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Liquid Argon TPC Trigger Development with SBND

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The Short Baseline Near Detector (SBND) is a 112 ton active mass liquid argon time projection chamber (LArTPC) that will begin operations in the Booster Neutrino Beamline at Fermilab in 2020. Its main physics goals include high-statistics measurements of neutrino-argon interaction cross-sections and searches for sterile neutrino oscillations as part of three LArTPCs that make up the Short Baseline Neutrino Program at Fermilab. In addition, SBND serves as an R&D platform for future LArTPC detectors such as the Deep Underground Neutrino Experiment (DUNE) far detector. One of the technical challenges of DUNE that SBND aims to address is that of efficient self-triggering of a LArTPC utilizing TPC signal information. This capability will enable searches for rare processes in the DUNE far detector, such as neutrino interactions from a potential galactic supernova burst. This talk will describe the SBND TPC readout system and ongoing R&D efforts to develop and demonstrate TPC-based triggering.

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