Design and exploitation of a β-delayed conversion electron spectroscopy device, application to the study of the neutron-rich region of mass A ~ 100

The nuclear shell structure evolves when moving away from the valley of stability and some nuclei lose the spectroscopic properties usually observed in magic nuclei. Such observations often are linked to nuclear shape coexistence and to the inversion of *normal* spherical and *intruder* deformed configurations.

Conversion electron spectroscopy is a remarkable tool to study this evolution. It not only allows to assign nuclear spins and parity of states but is also the only way to detect E0 transitions between two states of spin 0^+, which is a rather strong evidence of shape coexistence.

In this context, I detail the development of a new decay station for β-delayed conversion electron spectroscopy in the ISOL hall of the ALTO facility at IJCLab. This new system enables the collection and study of a radioactive source produced by ISOL technique and is optimized to reach very short-lived nuclei. The whole device is based on a magnetic transporter to guide electrons far from the radioactive source and greatly improve its selectivity.

I finally present the commissioning of the system which was made through an experimental campaign involving the production of rubidium isotopes around mass 100. These measures allowed to characterize the response of the new decay station under normal conditions of operation and the study of shape coexistence in this region.