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Developments for the ISOLDE resonance ionization laser ion source RILIS

Monday 15 December 2014 14:00 (15 minutes)

The long shutdown (LS1) provided an opportunity for ionization scheme and ion source development for the ISOLDE resonance ionization laser ion source (RILIS), in addition to several upgrades to the general RILIS set up. Several of these results will be presented along with a summary of the current RILIS status.

New RILIS ionization schemes have been successfully developed and tested for Ba, Li, Ge, Hg, and Cr. What is believed to be the world's first resonance ion-ionization in a hot cavity was demonstrated, creating Ba2+ to meet a specific need to eliminate the problem of a surface ionized isobaric background from beams of 112-118Ba. The first demonstration of resonance laser ionization inside the VADIS, ISOLDE's FEBIAD type ion source, was demonstrated off-line with gallium. This RILIS Mode operation of the VADIS cavity was then successfully applied on-line, coupling a molten Pb target with RILIS for the first time, to produce laser-ionized beams of neutron-deficient mercury isotopes[1].

[1] Gaffney (2014) https://cds.cern.ch/record/1953719

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