

KEK WNSC Seminar



Speaker: Dr. James Cubiss
(University of York)

**Title: Jumps and bumps in charge radii across the lead region
– in-source laser spectroscopy studies at ISOLDE**

*The seminar will be given in *English*

Date: From 15:30 on September 21, 2023

Place: Okochi Hall

Abstract

Laser spectroscopy is a powerful tool for studying fundamental nuclear properties. By observing small changes in atomic transitions, we can deduce the spins, changes in mean-squared charge radii and the electromagnetic moments of ground and isomeric states across long chains of isotopes. This allows for wide ranging studies to be conducted of how structures evolve across the nuclear chart.

The in-source resonance ionisation technique is a highly efficient method, which when combined with the sensitivity of radiation detection systems such as the ISOLDE Decay Station (IDS) and mass spectrometry devices like the MR-ToF-MS of ISOLTRAP, allows access to exotic nuclides with extremely low production rates. I will introduce the method and some of the techniques used to study isotopes in the vicinity of $Z = 82$, a region that has proven a hot bed of nuclear shape phenomena. Highlights will be given of experimental results from campaigns studying gold, mercury and bismuth isotopes at the CERN-ISOLDE facility, along with Monte-Carlos Shell Model and Hartree-Fock-Bogoliubov calculations.

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