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A PIP-II Mu2e Experiment

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We will investigate an alternative Mu2e-II production scheme based on general knowledge of muon-collider and neutrino-factory front ends, and specific knowledge developed on previous Muons, Inc. SBIR/STTR projects. Bright muon beams generated from sources designed for muon collider and neutrino factory facilities have been shown to generate two orders of magnitude more muons per proton than the current Mu2e production target and solenoid. In contrast to the current Mu2e, the muon collider design has forward-production of muons from the target. Forward production from 8 GeV protons would include high energy antiprotons, pions and muons, which would provide too much background for the Mu2e system. In contrast, the 800 MeV PIP-II beam does not have sufficient energy to produce antiprotons, and other secondaries will be at a low enough energy that they can be ranged out with an affordable shield of ~ 2 meters of concrete.

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