

Study of the neutrino energy reconstruction from final state particles and effects related to the simulation of the physics of neutrino interactions in DUNE

Friday, 21 June 2024 17:30 (2 hours)

DUNE will exploit a wide-band neutrino beam and the energy spectrum information at the level of both the 1st and 2nd oscillations maxima in order to achieve its sensitivity to CP violation. This sensitivity is obtained by comparing the energy spectra of oscillated events with neutrinos and antineutrinos.

This work is investigating the neutrino energy reconstruction in DUNE starting from final state particles, and on how this is affected by the neutrino interactions physics/modelling. The potential interest aims at optimizing the energy resolution at low energy, corresponding to the second oscillation maximum, in order to further enhance the CP sensitivity.

Different event generators as GENIE and GiBUU are compared investigating several aspects, such as the interplay of different processes from quasi-elastic, resonances to deep inelastic scattering; nuclear effects and final state interactions.

Poster prize

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