

Abstract Submitted
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Measuring absolute cross sections with HELIOS¹ B.P. KAY, B.B. BACK, B.J. DIGIOVINE, C.R. HOFFMAN, K.E. REHM, J.P. SCHIFFER, Argonne, J.C. LIGHTHALL, S.T. MARLEY, Western Michigan / Argonne, C.M. DEIBEL, JINA / Argonne — The HELIOS device at Argonne National Laboratory provides a means of analyzing outgoing ions produced in direct reactions in inverse kinematics, with good energy resolution. To best exploit this device it is imperative that there is a means to measure absolute cross sections: ingredients essential, for instance, to the extraction of spectroscopic factors. A method has been developed to determine absolute cross sections and to monitor the luminosity in the course of a measurement, which relies on the magnetic properties of HELIOS and the elastic scattering cross section at small center-of-mass angles. This method was tested recently using a 680-MeV ^{136}Xe beam impinging a CD_2 target of nominal thickness $110 \mu\text{g}/\text{cm}^2$ —here (d, d) elastic scattering was measured in the Rutherford regime. Using the same system the deuterium content of the target was monitored at higher (10 MeV/u) beam energies to obtain information on the extent to which the target degrades with beam dose.

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