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PIP2-BD: Searches for new physics with a stopped-pion source at the Fermilab accelerator complex

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The PIP-II Linac at Fermilab is slated for operation later this decade and can support a MW-class $\mathcal{O}(1\text{-GeV})$ 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 accelerator-produced light dark matter, active-to-sterile neutrino oscillations, and other BSM physics such as axion-like particles (ALPs). A key feature of the PIP2-BD program is the ability to design the detector hall at Fermilab specifically for HEP physics searches. I will present the PIP-II project and upgrades towards a stopped-pion neutrino source at Fermilab and studies showing the sensitivities of the conceptual PIP2-BD detector, a $\mathcal{O}(100\text{-ton})$ liquid argon scintillation detector, to the physics accessible with this source.

In-person or Virtual?

In-person

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