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Status of the Short-Baseline Near Detector at Fermilab

The Short-Baseline Near Detector (SBND) is one of the Liquid Argon Time Projection Chamber (LArTPC) neutrino detectors positioned along the axis of the Booster Neutrino Beam (BNB) at Fermilab, and is the near detector in the Short-Baseline Neutrino (SBN) Program. The detector completed commissioning and began taking neutrino data in the summer of 2024. SBND is characterized by superb imaging capabilities and will record around 2 million neutrino interactions per year. Thanks to its unique combination of measurement resolution and statistics, SBND will soon carry out a rich program of neutrino interaction measurements and novel searches for physics beyond the Standard Model (BSM). As the near detector, it will enable the full potential of the SBN sterile neutrino program by performing a precise characterization of the unoscillated event rate and constraining BNB flux and neutrino-argon cross-section systematic uncertainties. In this talk, the physics reach, current status, and future prospects of SBND are discussed.

Secondary track

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