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CP-violation measurement in DUNE with Sub-GeV Atmospheric Neutrinos

Liquid Argon TPC (LarTPC) detectors have a unique capability in measuring low energy neutrino signals. In this work, we study the DUNE sensitivity to the CP-violation phase using sub-GeV atmospheric neutrinos. LarTPCs would reconstruct with high accuracy the track and the energy of low-energy charged particles, allowing to infer the energy and direction of sub-GeV neutrinos with unprecedented precision. Combining the sensitivity of events with 0,1 and 2 observable protons in the final state, the results indicate that DUNE would be able to exclude several delta_CP values at more than 3\sigma of CL using only atmospheric neutrinos.

Mini-abstract

DUNE sensitivity to CP-violation with Sub-GeV Atmospheric Neutrinos.

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