Contribution ID: **73** Type: **Invited (In person)**

RILIS in 2024

Wednesday 27 November 2024 11:30 (25 minutes)

The Resonance Ionization Laser Ion Source (RILIS) is an essential technique to selectively supply radioactive ion beams to a plethora of experimental arrangements within the ISOLDE facility. Over the past year, RILIS has been involved in supplying laser ionized radioactive ion beams on 22 occasions, producing 60\% of the total beam supplied throughout the online and winter physics periods. This continuous requirement of laser-ionized species demands constant laser developments, ion beam production and selectivity improvements, and Laser Ion Source and Trap (LIST) progression in order to provide purified laser ion beams and rapid switching between elements.
In this talk I will summarize the operation and activities of RILIS and the local group throughout the course of 2024. This will include details on both the technical developments and the scientific output. The technical aspects of this talk will include the first online deployment of the intra-cavity frequency tripling unit, the implementation of the fast-switching 10˜kHz beamgate to provide enhanced laser-ionized beam purity, and the initial investigations to provide refractory beams using in-trap decay performed within the ISCOOL RFQ. On the scientific output component, brief details regarding the LIST experimental campaigns on thulium and lutetium will be presented along with the in-source laser spectroscopy campaign of mercury. The conclusion of this talk will present the planned upgrades and future outlook of RILIS leading into the next running period.

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Session Classification: Operation and developments II