite Element Methods*, NSF, $269,899 over three years beginning July 2009.
- PI for *Quantifying Prediction Fidelity in Multiscale Multiphysics Simulations*, DOE Office of Science, $224,000 over three years beginning Oct 2009.
- Co-PI on NSF project, *Automated Intrusive Algorithms for Numerical Solution of Partial Differential Equations via Software-Based Frechet Differentiation*, with R. Kirby and V. Howle (Co-PIs), Funded for $355,685 over 3 years, beginning 1 Oct 2008.
- Co-PI on Research Enhancement Foundation project, *Automated Scientific Computing: High-Level, High-Performance Finite Element Software*. Funded for $35,000, 1 Sept 2008-31 Aug 2009
- PI on TTU subcontract for *Finite Element Methods for Local Density Functional Theory Simulations of Electronic Structure Calculations,* from Sandia National Laboratories, Fall 2008, $22,310.
- PI on TTU subcontract for *Computational and Experimental Study of Nanoporous Membranes for Water Desalination and Decontamination,* from Sandia National Laboratories, Summer 2008, $13,975.
- Co-investigator on *Computational and Experimental Study of Nanoporous Membranes for Water Desalinization and Decontamination*, 2006, through DOE LDRD program at Sandia National Laboratories, Livermore. PI Bert Debusschere. Total funding is $1.68 million (3 years).

- Principal investigator on *Efficient Algorithms for Robust Decision Making through PDE-Constrained Optimization*, 2004, through CSRF program at Sandia National Laboratories, Livermore. Total funding $675,000 (3 years).
- Principal investigator on *Shape and Topology Optimization for Improving the Performance of Microfluidic Sensors*, 2003, through DOE LDRD program at Sandia National Laboratories, Livermore. Total funding $620,000 (3 years).

AWARDS

- 2004 R&D 100 Award for *Trilinos* solver software.

RESEARCH STUDENT SUPERVISION

- Jon Milhollan, MS 2009 (co-chair with Ram Iyer)

GRADUATE COMMITTEE SERVICE

- Janelle Charles (PhD 2009)
- Dinesh Ekanayake (PhD 2009)

CURRENT ADVISEES AND COMMITTEE SERVICE

- Kaleb McKale
- Vipin Palande
- Nick Landes (civil engineering student, am on committee)

SUMMER INTERNS SUPERVISED (AT SANDIA)

- Catherine Beni, Caltech, 2005-2007 (NPSC graduate fellow)
- Andy Terrel, University of Chicago, 2006
- Jill Reese, North Carolina State University, 2004-2005
- Patricia Howard, Rice, 2003-2005 (co-mentored with Paul Boggs)
- Allen Harvey, SUNY at Brockport, 2003

HOSSEIN MANSOURI

EDUCATION

Ph.D., Statistics (1983), Department of Statistics, The University of Kentucky
M.S., Statistics (1977), Department of Statistics, The Ohio State University
B.S., Statistics (1974), Institute of Statistics and Informatics, Iran

PROFESSIONAL EXPERIENCE

Associate Dean, College of Arts and Sciences, 11/2001- present
Professor, 9/99- present
Associate Professor, 9/91-9/99
Assistant Professor, 9/85-9/91
Department of Mathematics and Statistics, Texas Tech University

Visiting Assistant Professor

Department of Statistics, University of Kentucky, 9/84-9/85
Department of Mathematics, Tulane University 9/82-8/84

Teaching Assistant

Department of Statistics, University of Kentucky, 9/78-9/82
Department of Statistics, Ohio State University, 9/77-5/78

PUBLICATIONS

Refereed Journal Articles

1 Mansouri, H. and Shaw, Carrie, ``Nonparametric Multiple Comparison Procedures for Ordered Parameters in Balanced Incomplete Blocks, *Computational Statistics & Data Analysis*, (2004), **vol. 46**, 593-604.
2 Mansouri, H., Paige, R., and Surles, J., ``Aligned Rank Transform Techniques for Analysis of Variance and Multiple Comparisons," *Communications in Statistics, Theory and Methods*, (2004), **vol. 33**, 2217-2232
3 Anshel, Mark, and **Mansouri**, Hossein, "Influence of Perfectionism on Motor Performance, Affect, and Causal Attributions in response to Critical Information Feedback," *Journal of Sports Behavior*, **vol. XXVIII**, (2005), 99-124
4 Chandrashekar, N., **Mansouri,** H., Hashemi, J., Slaughterbeck, J., "Sex-Based Differences in the Tensile Properties of the Human Anterior Cruciate Ligament," *Journal of Biomechanics*, (2006), **vol. 39**, 2943-2950.
5 Hashemi J., Chandrashekar N., **Mansouri**, H., Hardy D., Slauterbeck J.R., "Ultrastructure, size, and material properties of the human anterior cruciate ligament: a sex based assessment," (2007), *in ACL Injuries—The Gender Bias Research Retreat III, Editors: Irene Davis, Mary L. Ireland, and Saori Hanaki*, Journal of *Orthopedic and Sports Physical Therapy*, **Vol.37**, No.2, A1-A37.}
6 Hashemi, J., Chandrashekar, N, **Mansouri**, H., Slauterbeck, J., and Hardy, D., "The Human Anterior Cruciate Ligament: Sex Differences in Ultrastructure and Correlation with Biomechanical Properties," **Journal of Orthopedic Research**, (2008), 945-950.
7 Hashemi, J., Chandrashekar, N., Gill, B., Beynnon, B.D., Slauterbeck, J., Schutt, R., **Mansouri,** H., Dabezies, E. "The Geometry of the Tibial Plateau and its Influence on the Biomechanics of the Tibiofemoral Joint," *The Journal Bone and Joint Surgery*,(2008), **vol. 90**, 2724-2734.

8 Hashemi,J., Chandrashekar,N., **Mansouri**, H., Gill, B., Slauterbeck, J., Schutt, R.,Dabezies, E., and Beynnon, B.D. "Shallow Medial Tibial Plateau and Steep Medial and Lateral Tibial Slopes New Risk Factors for Anterior Cruciate Ligament Injuries", *The American Journal of Sports Medicine, (2009), { accepted for publication }*

FUNDING ACTIVITY

- (2007, not funded) Understanding Non-Contact Anterior Cruciate Ligament (ACL) Injuries: True Mechanisms and Gender Dimorphism. NSF, $358053. Hahsemi (PI), Ekwaro-Osire , House, **Mansouri, H**. (coPI)
- (2008, not funded) Understanding Non-Contact Anterior Cruciate Ligament (ACL) Injuries: True Mechanisms and Gender Dimorphism. NSF, $358053. Hahsemi (PI), Ekwaro-Osire , House, **Mansouri, H**. (coPI)
- (2009, pending) Understanding Non-Contact Anterior Cruciate Ligament (ACL) Injuries: True Mechanisms and Gender Dimorphism. NSF. $398572. (highly recommended for funding – agency ran out of funding). Hahsemi (PI), Ekwaro-Osire , House, **Mansouri, H**. (coPI)
- (2009, pending) Enlarging and strengthening the anterior cruciate ligament (ACL) through exercise. A novel approach for reducing ACL injury rates, NIH, $401162, Hashemi, J. (PI), **Mansouri,** H (CoPI)--

PRESENTATIONS

- Hashemi*, Chandrashekar, Gill,Slauterbeck, Schutt, Dabezies**,Mansouri** & Beynnon. The depth of the medial tibial plateau is an important anterior cruciate ligament injury risk factor, American Society of Biomechanics Conf. Penn State University. 2009. (podium)
- Hashemi*, Chandrashekar, Gill, Slauterbeck, Schutt, Dabezies,**Mansouri** & Beynnon. The geometry of the tibial plateau and tibiofemoral kinematics: a biomechanical analysis American Society of Biomechanics Conf. Penn State University. 2009. (podium)
- Hashemi*, N Chandrashekar, B Gill, J Slauterbeck, R Schutt, H **Mansouri**, E Dabezies, B Beynnon The three slopes of the tibial plateau: Impact on knee biomechanics. ISL&T. LasVegas. 2009.

DIRECTION OF DISSERTATIONS AND THESES

Hanif Tlukder, Ph.D., Mathematics and Statistics, (2006)

Membership in Graduate Advisory Committees

Naveen Chandrashekar, Ph.D., (2006), Mechanical Engineering
Lisa Patvivastiri, Ph.D., (2006), Industrial Engineering
S. Kamalakanan, MS (2007), Electrical Engineering

PROFESSIONAL SERVICE

Department

Committees Served:
Hiring Committee, 2007-2008
Hiring Strategy Committee, 2008

University

Committees Served/Serving:
Committee to Review Teaching of Statistics at Texas, 2004-2005
Ad Hoc Committee for the Keh-Shew Lu Regent Chair in Engineering 2006-2007
Student Life Council, 2006-2008
Council on the Advancement of Standards in Higher Education to review the Student Counseling Center, 2007-2008
Credit by Examination Taskforce 2008
Credit by Examination Committee 2008-
Academic Council 2001-
Associate Dean Council 2001-
Strategic Enrollment Planning Council (Academic Subcommittee) 2009-
University Assessment Committee 2009-
Distributed Learning Council (Quality Assurance Subcommittee and Faculty Development Subcommittee) 2009-

Profession

Reviewed for the Journal of Nonparametric Statistics 2008

CLYDE F. MARTIN

PROFESSIONAL DATA

B.S.	Kansas State Teachers College	9/62-9/65
M.A.	University of Wyoming	9/65/9/67
Ph.D.	University of Wyoming	7/68-9/71

EMPLOYMENT

Visiting Professor, Stockholm University, Sweden	07/03-09/03
Visiting Professor, Royal Institute of Technology, Sweden	01/03-07/03
JSPS (Japanese Society for the Promotion of Science), Tokyo Denke University	08/03-10/03
Assistant to the Director, The Institute of Environmental and Human Health, TTU	99-00
Director, Institute for the Mathematics of the Life Sciences	5/97-
Distinguished Visiting Professor, Royal Institute of Technology, Sweden	1/97-8/97
Paul Whitfield Horn Professor	3/91-
Professor of Preventive Medicine, Texas Tech University Health Sciences Center	2/93-11/94
Associate of the International Center for Arid and Semiarid Land Studies (ICASALS)	12/92-
Ex-Students Association Distinguished Professor of Mathematics	1/89-
Chairman, Department of Mathematics	6/87-5/88
Director, Center for Applied Systems Analysis	5/87-
Professor of Mathematics, Texas Tech University	9/85-
Ex-Students Association Distinguished Visiting Professor, Texas Tech University	9/83-9/85
Associate Professor of Mathematics and Statistics, Case Western Reserve University,	9/78-8/81
with tenure	7/81-10/84
National Research Council Senior Research Associate, Ames Research Center, NASA	2/77-9/78
Private Contractor, NASA	9/76-2/77
N.S.F. Postdoctoral Fellow, Harvard University	9/75-9/76
Assistant Professor of Mathematics, Utah State University	9/73-9/75
National Research Council Research Associate, Ames Research Center, NASA	9/71-9/73
N.S.F. Trainee, University of Wyoming	9/68-9/71
Instructor, University of Wyoming	7/68-9/68
Graduate Assistant, Tulane University	9/67-7/68
N.S.F. Trainee, University of Wyoming	9/66-9/67
Part-time Instructor, University of Wyoming	9/65-7/67

SECURITY CLEARANCE

Top Secret, NSA, Communications Research

SELECTED GRANTS

- JSJPS (Japanese Society for the Promotion of Science), Tokyo Denke University, August 2003 – October 2003; $20,000
- Wenner-Gren Foundation, Stockholm, Sweden, January 2003 - July 2003; $7,000
- Mittag-Leffler Institute, Stockholm, Sweden, January 2003 – July 2003; $17,000

- Co-Director, Mittag-Leffler Institute Semester on Control Theory, Stockholm, Sweden, January 2003 – July 2003; $240,000
- ARP, Coordinated Periodic Motions, January 2002 – December 2003; $50,000
- Investigator, EPA, Playa Research, January 2003 – December 2006; $250,000
- Investigator, National Institute of Health, Green Tea as a Liver Cancer Preventive, July 2003 – July 2008; $1,250,000

PROFESSIONAL ORGANIZATIONS

- Institute of Electrical and Electronics Engineers, Inc., Fellow
- American Mathematical Society
- Sigma Xi
- Institute of Mathematical Statistics
- American Statistical Association

ACADEMIC INTERESTS

Applications of control theory to biology, medicine, vision, human movement, agriculture, economics, public health, plant succession, circadian rhythm, invasive species, and engineering.

STUDENTS

Ph.D. Students

- Baili Chen, Mathematical Models of Motion Detection in the Fly's Visual Cortex, 2005.
- Janelle Charles, Probability Distribution Estimation Using Control Theoretic Splines, 2009

Masters Students

- Theresa Fahlberg, Trajectory Planning Using Optimal Control, Royal Institute of Technology, Stockholm, Sweden, 2003.
- Adam Lind, Failure Detection in Coronary Arteries of Infants, Royal Institute of Technology, Stockholm, Sweden, 2003.
- Krithiga Anantharaman, Forced Models of Cardiac-Pulmonary Functions, 2004.
- Baili Chen, FitzHugh-Nagumo Model and Signal Processing in the Visual Cortex of the Fly, 2004.
- Bret Hanlon, Polynomials That Arise in a Polya Urn Gambling Game, 2005.
- Rong-Tsung Chen, Statistical Analysis of Longitudinal Data, 2005.
- Ann-Sofie Stolperud, A Chain of van der Pol Oscillators, Royal Institute of Technology, Stockholm, Sweden, 2005.
- Daniel Holder, The Application of Control Theory to the Numerical Solution of Ordinary Differential Equations, 2006.
- Bahtiyar Babanazarov, Distribution of New Temperature Extremes, 2006.

- Karen Lawrence, Genetic Aspects of the Body's Failure to Control Glucose, 2006.
- Peter Almstrom, The Interplay Between Iodine and Perchlorate in the Human Body, Royal Institute of Technology, Stockholm, Sweden, 2006.
- Karin Alvehag, How the Body Controls Glucose, Royal Institute of Technology, Stockholm, Sweden, 2006.
- Charles Byron Jordan, A Study of Software Piracy in Non-Enforced Areas, 2007.
- Sam Al-Hashmi, Interplay between obesity and type II diabetes, 2007
- Bo He, Control of error for numerical solution of ordinary differential equations, 2007

- Jun Lu, Analysis of weather patterns, 2007
- Renke Zhou, Plant distribution in the playa lakes, 2007
- Jing Wang, Longitudinal analysis, 2007
- Irene Corriette, Optimal ODE solvers., 2008
- Anton Kliewer, Extremes of temperature in Lubbock, 2008
- Palak Sanghvi, econometrics, 2008
- Tien Rein, approximation of continuous functions, 2008
- Nicholas Aaron Hensley, Coupling between pulmonary and cardiac function, 2008
- Ning Wang, Random matrices, 2009

PUBLICATIONS

274. Statistical estimates for generalized splines, *Control Optimisation and Calculus of Variables*, 9, 2003, 553-562, with M. Egerstedt.
275. B-splines and control theory, *IFAC: 15th World Congress*. Barcelona, Spain: 2002, with M. Egerstedt, H. Kano, and H. Nakata. Also in *Applied Mathematics and Computation*, 145, 2003, 263-288.
276. Ecotoxicology, in *Casarett and Doull's Essentials of Toxicology*, Curtis D. Klaussen and John B. Watkins, III, (eds.). New York: McGraw-Hill, 2003, 419-428, with T. Anderson, R. Baker, C. Bens, J. Carr, L. Chiodo, G. Cobb, III, R. Dickerson, K. Dixon, L. Frame, M. Hooper, R. Kendall, S. McMurry, R. Patino, E. Smith, and C. Theodorakis.
277. Input tracking and output fusion for linear systems, in *Directions in Mathematical Systems and Theory Optimization, (Lecture Notes in Control and Information Sciences 286)*, C. Byrnes and A. Rantzer, (eds.). Berlin: Springer-Verlag, 2003, 159-172, with U. Jonsson and X. Hu.
278. Optimal control and smoothing splines, *New Trends in Nonlinear Dynamics and Control*, W. Kang, (ed.), *(LNCIS 295)*. Berlin: Springer-Verlag, 2003, 279-294, with M. Egerstedt.
279. Binary bases of spaces of continuous functions, *J. Math. Anal. Appl.*, 287, 2003, 365-379, with P. Smith.
280. Trajectory planning for systems with a multiplicative stochastic uncertainty, *International Journal of Control*, 74, 2004, 713-722, with U. Jonsson and Y. Zhou.
281. A regularized solution to the Birkhoff interpolation problem, *Communications in Information and Systems*, 4, 2004, 89-102, with Y. Zhou.
282. Optimal Control of Ocular Dynamics, *The 1st COE International Forum and 1st COE Workshop on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2004, with W. Dayawansa, B. Ghosh, and A. Polpitiya.
283. Optimal curve fitting and smoothing using normalized uniform B-splines: A tool for studying complex systems, *Department of Information Sciences, Tokyo Denki University, Research Report TDU-IS-6*4, 2004, with H. Kano and H. Nakata.

284. Estimation and smoothing for data sets of mixed type, *The 1st COE International Forum and 1st COE Workshop on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2004, 39-44, with Y. Zhou.
285. FitzHugh-Nagumo model and signal processing in the visual cortex of a fly, *IEEE Conference on Decision and Control*, 2004, with B. Chen.
286. Analysis of delay in the control of head-eye coordination, submitted, with M. Egerstedt.
287. A characterization of a class of discrete nonlinear feedback systems, *Communication in Information and Systems*, with D. Wallace.
288. Phase IIa chemoprevention trial of green tea polyphenols in high-risk population of liver cancer: I. Design, clinical outcome, and baseline biomarker data, International Journal of Cancer Prevention, 1, 2004, 269-280, with T. Huang, J. Yu, L. Tang, H. Luo, M. Billam, Z. Wei, Y. Liang, Y. Li, K. Wang, J. Shi, Y. Cui, Z. Zhang, L. Zhang, S. Sun, and J. Wang.
289. Local issues in trajectory planning, 2004, with R. Palamakumbura.

290. Optimal curve fitting and smoothing using normalized uniform B-splines: A tool for studying complex systems, *Applied Mathematics and Computation*, 169, 2005, 96-128, with H. Kano and Hiroaki Nakata.
291. Optimal smoothing splines and contour synthesis, *Proceedings of the 2nd COE International Forum on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2005, 45-50, with H. Kano, Hiroyuki Fujioka, and M. Egerstedt.
292. Optimal transfer between affine subspaces, *Proceedings of the TDU COE-UK EPSRC Workshop on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2005, 43-46, with Y. Zhou and M. Egerstedt.
293. Control theoretic smoothing splines are approximate linear filters, *Communications in Information and Systems*, 4, 2005, 253-272, with Y. Zhou and W. Dayawansa.

294. Smoothing spline curves and surfaces for sampled data, *International Journal of Innovative Computing, Information, and Control: special issue on recent advances in stochastic systems theory and its applications*, 1, 2005, 429-449, with H. Fujioka, H. Kano, and M. Egerstedt.
295. Models of extinction of genotypes in closed populations, *International Journal of Innovative Computing, Information, and Control: special issue on recent advances in stochastic systems theory and its applications*, 1, 2005, 341-355, with Bret Hanlon and Y. Zhou.
296. Mathematical model of motion detection in the fly's vision system, *Proceedings of the 2nd COE Workshop on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2005, 195-200, with Baili Chen.
297. Optimal sample time selections for interpolation and smoothing, *IFAC 2005*, with M. Egerstedt and Florent Delmotte.
298. On the smallest enclosing balls, *Communications in Information and Systems*, 6, 2006, 137-160, with D. Cheng and X. Hu.
299. Hilbert space methods for control theoretic splines: a unified treatment, *Communications in Information and Systems*, 6, 2006, 55-82, with Y. Zhou and M. Egerstedt.
300. Perchlorate and iodine: a bad mixture for nursing mothers, *Proceedings of the 3rd COE Workshop on Human Adaptive Mechatronics (HAM)*. Tokyo, Japan: 2006, 65-70, with Peter Almstrom.
301. Geometry and control of human eye movements, *IEEE Trans. Automat. Control* 52 (2007), no. 2, 170--180., with A. Polpitiya, W. Dayawansa, and B. Ghosh.
302. Approximation with the output of linear control systems, *Journal of Mathematical Analysis and Applications*, 329, 2007, 798-821, with Ulf Jonsson.
303. Extrema detection of bivariate spline functions. *Appl. Math. Comput.* 200 (2008), no. 1, 58--69. with H. Kano and H. Fujioka

304. Location and mapping using recursive smoothing splines, *European Control Conference*. Kos, Greece: 2007, with Maja Karasalo and X. Hu.
305. Periodic smoothing splines, *Automatica*, 2007, with H. Kano, M. Egerstedt, H. Fujioka, and S. Takahashi.
306. Normalized uniform B splines viewed from optimal control theory, with H. Kano.
307. On the geometry of the smallest circle enclosing a finite set of points, with L. Drager and J. Lee.
308. Contour reconstruction and matching using recursive smoothing splines. *Modeling, estimation and control,* 193--206, Lecture Notes in Control and Inform. Sci., 364, *Springer, Berlin,* 2007, with M. Karasalo and X. Hu.
309. The control of error in numerical methods. *Modeling, estimation and control,* 183--192, Lecture Notes in Control and Inform. Sci., 364, *Springer, Berlin,* 2007., with D. Holder and L. Huo.
310. On the geometry of the smallest circle enclosing a finite set of points. *J. Franklin Inst.* 344 (2007), no. 7, 929--940. with L. Drager and J. Lee.
311. Extrema Detection of Bivariate Spline Functions 2007 American Control Conference with Hiroyuki Kano, Hiroyuki Fujioka.
312. Optimal Smoothing and Interpolating Splines with Constraints IEEE CDC2007, with Hiroyuki Kano, Hiroyuki Fujioka.

313. The Maximal Number of Pairwise Communicating Stations under Limitations of Maximal and Minimal Communication Distance IEEE CDC2007, with L. Drager, J. Lee, 2007.
314. Local Measures of Global Warming, SAS Conference, with Jun Lu, 2008.
315. First-Order, Networked Control Models of Swarming Silkworm Moths, with M. Haque, M. Egerstedt, ACC, 2008.
316. The Subprime Crisis: Irrational Exuberance or Rational Error, with Robert F. Martin, Federal Reserve Board, San Francisco, January 1, 2009.

317. Variations in Precipitation in West Texas, 1913—2007, with Anton Kliewer (JSM), 2008.
318. Local evidence of changes in temperature patterns, with J. Lu, A. Kliewer (JSM), 2008.
319. Statistical analysis of error in numerical methods for differential equations, with B. He (JSM), 2008.
320. Invariants of Pseudo-Random Number Generators, CIS, vol 8, p 39-54, with M. Neusel (CIS).
321. Statistical analysis of error in numerical methods for differential equations, to appear Journal of Applied Statistics, with B. He.
322. Control Theory and the Numerical Solution of Odes, to appear, Brockett Memorial Issue--CIS, with M.P.B. Ekanayake, B. He, L. Huo, K. Kaphle.
323. Recursive Identification of a Hybrid System, with M. Karasalo, T. Gustavi, and X. Hu, accepted European Control Conference, 2009.
324. Optimal Smoothing using General Cross Validation for Periodic Control Theoretic Smoothing Splines with M. Karasalo, X. Hu submitted CDC2009.
325. Cumulative distribution estimation via control theoretic smoothing splines, with J. Charles, submitted CDC2009.
326. Stability of switched linear systems and the convergence of random products, with N. Wang and M. Egerstedt, submitted CDC 2009.
327. Extreme Value and Statistical Analysis of a Single Weather Station, with A. Kliewer and J. Lu, submitted to AMS (Amer. Meteor. Society.).
328. Singular value assignment, to appear SICON, with Alex Wang.
329. Simulation of the optimal timing of a multiple drug regime, Y. Du, ENAR2009.

330. Probability Distribution Estimation Using Control Theoretic Splines, with J. Charles, ENAR 2009.
331. Stochastic models of flow through a random graph, N. Murray and V. Howle, ENAR2009.
332. In Search Of Sasquatch, with J. Emerson, B. He, R. Martin, JSM2009.
333. Model for Fitting Two Lines to Data, with P. Ellis C. Monico, JSM2009.

BOOKS

13. *Control Theoretic Splines*, Princeton University Press, (in press), expected publication date, 2009, with M. Egerstedt.

CHRIS MONICO

EDUCATION

2002, Ph.D in Mathematics, University of Notre Dame.
Dissertation: ``Semirings and semigroup actions in public-key cryptography". Advisor : Joachim Rosenthal.
2000, M.S. in Mathematics, University of Notre Dame.
1996, B.S. in Mathematics, Monmouth University.

PROFESSIONAL EXPERIENCE

2009—present: Associate Professor, Texas Tech University.
2003—2009: Assistant Professor, Texas Tech University.
2002—2003: Postdoctoral Researcher, University of Notre Dame, Department of Mathematics.
1998—2002: Teaching Assistant, University of Notre Dame.
1997—1998: Systems Analyst/Programmer, Ilex Systems / L^3 Communications, Shrewsbury, NJ.

RESEARCH INTERESTS

Public-key cryptography, discrete computational mathematics, number theory.

PUBLICATIONS

Refereed journals

- **C. Monico**, M. Elia. An additive characterization of fibers of characters on F_p^*. To appear in International Journal of Algebra.
- M. Peterson, **C. Monico**. $\mathbb{F}_2$ Lanczos Revisited. Linear Algebra and Its Applications, 428:4 (2008), 1135--1150.
- M. Elia, **C. Monico**. On the representation of primes in $\mathbb{Q}(\sqrt{2})$ as sums of squares. JP Journal of Algebra, Number Theory and Applications, 8:1 (2007), 21--133.
- G. Maze, **C. Monico**, J. Rosenthal. Public key cryptography based on semigroup actions. Advances in Mathematics of Communications, 1:4 (2007), 491--509.
- **C. Monico**, M. Elia. Note on an additive characterization of quadratic residues modulo p. Journal of Combinatorics, Information, and System Sciences, v.31 (2006), 209--215.
- **C. Monico**. On finite congruence-simple semirings. J. of Algebra, 271 (2004), 846--854.

Refereed conference proceedings

- Farooqi, R. Gale, S. Reddy, B. Nutter, **C. Monico**. Markov source based test length optimized SCAN-BIST architecture. 10th International Symposium on Quality Electronic Design (ISQED 2009), pp. 708--713. IEEE 2009.
- E. Byrne, C. Kelley, **C. Monico**, and Rosenthal J. Non-linear codes for belief propagation. In Proceedings of the 2003 IEEE International Symposium on Information Theory, p. 43, Yokohama, APAN, 2003.

FUNDING ACTIVITY

Source: National Security Agency.
Proposal: ``The discrete logarithm problem in finite semirings."
PI: **Chris Monico**
Date submitted: 10/13/2003.
Amount: $36,000.
Outcome: not funded.

Source: TTU Research Enhancement Fund.
Proposal: ``Factoring integers with the number field sieve."
PI: **Chris Monico**
Date submitted: 3/26/2004.
Amount: $2974.
Outcome: funded.

Source: TTU Research Enhancement Fund.
Proposal: ``The distribution of quadratic non-residues."
PI: **Chris Monico**
Date submitted: 3/2005.
Amount: $2500.
Outcome: funded.

Source: National Security Agency.
Proposal: ``Finite Semirings."
PI: **Chris Monico**
Date submitted: 10/12/2006.
Amount: $29,606.
Outcome: not funded.

PRESENTATIONS AND MEETINGS ATTENDED

Conference presentations

- Farooqi*, R. Gale, S. Reddy, B. Nutter, **C. Monico**. Markov source based test length optimized SCAN-BIST architecture. 10th International Symposium on Quality Electronic Design (ISQED 2009), pp. 708--713. IEEE 2009.
- E. Byrne*, C. Kelley, **C. Monico**, and Rosenthal J. Non-linear codes for belief propagation. Proceedings of the 2003 IEEE International Symposium on Information Theory, p. 43, Yokohama, JAPAN, 7/2003.
- ``Primality testing/proving" and ``GNFS factorization", **Chris Monico***. Series of talks given at 2004 IMA Workshop on Coding Theory and Cryptography, University of Notre Dame, 6/2004.
- ``Factoring Polynomials by Numerical Methods," **Chris Monico***. AMS Meeting \# 985, Indiana University, Bloomington, April 4, 2003.

DISSERTATION, THESIS AND REPORTS DIRECTED

Directed & co-directed

- Raymond Dick, An Additive Characterization of Quadratic Residues in Finite Fields, M.S.

Thesis, 5/2009.
- Aftab Farooqi, Markov source based test length optimized SCAN-BIST Architecture, Ph.D., 6/2008.
- Steven Lawless, Super-Resolution by Local Function Approximation, M.S. Thesis, 12/2007.
- Steven Lawless, Super-Resolution by Local Function Approximation, M.S. Thesis, December 2007.
- Memet Bulut, An Introduction to Schoof's Algorithm, M.S. Report, 4/2007.
- Anton Badev, Constructing Utility Functions on Infinite-dimensional Banach Spaces, M.S. Report, 5/2007.
- Michael Peterson, Parallel block Lanczos for solving large binary systems, M.S. Thesis, June 2006.
- Brian Miller, A construction and analysis of arithmetic progression-free sequences, M.S. Thesis, December 2004.
- Michael Peterson, The general number field sieve, Senior Honors Thesis, December 2004.

Current students

Ronnie Williams, Bo Gilbert, Arunabha Biswah.

