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

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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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