

Optical and Double Folding Model Analysis for Alpha Particles Elastically Scattered from 9Be and 11B Nuclei at Different Energies

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Abstract : Elastic scattering of α -particles from 9Be and 11B nuclei at different alpha energies have been analyzed. Optical model parameters (OMPs) of α -particles elastic scattering by these nuclei at different energies have been obtained. In the present calculations, the real part of the optical potential are derived by folding of nucleon-nucleon (NN) interaction into nuclear matter density distribution of the projectile and target nuclei using computer code FRESKO. A density-dependent version of the M3Y interaction (CDM3Y6), which is based on the G-matrix elements of the Paris NN potential, has been used. Volumetric integrals of the real and imaginary potential depth (JR, JW) have been calculated and found to be energy dependent. Good agreement between the experimental data and the theoretical predictions in the whole angular range. In double folding (DF) calculations, the obtained normalization coefficient Nr is in the range 0.70-1.32.

Keywords : elastic scattering, optical model, double folding model, density distribution

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