

Abstract Submitted
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Feasibility Study of Polarized Proton Beams at Fermilab CALLUM ALDRED, WOLFGANG LORENZON¹, University of Michigan — The feasibility of establishing a polarized proton beam in the Fermilab Main Injector accelerator complex is being investigated. Availability of a high luminosity polarized beam would enable measurements of polarized Drell-Yan production of di-muon pairs with hydrogen, deuterium and nuclear targets far more precise than at any other laboratory around the world. Due to spin-depolarizing resonances, a Siberian Snake is required in the Main Injector to maintain high beam polarization. Spin-tracking simulations must be performed to ensure the snake's effectiveness as the beam crosses many depolarizing resonances which become stronger as the beam energy increases. Using a lattice of the magnetic elements and the accelerator simulation software “zgoubi,” protons of varying emittance levels and momentum spreads were tracked through the acceleration of the beam from 8.9 GeV to 120 GeV. Results of the spin tracking simulations in the Main Injector will be presented and future plans that include the entire accelerator complex will be discussed.

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