Contribution ID: **48** Type: **Submitted**

Collinear Resonance Ionization Spectroscopy (CRIS) studies of neutrondefçient and neutron-rich Indium isotopes

Thursday, 6 December 2018 15:05 (20 minutes)

With a proton hole in the Z = 50 shell closure, the indium isotopic chain (Z = 49) offers a compelling scenario to explore the evolution of nuclear-structure properties in the neighbourhood of the doubly-magic isotopes 100Sn (Z, N = 50) and 132Sn (N = 82).

This contribution will present two recent successful campaigns to measure the hyperfine spectra of the neutron-deficient neutron-rich indium isotopes 101-113In and 113-131In at the Collinear Resonance Ionization Spectroscopy (CRIS) experiment. Offline developments which aided in the success of these measurements will be discussed [1].

From these measurements, the spins, electromagnetic moments, and changes in root-mean-squared charge radii of several ground and isomeric states have been determined for the first time, extending our experimental knowledge from down to N=53 and up to N = 82.
The importance of these results, in connection with long-standing nuclear structure puzzles in the area and with modern developments of nuclear theory will be outlined.

[1] R. F. Garcia Ruiz, A.R. Vernon et al., "High-Precision Multiphoton Ionization of Accelerated Laser-Ablated Species,"Phys. Rev. X, vol. 8, no. 4, p. 041005, Oct. 2018.

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Session Classification: Low Energy Physics 1