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Peculiar properties of the interaction of the ^{11}Li nucleus with Be-isotopes.

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The present work aims to a report on the experimental and theoretical achievements obtained over the last decade in the study of ($^{11}\text{Li}+\text{Be}$ -isotopes) -reactions. We also carried out a comparative analysis of theoretical approaches in the study of scattering reaction and direct reaction (stripping, pick-up) of these systems, since they play a role in astrophysical processes. We have considered the theoretical approach to solving the non-stationary Schrödinger equation for determining dominant channels and theoretical predictions. We calculated the energy and wave functions of the states of single-particle levels for $^9,^{11}\text{Li}$, $^8\text{-}^{10}\text{Be}$ within the framework of the shell model. The parameterization of the Woods-Saxon potential and the optimization of the spin-orbit part of the potential for $^9,^{11}\text{Li}$, $^8\text{-}^{10}\text{Be}$ nuclei are discussed. In addition, the manifestation of the structure ($9\text{Li} + 2n$) in ^{11}Li and the properties of valence neutrons in ^{10}Be are discussed.

Selected session

Nuclear Structure and Dynamics

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