Committees served on

- Charity Kelter, Groups defined on elliptic curves without flexes, M.S., 1/2004 (chair: Alex Wang)
- Syna Walby, Maximum Distance Separable Convolutional Codes, M.S. Report, 4/2004 (chair: Alex Wang).
- Benjamin J. Hough, Weil pairings and the discrete logarithm problem, M.S., 3/2005 (chair: Alex Wang)

- Amanda M. Klein, The effects of computer assisted instruction on college algebra students at Texas Tech University, M.S., 6/2005 (chair: Jerry Dwyer).
- Jackrapong Attagara, The Explosive Scanning Devices Allocation Problem for Airport Security Systems, Ph.D. Industrial Engineering, 9/2005 (chair: John Kobza).
- Dawn Harrison, Supplement to Incremental and Distributed Practice for State Mandated Assessment, M.A. Report, 5/2006 (chair: Carl Seaquist).
- David Martin, Maximizing the generalized Fekete-Szego functional over a class of hyperbolically convex functions, Ph.D. 6/2006 (chair: Roger Barnard).
- Atul Dixit, Ramanujan's Identities and Monotonicity Properties of Quotients of Theta Functions, M.S. Thesis, 8/2006 (chair: Alex Solynin).
- Torill Miller, Using storytelling to motivate mathematics for economically deprived students, M.A., 5/2007 (chair: Carl Seaquist).
- John M. Pekowski, A method for composing with interval cycles as applied to an original composition for symphony orchestra, Ph.D. Music, 8/2007 (chair: Mary Jeanne van Appledorn).

HONORS AND AWARDS

- Awarded ``Hemphill Wells New Professor Excellence in Teaching Award", 2007.
- Awarded ``Professor of the Year, 2007" by TTU Chapter of Kappa Mu Epsilon.
- Awarded ``Graduate Professor of the Year, 2005-2006" by the TTU Chapter of SIAM.
- Awarded ``Professor of the Year, 2005" by the TTU chapter of the MAA.
- Solved Certicom's $10,000 ``ECC2-109" elliptic curve cryptography challenge, 4/2004.

PROFESSIONAL SERVICE

Refereeing

Refereed for (1) Linear Algebra and It's Applications, (2) Communications in Algebra, (3) IEEE Transactions on Information Theory, Texas Journal of College Mathematics, (4) Journal of Algebra and It's Applications, (5) European Journal of Combinatorics, (6) Proc. of Transgressive Computing 2006.

OTHER RELEVANT ACTIVITIES

Served as mentor for students at high school (Clark Scholar program, TTU Summer Math Academy), undergraduate (SPMS program), and graduate levels.

MARA D. NEUSEL

Education

2001	venia legendi (Habilitation), Mathematics, Universität Göttingen, Germany
1992	Dr. rer. nat., Mathematics, Universität Göttingen, Germany
1988	Diplom, Mathematics, Universität Göttingen, Germany

Academic Appointments

2002- Present	Associate Professor, Texas Tech University, Lubbock TX
2000-2002	Visiting Assistant Professor, University of Notre Dame, Notre Dame IN
1999-2000	Visiting Lecturer, Yale University, New Haven CT
1998	Visiting Assistant Professor, University of Minnesota, Minneapolis MN
1995-1997	Instructor, Otto-von-Guericke Universität Magdeburg, Germany
1995	Visiting Lecturer, Yale University, New Haven CT
1994	Instructor, Georg-August Universität Göttingen, Germany
1993-1994	Lecturer, Universität Gesamthochschule Kassel, Germany

Visiting Appointments

July/August 2009	Hacettepe University, Ankara, Turkey
May/June 2009	University of Tunis, Tunis, Tunisia
July 2007	Boğaziçi Üniversitesi, Istanbul, Turkey
Sept.-Oct. 2006	University of Nebraska, Lincoln
July 2005	Boğaziçi Üniversitesi, Istanbul Turkey
July 2004	Cape Town University, Cape Town, South Africa
June-July 2003	Australian National University, Canberra, Australia
March-April 2002	Cape Town University, Cape Town, South Africa
October 2001	University of Minnesota, Minneapolis MN, USA
June 2001	Bilgi Üniversitesi, Istanbul, Turkey
July-Aug. 1999	Brandeis University, Waltham MA, USA
Oct.-Dec. 1997	Queen's University, Kingston OT, Canada
Feb.-March 1997	Université Paul Sabatier, Toulouse, France
September 1996	Université Paul Sabatier, Toulouse, France
Feb.-April 1996	Kungl Tekniska Högskolan, Stockholm, Sweden

May 1995	MIT, Cambridge MA, USA
November 1994	Institut für experimentelle Mathematik, Essen, Germany
March 1994	University of Minnesota, Minneapolis MN, USA
Jan.-Feb. 1994	Universität Zürich, Zürich, Switzerland
July-Oct. 1993	Pedagogičeskij Institut Im. K. D. Uşinskogo, Yaroslavl, Russia

Conference Presentations

1. Invited Talk, *Annual National Turkish Algebra Conference*, Antalya, Turkey, May 2009
2. Contributed Talk, Special Session on Invariant Theory, CMS Summer Meeting, St. John's, Newfoundland, June 2009
3. Invited Talk, *International Conference on Representations of Algebras and Related Topics*, Northeastern University, Woods Hole, MA, 2008
4. Contributed Talk, *Special Session on Algebraic Topology in Honor of Bill Singer's 60th Birthday*, American Mathematical Society 2008 Fall Eastern Section Meeting Middletown, CT, 2008
5. Invited Talk, *International Conference on Ring and Module Theory*, Hacettepe University, Ankara, Turkey, 2008
6. Invited Talk, *Transformation Groups 2007 in Honor of E. Vinberg*, Moscow, Russia, 2007
7. Invited Talk, *International Conference on Representations of Algebras and Related Topics*, Northeastern University, Boston MA, 2007
8. Invited Talk, *Djerba Conference on Algebraic Topology in Honor of Jean Lannes's 60th Birthday*, Djerba, Tunisia, 2007
9. Invited Talk, *Homological and Combinatorial Aspects in Commutative Algebra*, Buşteni, Romania, 2007
10. Contributed Talk, *Special Session on Invariant Theory*, Joint Mathematical Meetings, New Orleans LA, 2007
11. Invited Talk, *International Conference on Representations of Algebras and Related Topics,* Northeastern University, Boston MA, 2006
12. Invited Talk, *KUMUNU 7*, University of Kansas, Lawrence KS, 2006
13. Contributed Talk, *Special Session on Homological Algebra and its Applications,* American Mathematical Society Central Sectional Meeting, Lubbock TX, 2005
14. Invited Talk, *International Conference on Representations of Algebras and Related Topics,* Northeastern University, Boston MA, 2005
15. Invited Talk, *Workshop on Homotopy Theory and Group Actions*, Banff International Research Center, Banff, Canada, 2005
16. Invited Talk, *Conference on Algebraic Topology in Honor of Hyunh Mui's 60th Birthday*, Hanoi, Vietnam, 2004
17. Invited Lecture Series, *The Summer Conference Series in Topology and its Applications*, University of Cape Town, Cape Town, South Africa, 2004

18. Contributed Talk, Special Session on *Homological Algebra of Commutative Rings*, Joint American Mathematical Society-SMM International Meeting, Houston TX, 2004
19. Contributed Talk, Special Session on *Representations of Algebras*, Joint American Mathematical Society-SMM International Meeting, Houston TX, 2004
20. Invited Talk, *Commutative Algebra: Interactions with Homological Algebra and Representation Theory*, MSRI, Berkeley CA, 2003
21. Invited Talk, *Invariant Theory in Göttingen*, University of Göttingen, Germany, 2003
22. Contributed Talk, *First Central Texas Algebra Conference*, Baylor University, Waco TX, 2003
23. Invited Talk, *Workshop on Representation Theory*, The Australian National University, Canberra, Australia, 2003
24. Invited Talk, *International Workshop on Representations of Algebras and Related Topics*, Northeastern University, Boston MA 2003
25. Invited Talk, *Workshop on Classical Invariant Theory*, Queen's University, Kingston ON, Canada, 2002

Colloquia and Selected Seminar Talks

1. Algebraic Geometry Seminar, Texas A&M University, College Station, TX 2008
2. Colloquium, Vassar College, Poughkeepsie, NY 2008
3. Colloquium, Universität Erlangen-Nürnberg, Germany, 2008
4. Colloquium, Universität Bielefeld, Germany, 2008
5. Colloquium, Boğaziçi Üniversitesi, Istanbul, Turkey, 2007
6. Karcher Colloquium, University of Oklahoma, Norman OK, 2006
7. Colloquium, University of Nebraska, Lincoln NE, 2006
8. Algebra Seminar, University of Nebraska, Lincoln NE, 2006
9. Colloquium, Boğaziçi Üniversitesi, Istanbul, Turkey, 2005
10. Colloquium, Purdue University, West Lafayette IN, 2004
11. Colloquium, University of Bern, Switzerland, 2004
12. Representation Theory and Related Topics Seminar, Northeastern University, Boston MA, 2004
13. Colloquium, University of Stellenbosch, Stellenbosch, South Africa, 2004

Conferences Attended (last six years)

1. *American Mathematical Society-MAA Joint Annual Mathematics Meetings*, Washington DC, January 2009
2. *Clifford Lecture Series 2008*, Tulane University, New Orleans, November 2008
3. *Homotopical Group Theory and Topological Algebraic Geometry, Conference in Honor of Haynes Miller's 60th Birthday*, University of Bonn, Bonn Germany, 2008

4. *Commutative Algebra: Connections with Algebraic Topology and Representation Theory, Conference in Honor of Lucho Avramov's 60th Birthday,* University of Nebraska, Lincoln NE, 2008
5. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2008
6. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2007
7. *Emerging Frontiers in Control Theory, Memorial Conference for W. P. Dayawansa*, Texas Tech University, Lubbock TX, 2007
8. *American Mathematical Society-MAA Joint Annual Mathematics Meetings*, New Orleans, 2007
9. *2nd Texas Algebraic Geometry Seminar,* Texas A& M, College Station TX, 2006
10. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2006
11. *Brian Tracy Seminar*, Convention Center Dallas, Dallas TX, 2006
12. *American Mathematical Society-MAA Joint Annual Mathematics Meeting*, San Antonio TX, 2006
13. *Second Joint International Meeting of the American Mathematical Society and DMV*, Mainz, Germany, 2005
14. *International Conference on Algebraic Topology and its Applications*, Isle of Skye, Scotland, 2005
15. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2005
16. *American Mathematical Society Summer Institute in Algebraic Geometry*, University of Washington, Seattle, 2005
17. *American Mathematical Society-MAA Joint Annual Mathematics Meeting*, Atlanta, GA, January 2005
18. *TAA Annual Convention*, Petersburg FL, 2004
19. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2004
20. *Summer School on Algebraic Topology*, Hanoi Vietnam, 2004
21. *Red Raider Symposium*, Texas Tech University, Lubbock TX, 2003
22. *Maurice Auslander Distinguished Lectures*, Northeastern University, Boston MA, 2003

Grants and Awards

1. *Invariant Theory of Finite Groups: Approximations and Homological Properties,* May 2009 - April 2011, NSF $ 363,318 (pending)
2. 2008, Session Chair, *International Conference on Representations of Algebras and Related Topics*, Northeastern University, Woods Hole, MA
3. 2008, Session Chair, *International Conference on Ring and Module Theory*, Hacettepe University, Ankara, Turkey
4. 2007, travel grant, Association for Women in Mathematics $ 450.
5. 2006, Big XII Fellowship, Texas Tech University $ 2,500.

6. 2006, *5th Emmy Noether High School Mathematics Day*, Local MAA-student Chapter.
7. 2006, *5th Emmy Noether High School Mathematics Day*, Local SIAM-student Chapter.
8. 2006, *4th Emmy Noether High School Mathematics Day*: Dept. of Math. and Stats. (Texas Tech University), in-kind support.
9. 2006, *4th Emmy Noether High School Mathematics Day*: MAA Student Chapter (Texas Tech University) $ 1,500.
10. 2006, *4th Emmy Noether High School Mathematics Day*: SIAM Student Chapter (Texas Tech University) $ 1,000.
11. 2006, *4th Emmy Noether High School Mathematics Day*: Division of Outreach and Extended Studies (Texas Tech University) $1,500.
12. 2006, *4th Emmy Noether High School Mathematics Day*: College of Engineering (Texas Tech University) $ 250.
13. 2006, *4th Emmy Noether High School Mathematics Day*: Horn Professor Dayawansa, $500.
14. 2005, *3rd Emmy Noether High School Mathematics Day*: Dept. of Math. and Stats. (Texas Tech University), in-kind support.
15. 2005, *3rd Emmy Noether High School Mathematics Day*: MAA Student Chapter (Texas Tech University) $ 2000.
16. 2005, *3rd Emmy Noether High School Mathematics Day*: SIAM Student Chapter (Texas Tech University) $ 1000.
17. 2005, *3rd Emmy Noether High School Mathematics Day*: College of Engineering (Texas Tech University) $250.
18. 2005, *3rd Emmy Noether High School Mathematics Day*: The Office of the Provost (Texas Tech University) $ 1,000.
19. 2004, Included in *Who is Who in America*, 58th Edition.
20. 2004, *2nd Emmy Noether High School Mathematics Day*: Dept. of Math. and Stats. (Texas Tech University), in-kind support.
21. 2004, *2nd Emmy Noether High School Mathematics Day*: SIAM Student Chapter (Texas Tech University) $ 200.
22. 2004, *2nd Emmy Noether High School Mathematics Day*: MAA Student Chapter (Texas Tech University) $ 200.
23. 2004, *2nd Emmy Noether High School Mathematics Day*: CH-Foundation $ 2,000.
24. 2004, *2nd Emmy Noether High School Mathematics Day*: Helen-Jones Foundation $ 2,000.
25. *Modular Invariant Theory of Finite Groups and the Steenrod Algebra*, August 2004 - July 2006, NSA Standard Investigators Grant $ 31,184.
26. *Invariant Theory in Perspective*, Red Raider Symposium 2004, NSA $ 10,000.
27. *Invariant Theory in Perspective*, Red Raider Symposium 2004, NSF, $ 7,500.
28. 2003, *1st Emmy Noether Mathematics High School Day:* Dept. of Math. and Stats. (Texas Tech University), in-kind support.

29. 2003, *1st Emmy Noether Mathematics High School Day:* the Office of the Provost (Texas Tech University) $ 2,000.
30. 2003, *1st Emmy Noether Mathematics High School Day:* TLTC (Texas Tech University) $ 1,000.
31. 2003, *1st Emmy Noether Mathematics High School Day:* College of Engineering (Texas Tech University) $ 750.
32. 2003, *1st Emmy Noether Mathematics High School Day:* MAA-Student Chapter (Texas Tech University) $ 100.
33. 2003, *1st Emmy Noether Mathematics High School Day:* SIAM-Student Chapter (Texas Tech University) $ 100.
34. 2003-2004, *Invariant Theory and Steenrod Technology*, Texas Tech University, College of Arts and Sciences (REF), $ 3,000.
35. 2003, Travel grant, AWM, $ 1,000.

Publications

In Preparation

1. "Regular Sequences in Unstable Algebras over the Steenrod Algebra", (with Lars W. Christensen).
2. The organizers of the *International Conference on Ring and Module Theory*, Hacettepe University (Ankara, Turkey 2008) invited me to write a survey article on "Open Problems in Invariant Theory" for the conference proceedings. The deadline for submission is January 15, 2009.

Submitted Works

3. "Counting Special Monomials", (with Chris Monico), submitted to *Experimental Mathematics*, 2008.
4. "Characterizing Separating Invariants", (with Müfit Sezer), submitted to *Journal of Algebra*, 2008.
5. "On the Hilbert Ideal", submitted to *Algebra and Number Theory*, 2007.
6. "Degree Bounds and the Regular Representation", submitted to *Journal für die Reine und Angewandte Mathematik*, 2007.
7. "Inseparable Extensions of Algebras over the Steenrod Algebra with Applications to Modular Invariant Theory of Finite Groups II", submitted to *Illinois J. of Math.*, 2007
8. "Linear Control Systems with Polynomial Input-Output Functions", (with Clyde F. Martin), submitted to *Systems and Control Letters.* 2007

Refereed Journal Articles

9. "Invariants of Pseudo-Random Number Generators", (with Clyde F. Martin), *Communications in Information and Systems*, to appear.
10. "The Noether Map I" (with Müfit Sezer), *Forum Mathematicum*, to appear.

11. "On the Invariants of Modular Indecomposable Representations of Z /p^2" (with Müfit Sezer), *Mathematische Annalen* 341 (2008), 575-587.
12. "The Noether Map II" (with Müfit Sezer), *Proceedings of the American Mathematical Society* 135 (2007), 2347-2354.
13. "Degree Bounds. An Invitation to Postmodern Invariant Theory", *Topology and its Applications* 154 (2007), 792-814.
14. "Inseparable Extensions of Algebras over the Steenrod Algebra with Applications to Modular Invariant Theory of Finite Groups", *Transactions of the American Mathematical Society,* 358 (2006), 4689-4720.
15. "The Existence of Thom Classes", *Journal of Pure and Applied Algebra* 191 (2004), 265-283.

Refereed Conference Proceedings

27. "Comparing the Depths of Rings of Invariants", pp. 189-192 in: *Invariant Theory in All Characteristics* edited By H. E. A. Eddy Campbell and David L. Wehlau, Centre de Recherches Mathématiques, CRM Conference Proceedings and Lecture Notes, Volume 35, American Mathematical Society, Providence RI 2003.

Refereed Text Books

31. *Invariant Theory*, 314 pages, Student Mathematical Library 36, American Mathematical Society, Providence RI 2007.

Lecture Notes

32. "Rings of Invariants Generated by the Image of φ(G)", Texas Tech University, Lubbock TX 2006.

Other Publications

36. "The Noether Days at Texas Tech University", *Focus* Vol. 24 , Number 6 (2004) 4-5.
37. "The Noether Days at Texas Tech University", *AWM Newsletter*, September/October 2004.

Teaching

Students

- Jason Parker, Master Thesis in progress, Texas Tech University, since January 2008.
- Kaleb M. McKale, Master Thesis in progress, Texas Tech University, since March 2007.
- Jason T. Bacon, "*Systems of Parameters for Rings of Invariants*", Master's Report, Texas Tech University, 2008.
- Aaron B. Adcock, "*Vector Invariants of Elementary Abelian 2-Groups*", undergraduate research, Texas Tech University, since Fall 2007. ***Recipient of a 2008 Goldwater Scholarship.***
- Aaron B. Adcock, independent undergraduate studies, Texas Tech University, 2006-2007.

- Lauren Ferguson, *Vector Invariants of the Dihedral Group D_8*, undergraduate research, Texas Tech University 2003-2004.
- Alexander Williams, *2-fold Vector Invariants of the Dihedral Group D_6,* undergraduate research, 2002-2003.

Membership on Graduate Committees

- Irene C. Corriette, "*Random Switching Error Analysis*", Master Thesis, Texas Tech University 2008.
- Anton Kliewer, "*Study of Extreme Values in Weather*", Master Thesis, Texas Tech University 2008.
- Dwayne Towell, "*Easel: an indefinite computing language*", PhD in Computer Science (Dean's Representative), Texas Tech University 2007.
- Bo He, "*Statistical Analysis of Fourth Order Ordinary Differential Equation Solvers*", Master Thesis, Texas Tech University 2007.
- Renke Zhou, "*Biostatistical Analysis of the Flora Specie Coverage in Playas of the Playa Lake Region*", Master Thesis, Texas Tech University 2007.
- Bret Hanlon, "*Polynomials that Arise in a Polya Urn Gambling Game*", Master Thesis, Texas Tech University 2004.
- Brad Lutes, "*A Survey of Gröbner Bases and their Applications*", Master Thesis, Texas Tech University 2004.
- Joshua Nelson, *The Diffie-Hellman Key Exchange in Matrices over a Field and a Ring*, Master Thesis, Texas Tech University 2003.

Special Teaching Activities

- Temporary Faculty Advisor for one incoming graduate student, Fall 2008
- Undergraduate Colloquium, Vassar College, Poughkeepsie NY, October 2008.
- Panelist, Career Panel, Texas Tech University Women's Summer Mathematics Academy, 2008.
- Member, Houghton-Mifflin Calculus Advisory Board, 2008.
- Mentor, *AWM Workshop on Research of Recent Women PhDs*, American Mathematical Society Annual Meeting, New Orleans LA 2007.
- Undergraduate Colloquium, University of Oklahoma, Norman OK, 2006.
- Lecture at the *Graduate Student Seminar*, University of Nebraska, Lincoln NE, 2006.
- Chair, *4th Emmy Noether High School Mathematics Day*, Texas Tech University, 2006.
- Speaker, *AWM Panel Discussion on Careers in Mathematics* during the AWM Workshop on Research of Recent Women PhDs, American Mathematical Society Annual Meeting, San Antonio 2006.
- Coorganizer, *Poster Session for Undergraduate and Graduate Research*, American Mathematical Society Spring Central Sectional Meeting, Texas Tech University, 2005

- Chair, *3rd Emmy Noether High School Mathematics Day*, Texas Tech University, 2005.
- Judge, *AWM Essay Contest* 2004
- Colloquium for Students, University of Cape Town, South Africa, July 2004.
- Chair, *2nd Emmy Noether High School Mathematics Day*, May 2004.
- Judge, *South Plains Regional Science and Engineering Fair,* March 2004.
- Talk at the 19th *Annual Fall SIAM Symposium*, November 2003.
- Chair and Founder, *Emmy Noether High School Mathematics Day*, Texas Tech University, May 15th, 2003.

Professional Service

Professional Affiliations

- Member of the *American Mathematical Society* (AMS)
- Member of the *Mathematical Association of America* (MAA)
- Member of the *Association for Women in Mathematics* (AWM)
- Member of *Text and Academic Authors* (TAA)

Reviewer for

- Mathematical Reviews, since 2001
- McGraw-Hill

Referee for

- Advanced in Mathematics
- Asian Journal of Mathematics,
- Communications in Algebra
- CRM Conference Proceedings
- Demonstratio Mathematica
- East African Journal of Physical Sciences
- Experimental Mathematics
- Expositiones Mathematicae
- Illinois Journal of Mathematics
- Indiana University Mathematics Journal
- John Wiley & Sons, Inc.
- Journal of Algebra
- Journal of Algebra and its Applications
- Journal of Fixed Point Theory and Applications
- Journal of the Korean Mathematical Society
- Journal of Pure and Applied Algebra
- Journal of Symbolic Computation
- London Mathematical Society

- National Science Foundation
- Natural Sciences and Engineering Council of Canada
- Prentice Hall
- Proceedings of the American Mathematical Society
- Thomson, Brooks & Cole
- Transformations Groups
- Topology and its Applications
- Tenure and Promotion Procedures for Colleagues in the US and Europe

Judge for

- TAA Texty Book Award, since 2004
- TAA McGuffey Book Award, since 2004

Member of the Editorial Board of

- International Journal of Mathematics and Applied Statistics, since 2005

Conference Organization

- Special Session on *Invariant Theory* (with Frank Grosshans, West Chester) American Mathematical Society Annual Meeting, New Orleans LA, January 2007
- Special Session on *Invariant Theory* (with David Wehlau, Royal Military College) American Mathematical Society Annual Meeting, San Antonio, January 2006
- *American Mathematical Society Central Sectional Meeting*, Spring 2005 (together with W. Lewis and M. Toda, both Texas Tech University).
- Session on *Homological Algebra and its Applications* at the American Mathematical Society Central Sectional Meeting, Spring 2005, (together with A. Martsinkovsky, Northeastern University).
- Poster session for Students and Postdocs at the American Mathematical Society Central Sectional Meeting, Spring 2005, (together with Ali Khoujma, Texas Tech University).
- *Invariant Theory in Perspective,* Red Raider Symposium 2004.

Committees

- Chair, AWM Travel Grant Selection Committee, 2007-2008.
- Hiring Committee (Dept of Math. and Stats, Texas Tech University), since 2004.
- Dean's Committee for Academic Programs (College of Arts and Sciences, Texas Tech University), 2005-2006.
- Third Year Review Committee (Dept of Math. and Stats, Texas Tech University) 2005.
- Research Council (College of Arts and Sciences, Texas Tech University), 2004-2005.
- ESA Committee (Dept. of Math. and Stats, Texas Tech University), 2003-2005.
- Chair and Founder, Emmy Noether Committee (Dept of Math. and Stats, Texas Tech University), 2003-2006.
- Undergraduate Committee (Dept of Math. and Stats, Texas Tech University), 2004 - 2006.

ROBERT LEE PAIGE

EDUCATION

Ph.D., Statistics, Colorado State University, Ft. Collins, Colorado. 1999
Dissertation Title : Saddlepoint Methods in Neural Networks.
Advisor : Dr. Ronald W. Butler.

M.S., Mathematics, Colorado State University 1995.

B.S., Mathematics (Graduated Magna Cum Laude with a concentration in Actuarial Science), Colorado State University 1992.

PROFESSIONAL EXPERIENCE

- March 2008 to Present, Adjunct Associate Professor of Biostatistics, Department of Surgery, Texas Tech University Health Science Center School of Medicine.
- September 2007 to Present, Associate Professor of Statistics, Department of Mathematics and Statistics, Texas Tech University.
- August 2001 to August 2007, Assistant Professor of Statistics, Department of Mathematics and Statistics, Texas Tech University.
- August 1999 to August 2001, Assistant Professor of Mathematics, Department of Mathematics, University of Northern Iowa.
- August 1995 to August 1999, Graduate Teaching Assistant, Department of Statistics, Colorado State University.
- August 1993 to August 1995, Graduate Teaching Assistant, Department of Mathematics, Colorado State University.

AREAS OF INTEREST

Saddlepoint approximations, nonparametric methods, biostatistics.

PUBLICATIONS

Refereed Journals

1. Lund, R.B., Butler, R.W., and **Paige, R.L**. (1999) Prediction of Shot Noise, Journal of Applied Probability, 36(2), 374-388.
2. **Paige, R.L**. and Butler, R.W. (2001) Bayesian Inference in Neural Networks, Biometrika, 88(3), 623-641.
3. **Paige, R.L**. (2002) Lumpability and Classification in the Stochastic Hopfield Model, Advances in Applied Probability, 33(4), 930-943.
4. Mansouri, H. and **Paige, R.L.** (2002) Multiple Comparison Procedures for Linear Models under Order Restrictions, In Recent Advances in Statistical Methods, ed. Y. P. Chaubey, London: World Scientific Publishing Company Inc., 198-206.
5. Hall P., **Paige, R.L.** and Ruymgaart, F.H. (2003) Using Wavelet Methods to Solve Noisy Abel-Type Equations with Discontinuous Inputs, Journal of Multivariate Analysis, 86(1), 72-96.
6. Ramkumar, S.S., Rajanala, R., **Paige, R.L.,** et al. (2004) Experimental Verification of Failure of Amontons' Law in Polymeric Textiles, Journal of Applied Polymer Science, 91(6), 3879-3885.

7. H. Mansouri, **R.L. Paige** and J. G. Surles. (2004) Aligned Rank Transform Techniques for Analysis of Variance and Multiple Comparisons, Communications in Statistics, 33(9), 2217--2232.
8. R. V. Iyer and **R. L. Paige**, (2006) On the Representation of Hysteresis Operators of Preisach Type, Physica B: Condensed 372(1-2) 40-44.

9. J.M Brismee, **R. L. Paige,** M. Chyu, D. Feng, C. Shen, (2007) Group and Home-Based Tai Chi in Elderly Subjects with Knee Osteoarthritis: A Randomized Controlled Trial, Clinical Rehabilitation, 21(2), 99-111.
10. C. Shen, J.. Williams, M.. Chyu, **R. L. Paige**, A.. Stephens, K. Chauncey, F.. Prabhu, K. Okeefe, K. Hale, L.. Ferris, J. Yeh. (2007) Comparison of Effects of Tai Chi and Resistance Training on Bone Metabolism in the Elderly: A Pilot Study, American Journal of Chinese Medicine, 35(3), 369-381.
11. J.M. Brismee, **Paige R.L**., M. Chyu, J.D. Boatright, J.M. Hagar, J.A. McCaleb, M.M. Quintela, D. Feng, K.T.Xu, C.L. Shen (2007) Effects of Tai Chi for Knee Osteoarthritis were not Sustained after Detraining. Focus on Alternative and Complementary Therapies,12(4), 281-283.
12. **R.L. Paige**, P. Seshaiyer and M. Toda (2007), Student Misconceptions Caused by Misuse of Technology, The International Journal for Technology in Mathematics Education, 14(4), p 189-196.
13. **Paige, R.L**. and Trindade, A.A.(2008) Practical Small-Sample Inference for Order One Subset Autoregressive Models via Saddlepoint Approximations, Journal of Statistical Planning and Inference, 138(7), 1934-1949.
14. A. Munk, **R. Paige**, J. Pang, F. Ryumgaart, V. Patrangenaru (2008). The One-and-Multi-Sample Problem for Functional Data With Application to Projective Shape Analysis. Journal of Multivariate Analysis, 99(5), 815-833.
15. **R.L. Paige** and H.P. Fernando (2009) Robust Inference in Conditionally Linear Nonlinear Regression Models, Scandinavian Journal of Statistics, 35(1), 158-168 .
16. **R.L. Paige**, A.A. Trindade and H.P. Fernando (2009) Saddlepoint-Based Bootstrap Inference for Quadratic Estimating Equations, Scandinavian Journal of Statistics, 36(1), 98 - 111.
17. **Paige, R.L**., Sun, S. and Wang, K., (2009) Variance Reduction in Smooth Splines, Scandinavian Journal of Statistics, 36(1), 112 - 126.
18. Dissanaike, S, Griswold, J. **Paige, R.L**., Berry, M. and McNabb, W. (2009) Variations in the Perception of Trauma Related Complications between Attending Surgeons, Surgery Residents, Critical Care Nurses, and Medical Students. The American Journal of Surgery, 196(6), 764-768.
19. Ghimire, K., **Paige, R.L**., Goodin, G., Koch, D. Owen, R, Chu, Y.K and Jonsson, C. (2009). Microhabitat Characteristics of Hantavirus Host Rodents at an Atlantic Forest Site, Canindeyu, Eastern Paraguay. Journal of Vector Ecology, 34(1), 104-113.
20. Allen L.J.S., Wesley, C.L., Owen, R.D., Goodin, D.G., Koch, D., Jonsson C.B., Chu, Y-K., Hutchinson, S., **Paige, R.L.** (2009) A Habitat-Based Model for the Spread of Hantavirus between Reservoir and Spillover Species, Journal of Theoretical Biology, 260(4), 510--522.
21. Butler, R.W. and **Paige R.L.** (2009) Exact Distributional Computations for Roy's Statistic and the Largest Eigenvalue of a Wishart Distribution, Statistics and Computing (accepted).

