

Searches for New Physics with a Stopped-pion Source at the Fermilab Accelerator Complex

Wednesday 8 September 2021 16:00 (20 minutes)

The PIP-II complex at Fermilab is slated for operation later this decade and can support a MW-class $O(1 \text{ GeV})$ proton fixed-target program in addition to the beam required for DUNE. Proton collisions with a fixed target could produce a bright stopped-pion neutrino source. The addition of an accumulator ring allows for a pulsed neutrino source with a high duty factor to suppress backgrounds. The neutrino source supports a program of using coherent elastic neutrino-nucleus scattering (CEvNS) to search for new physics, such as sensitive searches for active-to-sterile neutrino oscillations and accelerator-produced light dark matter. A key feature of a program at the Fermilab complex is the ability to design the detector hall specifically for HEP physics searches. In this talk I will present the PIP-II project and upgrades towards a stopped-pion neutrino source at Fermilab and studies showing the sensitivities of a $O(100 \text{ ton})$ liquid argon scintillation detector to the physics accessible with this source.

Working group

WG5

Primary authors: ZETTLEMOYER, Jacob (Fermilab); TOUPS, Matthew (Fermi National Accelerator Laboratory)

Presenters: ZETTLEMOYER, Jacob (Fermilab); TOUPS, Matthew (Fermi National Accelerator Laboratory)

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