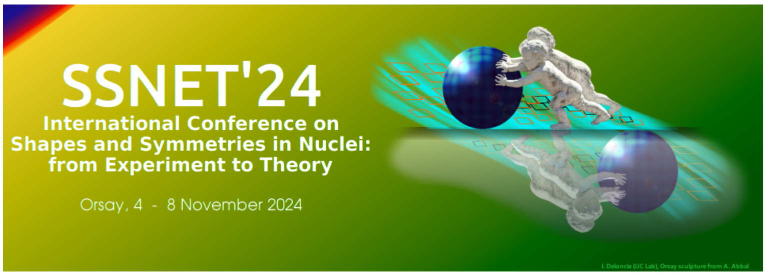

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Comparison of shape coexistence and Quantum Phase Transitions around A = 100 for even-even and odd-even cases

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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.

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