Refereed Conference Proceedings

1. Lee, J.L, **Paige, R.L.,** Patrangenaru, V., Ruymgaart, F. (2004). Nonparametric Density Estimation on Homogeneous Spaces in High Level Image Analysis, In R.G. Aykroyd, S. Barber, & K.V. Mardia (Eds.), Bioinformatics, Images, and Wavelets, 37-40.
2. **R.L. Paige**, V. Patrangenaru, F. Ruymgaart and W, Wang, (2005). Analysis of Projective Shapes of Curves Using Projective Frames, In S. Barber, P.D. Baxter, K.V. Mardia, and R.E. Walls (Eds.), Quantitative Biology, Shape Analysis, and Wavelets, 71-74.

FUNDING ACTIVITY

Funded

1. NSA Grant "Saddlepoint-Based Bootstrap Inference for Quadratic Estimating Equations". $16,000, May 2008-April 2010.
12. NSF Grant, "Red Raider Mini-Symposium 2005: Geometry, Statistics and Image Analysis" $5,000; November 2005-November 2006. (co-PI, with Vic Patrangenaru).
3. Texas Tech Multidisciplinary Seed Grant Proposal "Effects of Tai Chi on Biomechanical Responses Related to Risk of Falls in Elderly Women with Osteoporosis" $9,460; January 2005-December 2005. (co-PI, with Leslie Shen, Ming Chyu, Jean-Michel Brismee)

4. TTREF Grant "Using Predictive Statistical Learning and Data Mining Models to Explain Compliance with Water Quality Regulations" $3,394; September 2004-August 2005. (PI with Brian Gerber)
5. UNI Summer Research Grant "Lumpability and Classification in the Stochastic Hopfield Model". $5,500; June 2001-July 2001. (PI).

Not funded

1.UNI Summer Research Fellowship Proposal. (November 1999) "Bayesian Inference in Neural Networks". $5,000 (PI)
2.TTREF Grant Proposal (March 2002) "Classification and Reduction in Stochastic Hopfield Models". $4,800 (PI).
3.DOD Proposal (April 2002) "Wavelet Analysis of Friction Ridge Data". (with Clyde Martin, Texas Tech University) in response to Broad Agency Announcement DAAD05-02-T-0215, $450,000 (co-PI).
4. NSA Grant Proposal (October 2002) "Classification and Lumpability in Generalized Stochastic Hopfield Models". $36,00 (PI).
5. NSF Grant Proposal (November 2002) "Classification and Lumpability in Generalized Stochastic Hopfield Models". $100,475 (PI).
6. TTREF Grant Proposal (March 2003) "Classification and Reduction in Generalized Stochastic Hopfield Models". $4,737 (PI).
7. Proposal (June 2003) "Novel Analyses of Friction Ridge Data". (with James Surles, Texas Tech University) in response to Broad Agency Announcement DAAD05-03-T-0024, $450,000 (co-PI).
8. NSA Grant Proposal (October 2003) "Classification and Lumpability in Generalized Stochastic Hopfield Models". $36,00 (PI).
9. NSF Grant Proposal, (November 2003) "Pseudo Parameter Orthogonality for Small Sample Inference". (with Alex Trindade, University of Florida), $104,114 (co-PI)
10. EPA Grant Proposal, (March 2004) "Using Predictive Statistical Learning and Data Mining Models to Explain Compliance with Water Quality Regulations". (with Brian Gerber and Ken Dixon, Texas Tech University). $400,000 (co-PI).
11. DOD Proposal (April 2004) "Novel Analyses of Friction Ridge Data". (with James Surles, Texas Tech University) in response to Broad Agency Announcement DAAD05-03-T-0024, $450,000 (co-PI; not funded).
12. NIH Grant Proposal (June 2004) "Tai Chi as Alternative Exercise Intervention for Osteoporosis". (with Leslie Shen, Ming Chyu and Jean Michel Brismee, Texas Tech Univeristy), $534,769 (co-PI).
13. NSA Grant Proposal (October 2004) "Small Sample Inference in Generalized Conditionally Linear Models". $20,000 (PI).

14. NSF Grant Proposal, (November 2004) "Pseudo Parameter Orthogonality for Small Sample Inference". (with Alex Trindade, University of Florida), $118,538 (co-PI; not funded)
15. National Osteoporosis Foundation Proposal (January 2005) "Tai Chi Exercise to Reduce the Risk of Fall in Elderly Women with Osteoporosis". (with Leslie Shen, Steve Sawyer, Roger James, Jean-Michel Brismee, Phil Sizer, and Dale Dunn).$56,931 (co-PI).
16. EPA Proposal (February 2005). "Water Use and Regulatory Compliance on the U.S.-Mexican Border : Explaining Links between User Attitudes, Behavior and Use Environment". (with Ken Dixon, Brian Gerber, Socorro Barrajas, John Tuman) $100,000 ; (co-PI).
17.. NIH NCCAM Exploratory/Developmental Grant for Clinical Studies (March 2005) "Tai Chi and Osteoporosis : a Pilot Study". (with Leslie Shen, Steve Sawyer, Roger James, Jean-Michel Brismee, Phil Sizer, Dale Dunn, Bahram Arjmandi and Carol Felton), $593,373 (co-PI).
18. USDA National Integrated Water Quality Program Proposal (March 2005) "Understanding and Promoting Better Watershed Management Practices Among Agricultural and Other Key Stake Holders". (with Dave Doerfert, Brian Gerber, and Ken Dixon), $481,623 (co-PI).
19. DOD 2005 Peer Reviewed Medical Research Program Proposal (March 2005) "Alternative exercise to prevent osteoporactic fracture". (with Leslie Shen, Steve Sawyer, Roger James, Jean-Michel Brismee, Phil Sizer, Dale Dunn, Bahram Arjmandi and James Yeh), $971,453 (co-PI).
20. TTREF Grant Proposal (March 2005) "Small Sample Inference in Conditionally Linear Regression Models". $4,737 (PI).

21. NSA Grant Proposal (October 2005) "Exploiting Parameter Orthogonality for Small Sample Inference". (with Alex Trindade, University of Florida), $30,000 (PI).
22. IMS Application for Joint Sponsorship (October 2005) "Red Raider Mini-Symposium 2005: Geometry, Statistics and Image Analysis". (with Vic Patrangenaru), $3,000 (co-PI).
23. NSF Grant Proposal, (November 2005) "Collaborative Research: Pseudo Parameter Orthogonality for Small Sample Inference". (with Alex Trindade, University. of Florida), $115,875 (co-PI).

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

1. University of Missouri-Rolla, February 1999. "Bayesian Inference in Neural Networks"
2. University of Missouri-Columbia, February 1999. "Bayesian Inference in Neural Networks"
3. Oregon State University, March 1999. "Bayesian Inference in Neural Networks"
4. Texas Tech University, February 1999. "Bayesian Inference in Neural Networks"
5. University of Colorado at Denver, February 1999. "Bayesian Inference in Neural Networks"
6. University of Idaho, February 1999. "Bayesian Inference in Neural Networks"
7. Iowa State University, February 1999. "Bayesian Inference in Neural Networks"
8. University of Georgia, March 1999. "Bayesian Inference in Neural Networks"
9. University of Northern Iowa, March 1999. "Bayesian Inference in Neural Networks"
10. 15th International Workshop on Statistical Modelling, Bilbao, Spain, 2000. "Prediction of Shot Noise"
11. University of Florida, January 2002. "Bayesian Inference in Neural Networks"
12. University of Florida, January 2003. "Wavelet Neural Networks for Functional Data Analysis"
13. Interface 2003, Salt Lake City, UT, March 2003. "Bayesian Inference in Single-Layer Neural Networks"
14. Texas MAA, Sam Houston State University, April 2003. "Bayesian Inference in Wavelet Neural Networks"

15. 23rd L.A.S.R (Leeds Annual Statistics Research) Workshop LASR, July 2004. "Nonparametric Density Estimation on Homogeneous Spaces in High Level Image Analysis.
16. SIMPACT, Texas Tech University, September 2004. "Nonparametric Density Estimation on Homogenous Spaces in High Level Image Analysis".
17. AMS Central Sectional Meeting, Texas Tech University, April 2005. "Nonparametric Density Estimation on Homogenous Spaces in High Level Image Analysis"
18. Southern Regional Meetings, February 2008. "Statistical Inference for Case-Control and Prospective Cohort Studies"
19. Southern Regional Meetings, February 2008. "Confounding Variables and How to Adjust for Them"
20. Southern Regional Meetings, February 2008. "An Overview of Statistical Software Programs"
21. Missouri S & T, April 2008. "Sadddlepoint-based Bootstrap for Quadratic Estimating Equations"
22. 2008 Joint Statistical Meetings, August 2008. "Sadddlepoint-based Bootstrap for Quadratic Estimating Equations"
23. 2009 Joint Statistical Meetings, August 2009. "Saddlepoint-Based Bootstrap Inference about Optimal Smoothing Parameters in Nonparametric and Semiparametric Spline Models"

Invited hour talks

1. Texas Tech University, June 2001. "Model Choice and Modality"
2. World Congress of Nonlinear Analysts, July 2008. "Stochastic Differential Equation Models for Growth Data"

Local presentations

1. UNI Mathematics Department Colloquium, April 2000. "Prediction in Shot Noise"

2. Texas Tech University, November 2002, "An Introduction to Saddlepoint Approximations"
3. Texas Tech University, April 2002. "Lumpabilty and Classification in the Stochastic Hopfield Model".
4. Texas Tech University, April 2003. "Practical Small-Sample Inference for Time Series Models via Saddlepoint Approximations"
5. Texas Tech University, April 2006. "Projections and the Essential and Fundamental Matrices"
6. Texas Tech University, September 2006. "Small Sample Inference In Conditionally Linear Models"

DISSERTATION, THESIS AND REPORT DIRECTORS

Ph.D. Students

1.Harshini Fernando, Mathematics, Summer 2006, Title : Small Sample Inference for Nonlinear Regression Models.
2.Keyi Wang, (joint with Shan Sun), Mathematics, Fall 2006 Title : Variance Reduction Methods Based on a Smooth Spline Estimator for Nonparametric Regression Models.
3.Ke Yan, (joint with Shan Sun), Mathematics, Summer 2007 Title: Variance Reduction Methods for Kernel Estimators in Longitudinal Data Analysis.

Masters Students

1. David Stewart, Spring 2005, Title : The 2003 Texas Tech StudentFirst Survey.

2. Becky Cosner, Spring 2005, Title : Survey of Advanced Environmental Programs in Texas.
3. Janelle Charles, Fall 2004, Title : Statistical Analysis of the 2003 "State of the State" Survey.
4. Nalo Lewis, Summer 2004, Title : Statistical Analysis of the 2003 "State of the State" Survey Results.
5. Sherry Wilson, (joint with James Surles), Summer 2004, Title : Novel Analyses of Friction Ridge Data.
6. Robert Hill, (joint with Shan Sun), Summer 2003, Title : Statistical Analysis of Fatal Traffic Accident Data.
7. Xuli, Li , (joint with Shan Sun), Summer 2003, Title : Statistical Analysis of Traffic Data.

List graduate committees served on

PhD Committee Service

1. Johnny Pang, Mathematics, 2008, Some Statistical Methods for Directly and Indirectly Observed Functional Data.
2. Jean Cupidon, Mathematics, 2007, Canonical Correlation Analysis for Infinite Dimensional Data.
3. Hanif Talukder, Mathematics,2006, Order-Restricted Analyses for Repeated Measures.
4. Ananda Bandulasiri, Mathematics, 2006, Statistical Shape Analysis in Medical Imaging.
5. Samanmalee Sugathadasa, Mathematics, 2006, Affine and Projective Shape Analysis with Applications.
6. Jagadanand Chaudhary, Agricultural and Applied Economics, 2005, The Future of Indian Cotton Supply and Demand : Implications for the U.S. Cotton Industry.
7. Keith Emmert, Mathematics, 2004, Deterministic and Stochastic Discrete-time Epidemic Models with Applications to Amphibians.
8. Eun-Joo Lee, Mathematics, 2004, Estimating Linear Functionals of Indirectly Observed Input Functions.
9. Seung-Hwan Lee, Mathematics, 2004, Checking the Censored Two-sample Accelerated Life Model Using Integrated Cumulative Hazard Difference.
10. Kirupaharan Nadarajah, 2003, Deterministic and Stochastic Epidemic Models with Multiple Pathogens.

M.S. Committee Service

1. Chandrani Banerjee, Mathematics,.2007, The Dynamics of Mathematical Models for Machupo Viral Infection in a Rodent Population.
2. Simion Tomoiaga, Statistics, 2006, Clinical Trials Simulation.
3. Akashdeep Singh, Statistics, 2006, Simulation of Statistical Distributions in SAS.
4. Ananda Bandulasiri, Statistics, 2005, Multivariate Angular Data Analysis in Glaucoma Detection using Tomographic Images.
5. Johnny Pang, Statistics, 2005, One Sample Problem in Hilbert Spaces.
6. Tracy Harris, Statistics, 2003, Box-Cox/Bootstrap Inference Methods for Improving the Shape Parameter of the Burr Type X Distribution.
7. Jacylyn Waldrop, 2003, Parametric Inference using Combined Weighted Log-Rank Estimators For Regression with Survival Data.

HONORS AND AWARDS

1. Presidential Scholarship, Colorado State University (1991-1992)

2. Elected to Phi Beta Kappa (1992)
3. Colorado Graduate Fellowship (1995-1996)
4. James L. Madison Award, Department of Statistics, Colorado State University (1998)

PROFESSIONAL SERVICE

Refereeing

(i) Annals of Statistics; (ii) Journal of the Royal Statistical Society: Series B; (iii) Journal of Statistical Planning and Inference; (iv) Journal of Computational and Graphical Statistics; (v) The American Statistician; (vi) Computational Statistics and Data Analysis; (vii) Computational Statistics; (viii) Communications in Statistics; (ix) Central European Journal of Physics;.(x) Journal of Theoretical Biology and (xi) Journal of Biological Dynamics.

Reviewing

1. Reviewed book "Modelling with Ito Stochastic Differential Equations" by Edward Allen as per request of publisher.
2. Reviewed book "Nonparametric Statistics on Manifolds and Their Applications" by Vic Patrangenaru as per request of publisher.

Reviewing panels for funding agencies

Grant Review for CRDF (U.S. Civilian Research and Development Foundation)

Memberships in organizations

American Statistical Association, 1999 - Present.

KENT PEARCE

EDUCATION

August 1975_May 1980	State University of New York at Albany Ph.D., Mathematics Advisor: Louis Brickman
September 1972_April 1975	Brigham Young University M.S., Mathematics Advisor: Douglas Campbell
July 1969_May 1972	Brigham Young University B.S., Mathematics
September 1966_March 1967	Utah State University

ACADEMIC OR PROFESSIONAL POSITIONS

September 2009 - Present	Texas Tech University Department of Mathematics & Statistics Chair
September 2008 - September 2009	Texas Tech University Department of Mathematics & Statistics Interim Chair
September 1997 _ Present	Texas Tech University Professor
July 1991_ September 2008	Texas Tech University Department of Mathematics Associate Chair
January_December 1987	Institute Teknologi MARA Texas International Education Consortium (Shah Alam, Malaysia)
September 1986 _ August 1997	Texas Tech University Associate Professor
September 1980 _ August 1986	Texas Tech University Assistant Professor

AREA OF INTEREST

Geometric Function Theory

PUBLICATIONS

Refereed Journals

1. "Iceberg_type Problems: Estimating Hidden Parts of a Continuum from the Visible Parts" *Mathematische Nachricthen* accepted, with R.W. Barnard and A.Y. Solynin.
2. "A proof of Campbell's subordination conjecture" *Complex Variables and Elliptic Equations* **54** (2009), 103_117, with R.W. Barnard.
3. "A Sharp Bound on the Schwarzian Derivatives of Hyperbolically Convex Functions" *Proceeding of the London Mathematical Society* **93** (2006), 395_417, with Roger W. Barnard, Leah Cole and G. Brock Williams.
4. "A Variational Method For Hyperbolically Convex Functions" *Complex Variables and Elliptic Equations* **51** (2006), 313_327, with Roger W. Barnard and G. Lenny Ornas.

5. "Three Extremal Problems for Hyperbolically Convex Functions" *Computational Methods and Function Theory* **4** (2004), 97_109, with R.W. Barnard and G.B. Williams.
6. "Area, Width, And Logarithmic Capacity Of Convex Sets" *Pacific Journal of Mathematics* **212** (2003), 13_23 with Roger W. Barnard and Alex Yu. Solynin.

Refereed Conference Proceedings

1. "The Verification of an Inequality" *Journal on Analysis* (*Geometric Function Theory, Special Functions and Applications*) **15** (2007), 17-41, with Roger W. Barnard.

FUNDING

- "Growing the Graduate Program", Graduate School, Texas Tech University, $22,000, Oct 2008-Jul 2009, (with C. Seaquist, B. Williams).
- "Conferences on Complex Analysis Circle Packing and Applications", NSF, $15,784, Nov 2007_Oct 2008, (with Alexander Yu. Solynin and G. Brock Williams).
- "Growing the Graduate Program", Graduate School, Texas Tech University, $7,400, Oct 2007-Nov 2008, (with (C. Seaquist, B. Williams).

PRESENTATIONS AT MEETINGS

Colloquia

Brigham Young University, "Verification of Inequalities," Provo, Utah, January 2008.

Invited Conference Addresses

- International Conference on Geometric Function Theory, Special Functions and Applications, "The Verification of an Inequality," Pondicherry, India, January 2006.
- International Workshop on Quasiconformal Mappings and their Applications, "The Verification of an Inequality," Chennai, India, December 2005.

Conference presentations

- One and Several Complex Variables, "Majorization_subordination theorems for locally univalent functions. IV: A Verification of Campbell's Conjecture," University of Kentucky, May 2008.
- Special Session of AMS Sectional Meeting #1006, "Three Extremal Problems for Hyperbolically Convex Functions," Lubbock, Texas, April 2005.

DIRECTION OF GRADUATE STUDENTS

Ph.D. Students

Ornas, Lenny, Ph.D., Thesis: *Maximum distortion results for hyperolically convex functions*, 2003 (co_chair Roger W. Barnard)

Masters Students

- Erwin, Brock, M.S., Thesis: *The Usefulness of Non_University Tests as Substitutes for the Math Placement Exam*, 2007 (co_chair Petros Hadjicostas)
- Flores, Raymond, M.S., Thesis: *Psychometric Analyses of a Mathematics Placement Exam*, 2007 (co_chair Arturo Olivarez)
- Williams, Alexander, M.S., Thesis: *Power Series Coefficients of Some Classical Functions*, 2006 (co_chair Roger W. Barnard)

PROFESSIONAL SERVICE

Refereeing

Rocky Mountain J. Mathematics
Complex Variables

Meetings Organized

- AMS Special Session on "Contemporary Complex and Special Functions Theory" at Baylor University, Waco, TX, Oct 2009, (with R. Barnard, K. Richards, A.Y. Solynin, G.B. Williams).
- *Workshop on Complex Variables and Special Functions*, Lubbock, Texas, Nov. 2-3, 2007 (with Kendall Richards, Alex Yu. Solynin, G. Brock Williams).
- AMS Special Session on “Complex Variables” at Lubbock, TX, April 2005, (with R. Barnard, A.Y Solynin, G.B. Williams).

Membership in Professional Organizations

- American Mathematical Society
- Mathematical Association of America

LIH-ING W. ROEGER

EDUCATION

- Ph.D. in Mathematics, Purdue University, West Lafayette, Indiana, 2000.
- M.S. in Applied Mathematics, National Tsing Hua University, Hsinchu, Taiwan, 1991.
- B.S. in Mathematics, National Taiwan University, Taipei, Taiwan, 1988.

PROFESSIONAL EXPERIENCE

- Assistant Professor, Department of Mathematics and Statistics, Texas Tech University, 2004-present
- Visiting Scholar, National Center for Theoretical Sciences, Hsinchu, Taiwan, summers 2005-2008
- Visiting Assistant Professor, Department of Mathematics and Statistics, Texas Tech University, 2002-2004
- Assistant Professor, Berea College, Berea, Kentucky, 2000-2002

AREAS OF INTEREST

- Dynamical systems, differential equations, difference equations, nonstandard finite difference schemes, mathematical epidemiology, and mathematical ecology.

PUBLICATIONS

Refereed Journals

1. S.-B. Hsu and L.-I. W. Roeger. Heteroclinic cycles in the chemostat models and the winnerless competition principle. J. Math. Anal. Appl., 360: 599-608, 2009.
2. L.-I. W. Roeger, Z. Feng, and C. Castillo-Chavez. Modelling TB and HIV Coinfections. Mathematical Biosciences and Engineering, 6: 817-839, 2009.
3. J. A. D. Appleby, A. Rodkina, and L.-I. W. Roeger. Stability of a limit cycle for a planar system with stochastic perturbations. Functional Differential Equations}, 16: 73-91, 2009.
4. L.-I. W. Roeger. General nonstandard finite-difference schemes for differential equations with three fixed-points. Computers and Mathematics with Applications, 57: 379-383, 2009.
5. L.-I. W. Roeger. Nonstandard finite difference schemes for differential equations with n+1 distinct fixed-points. Journal of Difference Equations and Applications, 15: 133-151, 2009.
6. L.-I. W. Roeger. Exact finite-difference schemes for two-dimensional linear systems with constant coefficients. Journal of Computational and Applied Mathematics, 219: 102-109, 2008.

7. L.-I. W. Roeger. Periodic solutions preserved by nonstandard finite-difference schemes for Lotka-Volterra system: a different approach. Journal of Difference Equations and Applications, 14: 481-493, 2008.

8. L.-I. W. Roeger. Exact nonstandard finite-difference methods for a linear system---the case of centers. Journal of Difference Equations and Applications, 14: 381-389, 2008.

9. L.-I. W. Roeger. Dynamically consistent discrete Lotka-Volterra competition models derived from nonstandard finite-difference schemes. Discrete and Continuous Dynamical Systems Series B, 9: 415-429, 2008.

10. L.-I. W. Roeger and R. E. Mickens. Exact finite-difference schemes for first order differential equations having three fixed points. Journal of Difference Equations and Applications, 13: 1179-1185, 2007.

11. S.-B. Hsu and L.-I. W. Roeger. The final size of a SARS epidemic model without quarantine. Journal of Mathematical Analysis and Applications, 333: 557-566, 2007.

12. J. M. Cushing, S. M. Henson, and L.-I. W. Roeger. Coexistence of competing juvenile-adult structured populations. Journal of Biological Dynamics, 1: 201-231, 2007.

13. L.-I. W. Roeger. Nonstandard finite-difference schemes for the Lotka-Volterra systems: generalization of Mickens's method. Journal of Difference Equations and Applications, 12: 937-948, 2006.

14. L.-I. W. Roeger. A nonstandard discretization method for Lotka-Volterra models that preserves periodic solutions. Journal of Difference Equations and Applications, 11: 721-733, 2005.

15. L.-I. W. Roeger. Discrete May-Leonard competition models II. Discrete and Continuous Dynamical Systems---Series B, 5: 841-860, 2005.

16. L.-I. W. Roeger. Discrete May-Leonard competition models III. Journal of Difference Equations and Applications, 10: 773-790, 2004.

17. L.-I. W. Roeger. Local stability of Euler's and Kahan's methods. Journal of Difference Equations and Applications, 10: 601-614, 2004.

18. K. W. Blayneh and L.-I. W. Roeger. Asymptotic dynamics of an age-structured host-parasitoid model. Applicable Analysis, 83: 787-798, 2004.

19. L.-I. W. Roeger and L. J. S. Allen. Discrete May-Leonard competition models. Journal of Difference Equations and Applications, 10: 77-98, 2004.

Refereed Conference Proceedings

1. L.-I. W. Roeger. Dynamically consistent discrete-time Lotka-Volterra competition models. To appear in Discrete and Continuous Dynamical Systems Series B.

2. W. Hernandez-Padilla and L.-I. W. Roeger. Local stability of a discrete competition model derived from a nonstandard numerical method. Advanced Studies in Pure Mathematics, ICDEA2006, 53: 283-290, 2009.

3. L.-I. W. Roeger and R. W. Barnard. Preservation of local dynamics when applying central difference methods: application to SIR model. Journal of Difference Equations and Applications, 13: 333-340, 2007.

4. L.-I. W. Roeger. Hopf bifurcations in discrete May-Leonard competition models. Canadian Applied Mathematics Quarterly, 11: 175-194, 2005.

Technical Reports

- L.-I. W. Roeger. Nonstandard discretization methods on Lotka-Volterra differential equations. A chapter in Advances in the Applications of Nonstandard Finite Difference Schemes, edited by R. E. Mickens (Clark Atlanta University, USA), World Scientific, 2005.

FUNDING ACTIVITY

Funded

1. PI: Sophia Jang, Co-PIs: Linda Allen and **Lih-Ing Roeger**, MAA PREP Workshop "Mathematical Modeling with Applications to Biology", Aug 2009. Amount: $21,000.

2. AWM Travel Grant for SIAM (Society for Industrial and Applied Mathematics) conference in May 2009, Oct 2008. Amount: $1,100.

3. PI: Sophia Jang, Co-PIs: Linda Allen and **Lih-Ing Roeger**, MAA PREP Workshop "Mathematical Modeling with Applications to Biology", Aug 2008. NSF grant DUE-0817071. Amount: $20,700.

4. Travel grant for attending the 11th JDEA meeting in Kyoto University, Kyoto, Japan, July 2006. Amount: $1,000.

5. PI: **Lih-Ing Roeger** , Research Enhancement Fund, College of Arts and Sciences, Texas Tech University, April 2005. Amount: $4,000.

6. Room and board scholarship to attend the conference Discrete Dynamical Systems and their Applications to Population Dynamics, the Rocky Mountain Mathematics Consortium, Laramie, Wyoming, July 2003. Amount: $400.

Not Funded

1. PI: **Lih-Ing Roeger**, NSF grant proposal "Nonstandard Finite Difference Schemes and Applications to Differential Equations in Biological Systems", November 2008. Amount: $147,367.

2. PI: **Lih-Ing Roeger**, Research Enrichment Fund, Texas Tech University, Apr 2008. Amount: $28,853.

3. PI: Magdalena Toda, Co-PIs: Jerry Dwyer and **Lih-Ing Roeger**, NSF grant proposal "Women Mentoring Women in Mathematical Sciences", Jan 2008. Amount: $282,634.

4. PI: **Lih-Ing Roeger**, Pre-ARP (Advanced Research Program) proposal, Texas Higher Education Coordinating Board, Oct 2007. Amount: $34,000.

5. PI: **Lih-Ing Roeger**, Research Enrichment Fund, Texas Tech University, Oct 2007. Amount: $34,000.

6. AWM Travel Grant, Feb 2007. Amount: $2,000.

7. PI: **Lih-Ing Roeger**, Co-PI: Linda Allen, NSF grant proposal "Mathematical Models for the Biological Control of Saltcedars through Competition with Cottonwoods and Control by an Asian Leaf Beetle", January 2005. Amount: $371,122.

8. PI: **Lih-Ing Roeger**, NSF grant proposal "Saltcedar control by cottonwoods competition and discrete competition models", January 2004. Amount: $108,414.

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

1. Texas Tech University, Colloquium, Lubbock, Texas, October 2009. "Difference equations, differential equations, and population models"

2. National Chiao Tung University, Colloquium, Hsinchu, Taiwan, June 2007.

3. National Central University, Colloquium, Taoyuan County, Taiwan, June 2007.

4. National Center for Theoretical Sciences, Colloquium, Hsinchu, Taiwan, July 2005.

5. National Donghwa University, Colloquium, Hualien, Taiwan, June 2005.

6. North Carolina A & T University, Colloquium, Greensboro, North Carolina, March 2004

7. East Tennessee State University, Colloquium, Johnson City, Tennessee, March 2004

8. University of Central Arkansas, Colloquium, Conway, Arkansas, February 2004, "What does mathematics have to do with infectious diseases?"

9. Texas Tech University, Colloquium, Lubbock, Texas, January 2004. "Continuous-time and discrete-time competition models --- What's the difference?"

Conference presentations

1. SIAM Conference on Applications of Dynamical Systems (DS09), Snowbird, Utah, May 17--21, 2009. Contributed presentation, "Discrete Competition Equations that are Dynamically Consistent with Lotka-Volterra Equations".

2. Differential Equation and Application in Ecology and Epidemiology Conference at Purdue University on the occasion of H. Thieme's 60th birthday, West Lafayette, Indiana, Dec 2008. Invited presentation, "Competition of two species for two limited resources with one species mediated by parasites".

3. Fifth World Congress of Nonlinear Analysts (WCNA-2008), Hyatt Grand Cypress Resort, Orlando, Florida, July 2008. Co-organizer for a special session, "Dynamically consistent discrete Lotka-Volterra competition Models".

4. AIMS Seventh International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, Texas, May 2008. Invited presentation, "Dynamically consistent discrete Lotka-Volterra competition models".

5. Joint Mathematics Meetings, San Diego, California, January 2008. Co-organizer for AMS Special Session on Recent Advances in Mathematical Biology and Epidemiology, "Competition of two host species for two limited resources with one species mediated by parasites".

6. Mathematical Modeling and Analysis of Populations in Biological Systems, Tucson, Arizona, October 2007. Invited presentation, "Dynamically consistent discrete monotone competition models by nonstandard finite difference schemes".

7. AMS Spring Western Section Meeting, University of Arizona, Tucson, Arizona, April 2007. Invited presentation, "Winnerless competition in consumer-resource interaction models".

8. Workshop on the Mathematics of Global Public Health, Tempe, Arizona, March 2007. Contributed presentation, " The impact of HIV infection on tuberculosis".

9. Joint Mathematics Meetings, New Orleans, Louisiana, January 2007. Co-organizer for AMS Special Session on Recent Advances in Mathematical Biology and Epidemiology, "The final size of a SARS epidemic model without quarantine".

10. The 11th International Conference on Difference Equations and Applications, Kyoto University, Kyoto, Japan, July 2006. Contributed presentation, "Nonstandard finite-difference schemes for the Lotka-Volterra systems: generalization of Mickens's method".

11. Joint Mathematics Meetings, San Antonio, Texas, January 2006. Co-organizer for AMS Special Session on Recent Advances in Mathematical Biology and Epidemiology, "Winnerless Competition in Consumer-resource Interaction Models".

