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Investigation of reaction cross section for beam of 8Li, 8He on 28Si, 59Co, 181Ta targets

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Total reaction cross sections for interaction of ^{8}Li and ^{8}He secondary beam with ^{28}Si, ^{59}Co, ^{181}Ta target nuclei in the energy range 25–45 A MeV were measured. Modified transmission method based on registration of prompt n, γ radiation by a multi-detector γ-spectrometer [1, 2] was used. Energy dependences of total reaction cross sections were obtained. Theoretical analysis of experimental data was performed in the microscopic model based on numerical solution of the time-dependent Schrödinger equation for the outer weakly bound neutrons of the projectile nucleus [3]. Agreement with experimental data was obtained. The role of the cluster structure of projectile nuclei [4] in the reaction mechanisms was analyzed.

Referances

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2. Yu.G. Sobolev, Yu.E. Penionzhkevich, V.A. Maslov et al. // Bull. Russ. Acad. Sci.: Phys. 2019. V. 83. P. 402.
3. V.V. Samarin // Phys. At. Nucl. 2015. V. 78. P. 128.
4. V.V. Samarin, M.A. Naumenko // Bull. Russ. Acad. Sci.: Phys. 2019. V. 83. P. 411.

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