

Abstract Submitted
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Nuclear Lifetimes in ^{79}Sr ¹ S.R. ARORA², R.A. KAYE, Ohio Wesleyan University, S.L. TABOR, Florida State University, J. DÖRING³, GSI, Germany — Lifetimes of eight discrete energy states in the ^{79}Sr nucleus were measured using the Doppler-shift attenuation method. These states were populated at high angular momentum using the $^{28}\text{Si} + ^{54}\text{Fe}$ fusion-evaporation reaction at 90 MeV, with a thick 14 mg/cm² ^{54}Fe target used to stop all recoiling nuclei. The de-exciting γ rays were measured in prompt coincidence using a Compton-suppressed Ge array consisting of three Clover detectors and seven single-crystal detectors. Lifetimes were determined from experimental line shapes measured at 145° relative to the beam direction. Quadrupole deformations β_2 inferred from the lifetimes in the two lowest-energy positive-parity state sequences indicate highly deformed structures, in agreement with theoretical predictions from total Routhian surface calculations. Of these two sequences, the one built upon a higher intrinsic energy may have a larger average deformation, in agreement with the theoretical calculations.

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