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New results and upgrades from the CRIS experiment at ISOLDE

Thursday 30 November 2023 15:00 (25 minutes)

The Collinear Resonance Ionization Spectroscopy (CRIS) experiment is a laser spectroscopy setup that allows hyperfine structure measurements to be performed in high resolution, efficiency and sensitivity. This technic established itself as a versatile tool for the study of nuclear, atomic and molecular properties.
2023 has been a fruitful a year for the CRIS experiment with four online runs and two major upgrades of the setup. The year started by assembling and commissioning the new end of the CRIS beam line that allowed to greatly improve the beam transport efficiency towards the detection setup. Then, CRIS successfully studied neutron rich Aluminium, Chromium and Zinc isotopes, probing the evolution of ground state properties entering the N=20 and N=40 islands of inversion and across N=50 in the 78Ni vicinity, respectively. For the Chromium beam time, a decay spectroscopy station (DSS) has been installed to supress background arising from stable contaminants in the radioactive beam. For the Zinc beam time, this DSS was further upgraded using a tape system to perform decay spectroscopy of isomericaly purified Zn beams using the CRIS technique.
CRIS performed its last experiment of the year during winter physics, studying the rotational and hyperfine structure of the RaF radioactive molecules.
In this talk, the CRIS experiment will be introduced and the 2023 year at CRIS will be reviewed. The upgrades of the setup will be presented together with new results from the 2023 experimental campaign. The focus will be on the study of the evolution of the ground state properties of Chromium isotopes from the magical N=28 into the N=40 island of inversion.

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