

Spectral function approach in NuWro: modelling of multinucleon final states in quasielastic scattering

Tuesday 2 September 2025 17:00 (23 minutes)

Reliable theoretical modeling of neutrino-nucleus interactions is an essential requirement for current and next-generation neutrino-oscillation experiments, such as MicroBooNE and DUNE, which use argon as the target material. In this talk, I will present recent advancements in the treatment of the quasi-elastic (QE) channel in the NuWro Monte Carlo event generator. We implement the state-of-the-art argon spectral functions extracted from Jefferson Lab (JLab) experiment E12-14-012, separating its mean-field and correlated components. In addition to low energy corrections, such as nuclear recoil and Coulomb distortions, we implement a consistent treatment of final state interactions and short-range NN correlations, which may lead to multi-nucleon final states. The impact of these critical improvements is tested against electron scattering data and MicroBooNE exclusive cross sections.

Author: Mr BANERJEE, Rwik Dharmapal (University of Wrocław doctoral student)

Presenter: Mr BANERJEE, Rwik Dharmapal (University of Wrocław doctoral student)

Session Classification: WG2

Track Classification: NuFACT 2025: WG2 - Neutrino Scattering