

Pion-nucleus elastic scattering studies within the microscopic folding potential

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The pion-nucleus elastic scattering cross sections are calculated and compared to the data of pion scattering on ²⁸Si, ⁴⁰Ca, ⁵⁸Ni, ²⁰⁸Pb at energies from 130 to 291 MeV by using the microscopic optical potential (OP) [1,2]. We use the known nuclear density distributions while parameters of the elementary pion-nucleon scattering amplitude are fitted to the data with the aim to estimate the in-medium effect on pions scattered on bounded nucleons. The analysis of the data is also given in comparison with calculations using the local Kisslinger type potential, whose parameters are known from the earlier studies. The cross sections for both OPs are calculated by solving the Klein-Gordon wave equation. The role of a surface region of potentials is discussed.

References

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