Type: Poster

Determination of the B(E2) value for the first 2+ state of 142Sm using Coulomb excitation at REX-ISOLDE

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In order to investigate the effect of shell stabilization of mixed-symmetry states [1] it is intended to identify and study the mixed symmetry states in the N = 80 isotones. A necessary prerequisite for such an endeavor is the measurement of the E2 transition strength of the first 2+ state. A beam of radioactive 142Sm ions with an energy of 2.85 MeV/u was impinging on a 1.4 mg/cm2 48Ti as well as on a 2 mg/cm2 94Mo target. Gamma rays from the decay of Coulomb excited states were measured by the MINIBALL array while the nuclei were identified by a DSSSD. The transition strength of the first 2+ to the 0+ ground state in unstable, neutron deficient 142Sm could preliminarily be determined to 29(3) W.u. The result for the B(E2) value deviates from recent QPM calculations [2, 3] while it is in agreement with state-of-the-art large-scale shell model calculations [4, 5]. This finding provides a benchmark for the foreseen investigation of the effect of shell stabilization of the quadrupole isovector valence shell excitations.

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