6. THEORETICAL DESCRIPTION OF NUCLEONS PAIRED CORRELATIONS OF EVEN-EVEN NUCLEI IN THE ADIABATIC THREE-PARTICLE MODEL

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A hyperspherical adiabatic approach (HAA) has been suggested to find the energy spectrum of even-even atomic nuclei modelled by a spherically symmetric even-even core plus two valence nucleons in the external shell. The adiabatic three-particle model of nucleus for the case of the spherically symmetric and axially symmetric nucleus has been obtained. The so-called adiabatic three-particle model is based on the assumption on the separability of the motion of valence nucleons into the high-speed motion of nucleons over the angular variables and the adiabatic (slow-speed) motion of nucleons along the hyperradius *R*. The efficiency of the adiabatic approach is illustrated by the example of the numerical calculations of the energy spectrum of low-lying excited states of the even-even atomic nuclei ^{6}He, ^{10}Be, ^{14}C, ^{16}C, ^{18}O, ^{18}Ne, ^{42}Ca, and ^{58}Ni, which possess two valence nucleons in the shell.