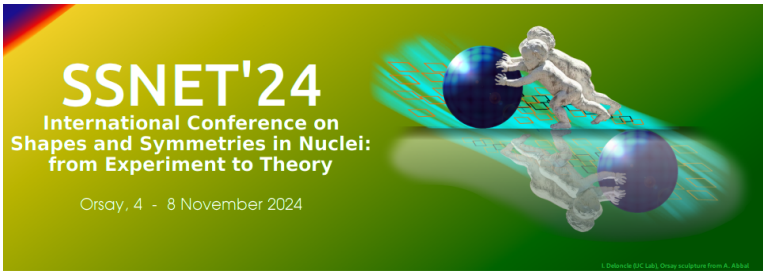

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Shape evolution and coexistence in reflection asymmetric nuclei

lundi 4 novembre 2024 17:00 (20 minutes)

Octupole deformation, an exotic nuclear deformation that breaks reflection symmetry, is a recurrent theme of interest in nuclear structure physics. This presentation highlights recent studies on the signatures of octupole correlations and related collective excitations using the interacting boson model that is based on the nuclear density functional theory. By mapping the self-consistent mean-field solutions obtained with a given energy density functional and pairing interaction onto the corresponding boson system, the interacting-boson Hamiltonian describing the low-energy spectra and electromagnetic transition properties is completely determined. Octupole correlations are shown to be relevant in a number of neutron-rich and proton-rich nuclei with mass A=70-250 including actinides and lanthanides, and in particular, in some challenging cases of the neutron-rich nuclei near N=60, and the N~Z~34 regions, where triaxiality and coexistence of quadrupole shapes play a crucial role along with the octupole degree of freedom.

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