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Unraveling the Structure of Be and the Disappearance of the N=8 Magic Number

Wednesday 10 December 2025 10:00 (35 minutes)

Be isotopes provide a great testing ground for investigating the novel effects incorporated in modern theories. Understanding the low-lying states of 12Be is crucial for explaining the disappearance of the N=8 magic number in the nearby region. We conducted a series of measurements for the 12Be nucleus, including the one-neutron adding 11Be(d,p)12Be, one-neutron removal 12Be(p, d) and 12Be(p, p') inelastic scattering reactions using either the ISS or the AT-TPC coupling to HELIOS. The high-resolution and high-statistics data enabled us to overcome previous experimental ambiguities. Our findings suggest that a combination of core deformation, weak-binding effects and cluster structure is responsible for the exotic phenomena observed in Be isotopes.

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