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Short-baseline neutrino physics at Fermilab

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The existing Booster Neutrino Beam (BNB) and the exceptional reconstruction capabilities of the liquid argon TPC detector technology provide an opportunity to execute a world-leading short-baseline neutrino physics program at Fermilab. The MicroBooNE detector, located 470m from the beamline target, is set to begin operation in 2014. The Liquid Argon Near Detector, LAr1-ND, is a proposed new detector to be located 100m from the target. LAr1-ND will provide a detailed characterization of the intrinsic content of the BNB, allowing for a near-to-far extrapolation between the two detectors and enabling precision searches for neutrino oscillations. We will present the capabilities of this program to resolve existing experimental anomalies within neutrino physics or to observe evidence for eV mass-scale sterile neutrinos through neutrino appearance and disappearance channels. The important role this short-baseline program plays in the continued development of the LArTPC technology for long-baseline neutrino experiments in the future will also be described.

Summary

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