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Triaxiality and shape evolution in even-even Ge isotopes

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The electromagnetic properties of low-lying states in 70,72,74,76Ge isotopes have been in- vestigated using a series of high-precision multi-step Coulomb excitation measurements carried out at the ATLAS facility of the Argonne National Laboratory. The experimental setup consisted of the GRETINA multidetector array coupled to the charge heavy-ion counter, CHICO2, facilitating precise Doppler correction and clean kinematic separation of the scattered particles. A comprehensive set of transition and static E2 matrix elements were extracted from the measured differential Coulomb cross sections and used to deduce the intrinsic shape parameters - overall deformation and asymmetry - using the model- independent rotational invariant sum rules. The resulting shape parameters are compared with results of configuration-interaction shell-model calculations and computations car- ried out within the framework of the Generalized Triaxial Rotor Model (GTRM). These results will be discussed in the context of the evolution of shape coexistence along the isotopic chain, with emphasis on the role of axial asymmetry in describing the structure of these stable nuclei.
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