Analysis of the 11B(d,n)12C Reaction NATHAN RIDLING, RICHARD PRIOR, MARK SPRAKER, HENRY WELLER, BRENT PERDUE, Triangle Universities Nuclear Laboratory — Studies have been performed on the $^{11}B(d,n)^{12}C$ reaction to measure the absolute astrophysical S factor and its energy dependence, the reaction cross section, and tensor and vector analyzing powers T_{20}, T_{21}, T_{22}, and iT_{11}. The motivation behind this research project is not only its relevance to nuclear astrophysics, but also in the reaction dynamics of (d,n) reactions at very low energies. PSD (Pulse shape discrimination) was used along with PAW (Physics Analysis Workstation) in order to extract the neutrons from the gamma-rays. Using a neutron response function fitting routine in Root, we have determined the number of neutron counts leading to the ground and first excited states of ^{12}C. These yields were used to construct the angular distributions of the cross section and analyzing powers. Ultimately, we will extract the reaction specific transition matrix elements.

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