

Abstract Submitted  
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**Polarization Phenomena in the Reaction  ${}^6\text{He}(\text{p,p}){}^6\text{He}$** <sup>1</sup> AZAMAT ORAZBAYEV, Ohio University, STEPHEN WEPPNER, Eckerd College, CHARLOTTE ELSTER, Ohio University — Recently, the polarization in elastic scattering of  ${}^6\text{He}$  off a polarized proton target was measured at the RIKEN facility. It turns out that calculations of this observable using conventional microscopic optical potentials fail to describe the data. The goal of this work is to improve the microscopic folding optical potential by explicitly taking into account the shell structure of  ${}^6\text{He}$ . This leads to additional terms containing the full spin-momentum structure of the nucleon-nucleon (NN) t-matrix as well as the shell structure of the valence neutrons. The density matrix of the  ${}^6\text{He}$  nucleus is obtained by using harmonic oscillator wave functions. Parameters of the wave functions are chosen to fit the experimental value for the charge radius and theoretical estimations for the matter radius of  ${}^6\text{He}$ . The NN t-matrix is calculated from the CD-Bonn potential. Preliminary results indicate that the polarization is sensitive to the additional terms. The calculations are performed in a recoil free approximation.

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