

Searches for Physics Beyond the Standard Model at the Short-Baseline Near Detector

Monday, 8 July 2024 17:38 (17 minutes)

The Short-Baseline Near Detector (SBND) is one of three Liquid Argon Time Projection Chamber (LArTPC) neutrino detectors positioned along the axis of the Booster Neutrino Beam (BNB) at Fermilab, as part of the Short-Baseline Neutrino (SBN) Program. The detector is currently being commissioned and is expected to take neutrino data this year. SBND is characterized by superb imaging capabilities and will record over a million neutrino interactions per year. Thanks to its unique combination of measurement resolution and statistics, SBND will carry out novel searches for physics beyond the Standard Model (BSM). As the near detector, it will enable the potential of the overall SBN sterile neutrino program, and be sensitive to any new BSM particles produced in the beam such as heavy neutral leptons, dark photons, heavy axions, dark neutrinos, and millicharged particles. In this talk, the physics reach, current status, and future prospects of SBND are discussed.

Primary author: LUO, Xiao (UCSB)

Co-author: CRESPO-ANADÓN, José I. (CIEMAT)

Presenter: LUO, Xiao (UCSB)

Session Classification: Parallel 3

Track Classification: Parallel session: Axion/Sterile