

Physics Opportunities in the Near DUNE Detector hall: PONDD



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General Neutrino-Electron Interactions at the DUNE Near Detector

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We consider the effect of general neutrino interactions (scalar, vector, pseudoscalar, axial vector and tensor) in neutrino-electron scattering at the DUNE near detector. Those interactions lead to characteristic deformations of the electron recoil spectrum and can be associated with heavy new physics. We show that for some cases energy scales up to 9 TeV are accessible after a 5 year run and that current bounds on interaction parameters can be improved by up to an order of magnitude. The full set of general interactions includes the usually considered neutrino-electron non-standard matter interactions, and the near detector will give limits comparable but complementary to the ones from the analysis of neutrino oscillations in the far detector.

Presenter: BISCHER, Ingolf

Session Classification: New Physics Scenarios/Neutrino-Electron Scattering