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Geant4 Simulations on Polarized Targets at CLAS12[1] XIAQING LI, IGOR KOROVER, Massachusetts Institute of Technology MIT, MAURIZIO UNGARO, Jefferson Lab, JEFFERSON LAB-MIT COLLABORATION — A Geant4 framework has been initialized to simulate the operation and performance characteristics of polarized targets at the CLAS12 spectrometer in Hall B of Jefferson Lab. The simulation is aimed at defining the parameters of the experiment such as beam size and position, optimal shielding from gamma radiation and Moller electrons, the vertex and momentum reconstruction, and beamline configuration to minimize accidentals in the CLAS12 detector. This simulation framework has been utilized in various polarized experiments such as the proposed experiment of spin-dependent electron scattering from a polarized ^{3}He target at CLAS12[2]. In this talk, we will present the details of the Geant4 framework, the previous and recent development and the future plan of this simulation effort on polarized targets.

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[2]JLab Conditionally Approved Proposal PR12-20-002: *A Program of Spin-Dependent Electron Scattering from a Polarized ^{3}He Target in CLAS12*, Co-Spokespeople: Harut Avakian, James Maxwell, Richard Milner, Dien Nguyen.

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