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Single Folding Potential Calculations in Cerium Isotopes

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Abstract. The ground state properties of the nuclei, especially nucleon densities, are generally calculated using Skyrme and Gogny forces. The nucleon densities of Cerium isotopes calculated by using Hartree-Fock-Skyrme (based Woods-Saxon Potential) (SHF-WS), Hartree-Fock-Skyrme (based Harmonic Oscillator Potential) (SHF-HO), Hartree-Fock-Bogolyubov-Skyrme (HFB-S) and the Hartree-Fock-Bogolyubov-Gogny (HFB-G) methods. In the first two methods, the densities and rms radii for both nucleons of Cerium isotopes were calculated by different Skyrme parameters set. Theoretical calculated charge density compared with experimental data to determine best parameter set for each Cerium isotope. Then all nucleon densities compared each other and all methods gave similar results for all Cerium isotopes.