Abstract Submitted
for the TSF21 Meeting of
The American Physical Society

Proto-DUNE High Voltage Feed-Through Electric Field Simulation with COMSOL MICHAEL SOLEK, JAEHOON YU, WOOYOUNG JANG, AHMED BEDAIR, STEVEN BOUCHER, ERIC GARCIA, GAJENDRA GURUNG, AAYUSH BHATTARAI, HARSHWARDHAN PRASAD, SKYLER RYU, University of Texas at Arlington — The Deep Underground Neutrino Experiment (DUNE) will require the construction of four liquid argon time projection chambers (LArTPC) approximately 13,000 cubic meters in volume to act as neutrino detectors. These detectors will depend on a powerful, uniform electric field, which will require a power supply capable of delivering 300,000 V. To help ensure smooth, predictable operation of the final detectors, a prototype detector, Proto-DUNE, is being constructed. As part of prototyping a high voltage feed-through for Proto-DUNE, it has been modeled in COMSOL to simulate the electric field it generates to foresee and prevent failures like electrical arcing.

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Date submitted: 24 Sep 2021 Electronic form version 1.4