



ID contributo: 1391

Tipo: Poster

Prospects for Beyond the Standard Model Studies at the Deep Underground Neutrino Experiment

venerdì 8 luglio 2022 20:10 (20 minuti)

The Deep Underground Neutrino Experiment (DUNE) is an international particle physics experiment and its primary scientific objective is a precision measurement of neutrino oscillation parameters. While the experiment was designed to focus on understanding neutrinos accurately, DUNE's unique experimental environment is expected to provide excellent opportunities for the potential discovery of new particles and the unveiling of new interactions and symmetries beyond the Standard Model (BSM). DUNE will consist of two detector complexes and the beam source. The beam will have an initial 1.2 MW of power, with a corresponding protons-on-target of 1.1×10^{21} , upgradable to multi-megawatt power. The Near Detector complex will be located 574 m from the neutrino source and will consist of a liquid argon Time Projection Chamber (TPC), a magnetized gaseous argon TPC, and a large, magnetized, beam monitor. The Far Detector complex will be located 1.5 km underground at the Sanford Underground Research Facility (SURF) in South Dakota, at a distance of 1300 km from the neutrino source, and will consist of a 70kt liquid argon TPC. This environment provides excellent conditions to probe many BSM physics topics, and we will review those various BSM scenarios and discuss their prospects at DUNE.

In-person participation

Yes

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