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Investigating the changes in nuclear structure below Z = 50 with Ag

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Exploring ground-state nuclear properties is a powerful tool to investigate our understanding of the nuclear structure. Laser spectroscopy gives access to model-independent measurements of the ground-state properties (spin, nuclear electromagnetic moments, changes in the charge radius) of short-lived (≥10 ms) nuclei, providing an excellent benchmark for theoretical predictions close to magic shell closures far from stability [1]. Moreover, combining laser spectroscopy and state-of-the-art quantum chemistry can provide insight into the nuclear magnetization distribution parameter [2].

One region of high interest is the region between heavily deformed Zr(Z = 40) and near-spherical Sn(Z = 50), a region with many competing nuclear configurations, and thus the subject of recent investigations: tin [3], indium [1], cadmium [4], palladium [5], and silver [6-9] studies have been successfully performed before, and neutron-rich
silver has been studied recently at ISOLDE/CERN [10] and IGISOL in Jyväskylä [8, 9].

I will present the laser spectroscopy setup at IGISOL and the CRIS technique at ISOLDE. A new isomeric state was discovered, and the level ordering was unambiguously assigned. The nuclear spin and electromagnetic properties of the ground state and isomeric states are deduced. These data provide a benchmark for state-of-the-art nuclear
models, further broadening our knowledge in this region of the nuclear chart. Further, I will present an outlook on BW effect studies in silver as a probe to the nuclear magnetization distribution.

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