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High resolution laser spectroscopy for the study of exotic nuclei

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Study of the properties and structure of exotic nuclei far from stability is a key area of research in modern nuclear physics [1]. High resolution laser spectroscopy is one of the powerful experimental tools for investigating the nuclear properties of exotic nuclei [2], such as the nuclear spins, electromagnetic moments and charge radii. These properties of unstable nuclei continue to deepen our understanding of exotic nuclear structure and to provide a prominent test for nuclear many-body methods and nuclear interactions [3-4].

In this contribution, recent results on the nuclear properties of several isotopic chains (e.g. Sc and Zn) in the calcium and nickel mass regions will be presented, along with their interpretation in the context of nuclear structure.

[1] Y.L. Ye et al., Nature Reviews Physics (2024) ,10.1038/s42254-024-00782-5

[2] X.F. Yang et al., Prog. Part. Nucl. Phys. 129, 104005 (2023).

[3] A. Koszorus et al., Nature Physics, 17, 439 (2021).

[4] S.W. Bai et al., Physics Letters B 829, 137064 (2022).

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