Radiative decay and electromagnetic moments in 229Th determined within nuclear DFT

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Using the nuclear DFT approach with symmetry breaking and restoration we investigated electromagnetic properties of the ground and isomeric states in 229Th. We determine the magnetic dipole transition strength B(M1; 3/2+ →5/2+) between these two states and discuss the effects of parity breaking, configuration mixing, and time-odd core polarization. We also determine the corresponding spectroscopic magnetic dipole and electric quadrupole moments. Because the octupole deformability of the Skyrme functionals used here is not described in sufficient detail, we analyse the results using a set of Skyrme functionals via the regression aligned with measured octupole moments of neighboring even-even nuclei. Without parameter adjustment, the obtained results favorably compare with the experimental data but also indicate the need to systematically adjust the octupole degrees of freedom in future functional parametrizations.