ID contributo: **87** Tipo: **Poster**

DUNE'S SENSITIVITY TO SOLAR NEUTRINOS

venerdì 21 giugno 2024 17:30 (2 ore)

DUNE (Deep Underground Neutrino Experiment) is a long-baseline neutrino experiment that will precisely measure neutrino oscillation parameters, observe astrophysical neutrinos, and search for processes beyond the standard model (such as nucleon decays, heavy neutral leptons, and accelerator-produced dark matter). DUNE will build four Liquid Argon Time Projection Chamber detectors (LAr-TPC) with a total mass of ~70 kt LAr located at Sanford Underground Research Facility (SURF), 1.5 km below the earth's surface. Among the different detection channels in LAr, the most dominant is the charged current (CC) absorption of νe on 40Ar, for which DUNE's observable will be short electron tracks and deexcitation gammas from the resulting 40K* final state. Additionally, the elastic scattering (ES) channel produces an electron track that conserves directionality, which will allow DUNE to pinpoint the astrophysical origin of the detected neutrinos. Our sun produces a continuous flux of neutrinos as a byproduct of fusion reactions. The products of the two most energetic processes (8B and hep chains) will be accessible to DUNE with neutrino energies centered at 10 MeV at an expected interaction rate of ~10^{-3} Hz. DUNE's solar analysis has the potential of characterizing for the first time the contribution of the hep chain to the solar neutrino spectrum as well as constraining the best-fit measurements of $\Delta m^2 12$ of previous solar and reactor experiments.

Poster prize

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