

Tuesday,

Feb. 4th

At 3:45 pm



**Determining the Properties of Dense Matter
from Neutron Star Observations**

Abstract:

Neutron stars are a unique laboratory for nuclear physics. In this talk, I will show how neutron star observations provide unique insights into quantum chromodynamics and the interactions between neutrons and protons. I present our earlier predictions for the tidal deformability, (aka "squishiness") of neutron stars, and show how that prediction was verified in the observation of a double neutron star merger, GW 170817. I show how to go beyond the equation of state to obtain information about the composition and superfluid properties of dense matter. I will show that neutron superfluidity pervades the star, preventing beta decay at almost all densities. Finally, I will show how we are using our improved knowledge of the nucleon-nucleon interaction to improve simulations of neutron star mergers.

**Colloquium
Speaker**

—

**Andrew
Steiner**

—

**Assistant
Professor**

—

**University of
Tennessee
and ORNL**

—

**CYCLOTRON
INSTITUTE**

Room 228

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Refreshments will be
served at 3:30 pm



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