



Contribution ID: 132

Type: **Oral Contribution**

Nuclear structure studies at the ISOLDE Decay station

Wednesday, 26 October 2022 15:45 (25 minutes)

The ISOLDE Decay Station (IDS) [<https://isolde-ids.web.cern.ch/>] was designed as a flexible tool for decay spectroscopy studies, operating since 2014 at ISOLDE. At the core of IDS there are 4-6 HPGe clovers to detect γ rays with high energy resolution together with a moving tape system and a complex array of ancillary detectors such as LaBr₃:Ce crystals to measure excited-state lifetimes down to a few picoseconds, silicon detectors (annular, PAD, DSSSD, Solar Cell) for charged particle (p , α , e^- , e^+) or β -delayed fission fragments spectroscopy and an efficient plastic scintillator array acting as a neutron Time-of-Flight detector for β -delayed neutron emission studies. In recent years, IDS has also been used as a decay-spectroscopy tool for in-source laser spectroscopy studies together with RLLIS.

Following the end of the CERN Long Shutdown (2019-2020) development campaign, ISOLDE has resumed experiments in June 2021 and there have been several new decay spectroscopy experiments performed at IDS: laser spectroscopy of neutron-rich Tl, Po and At isotopes; fast timing studies around neutron-rich Cu and Cd, beta-delayed neutron spectroscopy of ⁸He. These measurements will be highlighted in the current presentation alongside a detailed description of the setup and future development plans for IDS.

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Session Classification: P2 Nuclear Structure, Spectroscopy, and Dynamics

Track Classification: P2 Nuclear Structure, Spectroscopy, and Dynamics