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TALK: Neutrino-nucleus interactions and the quest for new and precision physics searches in neutrino experiments

Friday, July 5, 2024 10:00 AM (45 minutes)

Current and future accelerator-based neutrino facilities utilizing intense neutrino beams and advanced neutrino detectors are focused on precisely determining neutrino oscillation properties and signals of weakly interacting Beyond the Standard Model (BSM) physics. Neutrino-nucleus interactions constitute one of the biggest systematics hurdle in these endeavors. This talk will focus on neutrinos spanning from tens of MeV to a few GeV energies, where neutrino interactions present a formidable multi-scale, multi-process challenge that traverses uncharted territories, encompassing low-energy nuclear physics to perturbative Quantum Chromodynamics without a known unified framework. The presentation will provide an encompassing overview of the field, spotlighting the inherent challenges associated with neutrino interactions in this energy range as well as highlight recent progress and present some examples of ongoing cross-community efforts tackling such a problem.

Presenter: PANDEY, Vishvas (Fermilab)