

Abstract Submitted
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Single Particle Energies in Skyrme Hartree-Fock and Woods-Saxon Potentials¹ BRIAN NEWMAN, Carnegie Mellon University — Atomic nuclei exhibit the interesting phenomenon of single-particle motion that can be described within the mean field approximation for the many-body system. We have carried out Hartree-Fock calculations for a wide range of nuclei, using the Skyrme-type interactions. We have examined the resulting mean field potentials U_{HF} by fitting $r^2 U_{HF}$ to $r^2 U_{WS}$, where U_{WS} is the commonly used Woods-Saxon potential. We consider, in particular, the asymmetry ($x=(N-Z)/A$) dependence in U_{WS} and the spin-orbit splitting in the spectra of $^{17}\text{F}_8$ and the recently measured spectra of $^{23}\text{F}_{14}$. Using U_{WS} , we obtained good agreement with experimental data.

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