

## ASTROPHYSICS SEMINAR SERIES

**Dr. Wendell Misch**

Los Alamos National Laboratory

Tuesday, September 10 12:30 pm - Rm 184 NSH

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### **Neutrinos from Pre-supernova Stars**

Massive stars approaching supernova may produce neutrino emissions that are detectable within 1 kpc of Earth during their last few hours or days before collapse. A detected signal would not only alert observatories of the impending explosion, but also yield insight into the collapse mechanism. For example, an electron-capture supernova would produce a radically different signal from a gravitational instability supernova. I will give an overview of previous work in this area, including neutrino spectra and expected signals in detectors, then I will present results from my own research into the nuclear contribution to the neutrino spectra emitted by these stars. I will show that nuclear structure may play a key role in spectral features, and what might be the dominant source of pre-supernova electron anti-neutrinos as well as neutrinos and anti-neutrinos of all other flavors is excluded from earlier calculations.



PHYSICS