Int. Workshop “Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects”
ed. Nikolay Minkov, Heron Press, Sofia 2023

Shape evolution and shape coexistence in molybdenum isotopic chain

Y. EL BASSEM[1,2], **M. EL ADRI**[1], **A. EL BATOUL**[1], **M. OULNE**[1]

[1]High Energy Physics and Astrophysics Laboratory, Department of Physics, Faculty of Sciences Semlalia, Cadi Ayyad University P.O.B 2390, Marrakesh, Morocco.

[2]ERMAM, Polydisciplinary Faculty of Ouarzazate, Ibn Zhor University, P.O.B 638, Ouarzazate, Morocco

Abstract

The phenomena of shape evolution and shape coexistence within the Molybdenum isotopic chain are studied using the covariant density functional theory with the parameterizations DD-ME2 and DD-PC1. Furthermore, various ground state properties of this chain are investigated, including binding energy, two-neutron separation energy, charge radii, and two-neutron shell gap. A very good agreement is found with the available experimental data. The ground state deformation of Mo isotopes evolves smoothly and correlates with the continuous and gradual changes observed in the physical properties. A pronounced and well-defined shell closure is clearly evident at the neutron magic number $N = 82$.