12. American Mathematical Society Section Meeting, Lubbock, Texas, April 2005. Co-organizer for a special session, "A Class of Nonstandard Symplectic Discretization Methods for Lotka-Volterra Systems".

13. SIAM-SEAS, Charleston, South Carolina, March 2005. Invited presentation, "Discrete time May-Leonard competition models---annual plants competition".

14. The 9th International Conference on Difference Equations and Applications, University of Southern California, Los Angeles, August 2004. Invited presentation, "A Nonstandard Discretization Method for Lotka-Volterra Models that Preserves Periodic Solutions".

15. International Conference On Nonlinear Dynamics And Evolution Equations, Memorial University of Newfoundland, St. John's, Newfoundland and Labrador, Canada, July 2004. Invited presentation, "The impact of HIV infection on tuberculosis".

16. Joint Mathematics Meetings, Phoenix, Arizona, January 2004. Invited presentation, " Discrete May-Leonard competition model---the Ricker type".

17. Thirty-third Annual Lloyd Roeling Mathematics Conference, the University of Louisiana at Lafayette, Louisiana, October 2003. Invited presentation, "A nonstandard discretization method that preserves stability".

18. American Mathematical Society Joint Central and Western Section Meeting, Boulder, Colorado, October 2003. Invited presentation, "The impact of HIV infection on tuberculosis".

19. Discrete Dynamical Systems and Their Applications to Population Dynamics Workshop, University of Wyoming, Laramie, Wyoming, July 2003. Contributed presentation, "Continuous and discrete May-Leonard competition models".

20. Fourth Geoffrey J. Butler Memorial Conference, Edmonton, Alberta, Canada, June 2003. Contributed presentation, "Continuous and discrete May-Leonard competition models".

Local presentations

1. Texas Tech University, Colloquium, Lubbock, Texas, October 2009. "Difference equations, differential equations, and population models"

2. Texas Tech University, Biomathematics Seminar, Lubbock, Texas, February 2009.

3. Texas Tech University, Applied Mathematics Seminar, Lubbock, Texas, October 2008.

4. Texas Tech University, Biomathematics Seminar, Lubbock, Texas, September 2008.

5. Texas Tech University, Biomathematics Seminar, Lubbock, Texas, March 2008.

6. Texas Tech University, Biomathematics Seminar, Lubbock, Texas, November 2007.

7. Texas Tech University, Biomathematics Seminar, Lubbock, Texas, February 2007.

8. Texas Tech University, Control Theory Seminar, Lubbock, Texas, April 2006.

9. Texas Tech University, Applied Math/Biomathematics Seminar, Lubbock, Texas, September 2005.

10. Texas Tech University, Applied Math/Biomathematics Seminar, Lubbock, Texas, September 2004.

11. Texas Tech University, Colloquium, Lubbock, Texas, January 2004.

12. Texas Tech University, Applied Math/Biomathematics Seminar, Lubbock, Texas, February 2003.

13. Texas Tech University, Colloquium, Lubbock, Texas, January 2004. "Continuous-time and discrete-time competition models --- What's the difference?"

Sessions chaired

1. Co-organized with K. Blayneh a special session at the Fifth World Congress of Nonlinear Analysts WCNA 2008, Orlando, Florida, July 2008.

2. Co-organized with L. J. S. Allen and S. R.-J. Jang a special session at the Joint Mathematics Meetings, San Diego, CA, January 2008.

3. Co-organized with L. J. S. Allen and S. R.-J. Jang a special session at the Joint Mathematics Meetings, New Orleans, LA, January 2007.

4. Co-organized with L. J. S. Allen and S. R.-J. Jang a special session at the Joint Mathematics Meetings, San Antonio, TX, January 2006.

5. Co-organized with L. J. S. Allen and S. R.-J. Jang a special session at the AMS Central Section Meeting, Lubbock, TX, April 2005.

DISSERTATION, THESIS AND REPORT DIRECTORS

Directed Student(s)

- Wendy Hernandez-Padilla, "Dynamically Consistent Discrete Competition Models Derived from Nonstandard Finite-Difference Methods", M.S. Thesis, May 2007.

Student(s) currently in progress

- Glenn E. Lahodny Jr., MS student

Graduate committees serve on

- Calandra Brazile, MS, "Multivariate Multiresolution with Multiwavelets", May 2009

- Curtis Wesley, PhD, "Discrete-Time and Continuous-Time Epidemic Models with Applications to the Spread of Hantavirus in Wild Rodents and Human Populations", May 2008

- Bob McCormack, PhD, "Multi-Host and Multi-Patch Mathematical Epidemic Models for Disease Emergence with Applications to Hanta Virus in Wild Rodents", August 2006

- Yaji Xu, MS, August 2005

- Lin Huo, MS, December 2005

PROFESSIONAL SERVICE

Editorships

- Guest editor for the Journal of Biological Dynamics, spring 2007.

Refereeing

- Mathematics and Computers in Simulation
- Mathematical Biosciences and Engineering
- Journal of Biological Dynamics
- Journal of Mathematical Analysis and Applications
- Taiwanese Journal of Mathematics
- Discrete and Continuous Dynamical Systems-Series B
- Journal of Theoretical Biology
- Journal of Difference Equations and Applications
- Proceedings of the Fourth G. J. Butler Memorial Conference in Differential Equations

Reviewing

- Reviewer for the book {\it Calculus for the Life Sciences: A Modeling Approach} by J. L. Cornette and R. A. Ackerman, fall 2007.

Memberships in organizations

- ISDE, International Society of Difference Equations
- MAA, Mathematical Association of America
- AMS, American Mathematical Society
- SIAM, Society for Industrial and Applied Mathematics

FRITS H. RUYMGAART

ACADEMIC APPOINTMENTS

- Paul Whitfield Horn Professor, Department of Mathematics, Texas Tech University, Lubbock, Texas (2001-present).

MISCELLANEOUS

- Coordinating Editor *Journal Statistical Planning and Inference* (2001-2006).
- Guest Associate Editor, special issue of the Journal *of Statistical Planning and Inference* in honor of M.L. Puri (2007).
- Founder and sponsor "Red Raider Mini-Symposium Series", Texas Tech University, (2001-present).

- **Referee for**

Annals of Statistics (2x)
Statistics and Probability Letters (2x)
Journal of Statistical Planning and Inference (3x)
Metrik
Nonparametricé Statistics (2x)
Journal Fourier Analysis and Applications
Computers and Mathematics with Applications
Communications in Statistics
TEST
Journal of Applied Mathematics and Stochastic Analysis
Statistics
Inverse Problems (2x)
Electonic Journal of Statistics
Inverse Problems in Science and Engineering
Probability Theory and Related Fields
Journal of Multivariate Analysis (2x)
Bernoulli
The Israeli Science Foundation
Natural Sciences and Engineering Research Council Canada
Austrian Science Fund

- Member National Science Foundation panel (Statistics Program)

- **Evaluations**

3 candidates for W3 professorship, University of Goettingen
Candidate for promotion, University of Haifa
2 candidates for W3 professorship, University of Duisburg-Essen
2 candidates for W3 professorship, University of Osnabrück
Candidate for promotion, Florida State University
Candidate for promotion, West Virginia University

- Revised lecture notes for Math 5382 (Advanced Probability #1)
- Lecture notes for Stat 5378 (Stochastic Processes)

DEPARTMENTAL SERVICE

- Graduate Committee
- Search Committee for Dick and Martha Brooks Regents Endowed Professorship
- Statistics Coordinator
- Hiring Committee
- Executive Committee

UNIVERSITY SERVICE

- Arts and Sciences Horn Selection Committee
- University Horn Selection Committee

FUNDING

- Problems in ill-posed statistical inference; National Science Foundation, DMS-0203942. (Expired 2006)
- Fréchet differentiation of operators with application in functional data analysis; National Science Foundation, DMS-0605167. (Expired 2009)

RESEARCH

Appeared/Accepted

1. Aligned rank statistics for repeated measurement models with orthonormal design, employing a Chernoff-Savage approach. *J. Stat. Pl. Inf.* **130**, 167-182 (2005). Co-authors: J.H.J. Einmahl, B.O. Omolo and M.L. Puri.
2. Thermodynamics of impurities in semiconductors: Part II: free energie of impurities. *Phys. Rev*. B **70**, 1-10 (2004). Co-authors: S.K. Estreicher, M. Sanati, D. West.
3. Discussion of the paper "Wavelet deconvolution in a periodic setting" by I.M. Johnstone, G. Kerkyacharian, D. Picard and M. Raimondo. *J. Royal Statist. Soc*. *B* **66**, 642-643 (2004). Co-author: A. Munk.
4. Some results for moment-empirical cumulative distribution functions. *Nonpar. Statist.* **17**, 733-744 (2005). Co-author: R. Mnatsakanov.
5. Asymptotically efficient estimation of linear functionals in inverse regression models. *Nonpar. Statist*. **17**, 819-831 (2005). Co-authors: C.A.J. Klaassen and E.-J. Lee.
6. Some results on nonparametric calibration. *Comm. Statist*., *Th. and Meth*. **34**, 1-12 (2005). Co-author: P. Misquitta.
7. The convolution theorem for estimating linear functionals in indirect nonparametric regression models. *J. Statist. Pl. Inf*. **137**, 811-820 (2007). Co-authors: A. Khoujmane, M. Shubov.
8. Some aspects of multivariate calibration with incomplete designs. *Chemometrics Intel. Lab. Syst.* **77**, 161-172 (2005). Co-authors: C.H. Spiegelman, S.-J. Lee, T.M. Conny.
9. On moment-density estimation in some biased models. LNMS **49**, 406-420 (2006). Co-author: R.M. Mnatsakanov.
10. Fourier-Cesáro approximation in the Hausdorff metric with application to noisy data. To appear in *Advances in the Gibbs Phenomenon*, Sampling Publishing (A. Jerri, Editor). Co-authors: D.S. Gilliam, A.C.M. van Rooij.
11. The one-and multi-sample problem for functional data with application to projective shape analysis. *J. Multivar*. *Anal*. **99**, 815-833 (2008). Co-authors: A. Munk, R. Paige, J. Pang, V. Patrangenaru.
12. Convergence rates of general regularization methods for statistical inverse problems

and applications. *SIAM J. Numer. Anal*. **45**, 2610-2636 (2007). Co-authors: N. Bissantz, T. Hohage, A. Munk.

13. Nonparametric estimation of ruin probabilities given a random sample of claims. *Math. Meth. Stat*. **17**, 1-9 (2008). Co-authors: R. Mnatsakanov, L. Ruymgaart.
14. Some properties of canonical correlations and variates in infinite dimensions. *J. Multivar. Anal*. **99**, 1083-1104 (2008). Co-authors: J. Cupidon, R. Eubank, D. Gilliam.
15. The delta-method for analytic functions of random operators with application to functional data. *Bernoulli* **13**, 1179-1194 (2007). Co-authors: J. Cupidon, R. Eubank, D. Gilliam.
16. Fréchet-differentiation of functions of operators with application to testing the equality of two covariance operators. *J. Physics: Conf. Ser*. **124**, 012028. Co-author: X. Ji.
17. The Fréchet derivative of an analytic function of a founded operator with some applications. *Int. J. Math. Math Sci.*, ID 239025 (2009). Co-authors: P.S. Sullivan, T. Hohage, X. Ji.
18. Nonparametric shape analysis methods in glaucoma detection. *Int. J. Stat. Sci*., to appear. Co-authors: A. Bandulasiri, A. Gunathilaka, V. Patrangenaru, H. Thompson.

THESES

1. The one-sample problem in Hilbert spaces, by J. Pang (2005).
2. Rank test for multivariate two-sample data using projection pursuit, by A. Gunathilaka (2007).
3. Asymptotic efficiency of the minimum Hellinger distance estimator in regression by J. Wang (2009).

DISSERTATIONS

1. Estimating Linear Functionals of Indirectly Observed Input Functions, by E.-J. Lee (2004).
2. Aligned Rank Tests for Repeated Observation Models with Orthonormal Design, by B.O. Omolo (2004).
3. Improving Regression Function Estimators, by A. Khoujmane (2005).
4. Canonical Correlations for Functional Data, by J.R. Cupidon (2007).
5. Fréchet-Differentiation of Functions of Operators with Applications to Functional Data Analysis, by X.-Y. Ji, (2008).
6. Some Statistical Methods for Directly and Indirectly Observed Functional Data, by J. Pang (2008).
7. Improved Estimation of Fourier Coefficients for Ill-Posed Inverse Problems, by M. Shubov; Univer New Hampshire, (Co-Director, 2008).

INVITED LECTURES

1. Can you see the weight of a cable? Univ. of West Virginia, Morgantown, USA, 2004.
2. Inversion of noisy Laplace transforms with an application to the insurance ruin problem; meeting on Operator Methods in Microeconometrics, Time Series and Finance, Montreal, CANADA, 2004.
3. Fréchet differentiation of functions of operators with application in functional data analysis; workshop on Statistical Inverse Problems, Goettingen, GERMANY, 2006.
4. Samples of functional data and image analysis; conference on nonparametric statistics “Current and Future Trends in Nonparametrics", Univ. of South Carolina, Columbia, USA, 2007.
5. Statistical applications of Fréchet-derivatives of functions of operators; Florida State Univ., Tallahassee, USA, 2007.

6. Fréchet-differentiation of functions of operators with applications to functional regression; Cowles Conference on Operator Methods and Inverse Problems in Econometrics, Yale University, New Haven, USA, 2008.
7. Operator theory applied to statistics; Univ. of New Hampshire, Durham, USA, 2008.
8. Deconvolution and the ruin problem for unknown claims distributions; Florida State Univ., Tallahassee, USA, 2009.

LAWRENCE SCHOVANEC

EDUCATION

Ph.D., Indiana University, Mathematics (1982)

M.S., Texas A&M University, Mathematics (1977)

B.S., Phillips University, Mathematics (1975)

ACADEMIC AND PROFESSIONAL POSITIONS

Interim Dean, College of Arts & Sciences, Texas Tech University, 9/2009-

Chair, Department of Mathematics and Statistics, Texas Tech University (6/1999 – 9/2009).

Professor, Texas Tech University (1996 - present).

Acting Chair, Department of Mathematics and Statistics, Texas Tech University (fall 1998).

Associate Professor, Texas Tech University (1989 - 1996).

Research Fellow, U.S. Air Force Summer Faculty Research Program, Astronautics Laboratory, Edwards Air Force Base, CA (Summer 1987).

Visiting Assistant Professor, Texas A & M University (1983 - 1984, 1985 - 1986).

Assistant Professor, Texas Tech University (1982 - 1989) (on leave, 1983 - 1984, 1985 - 86).

ADMINISTRATIVE EXPERIENCE/HIGHLIGHTS

Chair, Department of Mathematics and Statistics, Texas Tech University (6/1999-9/2009).

The Department of Mathematics and Statistics, with 47 tenured/tenure track faculty, 94 full time graduate teaching assistants and approximately 20 instructors and lecturers, teaches more student credit hours than any department at Texas Tech University. The department teaches approximately 58,000 student credit hours in an academic year of which 3,300 are graduate hours.

From fall 1999 to 2008, the number of graduate students in mathematics and statistics increased by 30% and the number of doctoral students more than doubled. During the past five-years the department has awarded 32 PhDs and 121 masters degrees.

The department had 170 undergraduate majors in fall 2007 compared to 120 in 2000, and has awarded an average of 40 bachelor degrees for the past five years.

In 2007 the department, with a grant from the National Science Foundation, established the South Plains Mathematics Scholars Program (SPMSP) to support academically talented students from low-income families by providing scholarships for undergraduate study leading to a degree in mathematics. The inaugural class of 12 SPMSP scholars enrolled at Texas Tech for the fall 2008 semester and receive nearly full

In 2008 the Department of Mathematics and Statistic, in collaboration with the Department of Chemistry and Biochemistry, was awarded two National Science Foundation grants that will enhance graduate and undergraduate enrollment. A G-K12 Fellowship grant of $2.7 million dollars will provide fellowships of $30,000 to doctoral-level graduate students who will partner with in-service secondary teachers to enhance interdisciplinary educational experiences for mathematics, engineering, and science teachers. A grant of $740,00 will provide $20,000 stipends to Texas Tech Noyce Scholars who will be seeking teaching certification in mathematics and chemistry.

The number of departmental scholarship endowments has increased from 21 in 1999 to 28 while the total amount of the endowments has grown from $680,000 to more than $1.8 million. From these endowments the department now awards approximately $200,000 a year in undergraduate and graduate scholarships.

In 2006, the department was awarded the statewide Collegiate Partnership in Education Crystal Award by the Texas Association of Partners in Education, in recognition of outreach to K-12 schools.

Since fiscal year 2000, the department has averaged than $849,456 per year in external funding. For fiscal year 2008 the department received a record amount of funding of $1,543,853.

The first endowed chair in Mathematics and Statistics, the "Dick" and Martha Brooks Endowed Professorship, was established in 2004 and successfully filled in 2006.

RESEARCH INTERESTS

Biomechanics and physiological control systems.

Solid mechanics with an emphasis on fracture in elastic and viscoelastic media.

PUBLICATIONS

(* Denotes non-refereed or expository publication)

1. A Neuro-Muscular Elasto-Dynamic Model of The Human Arm--Part 1: Model Development, (with Alan Barhorst). *Journal of Bionics Engineering*, 6(2) 93-107 (2009).
2. A Neuro-Muscular Elasto-Dynamic Model of The Human Arm--Part 2: Musculotendon Dynamics, (with Alan Barhorst, Cody Moody). *Journal of Bionics Engineering*, 6(2) 108-119 (2009).
3. Application of hybrid parameter methods to biomechanical systems, (with A. Barhorst). *Proceedings of the 2008 Chinese Control and Decision Conference*. Yantai, China, 830-843 (2008).
4. A Nonlinear Dynamical Model and Response of Avian Cranial Kinesis (with A. Barhorst, S. Chatterjee, T. Burton). *Journal of Theoretical Biology*, 240(1), pp: 32-47 (2006).
5. Dynamic Model of The Human Arm (with C. Moody, A. Barhorst). *Proceedings of American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*, Washington D.C, 6 pp (2004).

RESEARCH ACTIVITES

External Funding

1. Co-Principal Investigator: "ISISP: Integrated STEM Initiative on the South Plains," (PI: Guy Bailey, Co-PI's: Jaclyn Canas, Jerry F. Dwyer, Juan S. Munoz). Funded by National Science Foundation. Amount: $977,962 (2009-2013).
2. Co-Principal Investigator: Supplement to "Texas Tech Noyce Scholars Program." (PI: J. Dwyer, Co-PI's: D. Casadonte, T. Stephens, M. Strauss). Funded by National Science Foundation. Amount: $148,111 (2009-2013).
3. Co-Principal Investigator: "Texas Tech Noyce Scholars Program." (PI: J. Dwyer, Co-PI's: D. Casadonte, T. Stephens, M. Strauss). Funded by National Science Foundation. Amount: $740,975 (2008-2013).

4. Senior Personnel: “Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems.” (PI: P. Seshaiyer,). Funded by National Science Foundation. Amount: $170,707 (2006-2007).

Local Funding

5. Co-Principal Investigator: “A Dynamic Model of Avian Kinesis,” (Co-PI’s: S. Chatterjee, A. Barhorst). Funded by TTU Interdisciplinary/Multidisciplinary Seed Grant. Amount: $18,673 (2002).

Colloquia, Conference And Workshop Presentations

1. Contributed talk: “Application of hybrid parameter methods to biomechanical systems,” 2008 Chinese control and Decision Conference, Yantai, China (July 2008).
2. Invited talk: “The Control and Biomechanics of Human Movement Systems," NSF sponsored conference on *Emerging Frontiers in Control Theory Research and Innovative Applications*, in honor of W.P. Dayawansa. Texas Tech Unversity (April, 2007).
3. Invited session talk: “A hybrid parameter systems approach to modeling elastodynamic effects in biomechanical systems.” *International Conference on Information and Automation and Control*, Colombo, Sri Lanka (December, 2005).
4. Invited session talk: “Modeling Hybrid Parameter Multiple Body Systems with Application to Biomechanics.” *AMS Fall Central Section Meeting*, Lincoln, NE (October, 2005).
5. Invited session talk: “Control of hybrid parameter systems.” *SIAM Conference on Control and its Applications*, New Orleans, LA (July, 2005).
6. Invited session talk: “A neuro-muscular-elasto-dynamic model of the human arm.” *AMS Spring Central Section Meeting*, Lubbock, TX (April, 2005).
7. Invited Talk: “A Hybrid Parameter Approach to Modeling Human Movement Systems.” C*omputation and Control and Biological Systems VII*, Bozeman, MT (August, 2003).
8. Invited talk: Karacher Colloquium: “Control and Biomechanics of Human Movement Systems.” Department of Mathematics, Oklahoma University, (September, 2003).

GRADUATE STUDENT DIRECTION

Graduate Students Directed

1. Tina Gaumond, Ph.D. Expected graduation: Spring 2010
2. Jeremy Hedges, M.S., August 2005. Thesis: “A perturbation analysis of nonlinear constrained vibrations.”
3. Jacqueline Fowler, M.A., August 2005. Report: ``Essential Resources and Cost Effectiveness of Online Mathematics Course."
4. Zachary Kemp, M.S., May 2004. Thesis: “The Stability and Control of Musculotendon Dynamics.”
5. Samantha Bouquin, M.S., May 2004. Thesis: “The Dynamics of a Constrained, Nonlinear Oscillator.”

Membership on Graduate Advisory Committees (16 PhD, 29 Masters)

Calandra Brazille, MS Mathematics (2007). Menaka Navaratrna, MS Mathematics (2006). Kyle Kundomal, MS Mathematics (2006). Tina Gaumond, MS Mathematics (2005). Preeda Meekangvan, MS Mechanical Engineering (2004). Cody Moody, MS Mechanical Engineering (2004). Channa Navaratna, PhD Mathematics (2003). Pantaleon Perera, PhD Mathematics (2003). Duminda Randeniya, MS Mathematics (2003). Menaka Navaratna, MS Mathematics (2003). Nilmini Wijeratne, MS Mathematics (2003).

PROFESSIONAL SERVICE

President, Texas Association of Academic Administrators in Mathematical Sciences (2004-2005)

Panelist and group discussion leader, Mathematical Association of America Professional Enhancement Program Workshop: "Leading the Academic Department." Washington D.C. (June, 2004).

President-elect, Texas Association of Academic Administrators in Mathematical Sciences (2003-2004).

Invited presenter and panel participant: "Perceived Challenges for Mathematics Departments for the Next Ten Years." Annual Fall Meeting of the Texas Association of Academics Administrators for Mathematical Sciences, Waco, TX (October 2002).

Member, IEEE Control System Society's Technical Committee on Biosystems and Control.

Member, Selection Committee, Outstanding Texas University Teacher Award, Texas Section of the Mathematical Association of America (2001-2002).

Member, Physical Sciences Panel for the Texas Higher Education Coordinating Board Advanced Research/Technology Program Review Team (1998).

Member, Advisory Board for the 3rd International Conference on Composites Engineering, New Orleans (1996).

Conferences, Special Sessions and Workshops Organized

Special Session: "Neuromotor Control," *2002 American Control Conference*, Anchorage, AL. Co-organizer W.P. Dayawansa TTU (May 2002).

Reviewer for

National Science Foundation; Swedish Research Council; American Society of Mechanical Engineers Publications; American Control Conference Proceedings; International Journal of Fracture; International Journal of Solids and Structures; Journal of Mathematical and Computer Modeling; Journal of Engineering Fracture Mechanics; Journal of Mathematics and Mechanics of Solids; Journal of Applied Mechanics; IEEE Journal of Automatic Control; IEEE Control Magazine; Rocky Mountain Journal of Mathematics; Academic Press; Harcourt Brace Press; Birkhauser Publications; SIAM Press

Professional Affiliations

Mathematical Association of America

American Mathematical Society

Society of Industrial and Applied Mathematics

University Service

Member, Texas Tech University Southern Association of Colleges and Schools Accreditation Task Force and Coordinator of Mathematics Core Competency Team, 2008-

Member, Graduate Program Review Committee, Mechanical Engineering, 2008-

Member, Task Force on Centers and Institutes, 2007-2008.

Chair, Search Committee for Chair of Department of Computer Science, 2006-2007

Member, Multidisciplinary Masters in Science Advisory Committee (2003- present)

TTU Faculty Representative, Federal Demonstration Partnership (2003-2006).

Chair, Graduate Program Review Committee, Electrical and Computer Engineering (2005).

Chair, Graduate Program Review Committee, Mechanical Engineering (2003).

Member, Graduate Program Review Committee, Political Science (2001).

Member, Information Technology Committee and Subcommittee on High Performance Computing (2001-2003).

Member, Bioinformatics Planning Group for Experimental Science Building (2001).

Member, University Departmental Teaching Award Selection Committee (1999 - 2001).

Member, Arts and Sciences Information Technology Committee (1999).

Member, Building Planning & Design Committee, Experimental Science Building (fall 1998).

Elected member, University Graduate Council, Mathematics and Sciences Representative (1991-1994).

Member, College of Arts and Science Dean's Search Committee (1992).

Departmental Service

Member, Hiring Committee (1988-1990, 1991-1993, 1998 - 1999).

Chair, Hiring Committee (1993 - 1997).

Chair, Comprehensive Faculty Review Committee (1998).

Member, Awards Committee (1998 - 1999).

Member, Space Committee (1998 - 1999).

Member, Computing Committee (1992 - 1995, 1998 - 1999).

Elected member, Graduate Programs Committee (1988 - 1990, 1992 - 1994, 1997 - 1998).

Elected member, Executive Committee (1990 - 1992, 1995 - 1997).

Departmental Coordinator for United Way Campaign (1988 - 1990)

EDUCATIONAL ACTIVITIES

Distinctions

Recipient of President's Excellence in Teaching Award, Texas Tech University (1996).

Charter member, Texas Tech University Teaching Academy.

Recognized as a 'Favorite Professor' at the 2003 and 2004 College of Engineering Annual Honors Convocation.

Invited presentation to the TTU Success Center "Last Lecture Series" (2001).

Special Educational Activities

Senior Personnel and Faculty Mentor for National Science Research Experience for Undergraduates Program (Summers 2007 and 2006).

Faculty Mentor for TTU Summer Mathematics Academy (Summer 2006).

PI and Co-PI on two NSF Instrumentation and Laboratory Improvement Grants that provided for the establishment of classroom-computer laboratories for the Department of Mathematics and Statistics.

CARL R. SEAQUIST

EDUCATION

Ph.D., Mathematics, Auburn University, Auburn, AL, 1995.
S.M., Electrical Engineering and Computer Science, M.I.T., Cambridge, MA, 1980
B.A., Mathematics, University of Alabama, Tuscaloosa, AL, 1972.

PROFESSIONAL EXPERIENCE

Sept. 2001 – Present,	Department of Mathematics and Statistics, Texas Tech University, Associate Professor
Sept. 1995 – Sept. 2001,	Department of Mathematics and Statistics, Texas Tech University, Assistant Professor
Sept. 1989 – Sept. 1990,	AT&T Bell Laboratories, Distinguished Member of Technical Staff
May 1985 – Sept. 1989,	AT&T Bell Laboratories, Supervisor
Dec. 1980 – May 1985,	AT&T Bell Laboratories, Member of Technical Staff
June 1975 – Aug. 1977,	Sperry UNIVAC Senior Systems Analyst
Aug. 1974 – June 1975,	Lockheed Electronics, Scientific Programmer

AREAS OF INTEREST

Topological graph theory, geometry, history of mathematics

PUBLICATIONS (Refereed Journals)

- **C. R. Seaquist**, *Proof Without Words: Area of a Parabolic Segment*, Math. Mag., Vol. 81, Numb. 3, June 2008, (219).
- **C. R. Seaquist**, K. Binam, R. Street, and G. E. Turner, III, *Orientable one-circuit double covers,* Top. Proc., Vol. 29, Numb. 1, 2005, (333—341).
- **C. R. Seaquist**, P. Seshaiyer, and D. Crowley, *Calculation across cultures and history,* TCMJ, Vol. 1, Numb. 1, 2005, (15—31).

FUNDING ACTIVITY

Funded

- *Growing Graduate Program,* TTU, $7,400, 2007-2008, L. Schovanec(PI), K. Pearce(I), **C. R. Seaquist**(I), B. Williams(I).
- *Instructional Team Members for Texas Regional Collaboratives for Excellence in Math Teaching*, TEA, $200,000, 2006-2007, B. Anderson(PI), S. Cooper(Instructor), **C. R. Seaquist**(Instructor), P. Seshairyer(Instructor), J. Wilhelm(Instructor).

Not funded

- *UBM-Group: Interdisciplinary Training for Undergraduates in Computational Biology of Small RNA's,* NSF, $66,333.25, 2006, C. Rock(PI) and **C. R. Seaquist**(Co-PI).

- *Topology, Domain Theory, and Theoretical Computer Science*, Advanced Research Program, $45,000, 2005, **C. R. Seaquist**(Co-PI) and H. Bennet(Co-PI).

PRESENTATIONS AND MEETINGS ATTENDED

Invited hour talks

C. R. Seaquist* and P. Seshaiyer*, *Calculation across cultures and history*, 51st Annual Conference—Texas Council for the Social Studies, Texas Tech University, Lubbock, Texas, October, 2003.

Conference presentations

- **C. R. Seaquist***, *The bridges of Königsberg revisited,* Texas Section of Mathematical Association of America, The University of Texas – Pan American, Edinburg, Texas, April, 2007.
- **C. R. Seaquist***, *Building effective student groups,* Texas Section of Mathematical Association of America, Midwestern State University, Wichita Falls, April 2006.
- **C. R. Seaquist***, *Long division in cultural and historical perspective,* Texas Section of Mathematical Association of America, University of Texas at Arlington, Arlington, Texas, April, 2005.
- **C. R. Seaquist***, P. Seshaiyer, and D. Crowley, *Calculation across cultures and history,* Texas Section of Mathematical Association of America, Texas A&M University-Corpus Christi, Corpus Christi, Texas, April, 2004
- **C. R. Seaquist*** and Galen E. Turner, III, *Orientable one-circuit double covers,* Spring Topology and Dynamics Conference, University of Alabama at Birmingham, March, 2004.

