Steven Gardiner – HEP Seminar – March 17, 2026
FNAL

Title: Taming DUNE's neutrino wilderness with precision nuclear science

Abstract: In the coming decade, the US will host a multi-billion-dollar particle physics project called the Deep Underground Neutrino Experiment (DUNE). With contributions from an international team of over one thousand scientific collaborators, DUNE will pursue fundamental discoveries using a world-leading neutrino beam, low-energy astrophysical neutrinos, and a variety of techniques to search for hypothetical new particles and interactions. Success in each of these areas depends critically on achieving unprecedented precision in simulations of nuclear reactions. Fortunately for DUNE, current investigations in nuclear physics are providing key inputs needed to unlock the experiment's full scientific potential. In this talk, I discuss the impact of this nuclear research on preparations for DUNE. Specific examples will include GeV electron scattering measurements and phenomenological reaction modeling at MeV energies.