

## **Colectivity, shape coexistence and nuclear chirality in the A=120-130 mass region. The status and plans for 2024**

*E. Grodner NCNR, J. Srebrny HIL UW and C. M. Petrache IJCLab  
Université Paris-Saclay*

Nuclei in the mass region A around 120-130 are characterized by rich collective excitation modes for high and moderate spin values. These excitation modes are the source of unique, symmetry-breaking based phenomena bringing these atomic nuclei into the spotlight. Collective nuclear deformation and the ability of a nucleus to change its shape plays the major role in coexistence of prolate and oblate deformation. It also gives rise to wobbling modes and nuclear chirality excitations which presently are exclusive to nuclear quantum systems.

Experimental study of i) the shape coexistence in  $^{119}\text{Cs}$  and  $^{137}\text{Nd}$  nuclei, ii) Lifetimes and chirality in lanthanide + Cs nuclei will be discussed together with brief introduction of the underlying physics.

The nuclear chirality has been identified in about 60 isotopes according to “25<sup>th</sup> anniversary of the nuclear chirality” CWAN 2023 conference which short recap will also be shown.

Status of experimental works, results and planned in beam measurements for 2024 will be presented.