Local presentations

- **C. R. Seaquist***, *Cycle double cover conjecture and similar problems*, Graph Theory Seminar, TTU, Sept., 2009.
- **C. R. Seaquist***, *History of algorithms for calculation,* Education Seminar, TTU, April, 2008.
- **C. R. Seaquist*** and P. Seshaiyer*, *MAP Workshop—Algebra II,* Region 17, May, 2007.
- **C. R. Seaquist***, *Historical and cultural dimension to long division,* Workshop for teachers, Emma Noether Day, TTU, May, 2007.
- **C. R. Seaquist*** and P. Seshaiyer, *Calculation across culture and history,* Workshop for teachers, Emma Noether Day, TTU, Office of International Affairs, TTU, Nov., 2005.
- **C. R. Seaquist***, *Calculation across culture and history,* Division of Public Education, Office of International Affairs, TTU, Nov., 2005.
- **C. R. Seaquist*** and P. Seshaiyer***,** *Calculation across culture and history,* Division of Public Education, Office of International Affairs, TTU, Nov, 2004.

Meetings attended

- Texas Section of Mathematical Association of America, University of North Texas, Denton, Texas, April 2009.

- Texas Section of Mathematical Association of America, Tarleton State University, Stephenville, Texas, April 2008.

DISSERTATION, THESIS AND REPORT DIRECTORS

List directed students

- Elisa Johnson, *Using Technology to Understand Apollonius*, M.A. Mathematics, May, 2008.
- Natividad Casas, *Teaching algebra with Euclid,* M. A. Mathematics, May 2008. (Co-advisor: Bob Byerly).
- Torill Miller, *Teaching mathematics through storytelling,* M.A. Mathematics, May 2007.
- Allen Williams, *Integrating geometry, history, and technology,* M.A. Mathematics, Dec. 2006. (Co-advisor: Gary Harris).
- Dawn Harrison, *Supplement to incremental and distributed practice for state mandated assessment,* M.A. Mathematics, May, 2006.
- Marilyn Jones, *Differential calculus without limits,* M.A. Mathematics, May 2005. (Co-advisor: Jo Temple).
- Charlotte Schmitz, *Point set topology via linearly ordered spaces,* M.A. Mathematics, May, 2004.

List students currently in progress

- Nicole Tunmire, M.A. Mathematics.

List graduate committees served on

- Sharon Sherrod, Ph.D. Education, May, 2009.
- Sheyleah Harris, M.S. Mathematics, May, 2004.
- Heather Smith, M.A. Mathematics, May, 2004.
- Shawna Allen, M.A. Mathematics, May, 2003.

HONORS AND AWARDS

President's Excellence in Teaching Award, TTU, 2004.

PROFESSIONAL SERVICE

Refereeing

- Mathematics Magazine, Mathematical Association of America
- Texas College Mathematics Journal
- Proceedings of the American Mathematical Society

Organization offices held

- Chairman of book sales, Texas Section of Mathematical Association of America
- Faculty Liaison for TTU to Mathematical Association of America
- Faculty Advisor at TTU of student chapter of Mathematical Association of America

Memberships in organizations

- Teaching Academy, TTU
- Mathematical Association of American
- National Council of Teachers of Mathematics
- Phi Beta Kappa

OTHER RELEVANT ACTIVITIES

Jan. 2007 – Present	Director of Master of Arts Program for Department of Mathematics and Statistics
Jan. 2006 – Aug. 2008	Director of Undergraduate Program for Department of Mathematics and Statistics
Jan. 2004 – Jan. 2006	Director of Master of Arts Program for Department of Mathematics and Statistics

BYUNGTAE SEO

EDUCATION

Ph.D., The Pennsylvania State University, 2007
B.S., Seoul National University, 2001

PROFESSIONAL EXPERIENCE

Assistant Professor, Texas Tech University, 2007-

AREAS OF INTEREST

mixture models, non or semi-parametric modeling, survival analysis, missing data analysis

PUBLICATION

1. **Refereed Journals**

(1) **B. Seo** "A gradient based algorithm for semiparametric models with missing covariates problem" Accepted *to Journal of Statistical Computation and Simulation*

(2) Mulla, Z., **B. Seo,** Kalamegham R., Nuwayhid B.S. "Multiple imputation for missing laboratory data: An example from infectious disease epidemiology" Accepted to *Annals of Epidemiology*

(3). **B. Seo** "An almost nonparametric model for missing covariates in parametric regression" Accepted to *International Journal of Intelligent Technology and Applied Statistics*

FUNDING ACTIVITY

1. **Not Funded**

(1) Z. Mulla and **B. Seo** "Handling Missing Data in Clinical Research using the Expectation-Maximization Algorithm" TTU-TTUHSC Initiative, $15,000, Principal Investigator,

PRESENTATIONS AND MEETING ATTENDED

1. Colloquia

(1) **B. Seo*** "Modified maximum likelihood", January 2007, Queen's University, Canada

(2) **B. Seo*** "Modified maximum likelihood", January 2007, Texas Tech University, TX, USA

(3) **B. Seo*** "A universally consistent modification of maximum likelihood", June 2009, Inha University, Incheon, Korea

2. Invited talk

(1) **B. Seo*** "Modified maximum likelihood estimation", May 2007, Rao prize conference, Pennsylvania State University, State College, PA, USA

(2) **B. Seo*** "Doubly-smoothed maximum likelihood with normal mixture models" March 2009, Conference of Texas Statisticians at Huntsville, TX

3. Conference presentations

(1) **B. Seo*** and B. Lindsay "Semiparametric mixture approach for the measurement error problem with additional error free covariates", August 2006, Joint Statistical Meeting, Seattle, WA, USA

(2) **B. Seo*** and B. Lindsay "Doubly smoothed maximum likelihood estimation", August 2008, Joint Statistical Meeting, Denver, CO

(3) Y. Chin*, H. Kim, and **B.Seo** "Longitudinal Effects of Intervention for Alzheimer's Caregiver", November 2008, APPAM Research conference, Los Angeles, CA (Poster)

(4) **B. Seo*** "An almost nonparametric model for missing covariates", July 2009, 1st IMS-APRM conference on July at Seoul, Korea.

(5) H. Jung*, J. L. Schafer, and **B. Seo** "Simulation studies of latent-class selection model for nonignorable missing data", August 2009, Joint Statistical Meeting, DC

(6) **B. Seo*** "An almost nonparametric model for missing covariates", August 2009, Joint Statistical Meeting, DC

4. Local presentations

(1) **B. Seo*** "Some research problems on semiparametric regression with incomplete covariate information", October 2008, SIAM Mini-Symposium, Texas Tech University

(2) **B. Seo*** "Consistency and efficiency of Doubly-Smoothed Maximum likelihood estimator", November 2008, Statistics Seminar, Texas Tech University

(3) **B. Seo*** talk "Mixture modeling and its application", October 2007, Statistics Seminar, Texas Tech University

5. Session chaired
(1) Session title: Recent Advances in Estimation and Hypothesis Testing, July 2009, 1st IMS-APRM, Seoul, Korea

DISSERTATION, THESIS AND REPORT DIRECTION

1. **Students currently in progress**

(1) Hemalika Abeysundara
(2) Sachith Abeysundara
(3) Cong Cui

2. **Graduate committees**

MS (MATH): Palak Sanghvi, Upeksha Adikari, Indika Wichramasinghe, Yu Chen,
Ph.D. (MATH): Janelle Charles
Ph.D. (HDFS): Yoona Chin

PROFESSIONAL SERVICE

G. Graduate Faculty Information

1. Book Review: “Workshop Statistics: Discovery with data”, 3rd edition by Rossman and Chance
2. Memberships in organizations: American Statistical Association, Institute of Mathematical Statistics, Korean Statistical Society

PHILIP W. SMITH

EDUCATION

Ph.D. in Mathematics, 1972
Purdue University
Specialization: $W^{r,p}$-Splines

M.S. in Mathematics, 1970
Purdue University

Bachelor of Arts in Mathematics, 1968
University of Virginia

WORK EXPERIENCE

Sr. Director of High Performance Computing Center (HPCC)
Professor of Mathematics and Statistics with Tenure
Texas Tech University
Lubbock, TX
1999-present

Vice President and Co-owner
Windward Technologies, Inc.
Houston, TX
1993- 1999

Director of Numerical Software
Manager of Numerical Software
Visual Numerics, Inc.
Formerly IMSL, Inc.
Houston, TX
1985 – 1993

Professor of Mathematics with Tenure
Old Dominion University
1980-1985

Assistant and Associate Professor of Mathematics with Tenure
Texas A & M University
1972-1980

TEACHING EXPERIENCE

Texas Tech University
Professor of Mathematics, 1999-present
- Parallel Computing

Old Dominion University
Professor of Mathematics, 1980-1985
- Numerical Analysis
- Numerical Solution of Operator Equations
- Optimization
- Functional Analysis

Texas A&M University

Assistant & Associate Professor of Mathematics, 1972-1980

- Numerical Analysis
- Numerical Solution of Operator Equations
- Functional Analysis

RESEARCH HIGHLIGHTS

Splines

Splines are piecewise polynomial functions that have been found to be a very effective method for approximating generic functions and data. Most of my early work involved exploring the efficacy of splines as approximations. Three sets of results stand out in this body of work. First, Dave Barrow and I determined the exact asymptotic behavior of spline approximations with variable knots as the number of knots goes to infinity. Second, in a series of papers, Barrow, Chui, Ward, and I (in various combinations) studied the problem of unicity of spline approximants. We showed that unicity of best approximation was unusual but that in certain cases unicity could be proved. Third, in a breakthrough result, *Constrained L^p Approximation* with C. A. Micchelli, J. Swetits, and J. D. Ward, a framework was introduced that generalizes the natural interpolating spline to the constrained natural interpolating spline. This paper led to a cottage industry of papers generalizing our approach to other constrained optimization and approximation problems.

My current interests include non-conforming (piecewise polynomial) methods for solving PDEs and the (statistically) optimal selection of knots to fitting noisy data. I am especially interested in developing parallel codes for these applications.

Linear Algebra

Banded and sparse matrices are extremely important in numerical computations. Several of my papers address the issues of factorization and inevitability of sparse matrices. The most important paper in this series, *Decay rates for inverses of band matrices* with S. Demko, and W. F. Moss, concerns the exponential decay of the entries of the inverse of a band matrix. This paper sharpened known results in the area as well as introducing new tools and techniques.

Scientific Software

From 1985 to 1999, I developed commercial products on the cutting edge of numerical software.

At IMSL I directed a team that produced a very efficient direct sparse solver for linear systems. We introduced new pivoting strategies for the solution of sparse general linear systems. This solver was made available to our customers in both the Fortran and C libraries and was comparable to the best sparse solvers of the time.

IMSL entered the high-performance computing field in the mid-eighties. I led a team of software designers and programmers who developed optimized code for supercomputers. This activity produced some of the fastest dense solvers.

I managed the release and design of the IMSL Version 1 and 2 Libraries involving over 75 IMSL developers and designers. Furthermore, I pushed for, designed, and released the first C numerical library from IMSL.

At Windward Technologies, I developed ConFit and RBFpack. The fundamental computation in ConFit produces a constrained spline fit to noisy data. The ConFit program is currently being used for data fitting in the oil industry and for fitting survival data. RBFpack is a very general high-dimensional surface fitting package. It is one of the few packages that has no constraints on the dimensionality of the data space.

TTU HPCC Highlights

- 2003

  - TechGrid instantiated the first functional large grid uniting over 200 TTU computers using AVAKI middleware. This was the first such grid in Texas. Several Computer Science Masters theses were supported on this grid.
  - DOD grant renewed at $135,000.
- 2004
  - Elected as Director of HiPCAT (Sept. 2004 to Sept. 2008). HiPCAT is now 10 members having added UT Southwestern Medical School, University of Texas at Arlington, and the University of Texas Health Sciences Center at San Antonio.
- 2005
  - PI on TIGRE (Texas Internet Grid for Research and Education). This is a two-year $2,500,000 project to build a statewide grid. The other participants are University of Texas, Rice, University of Houston, and Texas A&M. There is a partner project LEARN (Lonestar Education and Research Network) funded at $7,200,000 to build the fiber network to support TIGRE and similar projects.
  - Purchased our first Teraflop machine from Dell with cost savings above $300,000.
  - Implemented the "Community Cluster" concept that allows users to purchase nodes and add them to our existing clusters. This centralizes system administration and prevents proliferation of resources. Over $500,000 of faculty research money has been invested in this project.
- 2006
  - TTU brings in over $6,000,000 in HPC grants
  - Implemented a parallel file system managing over 12 Terabytes of data.
  - Enlarged our clusters to more than 1000 cores with over $300,000 cost savings from Dell.
- 2007
  - We have hundreds of users, with the largest scientific computing group working on problems in molecular dynamics. Their programs can use 16 to 64 cores for multiple weeks. Our users come from Math, Chemistry, Physics, Computer Science, Chemical Engineering, Mechanical Engineering, Civil Engineering, Electrical Engineering, Geosciences, Biology, Plant and Soil Sciences, and the College of Business.
  - Our aggregate cluster computational capacity is over 10 Teraflops with over 20 Terabytes of storage.
  - Elected to the SURAGrid Governance Committee (2007—2008). SURA is the Southeastern Universities Research Association.
  - TIGRE is identified by IBM as a "grid project to watch".
  - TechGrid is now a Condor Grid spanning over 600 desktop computers.
- 2008
  - Microsoft funded a port of NWChem to Windows HPC cluster.
  - Installed Grendel a 210 node 20 TF Dell cluster that is 288 on the top 500 list. Cluster storage over 80 TB formatted.
  - Gromacs is running well. Some problems scaling to 256 cores.
  - Reelected to the SURAGrid Governance Committee (2007—2008).

PUBLICATIONS

- *(with Padmanibahn Seshaiyer) A Non-conforming Finite Element Method for Submeshing, Applied Mathematics and Computation 139 (2003) 85--100.*

- *(with Clyde Martin) Binary Bases of Spaces of Continuous Functions, Journal of Mathematical Analysis and Applications, 287 (2003) 365-379.*

- *(with Scott Franklin and Padmanibahn Seshaiyer) A Computational Methodology to Study Coupled Physical Processes over Partioned Domains, Applied Mathematical Modelling, Volume 31, Issue 3, March 2007, Pages 632-646.*

- *(with Scott Franklin and Padmanibahn Seshaiyer) A three-field finite element method for elliptic partial differential equations driven by stochastic loads, Stochastic Analysis and Applications,* vol. 23, n4, pp. 757-783 (2005).

- *(with Ronald Bremer, Jerry Perez, and Peter Westfall) Grid Computing at Texas Tech University using SAS, Proc. SCSUGI 2004:* ***64-72****.*

- *(with Scott Franklin, Jerry Perez, Padmanibahn Seshaiyer) A grid implementation for domain decomposition in solving stochastic partial differential equations, Proceedings of the 12th ISPE International Conference on Concurrent Engineering: Research and Applications, Fort Worth, Texas July 25—29, 2005, Mike Sobolewski and Parisa Ghodous, eds., 432—436.*

- *(with V. Cheleenahali and N. Lopez-Benitez) A Latency-Tolerant Implementation of a Randomized Global Optimization Algorithm, Proceedings of the 2005 International Conference on Parallel and Distributed Processing Techniques and Applications, (PDPTA'05) Volume III, Las Vega, Nevada June 27—30 2005, Editor Hamid R. Arabnia, 1092—1098.*

SELECTED PRESENTATIONS

- Workshop on Grid Applications and Programming Tools, (GGF 8, in Seattle). Multivariate Minimization Using Grid Computing, by K. Kulish, J. Perez, and Phil Smith. June 25, 2003.
- Grid Computing at TTU presented at Weyland Baptist University, Plainview, TX, Fall 2003.
- Mathematical Problems Requiring Grid Computing, Univ. of Wyoming, Sept. 04.
- Variable Knot Spline Approximation, Univ. of Georgia, Approximation conference in honor of C. Chui, May 05.
- Computing Good and Best Approximations, Colliquium, UMSL, September 2007.
- Colloquium at the Math Department of the University of Missouri, St. Louis: Computing Good and Best approximations. September, 2007.
- TIGRE progress and Hipcat update, San Antonio, TX, November 07, LEARN meeting.

ALEXANDER YU. SOLYNIN

EDUCATION

- Ph.D. Kuban St. U. (Russia) and Institute of Applied Math. and Mech. (Ukraine) 1985, (Advisor: Igor P. Mityuk)
- Diploma with Honors (M.S.) Kuban St. U. (Russia), 1980

PROFESSIONAL EXPERIENCE

- September 2009-present, Professor, Texas Tech University.
- September 2004-August 2009, Associate Professor, Texas Tech University.
- September 2002-August 2004, Visiting Assistant Professor, University of Arkansas.
- March 2001-July 2002, Visiting Professor, Lady Davis Fellowship, Haifa, Israel.
- September 2000-January 2001 and September 2001-May 2002, Visiting Assistant Professor, Texas Tech University.
- 1993-2004, Senior Research Fellow, Steklov Institute of Mathematics, St.Petersburg, Russia.
- 1990-1993, Doctorantura, Steklov Institute of Mathematics, St.Petersburg, Russia.
- 1989-1990, Associate Professor (Docent), Kuban St. U., Krasnodar, Russia.
- 1987-1989, Senior Lecture, Kuban St. U., Krasnodar, Russia.
- 1983-1987, Lecture, Kuban St. U., Krasnodar, Russia.

AREAS OF INTEREST

- Primary: Complex Analysis , Potential Theory
- Secondary: Qualitative Theory of PDE's, Mathematical Physics

PUBLICATIONS: from the last six years, from total of 69 since 1983.

Refereed Journals (MS and PhD Students underlined)

18. "Iceberg-type Problems: Estimating Hidden Parts of a Continuum from the visible Parts," (R.W. Barnard, K. Pearce and **A.Yu. Solynin**), *Mathematische Nachrichten,* accepted.
19. "Quadratic differentials and weighted graphs on compact surfaces." (**A.Yu. Solynin**), In: *Analysis and Mathematical Physics. Trends in Math.* 469-501. *Birkhauser,* 2009.
20. "Area and the inradius of lemniscates." (**A.Yu. Solynin** and A. S. Williams), *J. Math. Anal. Appl.* **354** (2009), 507-517.
21. "Mapping properties of analytic functions on the unit disk," (**A.Yu. Solynin**), *Proc. Amer. Math. Soc.* **136** (2008), no. 2, 577—585.
22. "A note on equilibrium points of Green's function," (**A.Yu. Solynin),** *Proc. Amer. Math. Soc.* **136** (2008), no. 3, 1019—1021.
23. "A Schwarz lemma for meromorphic functions and estimates for the hyperbolic metric." (**A.Yu. Solynin),** *Proc. Amer. Math. Soc.* **136** (2008), no. 9, 3133—3143.
24. "Hyperbolic convexity and the analytic fixed point function," (**A.Yu. Solynin**), *Proc. Amer. Math. Soc.* **135** (2007), no. 4, 1181—1186.
25. "A note on minimal are problem for non-vanishing functions," (R.W. Barnard, C. Richardson and **A.Yu. Solynin**), In: *Quasiconformal Mappings and their Applications* (2007), pp 1-9
26. "Monotonicity of quotients of theta functions related to an extremal problem on harmonic measure," (A. Dixit and **A.Yu. Solynin**), *J. Math. Anal. Appl.* **336** (2007), 1042—1053.
27. "Variational principle and steady state invariants for non-linear hydrodynamic interactions in porous media," (E. Aulisa, A. Cakmak, A. Ibragimov and **A. Solynin**), *Dynamics of Continuous,*

Discrete and Impulsive Systems A Supplement, Advances in Dynamical Systems, **14**(S2) (2007), 141—148.

28. "A minimum area problem for non-vanishing functions," (R.W. Barnard, C. Richardson and **A.Yu. Solynin**), *Algebra i Analiz* **18** (2006), no. 1, pp 21-36.
29. "Minimal area problems for functions with integral representation," (D. Aharonov, H. Shapiro, and **A.Yu. Solynin)**, *J. Analyse Math***. 98** (2006), 83-111.
30. " Conformal mapping and ellipses," (A. Ledet and **A.Yu. Solynin)** *Proc. Amer. Math. Soc.* **134** (2006), no. 12, 3507-3513.
31. "The analytic fixed point function and its properties," (**A.Yu. Solynin**), *Zap. Nauchn. Semin. POMI*. **337** (2006), 238-252.
32. "Minimal kernels, quadrature identities, and proportional harmonic measures," (J. Akeroyd, K. Karber, and **A.Yu. Solynin)** *Rocky Mountain J. Math*. **36** (2006), no. 6, 1819-1844.
33. "The Poincare metrics and isoperimetric inequalities for hyperbolic functions," (R.W. Barnard, P. Hadjicostas and **A.Yu. Solynin**) *Trans. AMS* Vol 357, No. 10 (2005) pp 3905-3932.
34. "Concentration of area in half-planes," (R.W. Barnard, C. Richardson and **A.Yu. Solynin**) *Proc. AMS* Vol. 133, No. 7 (2005) pp. 2091-2099.
35. "An isoperimetric inequality for logarithmic capacity of polygons," (**A.Yu. Solynin** and V. A. Zalgaller) *Ann. of Math.,* **159** (2004), 277—303.
36. "Local variations and minimal area problems," **(**R.W. Barnard and **A.Yu. Solynin**) *Indiana J. of Math* Vol. 53 (2004) pp 135-167.

FUNDING ACTIVITY

Funded

5. *"Multidisciplinary Summer Undergraduate Research Program in Computation and Control Biological and Biologically Inspired Systems*," **Project Leader**. Covered Period: 6/06 – 5/08. Amount Funded: $170,707, Funding Agency and Program: NSF (REU Program) and Department of Defense (ASSURE Program).
6. *"Conference on Complex Analysis, Circle Packing, and Applications,"* NSF, Grant DMS-0745472, Covered Period: 11/01/07 – 10/31/08. Amount Funded: $15,784, **co-PI**.
7. *"Extremal problems in complex analysis and potential theory*," NSF, Grant DMS-0412908, Covered Period: 06/01/04 - 05/31/07. Budget for 3 years: $ 55,000, **PI**.

Pending

1. *"Topics on extremal problems in Complex Analysis and Potential Theory,"* NSF, $160,655, 2010-13, **PI**, (**A.Yu. Solynin**)

Not Funded

10. *"Topics on extremal problems in Complex Analysis and Potential Theory,"* NSF, $160,771, 2009-12, **PI, (A.Yu. Solynin**)
11. *"Non-Linear analysis of flows in heterogeneous porous media and applications to engineering,"* Submitted to NSF/Applied Mathematics on November 14, 2007, Period: 2008-2011, Total requested $489,417, **co-PI**.
12. *"Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological Systems,"* **Senior Personnel**. Period: 06/09/2008-07/31/2009. Total requested: $250,000, Funding Agency and Program: NSF/REU.
13. *"Nonlinear problems in computational biology and mathematical physics,"* Research Enrichment Fund Competition, Period: 06/01/2008-05/31/2009, Total requested 34,996, **co-PI**.
14. "*Mathematical Modeling, Analysis and Simulation of Non-linear Flow in Porous Media, with Application to Reservoir Engineering,"* **co-PI**, Submitted to NSF/Applied Mathematics, Total

Award Amount: 636,211, Covered Period: 2007-2010, Collaborative proposal with Texas A&M University.

PRESENTATIONS AND MEETINGS ATTENDED

Colloquia

- University of New Mexico, Feb.2009

Invited Conferences and Special Sessions of AMS

14. Gave an invited talk (May 19) on "*Some recent results in classical complex analysis*" at the International Conference "*Complex Analysis and Dynamical Systems IV*" held on 18-22 May 2009 in Nahariya, Israel, (chaired a session).
15. Gave an invited talk (June 9) on "*The analytic fixed point function and its properties*" at the International Conference "*Computational Methods and Function Theory*" held on June 8-12, 2009 in Ankara, Turkey, (chaired a session).
16. Gave an invited talk (June 28) on "*Recent results in classical complex analysis*" at the International Conference "*18th St. Petersburg Meeting in Mathematical Analysis*" held on June 27-July 2, 2009 in St. Petersburg, Russia.
17. An invited lecture *"Quadratic differentials and weighted graphs on compact surfaces"* at the "New trends in Complex and Harmonic Analysis" an international conference on Analysis and Mathematical Physics, May 7-12, 2007 Bergen, Norway, (chaired a session).
18. An invited talk *"Hyperbolic convexity and the analytic fixed point function"* at the "Complex Function Theory", **CMS-MITACS** Joint Conference 2007. May 31 - June 3, 2007 Winnipeg, Canada.
19. An invited talk "The analytic fixed point function" at the international conference "16th Summer St. Petersburg Meeting in Mathematical Analysis", June 25-30, 2007 Saint-Petersburg, Russia**,** Satellite Meeting for Festival dedicated to 300th birthday of Leonhard EULER .
20. Conference on "One and Several Complex Variables" at U. of Kentucky, May 2008, (chaired a session).
21. Special Session on "Complex Analysis" at the CMS-MITACS Joint Conference, Winnipeg, Manitoba, June 2007, (chaired a session).
22. Plenary talk at "Analysis Conference on the Interplay of Complex Variable, Probability and Partial Differential Equations," honoring Al Baernstein's 65th birthday, Washington U., St. Louis, Missouri, May 2005.

Local Presentations

8. Gave 15 minute presentations at SIAM Mini Symposium in 2004-08, TTU.
9. Gave several hour talks at Analysis Seminar, TTU, 2004-09.

DISSERTATION, THESIS AND REPORT DIRECTORS

M.S. Students

3. Atul Dixit (co-chair with R.W. Barnard), "Ramanujan's inequalities and monotonicity properties of the Theta Functions," 2006.

Current Students

PhD Students

5. Alex Williams (co-directing with R.W. Barnard), expected 2010.
6. Matt Lochman, (co-directing with R.W. Barnard), expected 2010.
7. James Valles, expected 2010.

M.S. Students

4. James Woodley, expected 2009.
5. Levi Johnson, (co-directing with R.W. Barnard), expected 2010.
6. Tyler Hamby, expected 2010.

PROFESSIONAL SERVICE

Editorship

5. Associate Editor for *Computational Methods and Function Theory*..

Refereeing

20. Academiæ Scientiarum Fennicæ. Mathematica
21. St. Petersburg Math. Journal
22. Zapiski Nauchn. Seminarov POMI
23. J. Math. Anal. and Applications
24. Journal of Science and Engineering 2006
25. Revista Matematica Iberoamericana
26. Proceedings of the American Mathematical Society
27. Applied Numerical Mathematics
28. Mathematische Zeitschrift
29. Ukrainian Mathematical Bulletin
30. Applied Mathematics Letters

Reviewer

6. Panel Reviewer for *U.S. Civilian Research and Development Foundation (CRDF) (December 2008)*.
7. External Reviewer for *the Israel Science Foundation (March 2008)*.

Meetings Organized

5. AMS Special Session on "Contemporary Complex and Special Functions Theory" at Baylor University, Waco, TX, Oct 2009, (with R.W. Barnard, K. Pearce, K. Richards, G.B. Williams).
6. Workshop on Complex Analysis and Special Functions, Lubbock, Texas, November 2007, (with K. Pearce, K. Richards, G.B. Williams).

Memberships

3. American Mathematical Society
4. St. Petersburg Mathematical Society
5. Mathematical Association of America
6. RGMIA – Research Group in Math. Inequalities & Applications

ADDITIONAL CONTRIBUTIONS

6. Faculty Adviser, SIAM, Texas Tech Chapter (2009).
7. Gave the UNM-PNM Statewide Mathematics Contest Lecture *"Symmetry and Isoperimetric Inequalities"*, Albuquerque, NM, February 7, 2009.
8. A member of Dr. Chidmi's evaluation committee, Department of Agricultural and Applied Economics, Texas Tech University.
9. Participated in the "TETE-A-TETE in Russia" program (with Professor Galina V. Kuz'mina, June 6-27, 2007) at the Euler International Mathematical Institute, St. Petersburg, Russia.

MONTY J. STRAUSS

EDUCATION

Ph.D. 1971 New York University Courant Institute of Mathematical Sciences

B.A. 1967 Rice University
(Mathematics, *magna cum laude*)

PROFESSIONAL EXPERIENCE

2008- Director of Undergraduate Programs, Department of Mathematics & Statistics, Texas Tech University
1985- Professor of Mathematics, Texas Tech University

AREAS OF RESEARCH INTEREST

Mathematical Education
Partial Differential Equations

PUBLICATIONS

- Monty J. Strauss, Gerald L. Bradley and Karl J. Smith, Calculus, Fourth Edition, Pearson Custom Publishing, 2006.
- Monty J. Strauss, Gerald L. Bradley and Karl J. Smith, Calculus, Fifth Edition, Pearson Custom Publishing, 2008.

GRANTS AND CONTRACTS-Funded

- South Plains Mathematics Scholars, National Science Foundation S-STEM) DUE-0727944, 2007-12, $571,850, **PI** with Michael O'Boyle, Kent Pearce, Magdalena Toda, and George Williams.
- Texas Tech Noyce Scholars, National Science Foundation DUE-Robert Noyce Scholarship Program DUE-0833326, 2008-13, $740,275, **co-PI** with Dominick Casadonte, Jerry Dwyer, Lawrence Schovanec, and Tara Stevens.
- Above grant extended in 2009 for additional $148,111, same expiration date.

