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Robustness of DUNE Field Cage Dual-Phase Detector CRISTOBAL GARCES, University of Texas at Arlington, DUNE TEAM — UTA's HEP Group oversees the design and construction of the protoDUNE Dual-Phase Field Cage, which is operating at CERN. Dual-Phase LArTPC's are one of the far detector technology options foreseen for the Deep Underground Neutrino Experiment (DUNE). The Field Cage is designed to be supported by I-Beams and is connected to the ceiling of the cryostat. The primary I-beams need to hold a load of at least 1800 lbs. This load is concentrated on the five holes that connect the primary I-beam to the ceiling. The primary beams are critical, since if they fail, the entire structure will fail as well and possibly collapse or cause discrepancies in data. Because of the importance of the primary I-beams, it is necessary to know the load that causes the I-beam to fail. A scaled model of the primary I-beam will be used in a tensile testing machine. The I-beam holes are more important than the beam itself since the load will primarily be supported at those locations. To examine the holes, fixing plates have been designed and manufactured. The plates serve to distribute the load in a uniform manner rather than on the entirety of the I-beam. The results of these tests will be very useful to both the DUNE experiment as well as for future LArTPC experiments.

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