ELASTIC SCATTERING OF 270 MEV ^{3}He PARTICLES

P.P. Singh, Q. Li, W.W. Jacobs, M. Saber, P. Schwandt, and E. Stephenson
Indiana University Cyclotron Facility, Bloomington, Indiana 47405

S. Kailas, M.K. Mehta, and B. Sinha
Bhaba Atomic Research Center, Trombay, Indiana

The differential cross sections for the elastic and inelastic scattering of 270-MeV ^{3}He particles from ^{58}Ni, ^{90}Zr, ^{116}Sn and ^{208}Pb have been measured using the QDDM spectrometer in 6° to 40° angular range with 0.75° or 1.0° steps. The data for elastic scattering and to the first few excited states have been analyzed. The differential cross sections for the elastic scattering are shown in Fig. 1. The diffraction pattern is relatively more pronounced for heavier targets but the slope with which the cross sections decrease with angle is remarkably similar in all cases.

Analysis of the elastic cross sections in terms of the optical model and various microscopic folding approaches is in progress. Besides establishing the energy dependence of the optical model parameters and testing the validity of the microscopic approaches, we intend to analyze the inelastic scattering cross sections in terms of the distorted wave Born approximation.

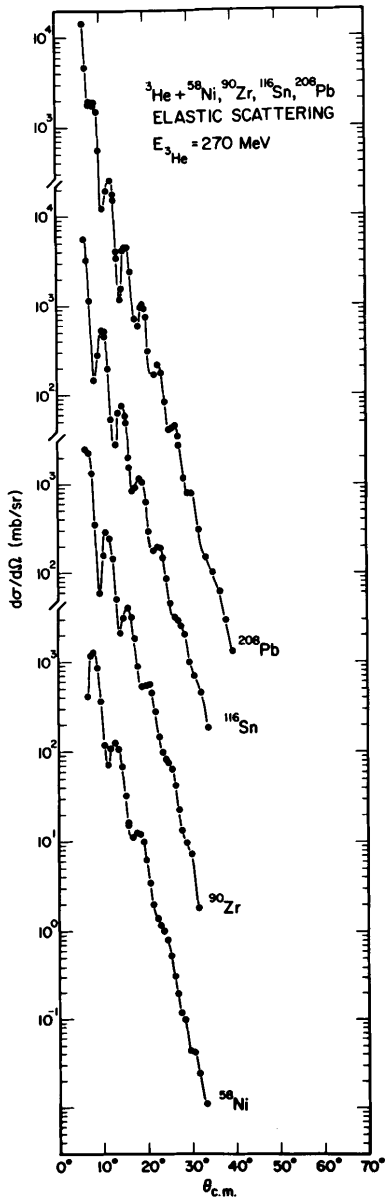

Figure 1. Differential cross sections for scattering of 270-MeV ^{3}He particles.