Contribution ID: **39** Type: **Poster (In person)**

Approaching N=82 through silver with the recently implemented voltage scanning at CRIS

Wednesday 30 November 2022 18:12 (2 minutes)

Understanding the nucleus and its structure relies on exploring the ground-state properties of nuclei far from stability. Many of these properties, such as the spin, nuclear electromagnetic moments and charge radii, can be measured with laser spectroscopy in a model-independent way. On-line laser spectroscopy provides access to these properties of long-lived states (>10ms). One region of interest is between the strongly deformed zirconium (Z=40) and the nearly-spherical tin (Z=50). This region features many competing configurations with rich isomerism and thus has been of central interest in recent experiments: tin [1], indium [2], cadmium [3], palladium [4] and neutron-deficient silver [5-6] have been successfully studied. Recently, neutron-rich silver has been investigated at IGISOL [7-8] in Jyväskylä and at ISOLDE/CERN [9] with the newly implemented voltage scanning at CRIS.

I will present the results of the recent CRIS experiment on silver in parallel with the IGISOL results. The spins and nuclear electromagnetic moments of the ground-state and multiple long-lived isomers have been deduced. This data provides a benchmark and challenge to state-of-the-art nuclear models in this region. Moreover, I will present a comparison of laser scanning and voltage scanning performed at CRIS, showcasing the strength of voltage scanning in collinear laser spectroscopy.

REFERENCES

[1] D. Yordanov *et al.*, Communications Physics **3** (2020) 2399-3650.
[2] A. Vernon *et al.*, Nature **607** (2022) 260-265.
[3] D. Yordanov *et al.*, Physical Review Letters **110** (2013) 192501.
[4] S. Geldhof *et al.*, Physical Review Letters **128** (2022) 152501.
[5] M. Reponen *et al.*, Nature Communications **12** (2021) 4596.
[6] R. Ferrer *et al.*, Physics Letters B **728** (2014) 191-197.
[7] R.P. de Groote *et al.*, I238 (2020).
[8] R.P. de Groote *et al.* Physics Review Letters (2022) (submitted).
[9] R.P. de Groote *et al.*, CERN-INTC-2020-023 / INTC-P-551 (2020).

Author: VAN DEN BORNE, Bram (KU Leuven (BE))

Co-authors: Dr KOSZORUS, Agota (CERN); ZADVORNAYA, Alexandra; DE ROUBIN, Antoine (MPIK); KANKAINEN, Anu (University of Jyväskylä); Dr CHEAL, Bradley (Department of Physics, University of Liverpool, Liverpool L69 7ZE, (GB)); Dr DELAFOSSE, Clément (Department of Physics, University of Jyväskylä, Jyväskylä, Finland); BERNERD, Cyril (KU Leuven (BE)); HANSTORP, Dag (Gothenburg University (SE)); PITMAN-WEYMOUTH, Daniel (University of Manchester (GB)); NESTERENKO, Dmitrii (University of Jyväskylä); NEYENS, Gerda (KU Leuven); POHJALAINEN, I. (Department of Physics, University of Jyväskylä, Jyväskylä, Finland); MOORE, Iain; DOBACZEWSKI, Jacek; JOHNSON, Jake David (KU Leuven (BE)); Dr BONNARD, Jonathan (Department of Physics, University of Jyväskylä, Jyväskylä, Finland); REILLY, Jordan (The University of Manchester); WESSOLEK, Julius Wilhelm (University of Manchester (GB)); CHRYSALIDIS, Katerina (CERN); FLANAGAN, Kieran T (The University of Manchester); CANETE, Laetitia (University of Surrey); LALANNE, Louis-Alexandre (KU Leuven (BE)); STRYJCZYK, M. (Department of Physics, University of Jyväskylä, Jyväskylä, Finland); HUKKANEN, Marjut (University of Jyväskylä

and CENBG); BISSELL, Mark (University of Manchester (GB)); VILEN, Markus (University of Jyväskylä); HEINES, Michael (KU Leuven (BE)); ATHANASAKIS-KAKLAMANAKIS, Michail (CERN); REPONEN, Mikael (University of Jyväskylä); NICHOLS, Miranda (Gothenburg University (SE)); URQUIZA GONZALEZ, Mitzi Valeria; BELIUSKINA, O. (Department of Physics, University of Jyväskylä, Jyväskylä, Finland); CAMPBELL, Paul (University of Manchester (GB)); IMGRAM, Phillip (Technische Universitaet Darmstadt (DE)); MATHIESON, R. (University of Liverpool Department of Physics, Liverpool, United Kingdom); GARCIA RUIZ, Ronald Fernando (Massachusetts Inst. of Technology (US)); DE GROOTE, Ruben Pieter (KU Leuven (BE)); GELDHOF, Sarina (Centre National de la Recherche Scientifique (FR)); BARA, Silvia (KU Leuven (BE)); KUJANPÄÄ, Sonja Pirita; COCOLIOS, Thomas E (KU Leuven); ERONEN, Tommi (Helsinki Institute of Physics HIP); KOESTER, Ulli (Institut Laue-Langevin (FR)); SONNENSCHEIN, Volker (HÜBNER Photonics GmbH, 34123 Kassel, Germany); Dr GINS, Wouter (University of Jyvaskyla (FI)); YANG, Xiaofei (Peking University (CN))

Presenter: VAN DEN BORNE, Bram (KU Leuven (BE))

Session Classification: Poster Session