Study of Ground State Properties in Atomic Nuclei using Hartree Fock Bogoliubov Approach

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Abstract

The potential energy surfaces of even-even nuclei in the sd-shell region have been obtained using USD Hamiltonian in the Hartree Fock Bogoliubov method. The stable deformed ground state shapes for most of the studied nuclei have been observed in agreement with the experimental and other theoretical studies. There is a significant shape dynamics in this mass region and in few cases shape co-existence is also witnessed. The evolution of deformation with the particle number beyond shell closure can be observed.