Contribution ID: **34** Type: **Submitted**

Interesting moments at CRIS this year

Thursday, 3 December 2015 14:40 (15 minutes)

The Collinear Resonance Ionization Spectroscopy (CRIS) experiment combines laser spectroscopy and nuclear-decay spectroscopy to provide nuclear-structure measurements of exotic isotopes. At CRIS, the high resolution innate to collinear laser spectroscopy is combined with the high efficiency of ion detection to provide a sensitive technique to probe an isotope's hyperfine structure. In addition to hyperfine-structure studies, ionization of the isotope of interest allows the (ground state or isomeric) ion beam to be deflected to a decay-spectroscopy station for radioactive -decay studies in clean conditions.

The first measurements performed at the CRIS experiment achieved a linewidth of 1.5 GHz, allowing the magnetic moments and charge radii of isotopes down to ²⁰²Fr to be studied [1,2]. More recently, high-resolution laser spectroscopy was achieved, allowing measurements of the quadrupole moments of francium isotopes [3-5] with linewidths of ˜20 MHz.

This past year has seen the commissioning of the new CRIS laser laboratory in Building 508, in addition to the installation of a new narrow-linewidth Ti:Sa laser system with high output powers and a broad tuning range. Integration of the new method for chopping CW laser light, used in last year's francium campaign, for two additional laser systems has allowed high-resolution studies of copper and gallium isotopes to be achieved.

Here we report on the interesting moments from the past year: the events that have improved the experimental setup and the electromagnetic-moment measurements that have resulted from such improvements.

Primary author: LYNCH, Kara Marie (CERN)

Presenter: LYNCH, Kara Marie (CERN)

Session Classification: Ground State Properties