

Reactions induced by 30 MeV ^3He beam on ^9Be : Cluster transfer reactions

To study the reactions of the transfer of clusters and nucleons, we carried out a number of experiments [1]. An experiment has been carried out for studying the cluster structure of ^9Be induced by the ^3He ions at the energy of 30 MeV. As results of the nuclear reaction $^3\text{He} + ^9\text{Be}$ the differential cross sections for the exit channels –elastic, inelastic, $\alpha + ^8\text{Be}$, $^6\text{He} + ^6\text{Be}$, $^6\text{Li} + ^6\text{Li}$, and $^7\text{Be} + ^5\text{He}$ –were measured. Elastic and inelastic scattering data are treated within both the Optical model and Coupled channels method[2,3] . A new set of optical potential was taken for the elastic scattering. The deformation parameter δ_2 was established for the transition $3/2 \rightarrow 5/2$. Cluster transfer reactions are analyzed by means of the Coupled reaction channels method. The nuclear reactions with the exit channels $^6\text{He} + ^6\text{Be}$, $^6\text{Li} + ^6\text{Li}$, and $^7\text{Be} + ^5\text{He}$ are complemented by two-step transfer mechanisms. The contribution of each reaction mechanisms are shown, and compared with the findings of other authors.

Acknowledgments

This research was funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No. AP14870958).

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Section

Nuclear physics (Section 1)

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Track Classification: The V International Scientific Forum “Nuclear Science and Technologies”: Nuclear physics (Section 1)