

Spins, moments and radii: probing changes in the nuclear shell structure

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In this presentation, we show how nuclear ground state properties like spins, magnetic dipole and electric quadrupole moments, and nuclear charge radii can provide us with detailed information about the nuclear structure and how systematic studies of these observable towards the driplines can help to test the validity of newly developed nuclear models and interactions.

This will be illustrated by showing recent results of studies performed mainly at ISOLDE-CERN over the past decade. The wide variety of experimental methods that has been developed and improved continuously by different international collaborations, has allowed systematic studies on a wide variety of elements and for very exotic isotopes. While some methods are extremely sensitive (allowing studies on beams of only tens/s), others allow investigating the ground state moments and radii up to an extremely high precision. Like this, new phenomena such a nuclear halo's, can be probed in great detail or new regions of structural changes (erosion of the shell structure, disappearing shell gaps) can be established and studied in great detail.

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