GRANTS AND CONTRACTS-Unfunded

- South Plains Mathematics Scholars, National Science Foundation S-STEM) DUE-0631098, 2006-11, $499,500, PI Jerry Dwyer, **co-PI** with Michael O'Boyle, Padhu Seshaier, and George Williams.
- Computational Science Taining for Undergraduates in the Mathematical Sciences: Undergraduate Research Teams in Interdisciplinary Computational Problems, 2008-13, $1087521, PI Jerry Dwyer, **Senior Personnel,** finished 9th of 30 in competition

HONORS AND AWARDS

Honors College Outstanding Faculty member 2005-6
Honors College Outstanding Faculty medallion Spring 2004 (first given)
Kappa Mu Epsilon Outstanding Mathematics Faculty Award, winner 2009, and first runnerup, 2007

PROFESSIONAL AFFILIATIONS

American Mathematical Society
Mathematical Association of America

SERVICE

Department

Director of Undergraduate Programs, 2008-
Undergraduate Program Committee 2004-5, 2008-
Scholarship Committee Chair, 2004-
Departmental Honors Studies Coordinator, 1999-
Executive Committee, 2008-

University

Institutional Committee to Select Goldwater Scholarship Nominees, 1998-

Professional

Founder and president of international organization of mathematical philatelists – current membership approximately 150 – numerous articles written on this topic for hobby journals

JAMES GUNN SURLES

EDUCATION

August, 1999	Ph.D. in Statistics, University of South Carolina 4.0 Grade Point Average Doctoral Advisor: William J. Padgett Dissertation Title: "The Scaled Burr Type X Distribution: Inferences and the Stress-Strength Problem"
December, 1997	M.S. In Statistics, University of South Carolina 4.0 Grade Point Average Thesis Advisor: William J. Padgett Thesis Title: "Classical and Bayesian Inference for $R = P(Y < X)$ in the Burr Type X Model"
May, 1995	B. S. in Mathematics, McNeese State University, Lake Charles, Louisiana • *Cum Laude* graduate
May, 1995	B. S. in Computer Science, McNeese State University, Lake Charles, Louisiana • *Cum Laude* graduate

PROFESSIONAL EMPLOYMENT

September, 2005 – Present	Associate Professor, Department of Mathematics and Statistics, Texas Tech University Director of the Statistical Consulting Laboratory in the Department of Mathematics and Statistics at Texas Tech University (August, 2004 – present) Adjunct Faculty Member, The Institute of Environmental and Human Health, Texas Tech University (2003 – present)
August, 1999 – August, 2005	Assistant Professor, Department of Mathematics and Statistics, Texas Tech University
August, 1995 – August, 1999	Graduate Assistant, Department of Statistics University of South Carolina

RESEARCH INTERESTS

Reliability and Life Testing, Statistical Consulting, Statistical Computing, Design and Analysis of Experiments.

RESEARCH PAPERS

M. Lochbaum, S. Stevenson, K. Meaney, M. Hart, J. Surles. "Effects of Achievement Goals on Perceptions of Success and Discrete Achievement Emotions While Controlling for Performance Expectations in Minority Children", submitted to *Journal of Sport and Exercise Psychology*.

M. R. Lochbaum, S. Stevenson, D. Hilario, J. G. Surles. "Personality and self-reported physical activity participation", submitted to *Personality and Individual Differences*. Undergoing revisions.

J. Froman, G. Harris, J. Surles. "A graduate pedagogy course for mathematics teaching assistants", submitted to *Journal of Graduate Teaching Assistant Professional Development*.

A. E. Andrei, L. M. Smith, J. G. Surles. "Aggressive behavior and foraging tactics of shorebirds migrating through saline lakes in the Southern Great Plains", submitted to *The Condor*.

Ekanayake, A. J., Tsai, J-S, Allen, L. J. S., Smith, L. M., Surles, J. G., Allen, E. J. "Estimating Watershed Area for Playas in the Southern High Plains, USA", accepted by *Wetlands*.

G. Harris, J. Froman, J. Surles. "The Professional Development of Graduate Mathematics Teaching Assistances", accepted by *International Journal of Mathematical Education in Science and Technology*.

A. E. Andrei, L. M. Smith, D. A. Haukos, J. G. Surles, W. P. Johnson. "Foraging Ecology of Migrant Shorebirds in Saline Lakes of the Southern Great Plains", accepted by *Waterbirds*.

M. Zhang, J. G. Surles. (2008) "Voltage-dependent outer hair cell stereocilia stiffness at acoustic frequencies", *NeuroReport*, vol. 19, pp. 855-859.

A. E. Andrei, L. M. Smith, D. A. Haukos, J. G. Surles. (2008) "Habitat Use by Migrant Shorebirds in Saline Lakes of the Southern Great Plains", *Journal of Wildlife Management*, vol. 72, pp. 246-253.

M. R. Lochbaum, S. Stevenson, D. Hilario, J. Surles, J. Havenar. (2008) "Achievement goal profiles for female exercise participation", *International Journal of Fitness*, vol. 4.

J. Froman, G. Harris, J. Surles. (2007) "A professional development course for mathematics teaching assistants", Referred Print Proceeding of Calafate DELTA 07, pp. 67-76.

E. E. Smith, J. G. Surles, K. A. Thuett, and B. A. Gentles. "Statistical Analysis of Organ and Body Weight Following Exposure to Ammonium Perchlorate Via Drinking Water to Adult Deer Mice (*Peromyscus Maniculatus*)", submitted to *Bulletin of Environmental Toxicology*.

J. G. Surles and T. A. Craney. "A Test for Significant Departure from the Assumption of Independence", submitted to *Journal of Applied Statistical Science*.

S. R. Shumate, J. G. Surles, R. L. Johnson, J. Penny. (2007) "The Effects of Nonnormality and the Number of Scale Points on the Generalizability Coefficient: A Monte Carlo Study", *Applied Measurement in Education*, Vol. 20, pp. 357-376.

K. L. Nicholson, W. B. Ballard, B. K. McGee, J. G. Surles, J. Kamler, and P. R. Lemons Jr. "Swift fox use of black-tailed prairie dog towns in northwest Texas", to appear in *Journal of Wildlife Management*.

A. E. Andrei, L. M. Smith, D. A. Haukos, J. G. Surles (2006). "Community composition and migration chronology of shorebirds using the saline lakes of the Southern Great Plains, USA", *Journal of Field Ornithology*, Vol. 77, pp. 372-383.

B. A. Gentles, J. G. Surles, and E. E. Smith (2005). "Evaluation of Adult Quail and Egg Production Following Exposure to Perchlorate-Treated Water", *Journal of Environmental Toxicology and Chemistry*, Vol. 24, pp. 1930-1934.

J. G. Surles and W. J. Padgett (2005). "Some Properties of the Scaled Burr Type X Distribution", *Journal of Statistical Planning and Inference*, vol. 128, pp. 271-280.

J. G. Surles (2004). Review of *The Stress-Strength Model and its Generalizations* by Kotz, Lumelskii, and Pensky. *Journal of the American Statistical Assocation*, vol. 99, pp. 903-904.

H. Mansouri, R. L. Paige, and J. G. Surles (2004). "Aligned Rank Transform Techniques for Analysis of Variance and Multiple Comparisons", *Communications in Statistics: Theory and Methods*, vol. 33, pp. 2217-2232.

J. G. Surles and D. D'Ambrosio (2004). "A Burr Type X Chain-of-Links Model for Carbon Fibers", *Journal of Composite Materials*, vol. 38, pp. 1337-1343.

SUPPORT

"Extension of Statistical Classification Analysis of Engineering Student Recruitment Study to Broaden the Database and Explore Additional Factors", Edward Anderson (PI), James G. Surles (Co-PI). Submitted to the NSF Division of Engineering Education and Centers. Not funded.

"Application of Statistical Classification Analysis to Engineering Student Recruitment", Edward Anderson (PI), James G. Surles (Co-PI). Submitted to the NSF Division of Engineering Education and Centers. Funded for $99,006.

"Retaining and Preparing Reflective and Self-Directed Learners in the STEM Disciplines", Edward Anderson (PI), James G. Surles (Co-PI), David Lamp (Co-PI), Roman Taraban (Co-PI). Submitted to the Fall 2008 Education Research Initiative, Office of the Vice President for Research, Texas Tech University. Funded for $125,000.

"Collaborative Research: Ecological Modeling of Zoonotic Diseases Across Multiple Landscape Scales", Linda J. Allen (PI), Robert D. Owen (Co-PI), James G. Surles (Co-PI). Submitted to the NSF Ecology of Infectious Diseases. Not funded.

"Characterizing Fiber Length Distribution in Cotton Processing", Mourad Krifa and James G. Surles, Co-P.I.'s. Submitted to the United States Department of Agriculture – National Research Initiative Grant, 2005. Not funded.

"Statistical and Computational Analysis of Small Ribonucleic Acid (smRNA) Biogenesis in Plants", Chris Rock, Padmanabhan Seshaiyer, James G. Surles, and Yu Zhuang, Co-P.I.'s. Submitted to the Texas Tech Interdisciplinary/Multidisciplinary Seed Grants, 2004. Not funded.

"Novel Analyses of Friction Ridge Data" (Quad chart proposal), Rob Paige and James G. Surles, Co-P.I.'s. Submitted to the Technical Support Working Group Broad Agency Announcement, 2004. Not funded.

"Novel Analyses of Friction Ridge Data" (Quad chart proposal), Rob Paige and James G. Surles, Co-P.I.'s. Submitted to the Technical Support Working Group Broad Agency Announcement, 2003. Not funded.

"A Culture of Problem Solving", Roger W. Barnard, Razvan Gelca, Carl R. Seaquist, James G. Surles, Co-P.I.'s. In preparation.

"Risk Based Approaches for Improved Toxic Chemical Management For Integrated Environmental And Human Health Issues In The Department Of Defense", Ronald J. Kendall, P.I. Funded for $1,740,000. Served as the Statistical Support Manager on the *Food Item Transfer of Perchlorate into Rodents* and *Avian Exposure Studies* projects under this grant. Ernest E. Smith was Project Manager for both projects.

PROFESSIONAL CONFERENCES AND PRESENTATIONS

June, 2006 — North American Society for the Psychology of Sport and Physical Activity, Denver, Colorado.

- S. Stevenson, M. Lochbaum, J. G. Surles, D. P. Hilario. "Looking for consistencies in the variations in the 'Big Five' across the stages of change for exercise". (Not personally presented. Abstract published in *Journal of Sport & Exercise Psychology*, Vol. 28, S175.)
- J. Havenar, M. Lochbaum, J. G. Surles, D. P. Hilario. "Motivation and perceived ability variations across the stages of change for exercise". (Not personally presented. Abstract published in *Journal of Sport & Exercise Psychology*, Vol. 28, S80.)

May, 2003 — International Conference on Reliability and Survival Analysis, Columbia, South Carolina.

- Presented a paper titled "A Burr Type X Chain-of-Links Model" (Co-authored with Donna D'Ambrosio.)

DISSERTATION, THESIS AND REPORT DIRECTION

- Advisor for Chunxia Deng's Master Thesis research in the Department of Mathematics and Statistics, Texas Tech University, 2008-present.
- Advisor for Haifeng Wu's Master Thesis research in the Department of Mathematics and Statistics, Texas Tech University, 2007-present.
- Advisor for Jose Lopez's Master Report in the Department of Mathematics and Statistics, Texas Tech University, 2007-2008.
- Advisor for Sherri Wilson's Master Thesis research in the Department of Mathematics and Statistics, Texas Tech University, 2003-2004.
- Advisor for Monica Allen's Honor's Thesis research in the Department of Mathematics and Statistics, Texas Tech University, 2001-2003.
- Advisor for Tracey Harris's Master Thesis research in the Department of Mathematics and Statistics, Texas Tech University, 2001-2003.

PROFESSIONAL SERVICE

Professional Service (Texas Tech University)

- Served on Bridget Guerrero's Ph.D. committee in the College of Agricultural Sciences and Natural Resources, 2008-present.
- Served on Erin Skjelstad's M.S. committee in the Department of Mathematics and Statistics, 2008-present.
- Served on Amy Ekanayeke's Ph.D. committee in the Department of Mathematics and Statistics, 2008-2009.
- Served on Justin Weeaks' Ph.D. committee in the Department of Plant and Soil Sciences, 2006-present.
- Member of the Undergraduate Committee in the Department of Mathematics and Statistics, 2006-2008.
- Served on Chris Betts' Ph.D. committee in the Department of Chemical Engineering, 2006-2008.
- Served on Gyujin Joo's Ph.D. committee in the Department of Civil Engineering, 2005-present.
- Served on the Faculty Development committee, 2005-2008.
- Served on Stephen Furlich's Ph.D. committee in the Department of Education, 2005-2006.

- Served on Adrian Andrei's Ph.D. committee in the Department of Agricultural and Applied Economics, 2003-2005.
- Served on Wisut Supithak's Ph.D. committee in the Department of Industrial Engineering, 2003-2005.
- Served on Biswaranjan Das's Ph.D. committee in the Department of Agricultural and Applied Economics, 2002-2004
- Served on Nalo Lewis's Master Thesis committee in the Department of Mathematics and Statistics at Texas Tech University, 2004.
- Served on Susitha Karunaratne's Master Thesis committee in the Department of Mathematics and Statistics at Texas Tech University, 2004.
- Served on the Committee for the Emmy Noether High School Mathematics Day and conducted a workshop on statistics, 2003.
- Submitted and graded questions for Wisut Supithak's qualifying examination in the Department of Industrial Engineering at Texas Tech University, 2003.

Professional Service (External)

- Associate Editor for the *Journal of Statistical Computation and Simulation*, 2005-2009
- Article reviewer for *Statistical Methodology*, 2008.
- Article reviewer for IUMPST: *The Journal*, 2007.
- Book reviewer for Pearson Prentice Hall Publishers, 2007.
- Article reviewer for the 2007 American Control Conference, 2006.
- Article reviewer for *Journal of Statistical Planning and Inference*, 2006.
- Article reviewer for *Technometrics*, 2005.
- Article reviewer for *Mathematical and Computer Modelling*, 2005
- Article reviewer for *Communications in Statistics*, 2004-2005.
- Article reviewer for *Metrika*, 2003.
- Article reviewer for *Journal of the First Year Experience and Students in Transition*, 2003.
- Book reviewer of *Miller and Freund's Probability and Statistics for Engineers* for Prentice Hall, 2003.

Society Memberships

American Statistical Association

MAGDALENA DANIELA TODA

EDUCATION

- PhD Mathematics – University of Kansas, 2000
- PhD Mathematics – Polytechnic University Bucharest, 2000
- MA Mathematics – University of Kansas, 1997
- MS Mathematics – 5-year Course of Mathematical Studies, Univ. of Bucharest, 1991

PROFESSIONAL EXPERIENCE

- 2008 - Associate Professor, tenured, Texas Tech University
- 2001-2008 Assistant Professor, tenure-track, Texas Tech University
- 2000-2001 Assistant Professor, tenure-track, Ball State University
- 1995-2000 Graduate Student, Teaching Assistant, University of Kansas
- 1992-1995 Asistent Universitar, Polytechnic University Bucharest (Politehnica)
- 1991-1992 Preparator, Polytechnic University Bucharest - Mathematics

AREAS OF INTEREST

1. Differential Geometry and Applications: Riemannian and Pseudo-Riemannian manifolds; surfaces with constant (mean or Gaussian) curvature in space forms (Euclidean, hyperbolic, spherical); Lorentz manifolds.
2. Integrable Systems and Geometric Analysis: Geometry of Second Order Hyperbolic and Elliptic PDEs

PUBLICATIONS (appeared or in press since Fall 2003)

a). Refereed Journals

1(J). **Toda, M.**, Ibraguimov, A, Aulisa, E, Geometric Frame-Work for Modeling Non-Linear Flows in Porous Media, and Its Applications in Engineering – ***Journal of Non-linear Analysis*** - Real World Applications, vol. 10 (2009); in press; available on line, at Science Direct **doi:10.1016/j.nonrwa.2009.03.028**
2(J). Iyer, R., **Toda, M.,** Holsapple R., *On an Optical Inertial Navigation System - II,* ***IEEE Transactions on Automatic Control,*** ISSN: 0018-9286, vol. 53, no. 8, (2008), pp 1864-1875.
3(J). Paige, R., Seshaiyer, P., **Toda, M**., *Student Misconceptions Caused by Misuse of Technology*, ***International Journal for Technology in Mathematics Education (former International Journal of Computer Algebra)*****,** vol. 14, no.4, (2007).
4(J). **Toda, M.,** *Initial Value Problems of the Sine-Gordon Equation and Geometric Solutions*, ***Annals of Global Analysis and Geometry*****,** vol. 27, no. 3, (2005), pp 257-271.
5(J). **Toda, M.,** *Immersions of Constant Mean Curvature in Hyperbolic Space*, ***Differential Geometry – Dynamical Systems****,* vol. 7, no.1, (2005), pp 111-126.
6(J). Inoguchi, J., **Toda, M.,** *Timelike Minimal Surfaces via Loop Groups*, ***Acta Applicandae Mathematicae***, vol. 83, no. 1-2, (2004) , pp 313-355.

b). Refereed Conference Proceedings

1(P).**Toda,M.,** Spectral Deformations of Constant Mean Curvature Surfaces, ***Proceedings of the 2nd Symposium on Mathematical Methods in Theoretical Physics***, Baltimore, Maryland, (2009); in press.

c). Conference Proceedings

2(P).**Toda, M.,** The geometry of the cosh-Gordon equation, ***Proceedings of the 5th Conference on Geometry and Graphics***, Ustron, Poland, June 25-27, 2007, pp 101-105.

d). Technical Reports

1(T). **Toda, M.,** *Dual surfaces of constant mean curvature*, *Technical Reports CESF - Programme 010603,* (2009); in press.

2(T). **Toda, M.,** *Gauss maps of surfaces in non-Euclidean space forms*, *Technical Reports CESF - Programme 010603*, vol. 11, (2008), pp 17-37.**3**(T). **Toda, M.,** *Weingarten Surfaces as Integrable Systems, Technical Reports CESF - Programme 010603*, vol. 1 (2007), pp 13-17.

4(T). **Toda, M.,** *Generalized harmonic maps*, *Technical Reports CESF - Programme 010603,* vol. 3 (2006), pp 25-34.

5(T). **Toda, M.,** *Harmonic maps of surfaces in hyperbolic space*, *Technical Reports CESF - Programme 010603*, vol. 2, (2005), pp 501-520.

6(T). **Toda, M.,** *Representations of constant mean curvature immersions*, *Technical Reports CESF - Programme 010603*, vol. 1 (2005), pp 391-415.

FUNDING ACTIVITY

Funded

External Funding

2009-2012
Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications; total amount to date $221,626, National Science Foundation, Division of Mathematical Sciences, DMS 0908177; A. Ibragimov, PI; E. Aulisa, CO-PI; L.Hoang, CO-PI, **M. Toda, CO-PI**

2004-2010
Integrable systems, Harmonic Maps and Weierstrass Representation, Central European Science Foundation; total award to date $62,900, Programme 010603; **M. Toda, PI**

2008-2012
South Plains Mathematics Scholars, total amount to date $571,580, National Science Foundation, STEM: SCHLR SCI TECH ENG&MATH; M. Strauss, PI; M. O'Boyle, CO-PI; K. Pearce, CO-PI; **M. Toda, CO-PI,** G.B. Williams, CO-PI

2008-2009

The Emmy Noether Mathematics Days, MAA, Tensor Projects, $4,500; **M. Toda, PI;** J. Dwyer, CO-PI; T. Stevens, CO-PI

2006-2008
Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems, total amount at closing $170,707, National Science Foundation (REU Program) and Department of Defense (ASSURE Program); P. Seshaiyer, PI; W. Dayawansa, former PI; no CO-PIs; **M. Toda, Senior Personnel**

2003-2006
The Joy of Thinking, MAA-Tensor Foundation, $5,000 (graduate student stipend); **M. Toda, PI**; J. Dwyer, CO-PI

Internal Funding
2005 **The Geometry of Backlund Transformations, REF - Research Enhancement Fund**, Summer 2005, total amount $2,725; **M. Toda, PI**

Not Funded

- *Non-linear analysis of flows in heterogeneous porous media and applications to reservoir engineering*, Applied Mathematics, DMS #0807461, submitted in 2007; requested $489,417; A. Ibragimov, PI; E. Aulisa, CO-PI; **M. Toda, CO-PI**
- *Women mentoring women in the mathematical sciences*, HRD #0820231, Preproposal accepted 11/7/2007, actual proposal submitted 01/17/2008; requested $282,634; **M. Toda, PI;** J. Dwyer, CO-PI; V. Howle, CO-PI; L.-I. Roeger, CO-PI; T. Stevens, CO-PI
- *Non-linear Studies in Applied and Computational Mathematics*, REF (Research Enhancement Fund Competition at Texas Tech University), submitted in 2008; requested $35,000; E.Aulisa, PI; **M. Toda, CO-PI**
- *Texas Center for Non-Linear Studies in Biological Systems*, ARP-ATP 003644-0051: Preproposal, submitted in 2007; requested $109,000; E.Aulisa, PI; A.Ibragimov, CoPI; **M. Toda, CO-PI;** J.Walton, CO-PI
- *Nonlinear Problems in Computational Biology and Mathematical Physics,* REF (Research Enhancement Fund Competition at Texas Tech University), submitted in 2007; requested $34,996; Akif Ibragimov, PI; E. Aulisa, CO-PI; A. Ibragimov, PI; **M. Toda, CO-PI;** J. Walton, CO-PI
- *Mathematical Modeling, Analysis and Simulation of Nonlinear Flow in Porous Media, with Applications to Reservoir Engineering*, Applied Mathematics, DMS #0708064, submitted in 2006; requested $636,211; A. Ibragimov, PI; E. Aulisa, CO-PI; **M. Toda, Senior Personnel**
- *Foliations by Constant Mean Curvature Surfaces and Harmonic Maps*, DMS #0707138, submitted in 2006; requested $80,172, **M. Toda, PI**
- *Foliations by Constant Mean Curvature Surfaces and Harmonic Maps*, DMS #0605072, submitted in 2005; requested $79,105; **M. Toda, PI**
- *Harmonic Maps into Special Linear Groups*, DMS #0505175, submitted in 2004; requested 87,049; **M. Toda, PI**
- *New Directions in Investigating Timelike Minimal Surfaces in Lorentz Space*, DMS #0406003, submitted in 2003; requested 81,339; **M. Toda, PI**
- *Integrable systems, harmonic maps and Weierstrass representation of immersions in the hyperbolic 3-space*, DMS #0306614, submitted in 2002; requested $81,828; **M. Toda, PI**
- *Fast Numerical Methods for Optimal Control Problems on Riemannian Manifolds,* DMS #0306384, submitted in 2002; requested $185,528; R. Iyer, PI; **M. Toda, CO-PI**

- *Constructing all surfaces of arbitrary constant mean curvature in hyperbolic 3-space*, DMS #0202903, submitted in 2001; requested 80,000; **M. Toda, PI**

PRESENTATIONS AND MEETINGS ATTENDED

Colloquium talk

M. Toda, Integrable Systems in Geometry, Texas Tech University, Sep 27, 2007 – tenure and promotion candidate

Invited hour talks

2006 M.Toda*, *CMC surfaces in hyperbolic space*, CMC seminar talk, London Math Society Symposium, University of Durham, Conference on Geometric Methods on Integrable Systems, Aug 11-22, 2006.

2004 M.Toda*, *Lorentz surfaces and the wave equation*, invited talk, Texas Topology and Geometry Conference, TCU - UTA, Dallas Fort Worth, Feb 28, 2004.

Conference presentations

- **2008** E. Aulisa, A. Ibragimov*, **M. Toda,** An up-scaling algorithm for non-Darcy flowsin inhomogeneous porous media, E. Aulisa, A. Ibragimov*, **M. Toda,** 7th aims International Conference on Dynamical Systems, Differential Equations and Applications, Special Session 19: Multiscale numerical methods for PDEs, May 18-21, 2008**,** University of Texas Arlington
- E.Aulisa, A.Ibragimov*, **M. Toda**, 22nd International Conference of Moscow State University - in honor of I. G. Petrovskii - Differential Equations and Related Topics. Variational Modeling of Transient Non Linear Flows. Moscow, May 2007
- E. Aulisa, A. Ibragimov, **M. Toda*,** *Geometrical Frame-Work for Modeling Non-Linear Flows in Porous Media, and Its Applications in Engineering*, SIAM-NSF Conference on Mathematics for Industry: Challenges and Frontiers (MI07), Sec. on Numerical Analysis, Numerical PDE and Clustering, joint work with E. Aulisa and A. Ibragimov, Philadelphia, Oct 9-11, 2007
- **2005 M.Toda***, *Harmonic maps into Lie groups*, invited talk, AMS Central Sectional Meeting #1006, Lubbock, Apr 8-10, 2005

Local presentations

- **Summer Math Academy**
  Introduction to Advanced Geometry, June 2009
  Two Introductory Workshops to Topology, June 2004
- **Geometry Seminar – 2003-2008, 12 talks total.**

- **REU-NSF (Research Experiences for Undergraduates) Lectures:**
  - *What every professional mathematician should know* - June 2007
  - *Minimal surfaces* - June 2007

- **Emmy Noether High-School Day Workshops/Lectures:**
  -Emmy Noether High-School Day, May 6, 2009:
  Is the universe curved?
  - Emmy Noether High-School Day, May 4, 2005:
  Hyperbolic Geometry: the whole world compressed in a disk
  - Emmy Noether High-School Day, May 4, 2004:

2-D and 3-D tiling: our dream houses- workshop for students and their teachers
- Emmy Noether High-School Day, May 14, 2003:
Geometric Models in Physics – workshop for students and their teachers

Sessions chaired

Emmy Noether Day Career Panel, May 6, 2009

Meetings attended

- 41st Texas Topology& Geometry Conference, Univ. of Houston, Feb 20-22, 2009
- 39th Topology& Geometry Conference, Texas Tech Univ., Feb 22-24, 2008
- 37th Texas Topology& Geometry Conference, Texas Christian U, Mar 23-25, 2007
- London Math Society Durham Symposium: Integrable Systems, Aug 11-22, 2006
- 35th Texas Topology& Geometry Conference, Univ. of Houston, Feb 17-19, 2006
- AMS Sectional Meeting, Texas Tech University, Lubbock, TX, Apr 8-10, 2005
- 33rd Texas Topology& Geometry Conference, Texas Tech Univ., Feb 25-27, 2005
- 31st Texas Topology and Geometry Conference, Texas Christian U, Feb 27-29, 2004
- 29th Texas Topology and Geometry Conference, Univ. of Houston, Feb 21-23, 2003

DISSERTATION, THESIS AND REPORT DIRECTORS

Graduate Students who graduated

- Alin Tomoiaga, MS in Mathematics, graduated Fall 2006; report: "Clinical Trials Simulations" co-directed with P. Westfall (from Business College)
- Casey Hume, MS in Mathematics, graduated Fall 2003; thesis: "Quadrilateral Circle Patterns" co-directed with G. B. Williams

Graduate Students in progress

- Kose, Zeynep, PhD in Mathematics, continuing, research supported from grant for Summer 2008, co-directed with E. Aulisa, dissertation in progress: "Numerical constructions of constant mean curvature surfaces"
- De Silva, Nadeeka, MS/PhD, directed between 2007-2009, research supported from grants - Summer 2007
- Hamby, Tyler, MS/PhD, served as temporary advisor in 2008

Graduate Committees served on

- Jea-pil Cho, PhD Mathematics, exp. defense 2010; thesis advisor: R. Gelca
- Kendall Gillies, MS Mathematics, Summer 2008; thesis advisor: Clyde Martin
- Dahwei Chang, MS Mathematics, Summer 2008; thesis advisor: Eugenio Aulisa
- Aaron Bailey, MS Mathematics, Summer 2004; thesis advisor: Petros Hadjicostas
- Theresa Busse, MS Mathematics, Summer 2004; thesis advisor: Marianna Shubov
- Kiyomi Kaskela, MS Mathematics, Summer 2004; thesis advisor: Linda Allen

HONORS AND AWARDS

2008 President's Award for Excellence in Teaching, Texas Tech University
2008 Professor of the Year, TTU Mathematics, Undergraduate level

PROFESSIONAL SERVICE

Refereeing of Professional Articles since Fall 2003

Referee for Rocky Mountain Journal – one paper
Referee for Journal of Geometric Analysis – two papers
Referee for International Journal of Mathematics & Mathematical Sciences – one paper
Conference Proceedings – one paper

Reviewing

Mathematical Reviews (reviewed 127 papers since Fall 2003)
Zentralblatt Mathematics (reviewed 63 papers since Fall 2003)

Reviewer of books and textbooks for:

- Springer-Verlag NY (since 2003)
- W.H.Freeman and Company Publishers (since 2003)
- Mathematical Reviews AMS Books (since 2003)
- Brooks and Cole (since 2008)
- Pearson (since 2008)

- Number of books reviewed for the editors in view of publication: 4
- Number of books reviewed for the editors after publication :8

Meetings Organized (Co-organized)

Peer level

- Red Raider Minisymposium, Non-linear analysis, PDEs and applications, Oct 31-Nov 1, 2009
- 39th Topology& Geometry Conference, Texas Tech Univ., Feb 22-24, 2008
- AMS Sectional Meeting, Texas Tech University, Lubbock, TX, Apr 8-10, 2005
- 33rd Texas Topology& Geometry Conference, Texas Tech Univ., Feb 25-27, 2005

Student level (yearly average participation: 200 K-12 students, 20 K-12 teachers, 35 TTU students, 20 TTU faculty)

- 7th Emmy Noether High School Mathematics Day, May 6, 2009
- 6th Emmy Noether High School Mathematics Day, May 8, 2008
- 5th Emmy Noether High School Mathematics Day, May 9, 2007
- 4th Emmy Noether High School Mathematics Day, May 3, 2006

Memberships in organizations

- American Mathematical Society (AMS)
- Mathematical Association of America (MAA)
- Association for Women in Mathematics (AWM)
- Project NExT Member and Mentor (New Experiences in Teaching)

OTHER RELEVANT ACTIVITIES

Departmental Service

- KME Advisor and Representative of the Texas Alpha Chapter
- Member of Undergraduate Committee, TTU Mathematics and Statistics, since 2008
- Chair of the Organizing Committee for the Emmy Noether High-School Mathematics Day, Texas Tech University
- Member of the Hiring Strategy Committee, 2007
- Member of the Hiring Committee, 2007-2009
- Served as REU Program Coordinator, June 11-25, 2007, (with E. Aulisa, P. Seshaiyer)
- Co-organizer of the Advanced Analysis and Geometry Seminar (2003-2009)
- Evaluated TA graduate students every year since 2003

University Service

- Member of the Faculty Senate at Texas Tech University (2006-2011) & Senate Committee C
- Member of University Childcare Committee
- PI of the Child Care Survey Proposal at Texas Tech University, 2007

Students Advised as a Mentor

- Dallas Evertts, Undergraduate Student, SPMS Scholarship Recipient, 2009
- Xiaoxiao Jiang , Graduate Student, TLTC Program at TTU, 2008-09
- Ellen Durant, Undergraduate Student, REU-NSF Program, Texas Tech University, Summer 2007
- Richmond Tarrant, Undergraduate Student, REU-NSF Program, Texas Tech University, Summer 2007. Co-mentored with R. Iyer; project: Modeling the compound eye of insects
- Robin Krenz, Undergraduate Student, Honors College, Undergraduate Research Fellow, 2007-2008. Project: Almost Minimal Surfaces

ADÃO ALEXANDRE (ALEX) TRINDADE

EDUCATION

- Ph.D. (Statistics), December 2000, Colorado State University, U.S.A.
- M.A. (Mathematics), May 1992, University of Oklahoma, U.S.A.
- B.Sc. (Mathematics), June 1988, University of Southampton, U.K.

