Analysis of π±-nucleus elastic and inelastic scattering using the single folding α-cluster model

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Abstract:

An analysis of π±-nucleus elastic and inelastic scattering has been performed using local semimicroscopic optical potentials constructed in the framework of the single folding approach. The folding calculations are carried out based upon the α-cluster structure of the target nuclei with two different phenomenological forms of the pion–alpha effective interaction. The derived potentials have been employed to extract the angular distributions of elastic and inelastic scattering cross sections through a broad energy range, 100–766 MeV, where 39 sets of data have been successfully described. The corresponding reaction and total cross sections have also been extracted.

Keywords:

cluster model, nuclear structure, distorted wave models, collective models

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