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Single particle nucleon energies of selected nuclei based on modified folded Yukawa potential

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There exist a number of models for nuclear structures allowing for descriptions of various nuclear properties [1]. One of such models is based on the idea of nucleons inside a given nucleus lying in the folded Yukawa potential, accounting for the spin-orbit and the Coulomb interactions [2, 3]. The model can be adapted for different nuclei properties calculations [4].

The work presents calculated single particle nucleon energies of selected nuclei based on spherically symmetrical shape approximation for modified folded Yukawa potential. The proposed modification provides for a way of taking possible metastable single particle levels into account. Obtained energy levels are suitable to be used in combinatorial approaches of calculating level density of excited states of a nucleus in the frozen core approximation.

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