

PRISMA+ Colloquium

Jan. 14, 2015 at 1 p.m.
Lorentz-Raum 05-127, Staudingerweg 7

Prof. Dr. Sebastian Böser
Institut für Physik, Mainz

Neutrinos from GeV to PeV

Being the only particle that is subject only to the weak force, neutrinos play a crucial role in our understanding of the universe. While their non-zero mass gives a first hint at physics beyond the standard model, the weakness of their interaction makes them both ideal messenger particles but at the same time hard to detect. With its recent discovery of a neutrino flux generated outside the solar system the IceCube experiment at the South Pole has cast open a new observational window to the universe. Moreover, through its low-energy infill DeepCore, this experiment has proven its ability to contribute to the precision measurements of the neutrino oscillation parameters as well. Consequently, plans for multiple extensions of the detector are currently in progress to promote both its ability to eventually resolve the century old puzzle of cosmic rays, as well as to determine the hierarchy of the neutrino mass eigenstates. The current status of the analyses in both areas as well as an outlook to future capabilities of an extended array will be discussed.