



Contribution ID: 33

Type: Talk

【364】 Sensitivity study for proton decay via $p \rightarrow K^+ + \bar{\nu}$ in the Deep Underground Neutrino Experiment

Thursday 29 August 2019 17:45 (15 minutes)

Supersymmetry and Grand Unified Theories predict several nucleon decay modes with lifetimes between 10^{28} and 10^{39} years. The Deep Underground Neutrino Experiment (DUNE) will be able to test many of the predicted decay modes for lifetimes up to 10^{35} years. DUNE's far detector will comprise four 10-kiloton Liquid Argon Time Projection Chambers (LAr TPCs) installed 1475 meters underground. Its design combines high precision calorimetry with an exposure of several 100 kiloton-years in a low-background environment, which makes it especially suitable for proton decay searches via $p \rightarrow K^+ + \bar{\nu}$. I will present a sensitivity study for this channel in DUNE, using a fully simulated and reconstructed signal and atmospheric neutrino background sample in a 10-kiloton dual phase LAr TPC.

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Session Classification: Nuclear, Particle- & Astrophysics

Track Classification: Nuclear, Particle- and Astrophysics (TASK)