**Neutron elastic and inelastic cross section measurements for $^{28}$Si**[1]

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— Neutron elastic and inelastic cross sections are critical for design and implementation of nuclear reactors and reactor equipment. Silicon, an element used abundantly in fuel pellets as well as building materials, has little to no experimental cross sections in the fast neutron region to support current theoretical evaluations, and thus would benefit from any contribution. Measurements of neutron elastic and inelastic differential scattering cross sections for $^{28}$Si were performed at the University of Kentucky Accelerator Laboratory for incident neutron energies of 6.1 MeV and 7.0 MeV. Neutrons were produced by accelerated deuterons incident on a deuterium gas cell. These nearly mono-energetic neutrons then scattered off a natural Si sample and were detected using liquid deuterated benzene scintillation detectors. Scattered neutron energy was deduced using time-of-flight techniques in tandem with kinematic calculations for an angular distribution. The relative detector efficiency was experimentally determined over a neutron energy range from approximately 0.5 to 7.75 MeV prior to the experiment. Yields were corrected for multiple scattering and neutron attenuation in the sample using the forced-collision Monte Carlo correction code MULCAT. Resulting cross sections will be presented along with comparisons to various data evaluations.

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