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The CAPTAIN detector and physics program

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The Cryogenic Apparatus for Precision Tests of Argon Interactions with Neutrinos (CAPTAIN) program is designed to make measurements of scientific importance to long-baseline neutrino physics and physics topics that will be explored by large underground detectors. CAPTAIN began as part of a Los Alamos National Laboratory (LANL) Laboratory Directed Research and Development (LDRD) project and has evolved into a multi-institutional collaboration. The CAPTAIN detector is a liquid argon time-projection chamber (TPC) deployed in a portable cryostat. Five tons of liquid argon are instrumented with a 2,000 channel TPC and a photon detection system. The cryostat has ports that can hold optical windows for laser calibration and for the introduction of charged particle beams. Assembly of the detector is underway. In this talk, we discuss the status of detector commissioning the physics program for CAPTAIN. The first stage of the program involves impinging a well-characterized neutron beam on the detector to take neutron data in a liquid argon TPC for the first time. The subsequent phase includes exposures to intense neutrino beams.

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