

Rotational States in Heaviest Nuclei

^a A. Dobrowolski, B. Nerlo-Pomorska, K. Pomorski

Institute of Physics, Theoretical Physics Department, Maria Curie Skłodowska
University, Lublin, Poland

An investigation of heavy and superheavy nuclei requires a proper model to reproduce masses and rotational energies. We obtain a very good agreement with experimental data with the Yukawa-folded single particle potential ¹ and the Lublin Strasbourg Drop (LSD) ². Using the Strutinsky shell-correction method ³ we add shell and pairing effects to the macroscopic energy, where pairing corrections are evaluated within the BCS model ⁴. The equilibrium deformations of Fm - Hs isotopes are determined. The ground-state masses and the rotational energies obtained using the cranking moments of inertia ⁵ are compared to the experimental data.

References

1. K.T.R. Davies and J.R. Nix, Phys. Rev. **C14**, 1977 (1976).
2. K. Pomorski and J. Dudek, Phys. Rev. **C67**, 044316 (2003).
3. V.M. Strutinsky, Nucl. Phys. **A95**, 420 (1967).
4. J. Bardeen, L. N. Cooper and J. R. Schrieffer, Phys. Rev. **108**, 1175 (1957).
5. S.G. Nilsson and O. Prior, Mat. Fys. Medd. Dan. Vid. Selsk, 32, No.16 (1961).