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Preliminary investigation of polarized heavy ion beams for the study of exotic nuclei

Measurements of spin observables are critical to understanding the role of spin-orbit, tensor, and nucleon-nucleon interactions. While they are an intrinsic part of scientific programs at worldwide facilities using electromagnetic beams, they are not routine although essential to understanding the structure and reactions of exotic nuclei. The Facility for Rare Isotope Beams (FRIB), which is expected to come online in the Spring of 2022, will provide high luminosity ion beams that can yield a suitable environment to study the polarization of secondary beams produced by fragmentation reactions. The utilization of a polarized beam would enable access to a rich spin-dependent program up to the neutron and proton drip lines. A preliminary study on current capabilities for measuring and quantifying the polarization of heavy ion beams impinging on reaction targets on an event-by-event basis will be discussed.

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