

Electrons for Neutrinos: Old and New Experiments at Jefferson Lab and Beyond

Tuesday, 2 November 2021 11:00 (30 minutes)

The Electrons for Neutrinos project (e4nu) at the Thomas Jefferson National Accelerator Facility (JLab) uses wide phase space exclusive electron scattering data from past and future experiments on nuclear targets with the CLAS and CLAS12 detector systems to obtain a comprehensive understanding of the interaction of leptons with matter. Data from JLab provides us with the means to constrain the available theoretical tools that are crucial in modelling the neutrino-nucleus interaction, and thus play a key role in the precise determination of the physics observables from neutrino-nucleus interactions measured at current and future neutrino experimental facilities, including MicroBooNE, MINERvA, DUNE and T2K.

The interdisciplinary nature of the e4nu project has brought new insights to older data, establishing the value of data mining efforts at JLab, and motivating new experiments, including a dedicated e4nu run period with the CLAS12 detector. Starting this autumn, we will take data with 1, 2, 4, and 6 GeV beams, on Deuterium, Oxygen, Carbon and Argon targets, greatly expanding the available data. Coupled with neutrino event generator descriptions of various reaction topologies, and a common analysis framework, e4nu can serve as a prime example of how to motivate future experiments and build new collaborations.

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