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Analysis of a Measurement of ^{12}C(n,2n)^{11}C Cross Sections GARRETT HARTSHAW, IAN LOVE, MARK YULY, Houghton College, STEPHEN PADALINO, MEGAN RUSS, MOLLIE BIENSTOCK, ANGELA SIMONE, DREW ELLISON, HOLLY DESMITT, State University of New York at Geneseo, THOMAS MASSEY, Ohio University, CRAIG SANGSTER, Laboratory for Laser Energetics
— In inertial confinement fusion (ICF), nuclear fusion reactions are initiated by bombarding a small fuel pellet with high power lasers. One ICF diagnostic tool involves placing graphite discs within the reaction chamber to determine the number of high-energy neutrons. This diagnostic requires accurate ^{12}C(n, 2n)^{11}C cross sections, which have not been previously well measured. An experiment to measure this cross section was conducted at Ohio University, in which DT neutrons irradiated polyethylene and graphite targets. The neutron flux was determined by counting recoil protons from the polyethylene in a silicon dE-E detector telescope. Preliminary cross sections were calculated using the incident neutron flux and the number of ^{11}C nuclei in the graphite and polyethylene targets determined by counting, in a separate counting station, the gamma rays resulting from the positron decay of ^{11}C. This poster will present the data analysis techniques used to determine these cross sections and the MCNPX simulation used to compute the corrections needed to account for the detector and target geometry. Funded in part by a LLE contract through the DOE.

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