

OPTICAL-MODEL ANALYSIS OF THE DEUTERON ELASTIC SCATTERING ON ^{12}C NUCLEUS WITH RESONANT PART CONTRIBUTION

The fitting of all available experimental data of deuteron elastic scattering on ^{12}C nucleus (differential cross sections at deuteron energies from 0.45 to 270 MeV and total $^{12}\text{C}+d$ reaction cross sections from 0.43 to 171 MeV) with the use of the resonant optical-model code OptModel [1,2] was performed. Violation of scattering matrix unitarity (optical-model + resonance) at several energies did not exceed 15% what corresponds to the mean errors of the data analyzed. Energy dependences of amplitude V_V , radius r_V and diffuseness a_V of the real volume potential obtained at the present work (solid bold line) and values presented from literature (other symbols) were shown in fig. a-c, respectively.

References

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[2] L.N. Generalov, V.A. Zherebtsov, S.M. Selyankina // Bull. Russ. Acad. Sci. Phys. 2021. V. 85. P. 1136;
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Section

Experimental and theoretical studies of nuclear reactions

Primary author: Mr GENERALOV, Leonid (Russian Federal Nuclear Center All-Russian Research Institute of Experimental Physics)

Co-authors: SELYANKINA, Svetlana (All-Russian Research Institute of Experimental Physics); Mr ZHEREBTSOV, Viktor (Russian Federal Nuclear Center All-Russian Research Institute of Experimental Physics)

Presenter: SELYANKINA, Svetlana (All-Russian Research Institute of Experimental Physics)

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