

Central Value Spread Dial and Exploring the Shallow Inelastic Region

Tuesday 8 April 2025 14:00 (15 minutes)

The Deep Underground Neutrino Experiment (DUNE) is a next generation long-baseline neutrino experiment. The experiment will study the changes in the neutrino flavour within the neutrino beam produced at Fermi National Accelerator Laboratory [FNAL, IL] and later measured at the Sanford Underground Research Facility [SURF, SD]. DUNE notably aims to study neutrino oscillations, determine their mass ordering, measure the amount of CP violation in neutrino oscillations, and perform precision measurements of the PMNS mixing parameters. DUNE's intense neutrino beam, energy regime and detector size means that, over time, rather than being limited by statistical uncertainties, it will instead be limited by systematic uncertainties due to the modelling of the neutrino flux and cross-sections. The latter, in particular, represents the largest source of systematic uncertainties for DUNE analyses. This talk will describe the ways in which cross-section effects impact DUNE oscillation analyses, and will also present recent efforts to parametrise uncertainties related to neutrino interactions with matter.

Author: COX, Callum Greg (Rutherford Appleton Laboratories and Royal Holloway (University of London))

Presenter: COX, Callum Greg (Rutherford Appleton Laboratories and Royal Holloway (University of London))

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