

Nuclear Structure Physics at HIE-ISOLDE

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The HIE-ISOLDE facility began operations in 2016 and has delivered beams from across the whole chart of nuclides from ^7Be up to ^{228}Ra , accelerated by the four superconducting cryomodules to energies ranging from 2 MeV/u up to 9.8 MeV/u for ^{28}Mg .

There are three permanent experimental setups at the end of HIE-ISOLDE's beam lines with the Miniball gamma-ray spectrometer taking most of the beam time until CERN's second long shutdown (LS2; 2018-2021). The Scattering Experiments Chamber (SEC) is a flexible setup that concentrates mostly on reactions of light nuclei and the ISOLDE Solenoidal Spectrometer (ISS) is a newly commissioned setup designed to perform few-nucleon transfer reactions inside the 4 Tesla magnetic field of a former MRI magnet.

Miniball underwent a total transformation during LS2, returning to action in 2022. There has been a refurbishment of the HPGe detectors, including new cryostats, electronics and preamplifiers, as well as a newly developed data acquisition system.

In this talk I will present preliminary results from the latest experiment campaigns at HIE-ISOLDE, focusing on ISS and Miniball. I will cover exemplar physics cases around the doubly-magic ^{132}Sn , studied using Coulomb excitation and one-neutron transfer reactions, shape coexistence in the neutron deficient Hg isotopes and single-particle structure outside of ^{68}Ni .

Presenter: GAFFNEY, Liam (University of Liverpool)

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