

Abstract Submitted
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Semi empirical formulae for nuclear single particle energies ABDULAZIZ AL-MOGEETH, M.A.K. LODHI, Texas Tech University — The nonlocal potential is a crucial property for finite nucleus calculations. Under the effect of a nonlocal potential, the energy of a particle at the point \mathbf{r} depends on the wave function at \mathbf{r} and the wave function at the other point \mathbf{r}' which is a neighbor of point \mathbf{r} . The Morse function has been used to represent the nucleon-nucleus nonlocal potential to generate single particle energies in nuclei. From these data of single particle energies of neutrons and protons thus generated semi empirical formulae have been constructed for the entire periodic table. These formulae may not give the exact values for each and every single particle state but provide a general trend giving broad features like magic numbers. These formulas yield level crossing at the right place, which will be illustrated in cases of s-d and p-f levels.

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