PROFESSIONAL EXPERIENCE

- *Associate Professor*, Department of Mathematics & Statistics, Texas Tech University, August 2007 to present.
- *Assistant Professor*, Department of Statistics, University of Florida, August 2000 to August 2007.
- *Graduate Research Assistant*, Department of Statistics, Colorado State University, 1999-2000.
- *Graduate Consultant*, The F.A. Graybill Statistical Laboratory, Department of Statistics, Colorado State University, 1997-98.
- *Graduate Teaching Assistant*, Department of Statistics, Colorado State University, 1996-2000.
- *Consultant*, Decision Consultants Inc., Dallas, Texas, 1993-1995. On assignment as a programmer/analyst with the IBM Corporation.
- *Graduate Teaching Assistant*, Department of Mathematics, University of Oklahoma, 1990-1992.

AREAS OF INTEREST

Time Series Analysis; Statistical Econometrics; Environmental Statistics; Quantile Regression; Saddlepoint Approximations; Reliability; Longitudinal Data Analysis.

PUBLICATIONS

Refereed Publications

1. **Trindade, A.A.**, Zhu, Y., and Andrews, B., "Time Series Models With Asymmetric Laplace Innovations", *Journal of Statistical Computation and Simulation*, (in press).
2. Paige, R.L., **Trindade, A.A.**, and Fernando, H., "Saddlepoint-Based Bootstrap Inference for Quadratic Estimating Equations", *Scandinavian Journal of Statistics*, 36, (2009), 98-111.
3. Paige, R.L. and **Trindade, A.A.**, "Practical Small Sample Inference for Single Lag Subset Autoregressive Models", *Journal of Statistical Planning and Inference*, 138(7), (2008), 1934-1949.
4. **Trindade, A.A.**, Uryasev, S., Shapiro, A., and Zrazhevsky, G., "Financial Prediction with Constrained Tail Risk", *Journal of Banking and Finance*, 31, (2007), 3524-3538.
5. Pichardo, J.C., **Trindade, A.A.**, Brindle, J.M., and Bolch, W.E., "Method for Estimating Skeletal Spongiosa Volume and Active Marrow Mass in the Adult Male and Adult Female", *The Journal of Nuclear Medicine*, 48(11), (2007), 1880-1888.
6. Giurcanu, M. and **Trindade, A.A.**, "Establishing Consistency of M-Estimators Under Concavity with an Application to Some Financial Risk Measures," *Journal of Probability and Statistical Science*, 5(2), (2007), 123-136.
7. Golodnikov, A., Macheret, Y., **Trindade, A.A.**, Uryasev, S. and Zrazhevsky, G., "Estimating the Probability Distributions of Alloy Impact Toughness: a Constrained Quantile Regression Approach", D. Grundel *et al* (Eds), in *Cooperative Systems: Control and Optimization*, Springer Berlin: Lecture Notes in Economics and Mathematical Systems, Vol. 588, (2007), 269-283.
8. Golodnikov, A., Macheret, Y., **Trindade, A.A.**, Uryasev, S., and Zrazhevsky, G., "Optimization of Composition and Processing Parameters for the Development of Steel Alloys: A Statistical Model-Based Approach", *Journal of Industrial and Management Optimization*, 3(3), (2007), 489-501.

9. **Trindade, A.A.** and Zhu, Y., "Approximating the Distributions of Estimators of Financial Risk Under an Asymmetric Laplace Law," *Computational Statistics and Data Analysis*, 51(7), (2007), 3433-3447.
10. Brindle, J.M., **Trindade, A.A.**, Pichardo, J.C., Shah, A.P., Jokisch, D.W., Patton, P.W., and Bolch, W.E., "A Linear Regression Model for Predicting Patient-Specific Total Skeletal Spongiosa Volume for Use in Molecular Radiotherapy Dosimetry", *The Journal of Nuclear Medicine*, 47(11), (2006), 1875-1883.
11. Brindle, J.M., **Trindade, A.A.**, Pichardo, J.C., Myers, S.L., Shah, A.P., and Bolch, W.E., "CT Volumetry of the Skeletal Tissues", *Medical Physics*, 33(10), (2006), 3796-3803.
12. **Trindade, A.A.**, and Uryasev, S., "Improved Tolerance Limits by Combining Analytical and Experimental Data: An Information Integration Methodology", *Journal of Data Science*, 4(3), (2006), 371-386.
13. **Trindade, A.A.**, and Uryasev, S., "Combining Model and Test Data for Optimal Determination of Percentiles and Allowables: CVaR Regression Approach - Part II", A.J. Kurdila *et al* (Eds), in *Robust Optimization-Directed Design*, Springer Netherlands: Nonconvex Optimization and Its Applications, Vol. 81, (2006), 209-246.
14. **Trindade, A.A.**, and Uryasev, S., "Combining Model and Test Data for Optimal Determination of Percentiles and Allowables: CVaR Regression Approach - Part I", A.J. Kurdila *et al* (Eds), in *Robust Optimization-Directed Design*, Springer Netherlands: Nonconvex Optimization and Its Applications, Vol. 81, (2006), 179-207.
15. Golodnikov, A., Macheret, Y., **Trindade, A.A.**, Uryasev, S., and Zrazhevsky, G., "Statistical Modeling of Composition and Processing Parameters for Alloy Development", *Modelling and Simulation in Materials Science and Engineering*, 13, (2005), 633-644.
16. Brockwell, P.J., Dahlhaus, R., and **Trindade, A.A.**, "Modified Burg Algorithms for Multivariate Subset Autoregression," *Statistica Sinica*, 15(1), (2005), 197-213.
17. Brockwell, P.J., Davis, R.A., and **Trindade, A.A.**, "Asymptotic Properties of Some Subset Vector Autoregressive Process Estimators," *Journal of Multivariate Analysis*, 90(2), (2004), 327-347.
18. **Trindade, A.A.**, "Implementing Modifed Burg Algorithms in Multivariate Subset Autoregressive Modeling", *Journal of Statistical Software*, 8(5), (2003), 1-68.
19. "Time-Series Forecasting", by C. Chatfield. *Journal of the American Statistical Association* book review, 2002, 97, 920-920.
20. Breidt, F.J., Davis, R.A., and **Trindade, A.A.**,"Least absolute deviation estimation for all-pass time series models", *The Annals of Statistics*, 29(4), (2001), 919-946.

FUNDING ACTIVITY

Funded

- "Saddlepoint-Based Bootstrap Inference for Quadratic Estimating Equations", National Security Agency, $29,992, April 2008 - April 2010, **A.A. Trindade** (Principal Investigator, Texas Tech Univ.), R.L. Paige (Principal Investigator, Missouri University of Science and Technology).
- "Winter Workshop on Frontiers of Theoretical Statistics", National Science Foundation, $10,000, October 2005 - September 2006, **A.A. Trindade** (Co-Principal Investigator, University of Florida), A.I. Khuri (Principal Investigator, University of Florida).
- "NSF Conference in the Mathematical Sciences on Functional Data Analysis", National Science Foundation, $13,500, October 2002 - September 2003, **A.A. Trindade** (Co-Principal Investigator, University of Florida), G. Casella (Principal Investigator, University of Florida).
- "Saddlepoint approximations to the distributions of Yule-Walker and Burg coefficient estimators of subset autoregressive models with subset size one", University of Florida College of Liberal Arts & Sciences Research Award, $9,660, Summer 2001, **A.A. Trindade** (Principal Investigator).

Not Funded

- "Linking Public Sustainability to Public Investment Expenditure", Center for Retirement Research at Boston College, $43,197, Summer 2009, M.C. Farmer (Principal Investigator, Dept. of Agricultural & Applied Economics, Texas Tech Univ.), E.J. Belasco (Co-Principal Investigator, Dept. of Agricultural & Applied Economics, Texas Tech Univ.), **A.A. Trindade** (Co-Principal Investigator, Texas Tech Univ.).
- "Combining Different Sources of Information for Estimating Percentiles of Probability Distributions: An Information Integration Methodology ", Office of Naval Research, $49,953, April 2009-April 2012, S. Uryasev (Principal Investigator, Univ. of Florida), **A.A. Trindade** (Consultant, Texas Tech Univ.).
- "Collaborative Research: Risk and Deviation Measures in Safeguarded Optimization and Estimation", National Science Foundation, $242,464, June 2009-May 2012, S. Uryasev (Principal Investigator, Univ. of Florida), R.T. Rockafellar (Principal Investigator, Univ. of Washington), M. Zabarankin (Principal Investigator, Stevens Institute of Technology), **A.A. Trindade** (Principal Investigator, Texas Tech Univ.).
- "Collaborative Research: Deviation Measures in Risk Analysis and Optimization", National Science Foundation, $218,419, June 2008-May 2011, S. Uryasev (Principal Investigator, Univ. of Florida), R.T. Rockafellar (Principal Investigator, Univ. of Washington), M. Zabarankin (Principal Investigator, Stevens Institute of Technology), **A.A. Trindade** (Principal Investigator, Texas Tech Univ.).
- "FRG: Collaborative Research: General Deviation Measures: New Directions in Statistics From an Optimization Perspective", National Science Foundation, May 2007-April 2010, S. Uryasev (Principal Investigator, Univ. of Florida), R.T. Rockafellar (Principal Investigator, Univ. of Washington), M. Zabarankin (Principal Investigator, Stevens Institute of Technology), **A.A. Trindade** (Principal Investigator, Univ. of Florida).
- "Exploiting Pseudo Parameter Orthogonality for Improving Small Sample Inference", National Security Agency, $30,000, May 2007 - April 2008, R.L. Paige (Principal Investigator, Texas Tech University), **A.A. Trindade** (Principal Investigator, Univ. of Florida).
- "Collaborative Research: Pseudo Parameter Orthogonality for Small Sample Inference", National Science Foundation, $205,460, May 2006-April 2008, R.L. Paige (Principal Investigator, Texas Tech Univ.), **A.A. Trindade** (Principal Investigator, Univ. of Florida)
- "Materials World Network: Predicting Properties of Composite Materials by Statistically Integrating Information", National Science Foundation, $385,488, May 2006-April 2008, S. Uryasev (Principal Investigator, University of Florida), **A.A. Trindade** (Co-Principal Investigator, Univ. of Florida)
- "Collaborative Research: Pseudo Parameter Orthogonality for Small Sample Inference", National Science Foundation, $176,849, May 2005-April 2007, R.L. Paige (Principal Investigator, Texas Tech University), **A.A. Trindade** (Principal Investigator, Univ. of Florida)
- "Collaborative Research: Pseudo Parameter Orthogonality for Small Sample Inference", National Science Foundation, $161,555, May 2004-April 2006, R.L. Paige (Principal Investigator, Texas Tech University), **A.A. Trindade** (Principal Investigator, Univ. of Florida).
- "Statistical investigation of a new class of asymmetric measures of deviation", National Science Foundation, $408,400, May 2003-May 2005, S. Uryasev (Principal Investigator, University of Florida), **A.A. Trindade** (Co-Principal Investigator, Univ. of Florida).
- "Some Problems in Multivariate Subset Autoregression", National Science Foundation, $83,314, June 2002-May 2005, **A.A. Trindade** (Principal Investigator, Univ. of Florida).

•"Conditional Value-at-Risk: Applications in Statistics", National Science Foundation, $600,000, January 2002-December 2004, S. Uryasev (Principal Investigator, Univ. of Florida), **A.A. Trindade** (Co-Principal Investigator, Univ. of Florida).

PRESENTATIONS AND MEETINGS ATTENDED

Invited hour talks

- **A.A. Trindade***, "Modeling and Approximating the Distributions of Estimators of Financial Risk Under an Asymmetric Laplace Law", Dept. of Mathematics & Statistics, *University of Nevada*, Reno, February 7, 2008.
- **A.A. Trindade***, "An Application of Quantile Regression to the Discovery of Optimal Alloys", Dept. of Mathematics & Statistics, *Texas Tech University*, Lubbock, March 28, 2007.
- **A.A. Trindade***, "Approximating the Distributions of Estimators of Financial Risk Under an Asymmetric Laplace Law", Dept. of Mathematics & Statistics, *Texas Tech University*, Lubbock, February 15, 2007.
- **A.A. Trindade***, "Approximating the Distributions of Estimators of Financial Risk Under an Asymmetric Laplace Law", Dept. of Mathematics & Statistics, *University of Missouri Kansas City*, Kansas City, February 9, 2007.
- **A.A. Trindade***, "Approximating the Distributions of Estimators of Financial Risk Under an Asymmetric Laplace Law", Dept. of Mathematics & Statistics, *San Diego State University*, San Diego (California), February 5, 2007.
- **A.A. Trindade***, "Assessing the Performance of Burg Algorithms in Fitting Multivariate Subset Autoregressions", UF/FSU Statistics Seminar Series, *Florida State University*, Tallahassee, September 28, 2001.
- **A.A. Trindade***, "Burg-type Algorithms for Subset Multivariate Autoregressive Processes", *Oklahoma State University*, February 28, 2000.
- **A.A. Trindade***, "Burg-type Algorithms for Subset Multivariate Autoregressive Processes", *University of Florida*, February 24, 2000.

Conference presentations

- **A.A. Trindade***, "Time Series Models With Asymmetric Laplace Innovations", talk, *Econometrics, Time Series Analysis and Systems Theory: A Conference in Honor of Manfred Deistler*, Vienna, Austria, June 20, 2009.
- **A.A. Trindade***, "Time Series Models With Asymmetric Laplace Innovations", poster, *Joint Statistical Meetings*, Denver, Colorado, August 5, 2008.
- **A.A. Trindade***, "Regression Modeling of Alloy Mechanical Properties: An Aid for the Discovery of Steels with Optimal Composition and Processing Parameters", talk, *12th Annual Spring Research Conference on Statistics in Industry and Technology*, Park City, Utah, June 2, 2005.
- **A.A. Trindade***, "Practical small sample inference for order one subset autoregressive models via saddlepoint approximations", talk, *6th World Congress of the Bernoulli Society for Mathematical Statistics & Probability and 67th Annual Meeting of the Institute of Mathematical Statistics*, Barcelona, Spain, July 29, 2004.
- **A.A. Trindade***, "Combining Analytical Model and Experimental Test Data for Optimal Determination of Failure Load Tolerance Limits", poster, *4th International Conference on Mathematical Methods in Reliability: Methodology and Practice*, Santa Fe, New Mexico, June 23, 2004.

- **A.A. Trindade***, "Modified Burg Algorithms for Multivariate Subset Autoregression", talk, *65th Annual Meeting of the Institute of Mathematical Statistics*, Banff, Canada, July 29, 2002.
- **A.A. Trindade***, "Burg Algorithms for Modeling Multivariate Subset Autoregressive Processes", poster, *New Researchers Conference*, Georgia Tech University, Atlanta, August 1, 2001.
- **A.A. Trindade***, "Approximating the Distributions of Estimators of Financial Risk Under a Generalized Laplace Law", talk, *International Conference on Financial Engineering*, University of Florida, Gainesville, March 24, 2006.
- **A.A. Trindade***, "Controlling Risk via Asymmetric Residual Error Tail Constraints With an Application to Financial Returns", talk, *International Conference on Risk Management and Quantitative Approaches in Finance*, University of Florida, Gainesville, April 8, 2005.
- "Burg Algorithms for Modeling Multivariate Subset Autoregressive Processes", poster, *Graybill Conference on Linear Models*, Colorado State University, Fort Collins, June 13, 2001.

Local presentations

- **A.A. Trindade***, "Computationally Intensive Confidence Intervals for the Smoothing Parameter in Penalized Spline Regression Models", Computational Science Seminar, *Texas Tech University*, Lubbock, April 7, 2009.
- **A.A. Trindade***, "Time Series Models With Asymmetric Laplace Innovations", Dept. of Mathematics & Statistics, *Texas Tech University*, Lubbock, February 4, 2009.
- **A.A. Trindade***, "Financial Prediction With Constrained Tail Risk", Dept. of Mathematics & Statistics, *Texas Tech University*, Lubbock, October 3, 2007.
- **A.A. Trindade***, "Saddlepoint-Based Bootstrap Inference for Nonlinear Regression Models", Dept. of Statistics, *University of Florida*, September 28, 2006.
- **A.A. Trindade***, "Measures of Financial Risk: Connections With Quantile Regression and an Application to the Discovery of Optimal Alloys", Dept. of Statistics, *University of Florida*, October 13, 2005.
- **A.A. Trindade***, "Multivariate Frailty Models with an Autoregressive Structure on the Transformed Hazards", Dept. of Biostatistics, *University of Florida*, October 6, 2004.
- **A.A. Trindade***, "Practical Small-Sample Inference for Order One Subset Autoregressive Models via Saddlepoint Approximations", Dept. of Statistics, *University of Florida*, November 6, 2003.

Sessions chaired

- **A.A. Trindade**, contributed session C2a, *Econometrics, Time Series Analysis and Systems Theory: A Conference in Honor of Manfred Deistler*, Vienna, Austria, June 20, 2009.
- **A.A. Trindade**, contributed session 64, *65th Annual Meeting of the Institute of Mathematical Statistics*, Banff, Canada, July 29, 2002.

DISSERTATIONS, THESES, AND REPORTS DIRECTED

Completed

- Yu Chen, M.S., 2008, Texas Tech University.
- Shuanglin Sun, M.S., 2008, Texas Tech University.
- Xiaolin Wang, "An Investigation of Common Estimators of Financial Risk Under Random Sampling", M.S., 2008, Texas Tech University.

- Arlene Naranjo, "State-Space Models with Exogenous Variables and Missing Data", Ph.D., 2007, University of Florida. (Co-advised with George Casella.)
- Yun Zhu, "Application of Asymmetric Laplace Laws in Financial Risk Measures and Time Series Analysis", Ph.D., 2007, University of Florida.
- Hsiao-Hsiang Hsu, "Comparing Estimators of VaR and CVaR Under the Asymmetric Laplace Distribution", M.Sc., 2005, University of Florida.
- S. Strauber, M.S., 2005, University of Florida.
- T. Mashtare, M.S., 2004, University of Florida.

In Progress

- Lasantha Premarathna, M.S., Texas Tech University.
- Yanxun Xu, M.S., Texas Tech University.
- Indika Rathnathungalage, Ph.D., Texas Tech University.

Graduate Committees Served On

- Miaomiao Wang, Ph.D., 2009, Agricultural & Applied Economics, Texas Tech University.
- Uzair Muhammad, M.S., 2009, Texas Tech University.
- Ning Wang, M.S., 2009, Texas Tech University.
- Chen Chen, M.S., 2009, Plant & Soil Science, Texas Tech University.
- M. Giurcanu, Ph.D., 2007, University of Florida.
- T. Barkley, Ph.D., 2007, Business Administration, University of Florida.
- J. Xu, 2007, Electrical and Computer Engineering, University of Florida.
- K. Park, 2007, Electrical and Computer Engineering, University of Florida.
- B. Kim, Ph.D., 2006, University of Florida.
- E. Schmacker, Ph.D., 2006, Health Services Research, University of Florida.
- J. Choi, Ph.D., 2006, Civil Engineering, University of Florida.
- J. Brindle, Ph.D., 2006, Nuclear Engineering Sciences, University of Florida.
- S. Jung, M.S., 2006, University of Florida.
- S. Vazquez, M.S., 2006, University of Florida.
- S. Busbee, M.S., 2006, University of Florida.
- S. Lahiri, M.S., 2005, University of Florida.
- Y. Cui, Ph.D., 2005, University of Florida.
- M. Capanu, Ph.D., 2005, University of Florida.
- P. Rumcheva, Ph.D., 2005, University of Florida.
- J. Suarez, Ph.D., 2004, Civil Engineering, University of Florida.
- D. Marchev, Ph.D., 2004, University of Florida.
- L. Qiu, M.S., 2004, University of Florida.
- H. Zhu, M.S., 2004, University of Florida.
- M. Thomas, M.S., 2004, University of Florida.
- M. Huang, M.S., 2004, University of Florida.
- T. Beechner, M.S., 2004, University of Florida.
- R. Miranda, M.S., 2004, University of Florida.
- D. Freeman, M.S., 2004, Forest Resources and Conservation, University of Florida.
- D. Khey, M.S., 2003, Sociology, University of Florida.
- G. Papageorgiou, M.S., 2003, University of Florida.
- R. Kadel, M.S., 2003, University of Florida.
- S. Ali, M.S., 2003, University of Florida.

HONORS AND AWARDS

- *AcademicKeys Who's Who in Sciences Higher Education*. Selected for inclusion in November 2003.
- *IMS Laha Award 2002*. Provided travel funds to present a paper at the IMS annual meeting, Banff, Canada, July 2002.
- *CLAS Research Award 2001*. Research grant in the form of two months summer salary awarded by the College of Liberal Arts & Sciences, University of Florida, Summer 2001.
- *Madison Award 2000*. Recognition of outstanding Graduate Work, Dept. of Statistics, Colorado State University, May 2000.
- *Graybill Award 1998*. Recognition of excellence in Linear Models, Dept. of Statistics, Colorado State University, May 1998.

PROFESSIONAL SERVICE

Refereeing

Statistical Modelling; IEEE Transactions on Engineering Management; IEEE Transactions on Signal Processing; Annals of Statistics; Journal of the American Statistical Association; Journal of Banking and Finance; Journal of Nonparametric Statistics; Journal of Multivariate Analysis; International Journal of Mathematics and Mathematical Sciences; Bioinformatics; Journal of Risk; The American Statistician; Journal of Probability and Statistical Science; Journal of Statistical Computation and Simulation; Communications in Statistics - Theory & Methods; Journal of Systems Science and Complexity; IEEE Control Systems Magazine; Journal of Stochastic Analysis and Applications; Brazilian Journal of Probability and Statistics.

Memberships in Organizations

ASA (American Statistical Association); IMS (Institute of Mathematical Statistics).

HAROLD DEAN VICTORY, JR.

ACADEMIC BACKGROUND

Ph.D., *Applied Mathematics*, **Purdue University**, December, 1974
M.S., *Applied Mathematics*, **Purdue University**, June, 1970.
A.B., *Mathematics,* **Rice University**, June, 1968.

PROFESSIONAL EXPERIENCE

- Professor of Mathematics, **Texas Tech University**, September 1989-present
- Associate Professor of Mathematics, **Texas Tech University**, September 1980-September 1989
- Assistant Professor of Mathematics, **Texas Tech University**, September 1976-September 1980
- Lecturer in Mathematics, **Texas Tech University**, September 1974-September 1976.

PUBLISHED RESEARCH AND CREATIVE ACTIVITY

46. F.J.S. Severino, E.J. Allen, and H.D. Victory, Jr., *Acceleration of quasi-Monte-Carlo approximations with applications in mathematical finance, Applied Mathematics and Computation*, **148 (2004)**, pp. 173-187.
47. E.J. Allen and H.D. Victory, Jr., *Modelling and simulation of a Schistosomiasis infection with biological control, Acta Tropica*, **87 (2003)**, pp. 251-267.

CURRENT PARTICIPATION IN PROFESSIONAL ORGANIZATIONS

Society for Industrial and Applied Mathematics
Sigma Xi, The Scientific Research Society
Alexander von Humboldt Association of America

SUCCESSFUL PEER-REVIEWED GRANTS AND CONTRACTS

13. **Mathematical Modeling of Schistosomiasis** (*Principal Investigator* with *Co-Principal Investigator* E.J. Allen). Funded by the Texas Higher Education Coordinating Board Advanced Research Program (THECB-ARP) in the amount of $83,395 for two years, January 2, 2002-December 31, 2003.

REFEREEING ACTIVITY

(A) **Referee for the Journals**:

SIAM JOURNAL ON MATHEMATICAL ANALYSIS
SIAM JOURNAL ON NUMERICAL ANALYSIS
PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY
TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY
JOURNAL OF COMPUTATIONAL PHYSICS
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS
JOURNAL OF TRANSPORT PHYSICS AND STATISTICAL PHYSICS
INDIANA UNIVERSITY MATHEMATICS JOURNAL
IMA JOURNAL ON NUMERICAL ANALYSIS
COMMUNICATIONS ON PURE AND APPLIED MATHEMATYICS

(B) Reviewer for the **Applied Mathematics Program** of the **National Science Foundation**

(C) Reviewer for the **Mathematics Program** of the **National Research Council of Canada**

XIAOCHANG (ALEX) WANG

EDUCATION

- Ph.D. in Mathematics, Arizona State University, 1989.
- M.S. in Electrical Engineering, Xidian University, 1984.
- B.S. in Applied Mathematics, Xidian University, 1982.

PROFESSIONAL EXPERIENCE

- 2004-present: Professor, Department of Mathematics and Statistics, Texas Tech University.
- 2003-present: Graduate Advisor, Department of Mathematics and Statistics, Texas Tech University.
- 1996-2004: Associate Professor, Department of Mathematics and Statistics, Texas Tech University.
- 1998-2003: Hiring Committee Chair, Department of Mathematics and Statistics, Texas Tech University.
- 1991-1996: Assistant Professor, Department of Mathematics and Statistics, Texas Tech University.
- 1989-1991: Visiting Assistant Professor, Department of Mathematics and Statistics, Texas Tech University.

AREAS OF INTEREST

Systems and Control, Cryptography.

PUBLICATIONS

- **Refereed Journals and Books**

1. M. Kim, J. Rosenthal and **X. Wang**, "Pole Placement and Matrix Extension Problems: A Common Point of View", *SIAM J. Control Optim.*, Vol. 42, No. 6, 2004, pp. 2078-2093.
2. **X. Wang**, "On Static Output Feedback Stabilization of Systems with Stable Generalized Zero Dynamics", *IEEE Trans. Auto. Control*, Vol. 49, No.1, 2004, pp. 141-145.
3. U. Helmke, J. Rosenthal, and **X. Wang**, "Output Feedback Pole Assignment for Transfer Functions with Symmetries", *SIAM J. Control Optim.*, Vol. 45, No.5, 2006, pp. 1898-1914.
4. **X. Wang**, "On the Solvability of Polynomial Systems Arising in Control", *Linear Algebra and Its Application*, Vol. 425, No. 2-3, 2007, pp. 313-322.
5. C.F. Martin and **X. Wang**, "Singular Value Assignment", *SIAM J. Control Optim.*, Vol. 48, No. 4, 2009, pp. 2388-2406.

- **Refereed Conference Proceedings**

1. U. Helmke, J. Rosenthal, and **X. Wang**, "Pole Placement Results for Complex Symmetric and Hamiltonian Transfer Functions", *Proc. 46th IEEE CDC, New Orleans*, 2007, pp.

PRESENTATIONS AND MEETINGS ATTENDED

- **Invited talks**

1. **X. Wang***, "Lattice Reduction and LLL Algorithm", *IMA Summer Program for Graduate*

Students: Coding and Cryptography, June, 2004, University of Notre Dame.
2. **X. Wang***, "Low Key RSA via CFE and LLL", *IMA Summer Program for Graduate Students: Coding and Cryptography*, June, 2004, University of Notre Dame.

THESIS AND REPORT DIRECTORS

- **Students Directed**

1. Joshua Nelson, M.S. Mathematics, Thesis: *The Diffie-Hellman Key Exchange in Matrices over a Field and a Ring*, 2003.
2. Bradley Beauchamp, M.S. Mathematics, Report: *A Cryptosystem Defined on a Multiplicative Semigroup*, 2003.
3. Syna Walby, M.S. Mathematics, Report: *Maximum Distance Separable Convolutional Codes*, 2004.
4. Charity Kelter, M.S. Mathematics, Thesis: *On the Groups of Elliptic Curves Without Flexes*, 2004.
5. Benjamin Hough, M.S. Mathematics, Thesis: *Weil Pairing and Elliptic Curve Logarithm Problems*, 2005.

- **Graduate Committees Served**

1. Brent McHale, M.S. Electrical Engineering, 2003.
2. anjeeva Maithripala, Ph.D. Mechanical Engineering, 2003.
3. Dinesh Ekanayake, M.S. Mathematics, 2005.
4. Xi Zhang, Ph.D. Chemical Engineering, 2008.
5. Xiaoyi Ji, Ph.D. Mathematics, 2008.

PROFESSIONAL SERVICE

- **Editorships**

1. Associate Editor of the IEEE Control Systems Society Conference Editorial Board, 1994-2004.
2. Associate Editor of SIAM Journal on Control and Optimization, 2004-present.

- **Memberships in organizations**

1. Society for Industrial and Applied Mathematics.
2. Institute of Electrical and Electronics Engineers, Inc.

DAVID A. WEINBERG

EDUCATION

S.B. in Mathematics, University of Chicago, 1974

Ph.D. in Mathematics, University of Wisconsin, Madison, 1980

PROFESSIONAL EXPERIENCE

Associate Professor of Mathematics, Texas Tech University, (1986)2003-2009

Member of Mathematical Sciences Research Institute, Berkeley, California, Jan. 1 – May 25, 2004 (participant in the Program on Topological Aspects of Real Algebraic Geometry)

AREA OF INTEREST

Algebraic Geometry

PUBLICATIONS

a. **Refereed Journals**

1. **David A. Weinberg** and Nicholas J. Willis, Singular Points of Real Sextic Curves, accepted by Acta Applicandae Mathematicae in 2007, appeared on the Journal's website online on Feb. 27, 2009 (will appear in hard copy next year), 58 pages.

2. Anatoly Korchagin and **David A. Weinberg,** Quadric, Cubic, and Quartic Cones**,** Rocky Mountain Journal of Mathematics, Vol. 35, No. 5, 2005, p. 1627 – 1656.

b. **Technical Reports**

The following papers were posted on the Mathematics ArXiv:

1. **David A. Weinberg** and Nicholas J. Willis, Real Quintic Curves Via Computer Algebra, arXiv:0807.0010, 37 pages.

