Abstract Submitted
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Systematic Trends in Nuclear Reactions LUKE TITUS, University of Wisconsin River Falls — A systematic study of elastic scattering is performed to test global optical potentials. Many global optical potentials exist in the literature. Here, three popular potentials were used to predict cross sections of proton elastic scattering: Perey and Perey, Chapel Hill and Koning and De la Roche. The predicted cross sections are compared with experimental data for accuracy. In addition to the elastic studies, transfer (d,p) reactions are also calculated using the adiabatic method to construct the deuteron optical potential. Two methods for constructing the deuteron optical potentials are tested for accuracy, the first consisting on the Johnson and Soper approximation and the second on the finite-range correction by Wales and Johnson. Systematic trends in the predicted cross sections are analyzed as neutrons are added to the target and projectile energies are changed. Our calculations have shown that some well established potentials may lose their predictive power over certain mass and energy ranges, while others are more consistent.

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