

Abstract Submitted
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Design Tools for FRIB Fragment Separators LAURA BANDURA,
National Superconducting Cyclotron Lab, Michigan State University — A key component of the Facility for Rare Isotope Beams, FRIB will be the in-flight fragment separator used to select and purify the isotope of interest for experiments. In order to simulate this process, we have developed a hybrid map-Monte Carlo code based on the ion optics code COSY INFINITY that accurately models fragment production and atomic processes. The code COSY INFINITIY uses powerful differential algebraic methods for computing the dynamics of the beam in the fragment separator. Ion production and atomic processes have been added to COSY to calculate beam-material interactions. The code tracks the fragmentation and fission of the beam in target and absorber material while computing energy loss and energy and angular straggling as well as charge state evolution of the beam by implementing auxiliary codes such as ATIMA and GLOBAL. EPAX has been utilized to return the cross sections of fragmentation products. The hybrid map-Monte Carlo code extensions added to COSY provide an integrated beam dynamics-nuclear processes design optimization and simulation framework that is efficient and accurate. The code may be used to optimize any fragment separator system for the selection of any rare isotope.

Laura Bandura
National Superconducting Cyclotron Lab, Michigan State University

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