



**DEPARTMENT OF PHYSICS
COLLOQUIUM SERIES**



**SPEAKER: Dr. David Jones (UC Santa Cruz)
Faculty Candidate**

**TITLE: H_0 , Dark Energy, and Testing Gravity: Using Pan-STARRS
Supernovae to Understand Cosmic Controversies in the 2020s**

ABSTRACT: The next decade of supernova cosmology will increase the sample size of Type Ia supernovae (SNe Ia) by more than two orders of magnitude, while putting new constraints on the Hubble constant, dark energy, and the nearby growth rate of structure. These new data will introduce new challenges: how to determine SN types without spectroscopic classifications, how to anchor the Hubble diagram with a low- z sample that can compete with the calibration of the Vera Rubin Observatory (LSST) and *WFIRST*, and how to build an improved SN Ia standardization model to reduce systematic uncertainties on cosmological parameters. I will discuss previous and ongoing work to address these challenges, in particular by using the Young Supernova Experiment: a new 1500 square-degree, three-day cadence survey on the Pan-STARRS telescopes. YSE is leveraging the large field of view and mmag-level photometric calibration of the Pan-STARRS system to discover thousands of new SN Ia and drastically improve constraints on cosmological parameters in the next few years.



**Friday, Feb 7, 2020 – 11:00 a.m.
NRAO - Auditorium**