



ID de Contribution: 405

Type: **oral contribution**

The ISOLDE RILIS at 30

jeudi 8 juin 2023 16:45 (15 minutes)

The Resonance Ionization Laser Ion Source (RILIS) has been the principal ion source at ISOLDE for the majority of the past three decades. Unmatched selectivity, coupled to high efficiency, has been the main reason for RILIS being requested in more than half of the proposals submitted for review to the ISOLDE scientific committee (INTC). What started as a home-made system of 3 tunable dye lasers pumped by a single Copper vapor laser system with a Master oscillator/ Power amplifier configuration has now become a suite of state-of-the-art collection of >13 lasers: Ti:Sapphire and commercial dye lasers pumped by industrial solid state lasers. Over 35 chemical elements have been ionised within a variety of specially-designed laser ion source configurations and simultaneous operation at both ISOLDE front-ends is possible.

I will talk about the changes made over the past years to get to the modern RILIS system we use today and deliver a performance review. In addition I will give a summary of ongoing developments and how they might improve RILIS efficiency, applicability and selectivity further. I will conclude by presenting the work towards making RILIS a viable option for high-resolution laser spectroscopy, future-proofing the highly sensitive in-source laser spectroscopy method at ISOLDE.

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Classification de Session: parallel session

Classification de thématique: facilities/instruments