

Population of strongly deformed nuclear states within cluster approach

Using the cluster model, the population of the yrast superdeformed states of ^{152}Dy nucleus treated as dinuclear configuration is described. The excitation functions for the production of the superdeformed states in the different asymmetric and almost symmetric reactions are calculated and analyzed. The dependencies of the relative intensities of $E2$ -transitions between the rotational states of superdeformed band of ^{152}Dy on de-excitation channels, charge asymmetry of the entrance channel, and beam energy are established. The calculated results are compared with the available experimental data. Using the same approach, we analyze the possible formation and experimental observation of hyperdeformed states in the entrance channel of heavy ion reactions.

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