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Comparison of Optical Models for 400 MeV alpha scattering off ^{90}Zr and ^{92}Mo[1] DANIEL JONES, KEVIN HOWARD, UMESH GARG, MENEKSE SENYIGIT, University of Notre Dame — Nuclear incompressibility is an important parameter governing the equation of state of nuclear matter. From the measurable centroid energies of the Isoscalar Giant Monopole Resonance (ISGMR), the incompressibility of nuclear matter can be calculated. The first necessary step is to fit elastic scattering angular distributions for a particular reaction and test the obtained model dependent parameters by calculating low-lying discrete state distributions for target nuclei. This study tests the suitability of two optical models to reproduce the angular distributions of differential cross sections from elastic and inelastic scattering of 400-MeV alpha particles. The first model utilizes a single folded potential for both the real and imaginary volume terms, and the second utilizes a single folded potential for the real volume term, and a phenomenological Woods-Saxon potential for the imaginary volume term. The elastic distributions for two heavy isotopes, ^{90}Zr and ^{92}Mo, are analyzed and the best parameter sets for each are shown. From this comparison, it is concluded that the second model, the so called "hybrid model," is better able to reproduce the angular distributions for both ^{90}Zr and ^{92}Mo. Future work will include the Multipole Decomposition Analysis (MDA) for each reaction.

[1]NSF/REU Program at Notre Dame

Daniel Jones
University of Notre Dame

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