**SSNET 2024** 



ID de Contribution: 97

Type: Non spécifié

## Comparison of shape coexistence and Quantum Phase Transitions around A = 100 for even-even and odd-even cases

mardi 5 novembre 2024 19:04 (1 minute)

Shape of nuclei is determined by a fine balance between the stabilizing effect of closed shells and the pairing and quadrupole forces that tend to induce deformation [1]. In the mass region around A=100, there exist clear cut examples of the rapid appearance of deformation such as Zr (even-even) [2] and Nb isotopes (odd-even) [3], which can be understood in terms of the coexistence of two different configurations, i.e., shape coexistence. Sr [4] isotopes are also good candidates to study the onset of nuclear deformation and the influence of shape coexistence, while Ru and Mo [5] isotopes seem to be placed at the border of dilution of shape coexistence In addition, the structural evolution of odd-mass isotopes in this region is significant due to the diversity of configurations and coexisting shapes and to the enhancement of the onset of deformation [3].

In this contribution will be used as framework the Interacting Boson-Fermion Model [6] with Configuration Mixing (IBFM-CM) to introduce a mean-field view (intrinsic state) for studying the evolution of the nuclear deformation in A=100 region, focussing on the case of odd-even Nb isotopes. Two complementary approaches will be used for studying shape evolution: first, an algebraic approach employing a laboratory frame of reference, and secondly, a geometric-oriented method within the context of an intrinsic state formalism. The objective is to compare the onset of deformation in Nb isotopes with the even-even cases, such as Sr and Zr, extracting information from the intrinsic state, but also from spectroscopic properties.

To conclude, by applying the IBFM-CM framework and employing both algebraic and geometric approaches, this contribution aims at providing insights into the evolution of nuclear shapes in even-even and odd-even nuclei in the mass region around A=100.

[1] K. Heyde and J. L. Wood, Rev. Mod. Phys. 83, 1467 (2011).

[2] J.E. García-Ramos and K. Heyde, Phys. Rev. C 100, 044315 (2019).

[3] N. Gavrielov, A. Leviatan, and F. Iachello, Phys. Rev. C 106, L051304 (2022).

[4] E. Maya-Barbecho and J.E. García-Ramos, Phys. Rev. C 105, 034341 (2022).

[5] E. Maya-Barbecho, S. Baid, J.M. Arias, and J.E. García-Ramos, Phys. Rev. C 108, 034316 (2023).

[6] F. Iachello and P. Van Isacker, The interacting boson-fermion model (Cambridge University Press, Cambridge, 1991).

**Auteurs principaux:** MAYA BARBECHO, Esperanza (Universidad de Huelva, Spain); GARCÍA-RAMOS, José Enrique (University of Huelva)

Orateur: MAYA BARBECHO, Esperanza (Universidad de Huelva, Spain)

Classification de Session: Poster session & Cocktail