Abstract Submitted
for the TSS18 Meeting of
The American Physical Society

Design and testing of High Voltage Divider Board for ProtoDUNE Dual Phase Field Cage DOUGLAS ZENGER, Univ of Texas, Arlington, DUNE TEAM — The ProtoDUNE dual-phase is a prototype of the Deep Underground Neutrino Experiment (DUNE), which will be operating at CERN. With 98 aluminum profiles and supported by FRP I-beams, the field cage will be submerged in liquid argon with gaseous argon above it. A neutrino will interact with a liquid argon's electron, and the electron is detected in the gaseous argon. A strong, uniform electric field of 500V/cm will cause the electron to drift upwards, requiring a voltage of 300kV at the cathode at the bottom. To connect profiles electrically and to distribute the field uniformly , resistors and varistors will be placed on a divider board, where resistors divide the voltages uniformly across the detector active volume, and varistors protect the resistors from potential electrical surges. Four 2GΩ resistors and two groups of four varistors in series are placed in parallel between each profile. The Boards will consist of pretested parts and then assembled. Testing will ensure the quality of the parts using liquid argon. The divider board has been tested in room temperature, liquid nitrogen, and mounted on a field cage. Testing occurs by testing both individual stages and whole boards up to 6kV potentials.

Douglas Zenger
Univ of Texas, Arlington

Date submitted: 02 Mar 2018 Electronic form version 1.4