

A Study of Intermediate Energy Proton- ^{16}O Elastic Scattering Based on the α -Particle Model

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Abstract: In the framework of KMT multiple scattering theory, an optical potential for the intermediate energy proton- ^{16}O elastic scattering is presented based on the α particle model of ^{16}O . The differential cross sections, the analyzing powers, and the total cross sections of the intermediate energy proton- ^{16}O scattering have been calculated by using the obtained optical potential. The main features of the measured angular distributions of the cross section and the analyzing power can be well described. The calculated total cross sections are in good agreement with the experimental data at energies below 0.7 GeV and underestimate the data about 8% at higher energies.

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Key words: proton-nucleus elastic scattering, nuclear alpha-particle model, optical potential

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