



# Physics Colloquium



Thursday, Sept 17th at 3:30PM in SC 234

Dr. Rob Coyne, TTU

*A Cross-correlation Search for Intermediate Duration Gravitational Waves:  
Advanced Techniques for Advanced Detectors*

Starting in the Fall of 2015, the newly-upgraded Laser Interferometer Gravitational-wave Observatory (LIGO) will come online for its first observing run. It is expected that this generation of advanced Gravitational Wave (GW) detectors will make the first direct detection of GWs, and mark the beginning of an entirely new field of observational astrophysics. As GW astrophysics becomes a reality, data analysis techniques that bridge the gaps between “traditional” methods are starting to be developed. These new techniques can enhance LIGO detection rates and enable us to test a larger variety of astrophysical models. In this context, I present the adaptation of a cross-correlation data analysis method originally designed to look for long-lived GW emission from pulsars, to a regime of intermediate-duration GW transients. The detection of this type of transient GWs would allow us to answer key open questions on the most relativistic explosions in the universe, gamma-ray bursts, and serve as a starting point for probing several other astrophysical scenarios that predict the existence of such signals.

Refreshments at 3:00PM in SC 103