

Bhupal Dev – Special HEP/Journal Club seminar – April 7, 2023
Washington University in St. Louis

Title: A multi-messenger probe of the nature of neutrino mass

Abstract: Whether neutrinos are Majorana or Dirac particles is an open question. Theoretically, it is also possible that neutrinos are pseudo-Dirac, which are fundamentally Majorana fermions, but essentially act like Dirac fermions in most experimental settings, due to extremely small active-sterile mass splitting. Such small values of mass splitting can only be accessed via active-sterile oscillations with an astrophysical baseline. In this talk, I will show that the recent identification of high energy neutrino sources by the IceCube Neutrino Observatory provides us with such an astrophysical baseline, thus improving the reach of terrestrial experiments by more than a billion for the mass-squared difference.