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Enhancing the LBNF Physics Programs With A high-resolution Magnetized Detector

The Long-Baseline Neutrino Facility (LBNF) offers an unprecedented intensity for neutrino physics. We discuss a proposal to enhance the LBNF physics programs at Fermilab with the addition of a high-resolution magnetized detector at the near site. The detector is largely based upon reusing an existing superconducting magnet and electromagnetic calorimeter, supplemented with a new low-density straw tube tracker. We also discuss the physics opportunities of the proposed design for the long-baseline oscillation analysis, as well as for precision measurements of (anti)neutrino interactions.

Primary authors: DUYANG, Hongyue (University of South Carolina); PETTI, Roberto (University of South Carolina (US)); Prof. MISHRA, Sanjib (University of South Carolina)

Presenter: DUYANG, Hongyue (University of South Carolina)

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