

CLUSTER STRUCTURE OF LIGHT NUCLEI AND ITS INFLUENCE ON MECHANISM OF LOW ENERGY NUCLEAR REACTIONS

The structure of the light nuclei ${}^6\text{Li}$, ${}^9,10,11,12\text{Be}$, ${}^{10,11}\text{B}$, ${}^{12,13,14}\text{C}$, ${}^{13,14}\text{N}$ and ${}^{14}\text{O}$ were studied using the alpha-cluster model with hyperspherical functions and Feynman's path integrals [1-4] and the shell model of the deformed nuclei [5]. Results for the ${}^{12}\text{C}$ and ${}^9\text{Be}$ nuclei are shown in Figs. 1, 2.

Fig. 1. The regular triangle configuration in the alpha-cluster models (a) and the total neutrons probability density (logarithmic scale) for the ${}^{12}\text{C}$ nucleus obtained in the shell model of a deformed nucleus (b)

Fig. 2. The total protons (a) and neutrons (b) probability densities (linear scale) for the ${}^9\text{Be}$ nucleus obtained in the shell model of a deformed nucleus

The cluster transfer channels in the low energies nuclear reactions [6, 7] are explained taking into account the cluster structure of the ${}^9\text{Be}$ nucleus.

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