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Differential Cross Section Measurements for Elastic and Inelastic Scattering of Neutrons from Neon[1] SEAN MACMULLIN, REYCO HENNING, University of North Carolina and Triangle Universities Nuclear Laboratory (TUNL), MARY KIDD, WERNER TORNOW, CALVIN HOWELL, Duke University and Triangle Universities Nuclear Laboratory (TUNL) — Neutron backgrounds are a significant concern to experiments that attempt to directly detect Weakly Interacting Massive Particle (WIMP) dark matter. Until now, there was insufficient data available for the interactions of neutrons with neon, which is a candidate detection medium for such experiments. Neutron elastic and inelastic scattering from neon of natural abundance was investigated at the Triangle Universities Nuclear Laboratory. A pulsed beam of 8.0 MeV neutrons, incident on a high pressure gas target, was created with the 10 MV Tandem Van de Graaff accelerator using the $^{2}\mathrm{H}(d,n)^{3}\mathrm{He}$ reaction. The cross section was measured using a time-of-flight technique for angles from 22° to 154°. Details of the experimental technique and differential cross section results will be presented.

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