Coulomb Excitation of Proton-Rich $N = 80$ Isotones at HIE-ISOLDE

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Abstract. The evolution of the first quadrupole proton-neutron mixed-symmetry state $2^+_{1,\mathrm{ms}}$ of the proton-rich $N = 80$ isotones exposes fundamental information of their nuclear sub-shell structure. The observed fragmentation of the $2^+_{1,\mathrm{ms}}$ state of ^{138}Ce suggests an appreciable $g_{7/2}$ proton sub-shell closure at $Z = 58$ [1]. Thus, it is intriguing to study how the $2^+_{1,\mathrm{ms}}$ state changes for a rising proton number in the $N = 80$ isotonic chain. To address this issue, Coulomb-excitation experiments with radioactive ion beams of the $N = 80$ isotones ^{140}Nd and ^{142}Sm ($Z = 60, 62$) were carried out using the γ-ray spectrometer MINIBALL at HIE-ISOLDE at CERN [2]. The Coulomb-excitation code GOSIA is used to identify the $2^+_{1,\mathrm{ms}}$ state by fitting transition matrix elements to experimental γ-ray intensities. The current status of the analysis will be presented. This work was supported by the BMBF grant 05P(15/18)RDCIA.

References

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