

Abstract Submitted
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Gas-Filled Recoil Separation of Heavy Ions at Intermediate Energies¹ MATTHEW STERNBERG — Current capabilities for the capture of fusion products produced at the Argonne Tandem Linear Accelerator System (ATLAS) and used for mass measurements at the Canadian Penning Trap are limited. The facility can capture reaction products emitted at angles up to 4 degrees off axis. In many reactions that take place the majority of recoil products are emitted at angles within 4 degrees of the axis. However, there are many desirable reactions where the majority of products fall outside this window. The use of a large bore solenoid magnet has been investigated as a means of capturing a larger range of recoil products. A Monte Carlo simulation was developed to model the transport of ions through a gas-filled solenoid magnet and different means of disposing of the primary beam have been investigated. A method was developed in which a large range of recoil products at various energies could be efficiently separated from the primary beam. Simulations suggest that recoil products could be captured at angles as large as 12 degrees, improving the current efficiency by as much as 1000%. Design and construction of the proposed apparatus are currently underway at Argonne National Laboratory.

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