



# Physics Colloquium



Thursday, March 3<sup>rd</sup> at 3:30 pm in SC 234

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## ***Investigating student learning in Upper-division Electrostatics***

Student learning in upper-division physics courses is a growing area of research in the field of Physics Education. Students often struggle with the advanced physics content and mathematically sophisticated tools/techniques required at the junior and senior level. Developing effective new curricular materials and pedagogical techniques to improve student learning in upper-division courses requires knowledge of the nature of students' difficulties. As an example of this, I will describe ongoing efforts to characterize students' difficulties in upper-division electrostatics with particular emphasis on how students use mathematics during physics problem solving. I will also present aspects of the development and validation of an electrostatics conceptual assessment designed to measure student learning overall and assess the effectiveness of different curricular approaches.

Refreshments 3:00-3:20 pm in SC 103