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Further Investigation of α+12C and α+16O Elastic Scattering

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Abstract : The current work aims to study the rainbow like-structure observed in the elastic scattering of alpha particles on both ¹²C and ¹⁶O nuclei. We reanalyzed the experimental elastic scattering angular distributions data for α+¹²C and α+¹⁶O nuclear systems at different energies using both optical model and double folding potential of different interaction models such as: CDM3Y1, DDM3Y1, CDM3Y6 and BDM3Y1. Potential created by BDM3Y1 interaction model has the shallowest depth which reflects the necessity to use higher renormalization factor (N_r). Both optical model and double folding potential of different interaction models fairly reproduce the experimental data.

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