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Coincidence Efficiency Measurement Using 11B(p,n)11C STEPHEN PADALINO, MEGAN RUSS, DANAE POLSIN, MICHAEL KRIEGER, COLLIN STILLMAN, MOLLIE BIENSTOCK, DREW ELLISON, ANGELA SIMONE, SUNY Geneseo, MARK YULY, KEITH MANN, TYLER REYNOLDS, Houghton College, CRAIG SANGSTER, Laboratory for Laser Energetics — An attempt to measure the 12C(n,2n)11C cross section for high energy neutrons in the range of 20-30 MeV was conducted using Ohio University's accelerator facility as a fast neutron source. The neutrons were incident on a graphite target and the $\beta+$ decay of the activated carbon-11 nuclei were observed in an on-axis gamma ray detector pair. To predetermine the efficiency of this gamma ray detector system, a boron-11 activation experiment was performed. Using SUNY Geneseo's 1.7 MV tandem pelletron accelerator, 3.1 MeV protons were incident upon the 11B foil inducing the 11B(p,n)11C reaction to occur at a high rate of activation. The 11C decays via $\beta+$ emission, then upon annihilation with an electron creates characteristic 511-511 keV photon pairs which were counted using coincidence methods. Since the 11B(p,n) cross section is well defined, a calculation was performed to determine the expected number of activations and later compared to the total number of decays observed in the counting system. Funded in part by a grant from the DOE through the Laboratory for Laser Energetics.

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