

Recent results on laser spectroscopy at COLLAPS with the ROC and LIAF setups

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Abstract

Collinear laser spectroscopy provides high-precision access to nuclear spins, electromagnetic moments, and changes in mean-square charge radii of atomic nuclei. In this contribution, I will present an overview of recent progress at COLLAPS during CERN Run 3, with emphasis on spectroscopy of the neutron-rich calcium isotopes $^{53,54}\text{Ca}$ and on major instrumental developments aimed at pushing the sensitivity frontier. Measurements on $^{53,54}\text{Ca}$ address the debated emergence of a shell closure at $N = 32$, reaching production yields down to a few ions per second. I will also discuss the new LIAF setup, which opens new opportunities for charge-radius measurements in light nuclei such as fluorine and oxygen through improved background suppression and novel detection concepts. Together, these developments establish the basis for future studies of very exotic species at radioactive facilities.