

APR15-2015-001121

Abstract for an Invited Paper
for the APR15 Meeting of
the American Physical Society

Precision Studies in Neutrino Physics: Prospects and Opportunities

KARSTEN HEEGER, Yale University

The discovery of neutrino oscillation has opened a rich field of physics at the intersection of particle, nuclear, and astrophysics. Experiments have measured the mixing of the three active neutrino states and determined the associated oscillation parameters. Yet many neutrino properties are unknown. We do not know if neutrinos are Dirac or Majorana particles, the mass and ordering of the neutrino states, and we have not observed CP violation in the lepton sector. There may even be more than three neutrino species in the form of sterile neutrinos. Future experiments at accelerators will provide precision measurements of the properties and interactions of neutrinos and probe for signs of new physics. I will review next-generation neutrino experiments with high-powered beams and provide an outlook to the physics opportunities at the intensity frontier.