Abstract Submitted for the DNP11 Meeting of The American Physical Society

Energy Loss Calculations for Target Thickness Determinations using SRIM and Excel A.S. PAWLAK, J.P. GREENE, Argonne National Laboratory — The thickness of a thin target foil can be determined by measuring the energy loss of alpha particles that travel through it. In the Target Laboratory of the Physics Division at Argonne National Laboratory (ANL), this is accomplished by measuring the energy loss of the 5812 keV alpha particles emitted by a $^{2}49$ Cf source using a silicon detector set-up [1]. The energy loss is translated into the target foil thickness using the stopping power for ${}^{4}\text{He}$ in the target material obtained from the stopping/range tables provided by SRIM. This calculation has until recently been carried out using a program developed for this purpose, "ENELOSS." This program uses the stopping/range tables from the original work published by Ziegler [2]. Additionally, due to its design, ENELOSS is unable to easily accommodate targets made from compounds. In order to perform theses measurements using the most recent SRIM data, and to better calculate the thickness of compound targets, we have developed a "Thickness Calculation" spreadsheet using Microsoft Excel. This spreadsheet approach is not limited to elemental targets and employs stopping/range tables from the most recent edition of SRIM available on the web. The calculations obtained allow for more accurate target thicknesses and automates the process conveniently for repetitive measurements. This work was supported by the U.S. DoE, Nuclear Physics Division, under Contract No. W-31-109-Eng-38. [1] G.E. Thomas and J.P. Greene, NIMA **362** (1995) 201 [2] J.F. Ziegler, *The Stopping* and Range of Ions in Matter, vols. 2-6, Pergamon Press, New York, USA, 1977-1980

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Date submitted: 15 Aug 2011

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