Contribution ID: **33** Type: **Oral**

Fundamental properties of nuclear ground and isomeric states in neutron-deficient indium from laser spectroscopy

Tuesday, 14 May 2019 17:00 (20 minutes)

Hyperfine structure measurements of the neutron-deficient indium ($Z = 49$) isotopes, approaching the heaviest self-conjugate doubly-magic nucleus ^{100}Sn, have been performed using collinear resonance ionization spectroscopy [1]. These measurements provide an important benchmark in the development of many-body methods, which are now able to predict properties around the $Z = N = 50$ shell-closure [2,3].

States in previously measured odd-even In isotopes have shown a remarkably simple single-particle behaviour, whether this trend in the electromagnetic moments continues will give insight into the strength of the shell closure. Isomeric spin assignments in the odd-odd isotopes also help pin down the ordering of the neutron $d_{5/2}$ and $g_{7/2}$ orbits [4,5]. This first experimental determination of ground-state electromagnetic moments and changes in mean-square charge radii of neutron-deficient $^{101-103}$In will shed light on the evolution of nuclear structure around ^{100}Sn.

[1] K.T. Flanagan, et al., Phys. Rev. Lett. 111, 212501 (2013).
[2] T.D. Morris et al., Phys. Rev. Lett. 120, 152503 (2018).
[3] T. Togashi et al., Phys. Rev. Lett. 121, 062501 (2018).
[4] C. Vaman et al., Phys. Rev. Lett. 99, 162501 (2007).
[5] D. Seweryniak et al., Phys. Rev. Lett. 99, 022504 (2007).

Primary author: RICKETTS, Christopher (The University of Manchester)

Co-authors: Mr VERNON, Adam (The University of Manchester); Ms KOSZORUS, Agota (KU Leuven); KANELLAKOPOULOS, Anastasios (KU Leuven); Mr BINNERSLEY, Cory (The University of Manchester); Mr GUSTAFSSON, Fredrik (KU Leuven); NEYENS, Gerda (KU Leuven); Mr FAROOQ-SMITH, Gregory (KU Leuven); Prof. STROKE, Henry (New York University); Prof. BILLOWES, Jonathan (The University of Manchester); Dr FLANAGAN, Kieran (The University of Manchester); Prof. WENDT, Klaus (Johannes Gutenberg University); Dr BISSELL, Mark (The University of Manchester); Dr GARCIA RUIZ, Ronald (CERN); Dr DE GROOTE, Ruben (University of Jyvaskyla); Dr WILKINS, Shane (CERN); COCOLIOS, Thomas Elias (CERN ISOLDE); Mr GINS, Wouter (KU Leuven); Prof. YANG, Xiaofei (Peking University); FRANCHOO, serge (cnrs)

Presenter: RICKETTS, Christopher (The University of Manchester)

Session Classification: Session XII (Parallel Session)