2. **David A. Weinberg** and Nicholas J. Willis, Singular Points of Reducible Sextic Curves, arXiv:0807.0219, 11 pages.

3. **David A. Weinberg** and Nicholas J. Willis, Singular Points of Real Quartic Curves Via Computer Algebra, arXiv:0707.0241v1, 24 pages.

FUNDING ACTIVITY

Not Funded

In each case, **David A. Weinberg** was the sole principal investigator.

1. NSF Grant Proposal No. 0904485, 2008
Title: Local and global studies of algebraic curves
Amount: $131,149

2. TTU Research Enrichment Fund, 2008
Title: Local and global studies of algebraic curves and surfaces
Amount: $26,301

3. NSF Grant Proposal No. 0804518, 2007

Title: Local and global studies of algebraic curves
Amount: $126,850

4. NSF Grant Proposal No. 0704201, 2006
Title: Isotopy classifications of algebraic curves
Amount: $126,716

5. NSF Grant Proposal No. 0604608, 2005
Title: Isotopy classifications of algebraic curves
Amount: $123,072

6. NSF Grant Proposal No. 050527, 2004
Title: Isotopy classifications of real algebraic curves
Amount: $122,967

7. NSF Grant Proposal No. 0404231, Fall 2003
Title: Isotopy classifications of real algebraic curves
Amount: $111,296

8. ARP-Preproposal No. 003644-0035-2003, Fall 2003
Title: Real algebraic curves
Amount: $50,000

PRESENTATIONS AND MEETINGS ATTENDED

Conference Presentations

1. 30-minute invited talk at the Special Session on Real Algebraic Geometry at the American Mathematical Society Meeting at Texas Tech, April 8, 2005:
David A. Weinberg* and Nicholas J. Willis, "Singular points of real sextic curves".

2 30-minute invited talk at the Special Session on Real Algebraic Geometry at the American Mathematical Society Meeting at Texas Tech, April 8, 2005:
David A. Weinberg and Nicholas J. Willis*, "Singular points of real quintic curves".

3. 30-minute talk at Mathematical Sciences Research Institute, Berkeley, CA, May 7, 2004.
Title: "Favorite Problems in Real Algebraic Geometry".

Local Presentations

I gave the following talks in seminars at Texas Tech:

Algebra Seminar – Sept. 19, Sept. 26, and Oct. 3, 2008.

Real Algebraic Geometry Seminar – Jan. 27, Feb. 24, April 7, 2005, Sept. 22, Sept. 29, Oct. 6, Nov. 17, 2004.

Sessions Chaired

Special Session on Real Algebraic Geometry at the American Mathematical Society Meeting at Texas Tech, April 8 – 10, 2005.

Meetings Attended

1. Texas Geometry and Topology Conference, Texas Tech, Feb. 22 – 24, 2008.

2. Red Raider Minisymposium on the Topology and Geometry of Physics, Texas Tech, Oct. 23 – 25, 2008.

3. Joint American Mathematical Society Meeting, Atlanta, GA, Jan. 4 – 8, 2005.

4. Introductory Workshop in Topological Aspects of Real Algebraic Geometry, Mathematical Sciences Research Institute, Berkeley, CA, Jan. 12 – 16, 2004.

5. Topology and Geometry of Real Algebraic Varieties, Mathematical Sciences Research Institute, Berkeley, CA, Feb. 23 – 27, 2004.

6. Assessing Students' Mathematics Learning Issues: Costs and Benefits, Mathematical Sciences Research Institute, Berkeley, CA, March 7 – 10, 2004.

7. Geometric Modeling and Real Algebraic Geometry, Mathematical Sciences Research Institute, Berkeley, CA, April 3 -4, 2004.

8. Algorithmic, Combinatorial, and Applicable Real Algebraic Geometry, April 12 – 16, 2004.

9. Short Course on Resolution of Singularities given by Herwig Hauser, Mathematical Sciences Research Institute, Berkeley, CA, May 2004.

DISSERTATION, THESIS, AND REPORT DIRECTION

Directed Students

1. Nicholas J. Willis, Ph. D., May 2005.
Dissertation Title: Singular Points of Real Sextic Curves.

Graduate Advisory Committees Served On

1. Anton Badev, Master's Degree, May 2007.

2. Lina Williams, Master's Degree, May 2005.

PROFESSIONAL SERVICE

Refereeing

I refereed a paper for:

1. Journal of Symbolic Computation, 2008.

2. Rocky Mountain Journal of Mathematics, 2008.

3. Duke Mathematical Journal, 2005.

Memberships in Organizations

Member of the American Mathematical Society

Meetings and Seminars Organized

1. Organizer (with Anatoly Korchagin) of the Special Session in Real Algebraic Geometry at the American Mathematical Society Meeting at Texas Tech, April 8 – 10, 2005.

2. Organizer of the Real Algebraic Geometry Seminar at Texas Tech, 2003, 2004, and 2005.

Service at Texas Tech

1. Graduate Council, Fall 2008, 2009.

2. Graduate Faculty Committee of the Graduate Council, Fall 2008, 2009.

3. Panel for Tenure Hearing, 2006, 2007, 2008.

4. Presidential Lecture and Performance Council, 2007, Spring 2008.

5. Judge for SIAM Graduate Student Day, March 6, 2007.

6. Arts and Sciences Committee for Academic Programs, Fall 2003, Fall 2004, 2005.

OTHER RELEVANT ACTIVITIES

1. Received a faculty development leave in order to participate in the Program on Topological Aspects of Real Algebraic Geometry at Mathematical Sciences Research Institute, Berkeley, CA, Spring 2004.

2. Developed and taught a new graduate course on Differential Topology (as MATH 5342), Fall 2005.

Graduate Courses Taught

MATH 5319 (Intermediate Analysis II) Spring 2008
MATH 5342 (Introductory Algebraic Geometry) Summer I 2008
MATH 5323 (Real Analysis I) Spring 2007
MATH 5318 (Intermediate Analysis I) Fall 2007
MATH 5322 (Real Analysis I) Fall 2006
MATH 5318 (Intermediate Analysis I) Spring 2005
MATH 5319 (Intermediate Analysis II) Summer 2005
MATH 5342 (Differential Topology) Fall 2005
MATH 5318 (Intermediate Analysis I) Summer 2004

GEORGE BROCK WILLIAMS

EDUCATION

Ph.D.	University of Tennessee, Knoxville	1999
B.S.	Mississippi State University	1993

PROFESSIONAL EXPERIENCE

Associate Professor Texas Tech University	2007-Present
Assistant Professor Texas Tech University	2001-2007
Visiting Assistant Professor Texas Tech University	1999 -2001
Graduate Teaching Assistant University of Tennessee, Knoxville	1993- 1999

AREAS OF INTEREST

Complex Analysis, Discrete Conformal Geometry

PUBLICATIONS

Refereed Journals

1. Roger W. Barnard, Eric M. Murphy, **G. Brock Williams**, "Euclidean Earthquakes," accepted in *Complex Variables and Elliptic Equations*
2. **G. Brock Williams**, "Circle Packings, Quasiconformal Mappings, and Applications," *Quasiconformal Mappings and Their Applications* (2007), 327-346.
3. Roger W. Barnard, Leah Cole, Kent Pearce, **G. Brock Williams**, "The Sharp Bound for the Deformation of a Disc Under a Hyperbolically Convex Map," *Proceedings of the London Mathematical Society*, **93** (2006), no. 2, 395-417.
4. **G. Brock Williams**, "A Circle Packing Packing Measurable Riemann Mapping Theorem," *Proceedings of the AMS* **134** (2006), no. 7, 2139-2146.
5. David Dennis, **G. Brock Williams**, "Layered Circle Packings," *International Journal of Mathematics and Mathematical Sciences* **15** (2005), 2429-2440.
6. **G. Brock Williams**, "Discrete Conformal Welding," *Indiana University Mathematics Journal* **53** (2004), 765-804.
7. Roger W. Barnard, Kent Pearce, **G. Brock Williams**, "Three Extremal Problems for Hyperbolically Convex Functions," *Computational Methods and Function* Theory **4** (2004), 97-109.

Refereed Conference Proceedings

1. Roger W. Barnard, Eric M. Murphy, **G. Brock Williams** "Some Results on Spaces of Packable Riemann Surfaces," *Journal of Analysis*, **15** (2007) 1-16.'

Other

1. **G. Brock Williams**, "LearnStar Empowers Texas Tech Students," *T.H.E. Journal*, September 2005, 49.

FUNDING ACTIVITY

All proposals had multiple investigator teams. Primary collaborators include Roger Barnard, Lawrence Schovanec, Gary Harris, Monty Strauss, Victoria Howle, Magdalena Toda, Kent Pearce, Carl Seaquist, Ram Iyer, Jeff Lee (Mathematics), Robert Blake (Chemistry), Dominick Casadonte (Chemistry), David Lamp (Physics), Joaquin Borrego, Lee Cohen (Psychology), Mark McGinley, Nancy McIntyre (Biology), Jaclyn Canas, Mary Baker, Brian Nutter, Michael O'Boyle (Human Sciences), Tara Stevens, Jennifer Wilhelm, Zenaida Aguirre-Munoz (Education), Barbara Moskal (Colorado School of Mines).

Funded

1. Integrated Stem Initiative on the South Plains, NSF $990,000 2009-2013, Senior Personnel
2. West Texas Middle School Math Partnership, NSF $6,100,000, 2008-2013, Senior Personnel
3. GK-12 Building Bridges: Integrating Mathematics, Engineering, and Science on the South Plains, NSF, $2,971,630, 2008-2013, Co-PI
4. Growing Graduate Programs Project, TTU Graduate School, $22,000, 2008-2009, co-PI
5. South Plains Mathematics Scholars, NSF, $571,580, 2007-2012, Co-PI
6. Conferences on Complex Analysis, Circle Packing, and Applications, NSF $15,784, 2007-2008, PI
7. Growing Graduate Programs Project, TTU Graduate School $7400, 2007-2008, co-PI
8. REU: Multidisciplinary Summer Undergraduate Research Program in Computation and Control of Biological and Biologically Inspired Systems, NSF and DoD, $170,707, 2005-2007, Senior Personnel
9. Quasiconformal Mappings, Geometric Functions, and Applications, NSF, $48,000, 2005-2006, co-PI
10. LOGO, TEA $108,000, Texas Dept. of Education. 2005-2006, co-PI
11. LearnStar: Invigorating Undergraduate Education in Chemistry, Mathematics, and Psychology, NSF, $99,952, 2003-2006, co-PI
12. Biomedical Imaging Using Circle Packings, TTU REF, $3000, 2001-2002, PI

Not Funded

1. PRISM: Proactive recruitment of math students on the South Plains, NSF, $2,852,173, PI, 2008
2. Computational Methods from Conformal Geometry and Special Functions with Applications, NSF, $299,569, PI, 2008
3. CSUMS: Undergraduate Research Teams In Interdisciplinary Computational Problems, NSF. $1,087,521.00, PI, 2007
4. REU: Multidisciplinary Summer Undergraduate Research Program in Modeling, Computation and Control of Biological Systems, NSF $302,081, co-PI, 2007
5. The West Texas Partnership Institute for the Professional Development of Math and Science Teachers, NSF, $3,733,996, Senior Personnel, 2006
6. Collaborative Research: Recruiting and Mentoring Mathematics Students: A Texas Tech and Colorado School of Mines Collaborative, NSF, $891,147, co-PI, 2006
7. South Plains Math Scholars, NSF, $499,900, co-PI, 2006
8. Collaborative Research: Recruiting and Mentoring Mathematics Students: A Texas Tech and Colorado School of Mines Collaborative, NSF, $2,200,000, Senior Personnel, 2005
9. Analysis, Geometry, and Applications, NSF, $317,829, co-PI, 2005
10. Problems and Techniques in Conformal Geometry and Complex Analysis, NSF, $273,045, co-PI, 2004

11. From the Canyons to College, NSF, $2,200,000, Senior Personnel, 2004

Pending

1. "Applications of Complex Analysis and Discrete Conformal Geometry," NSF, $393,245, 2010-2013, co-PI
2. "Imaging Applications of Discrete Conformal Geometry," NHARP, $140,000, 2010-2011, PI
3. CCLI: Incorporating a Virtual Classroom-Based Procedural Model of Small Group Communication Problem Solving into the Undergraduate Mathematics Curriculum, NSF, $199,900, 2010-2013, co-PI

PRESENTATIONS AND MEETINGS ATTENDED

Invited Hour Talks

1. **G. Brock Williams*,** "Gluing Operations on Circle Packings," Technische Universität Bergakademie Freiberg, August 2009
2. **G. Brock Williams*,** "LearnStar at Texas Tech," Spring Into Educational Technology Meeting, Amarillo, Texas, March 2007
3. **G. Brock Williams*,** "Circle Packings and Quasiconformal Mappings," International Workshop on Quasiconformal Mappings, Special Functions, and Applications, Madras, India, December 2005
4. **G. Brock Williams***, "Circle Packings and Applications," International Workshop on Quasiconformal Mappings, Special Functions, and Applications, Madras, India, December 2005
5. **G. Brock Williams***, "Personal Response Units in Calculus," Two Workshops at the West Virginia Higher Education Symposium, Flatwoods, West Virginia, March 2005
6. **G. Brock Williams*,** "Schwarzians of Hyperbolically Convex Functions," Funktionentheorie Meeting, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, February 2004
7. **G. Brock Williams*,** "Using LearnStar in Calculus and Teacher Preparation Courses," International Conference on Technology in Collegiate Mathematics, New Orleans, Louisiana, October 2004

Conference Presentations

1. **G. Brock Williams*,** "Stability of Packable Riemann Surfaces," Computational Methods and Function Theory Conference, Ankara, Turkey, June 2009
2. Eric M. Murphy*, **G. Brock Williams**, "Riemann Surfaces via Circle Packing," Joint Math Meetings, AMS Special Session, Washington D. C., January 2009
3. **G. Brock Williams*,** "Circle Packing and QC Maps," One and Several Complex Variables Conference, Lexington, Kentucky, June 2008
4. **G. Brock Williams***, "Circle Packings, Welding Operations, and Applications," CMS/MITACS Annual Meeting, Special Session on Complex Function Theory, Winnipeg, Manitoba, Canada, June 2007
5. Jerry Dwyer, Gary Harris, **G. Brock Williams*,** "Using LOGO to Teach Geometry and Problem Solving to Future Middle School Teachers," Joint Math Meetings, MAA Session on Programs for Future Middle School Teachers, New Orleans, Louisiana, January 2007
6. **G. Brock Williams*,** "Complex Functions and Circle Packings," AMS Sectional Meeting, Special Session on Composition Operators and Dynamical Systems, Miami, Florida, May 2006
7. **G. Brock Williams*,** "Empowering K-12 Teachers to Use Technology Wisely**,"** Joint Math Meetings, MAA Session on Professional Development Programs for K-12 Teachers, San Antonio, Texas, January 2006
8. **G. Brock Williams*,** "Quasiconformal Connections Between Continued Fractions and Circle Packings," Joint Math Meetings, AMS Special Session on Continued Fractions, San

Antonio, Texas, January 2006
9. **G. Brock Williams*,** "Conformal Mapping of Physical Surfaces Using Circle Packing," International Conference on Geometric Function Theory, Special Functions, and Applications, Pondicherry, India, January 2006
10. Ken Stephenson**, G. Brock Williams***, "Image Recognition Using Circle Packings," Computational Methods and Function Theory Conference, Joensuu, Finland, June 2005
11. **G. Brock Williams*,** "Using LearnStar to Gain Insight into the Thinking of Pre-Service Teachers and Our Curriculum" Joint Math Meetings, MAA Session on Drawing on Our Students' Thinking to Improve the Mathematical Education of Teachers, Atlanta, Georgia, January 2005
12. **G. Brock Williams*,** "Applications of Brooks's Continued Fraction Parameter to Riemann Surfaces and QC Maps" Joint Math Meetings, AMS Special Session on Continued Fractions, Phoenix, Arizona

Local Presentations

1. **G. Brock Williams*,** "Graph Theory and Circle Packing," Graph Theory Seminar, TTU, September 2009
2. **G. Brock Williams*,** "A Capstone Class for Middle School Math Teachers," Education Seminar, TTU, November 2008
3. **G. Brock Williams*,** "Assessment Issues," Education Seminar, TTU, September 2008
4. **G. Brock Williams*, "**Reflections, Tilings, and Subdivision Rules," Two Lectures, Analysis Seminar, TTU, October 2007
5. **G. Brock Williams*, "**Continued Fractions and Complex Functions," Complex Analysis Seminar, TTU, February 2006
6. **G. Brock Williams*, "**Inversive Distances and Cross Ratios," Four Lectures, Complex Analysis Seminar, TTU, October 2005
7. **G. Brock Williams*,** "Using the LearnStar Interactive Quiz System in Calculus and Teacher Preparation Courses," Education Seminar, TTU, March 2005

Meetings Attended

1. Advancing Teaching and Learning Conference, TTU, March 2006

DISSERTATION, THESIS AND REPORT DIRECTION

Directed Students

1. Jennifer Bartlett, M.S., "Circle Packing and the Brooks Parameter," 2007
2. David Martin, Ph.D., "Maximizing the Generalized Fekete-Szego Functional Over a Class of Hyperbolically Convex Functions," 2006, co-directed with Roger W. Barnard
3. Casey Hume, Ph.D., "A Sharp Bound on the Fourth Coefficient for Bounded Convex Functions," 2006, co-directed with Roger W. Barnard
4. J'Lee Bumpus, Ph.D., "Deformations on Tori," 2006
5. Eric M. Murphy, Ph.D. "Discrete Conformal Approximation of Complex Earthquake Maps," 2005, co-directed with Roger W. Barnard
6. Julia Head, M.S., Ph.D. "Effectively Combining Online Learning with Face-to-Face Instruction," 2005

Current Students

1. Seth Streitmatter
2. Malissa Trotter

Graduate Committees

1. Bibi Ganesh, Ph.D. Education, 2009
2. Alex Williams, Ph.D., 2009
3. James Woodley, M.S., 2009
4. Dana Gustafson, M.S., Multidisciplinary Sciences, 2008
5. Neil Pratt, M.S., Multidisciplinary Sciences, 2008
6. Rachael Koskodan, Ph.D., 2006
7. Atul Dixit, M.S., 2006
8. Jessica Para-Cisneros, M.S., 2006
9. Sonya Sherrod, M.S., 2006
10. Alex Williams, M.S., 2006
11. Leah Chenault, M.S., 2005
12. Amanda Klein, M.S., 2005
13. Donnie Dutton, M.S. Multidisciplinary Sciences, 2005
14. Nancy Owens Schunke, M.S. Multidisciplinary Sciences, 2005
15. Don Scroggins, M.S. Multidisciplinary Sciences, 2005
16. Dee Rutherford, M.S. Multidisciplinary Sciences, 2005
17. Aaron Bailey, M.S., 2004
18. Nick Willis, Ph.D., 2004

HONORS AND AWARDS

Teaching and/or Research Awards (Including Nominations)

1. College of Arts and Sciences Nominee for the Chancellor's Council Distinguished Research Award, 2007
2. President's Excellence in Teaching Award, 2006
3. Graduate Professor of the Year, Awarded by the Texas Tech SIAM Chapter, 2005

Other Distinctions

1. Member of the Texas Tech Teaching Academy, 2005-Present

PROFESSIONAL SERVICE

Refereeing

1. *Journal of Mathematical Analysis and Applications*
2. *Computational Methods and Function Theory*
3. *Discrete and Computational Geometry*

Reviewing

1. *Mathematical Analysis* by S. Ponnusamy
2. *Calculus* by Beyer
3. *Calculus* by Briggs and Cochran
4. *Calculus* by Rogawski
5. *Applied Calculus* by Hoffman and Bradley
6. *Business Statistics* by Walton
7. *Math Reviews*
8. City University of New York Internal Research Grant Competition

Meetings Organized

1. AMS Special Session on Contemporary Complex and Special Function Theory, Waco, Texas, October 2009, with Roger W. Barnard, Kent Pearce, Kendall Richards, and Alex Solynin
2. Workshop on Complex Analysis and Special Functions, Texas Tech University, November 2007, with Kent Pearce, Kendall Richards, and Alex Solynin
3. Red Raider Mini-Symposium, Texas Tech University, October 2007, with Kent Pearce, Kendall Richards, and Alex Solynin
4. Assisted with the International Conference on Geometric Function Theory, Special Functions, and Applications, Pondicherry, India, January 2006, with Roger W. Barnard, David Minda, Samy Ponnusamy, and Matti Vourinen
5. Assisted with the International Workshop on Quasiconformal Mappings, Special Functions, and Applications, Madras, India, December 2005, with Roger W. Barnard, David Minda, Samy Ponnusamy, and Matti Vourinen
6. AMS Special Session on Recent Advances in Complex Function Theory, Texas Tech University, April 2005, with Roger W. Barnard, and Kent Pearce

Memberships in organizations

1. American Mathematical Society

Other relevant activities

1. Mathematics Event Director for the University Interscholastic League
2. Member of the Emmy Noether Day Committee
3. Session Organizer for Emmy Noether Day
4. Regional Science and Engineering Fair Judge

BO YANG

EDUCATION

Ph.D.	Dept. of Electrical Engineering & Computer Science, Case Western Reserve Univ., Cleveland, OH Dissertation title: *Output Feedback Control of Nonlinear Systems with Unstabilizable/Undetectable Linearization* (Advisor: Prof. Wei Lin; Jan. 2006)
M.S.	Control Theory & Operations Research, Institute of Mathematics, Fudan Univ., China Thesis title: *Necessary conditions for optimal controls of forward-backward stochastic systems with nonsmooth cost functionals* (1999)
B.S.	Control Theory, Dept. of Mathematics, Fudan Univ., China (1996) Minor: Electrical Engineering

RESEARCH INTERESTS

- Output feedback control of nonlinear systems with uncontrollable/unobservable linearization
- Robust and adaptive control
- System identification, observer design, and applications to signal processing
- Stochastic control systems
- Distributed parameter systems, HJB equation and optimal control
- Applications to nonholonomic underacturated mechanical systems, active flow control, robotics, and biologically-inspired systems.

RESEARCH EXPERIENCES

Aug 2005-present	Visiting Assistant Professor, Dept. of Mathematics & Statistics, Texas Tech Univ., Lubbock, TX
2001-2005	Research/Teaching Assistant, Dept. of Electrical Engineering & Computer Science, Case Western Reserve Univ., Cleveland, OH
1996-1999	Research/Teaching Assistant, Institute of Mathematics, Fudan Univ., China, Conducted research on stochastic systems, distributed parameter systems, optimal control theory, and mathematical finance

TEACHING EXPERIENCES

- Instructor for Courses (at Texas Tech Univ.):
- Nominated twice as the Outstanding Teacher of the Year by The Texas Alpha Chapter of the Honorary Kappa Mu Epsilon (2007 & 2008)
- Courses Taught: Calculus(I, II, III), Technical Calculus, Linear Algebra, Differential Equation, Trigonometry, Finite Mathematics, Business Mathematics
- Teaching Assistant and Lab Instructor for Courses (at Case Western Reserve Univ.): Using MATLAB and Simulink for modeling, simulating and analyzing multidomain dynamic systems.

INDUSTRIAL EXPERIENCES

May-Aug 2005	Intern, Project: *Active Flow Control for Aerodynamic Enhancement*, Orbital

	Research Inc., Cleveland, OH
1999-2001	Wireless Network Optimization Engineer, Shanghai Datang Mobile Communications Equipment Co., Ltd., a subsidiary company of Datang Telecom Technology Industry Group, one of the largest telecom equipment providers in China, good at programming in C++, Pascal

PROFESSIONAL ACTIVITIES and AFFILIATIONS

2001-present	Frequent Reviewer for: *IEEE Transactions on Automatic Control*, *Automatica*, *Systems and Control Letters*, *SIAM Journal on Control and Optimization*, *International Journal of Robust and Nonlinear Control*, *IEEE Transactions on Circuits and Systems I*, *Journal of the Franklin Institute*, *Communications in Information and Systems*, *IEEE Conference on Decision and Control (CDC), American Control Conference (ACC)*, *IFAC World Congress*, *IFAC Symposium on Nonlinear Control Systems*
2001-present	Member of Institute of Electrical and Electronics Engineers (IEEE)
2005-present	Member of Society for Industrial and Applied Mathematics (SIAM)

INVITED TALK and CONFERENCE PRESENTATIONS

- "What Can Linear Feedback Accomplish for Highly Nonlinear Systems? ", Dept. of Electrical & Computer Engineering, Univ. of Waterloo, Waterloo, ON, Canada, May 2008
- 46th IEEE Conference on Decision and Control, New Orleans, LA, Dec. 2007 (Session Chair)
- 2007 American Control Conference, New York, NY, Jul. 2007
- Semi-global output feedback stabilization of non-uniformly observable and nonsmoothly stabilizable systems", *Emerging Frontiers in Control Theory Research and Innovative Applications*, Memorial Workshop in Memory of W. P. Dayawansa, Dept. of Mathematics and Statistics, Texas Tech University, Apr. 2007
- 44th IEEE Conference on Decision and Control, Seville, Spain, Dec. 2005
- 16th IFAC World Congress, Prague, Czech, Jul. 2005
- 2005 American Control Conference, Portland, OR, Jun. 2005
- "Output feedback control of nonlinear systems with unstabilizable/undetectable linearization", Dept. of Electrical & Computer Engineering, Cleveland State Univ., Cleveland, OH, Mar. 2005
- 6th IFAC Symposium on Nonlinear Control Systems, Stuttgart, Germany, Sept. 2004
- 2004 American Control Conference, Boston, MA, Jun. 2004
- 42nd IEEE Conference on Decision and Control, Maui, HI, Dec. 2003

HONORS AND AWARDS

2007 & 2008	Nominated as the Outstanding Teacher of the Year by The Texas Alpha Chapter of the Honorary Kappa Mu Epsilon
2003-2005	Travel Grants for American Control Conference or IEEE Conference on Decision and Control, supported by NSF, AFOSR and AACC
2005	Travel Grant for 2005 American Control Conference, supported by the Verhosek Fund
2003	Endowment Sponsored Mentorship Travel Award, supported by School of Graduate Studies of Case Western Reserve University

2002-2003 Case Prime Fellowship, Case Western Reserve University

PUBLISHED/ACCEPTED/SUBMITTED JOURNAL PAPERS

1. B. Yang and W. Lin, Semi-global output feedback stabilization of a class of nonuniformly observable and non-smoothly stabilizable systems, submitted to *IEEE Transactions on Automatic Control*
2. B. Yang and W. Lin, Nonsmooth output feedback stabilization of inherently nonlinear systems under output dependent growth conditions, submitted to *International Journal of Robust and Nonlinear Control*.
3. B. Yang and W. Lin, On Finite-time stabilization of a class of nonsmoothly stabilizable systems, Book Chapter in *Control Theory and Related Topics—in Memory of Xunjing Li 1935-2003*, S. Tang and J. Yong eds., pp. 220-240, World Scientific, Singapore, 2007.
4. B. Yang and W. Lin, On semi-global stabilizability of MIMO nonlinear systems by output feedback, *Automatica*, Vol. 42, No. 6, pp. 1049-1054, 2006.
5. B. Yang and W. Lin, Robust output feedback stabilization of uncertain nonlinear systems with uncontrollable and unobservable linearization, *IEEE Transactions on Automatic Control*, Vol. 50, No. 5, pp. 619-630, 2005 (Regular Paper).
6. B. Yang and W. Lin, Further results on global stabilization of uncertain nonlinear systems by output feedback, *International Journal of Robust and Nonlinear Control*, Vol. 15, No. 6, pp. 247-268, 2005.
7. X. Huang, W. Lin and B. Yang, Global finite-time stabilization of a class of uncertain nonlinear systems, *Automatica*, Vol. 41, No. 5, pp. 881-888, 2005.
8. B. Yang and W. Lin, Homogeneous observers, iterative design, and global stabilization of high-order nonlinear systems by smooth output feedback, *IEEE Transactions on Automatic Control*, Vol. 49, No. 7, pp. 1069-1080, 2004 (Regular Paper).

REFERRED CONFERENCE PAPERS

1. B. Yang and W. Lin, Semi-global robust stabilization of a family of uncertain nonlinear systems by non-smooth output feedback: the planar case, accepted by *17th IFAC World Congress*
2. B. Yang and W. Lin, Nonsmooth Output Feedback Design with a Dynamic Gain for Uncertain Systems with Strong Nonlinearity, *Proc. of 46th IEEE Conference on Decision and Control, New Orleans, LA, pp. 3495-3500, 2007*
3. H. Lei, W. Lin and B. Yang, Adaptive robust stabilization of a family of uncertain nonlinear systems by output feedback: the non-polynomial case, *Proc. of 2007 American Control Conference*, New York, NY, pp. 5341-5346, 2007
4. B. Yang and W. Lin, Semi-global output feedback stabilization of non-uniformly observable and nonsmoothly stabilizable systems, *Proc. of 44th IEEE Conference on Decision and Control*, Seville, Spain, pp. 4207-4212, 2005.
5. B. Yang and W. Lin, Finite-time stabilization of nonlinear systems with uncontrollable unstable linearization, *Proc. of 16th IFAC World Congress*, Prague, Czech, paper code: Tu-M22-TO/4, 2005.
6. B. Yang and W. Lin, Robust stabilization of uncertain nonlinear systems by nonsmooth output feedback, *Proc. of 2005 American Control Conference*, Portland, OR, pp. 4702-4707, 2005.
7. B. Yang and W. Lin, A further result on global stabilization of uncertain nonlinear systems by output feedback, *Proc. of 6th IFAC Symposium on Nonlinear Control Systems*, Stuttgart, Germany, pp. 95-100, 2004.
8. W. Lin and B. Yang, Robust stabilization of uncertain high order systems via smooth output feedback, *Proc. of 6th IFAC Symposium on Nonlinear Control Systems*, Stuttgart, Germany, pp. 67-74, 2004.

9. X. Huang, W. Lin and B. Yang, Finite-Time stabilization in the large for uncertain nonlinear systems, *Proc. of 2004 American Control Conference*, Boston, MA, pp. 1073-1078, 2004.
10. B. Yang and W. Lin, Output feedback stabilization of a class of homogeneous and high-order nonlinear systems, *Proc. of 42nd IEEE Conference on Decision and Control*, Maui, HI, pp. 37-42, 2003.