Contribution ID: **67** Type: **Invited (In person)**

Single-Neutron Strength Outside Doubly Magic 132Sn

Thursday 28 November 2024 14:30 (25 minutes)

The pattern of single-particle excitations outside of ¹³²Sn has held a long-standing fascination in the field, being the heaviest short-lived doubly magic nucleus. For over three decades, measurements to explore these excitations have been used as examples to motivate the development of facilities and instrumentation in long-range planning exercises. In a recent experiment at CERN's HIE-ISOLDE facility, the ¹³²Sn(d,p) reaction was carried out at energies above the Coulomb barrier using the ISOLDE Solenoidal Spectrometer. The measurement revealed, for the first time, the energy and strengths of all the valance neutron orbitals outside of 132Sn, including a determination of the long-sought-after 13/2⁺ strength.

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Session Classification: Neutron-rich Nuclei