

STRUCTURE PECULIARITIES OF THREE- AND FOUR-CLUSTER NUCLEI ${}^6\text{He}$, ${}^6\text{Li}$, AND ${}^{10}\text{Be}$, ${}^{10}\text{C}$

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Within a three-particle model ($\alpha + N + N$), structure peculiarities of ${}^6\text{He}$ and ${}^6\text{Li}$ halo nuclei are studied. Within a four-particle model ($\alpha + \alpha + N + N$), the structure of ${}^{10}\text{Be}$ and ${}^{10}\text{C}$ nuclei is analyzed and compared with that of ${}^6\text{He}$ and ${}^6\text{Li}$. The charge density distributions and form factors of these nuclei are calculated and explained. The density distributions of extra nucleons in ${}^{10}\text{Be}$ and ${}^{10}\text{C}$ are studied and compared with the calculated distributions of halo nucleons in ${}^6\text{He}$ and ${}^6\text{Li}$. A detailed study of the asymptotics of the density distributions is carried out for the three-particle ${}^6\text{He}$ and ${}^6\text{Li}$ nuclei. Asymptotic behavior of the amplitudes of clusterization is analyzed, and the coefficients of clusterization are calculated for the deuteron cluster in ${}^6\text{Li}$ and the dineutron cluster in ${}^6\text{He}$. The variational method with optimized Gaussian bases is used in calculations.

Keywords: ${}^6\text{He}$, ${}^6\text{Li}$, ${}^{10}\text{Be}$, ${}^{10}\text{C}$, charge density distribution, form factor, coefficient of clusterization.