



Department of Physics Colloquium

October 10, 2022



3:00 PM

Probing the Nature of Neutrino Mass

Prof. Karsten Heeger
Yale University

Neutrinos are amongst the most abundant particles in the Universe. The discovery of neutrino oscillation has shown that neutrinos have non-zero mass but the absolute mass scale remains unknown. We also don't know if neutrinos are their own antiparticles. Understanding the nature of neutrino mass is one of the fundamental questions in neutrino physics. Neutrinoless double beta decay, a rare, unobserved nuclear decay, is uniquely suited to probe the Majorana nature of neutrinos and determine the effective neutrino mass. Amongst the worldwide suite of experiments, the Cryogenic Underground Observatory for Rare Events (CUORE) is the largest, coldest solid-state detector operating in the world designed to search for neutrinoless double beta decay ($0\nu\beta\beta$) and other rare events in ^{130}Te . In this talk, we present the latest results from the search for $0\nu\beta\beta$ in CUORE, the plans to upgrade the bolometer array with particle identification (CUPID), and the prospect for discovering the Majorana nature of neutrinos.

This colloquium will be held in-person, at SERC 116 unless announced otherwise.