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Developments for the S3 Low Energy Branch at the GISELE laser laboratory

Laser spectroscopy for studying the ground and isomeric state properties of exotic nuclei has established itself as a versatile and powerful tool, with the capabilities of providing access to nuclear model-independent data about charge radii, electromagnetic moments and spins [1]. Part of this achievement is owed to the possibility of having narrow-bandwidth (60 MHz), high power and tunable laser sources, which allow measuring the hyperfine structure and isotope shift along isotopic chains.

The Low-Energy-Branch (LEB) joined to The Super Spectrometer Separator (S3) facility at GANIL-SPIRAL2 will enable high-resolution in-gas-jet laser spectroscopy of radioactive nuclei produced with extremely low cross sections [2-3]. The online commissioning plan for S3 (and thus S3-LEB) has been established, and the first fusion-evaporation reaction used will give the opportunity to obtain nuclear and atomic information of neutron-deficient isotopes around erbium, towards the $N=82$ shell closure.

As part of the preparation for the first experiments, offline tests of full Ti:sapphire laser system and required laser spectroscopic schemes are carried out at the GISELE laser laboratory on elements of interest such as dysprosium and erbium [4]. The results of these offline measurements and related technical developments will be presented in this contribution.

References

- [1] X.F. Yang, et al., Prog. Part. Nucl. Phys. 129 (2023)
- [2] R. Ferrer et al., Nucl. Instrum. Meth. B 317 (2013) 570–581.
- [3] A. Ajayakumar, et al., Nucl. Instrum. Meth. B 539, 102 (2023)
- [4] J. Romans, et al., Nucl. Instrum. Meth. B 536, 72 (2023)

Author: LOPEZ, Andres Felipe (PhD GANIL CNRS)

Co-authors: ORTIZ-CORTES, Alejandro (GANIL); BRIZARD, Alexandre (GANIL); AJAYAKUMAR, Anjali (GANIL); DE ROUBIN, Antoine (LPC Caen); STUDER, Dominik (JGU Mainz); SAVAJOLS, Hervé (GANIL/CNRS); ROMANS, Jekabs (KU Leuven); GOUPIL, Johan (CNRS/IN2P3/GANIL); LALANNE, Louis-Alexandre (IPHC); LAATIAOUI, Mustapha (GANIL); LECESNE, Nathalie (GANIL); DELAHAYE, Pierre (GANIL); VAN DUPPEN, Piet (KU Leuven); FERRER, Rafael (KU Leuven - IKS); LEROY, Renan (GANIL); CHINTHAKAYALA, Saikumar (University of Caen / GANIL); GELDHOF, Sarina (GANIL); FRANCHOO, Serge (Université Paris-Saclay, CNRS/IN2P3, IJCLab, 91405 Orsay, France); COCOLIOS, Thomas Elias (KU Leuven - Instituut voor Kern- en Stralingsfysica); MARC-HAND, Valentin (IJCLab : Nucléaire - SDF); MANEA, Vladimir (Université Paris-Saclay, CNRS/IN2P3, IJCLab, 91405 Orsay, France); DONG, Wenling (Université Paris-Saclay, CNRS/IN2P3, IJCLab, 91405 Orsay, France)

Presenter: LOPEZ, Andres Felipe (PhD GANIL CNRS)

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