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Recent highlights from laser spectroscopy at COLLAPS-CERN

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High-resolution collinear laser spectroscopy has been recently performed on a long sequence of tin ($Z=50$) and lead ($Z = 82$) isotopes at COLLAPS/CERN. Hyperfine structures and isotope shifts have been measured and high-precision values of electromagnetic moments and charge radii of ground and isomeric states are extracted. Similar quadratic trends are observed for the quadrupole moments of the $11/2^-$ and $13/2^+$ isomeric states in the semi-magic nuclei. The picture is not the same for the ground states where the pattern changes from linear, in tin, to quadratic, in lead. Differences in charge radii between the high-spin isomeric states and the nuclear ground states, on the other hand, also show a surprisingly similar behaviour. These regularities will be discussed in the framework of nuclear structure with emphasis on how, under certain conditions, simplicity arises out of complexity.

Presenter: Prof. RODRIGUEZ, Liss Vazquez

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