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Polarized Electrons for Polarized Positrons ERICA FANCHINI, Laboratoire de Physique Subatomique et de Cosmologie CNRS/IN2P3, Université Joseph Fourier, INP, PEPPo COLLABORATION — Recently, the nuclear and high-energy physics communities have shown a growing interest in the availability of high current, highly spin-polarized positron beams. The Polarized Electrons for Polarized Positrons (PEPPo) experiment at the Thomas Jefferson National Accelerator Facility (Jefferson Lab) aims to measure the transfer of polarization from a low energy 10 MeV highly spin polarized electron beam to positrons. A sufficiently energetic polarized photon or lepton may generate, via bremsstrahlung and pair creation processes within a target foil, electron-positron pairs that will carry a fraction of the initial polarization. This approach has been successfully tested using polarized photons created with a multi-GeV unpolarized electron beam, resulting in positrons with polarization of 80%. Although pair creation yield is reduced at lower energy, recent advances in high current milliamperic spin-polarized electron sources at Jefferson Lab offer the perspective of creating polarized positrons using a low energy electron beam. A successful demonstration of this technique would provide an alternative scheme to produce low energy polarized positrons, as well as useful information to optimize the design of a polarized positron source using sub-GeV electron beam. An overview and status of the PEPPo experiment will be presented, along with some of the motivations in the context of the Jefferson Lab nuclear physics program.

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