

Abstract Submitted
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Recoil Distance Method lifetime measurement of the 2_1^+ state in ^{94}Sr and implications for the structure of neutron rich Sr isotopes

AARON CHESTER, KRZYSZTOF STAROSTA, Department of Chemistry, Simon Fraser University, S1467 EXPERIMENT COLLABORATION — A high precision lifetime measurement of the 2_1^+ state in ^{94}Sr was performed at TRIUMF's ISAC-II facility by coupling the Recoil Distance Method implemented via the TIGRESS Integrated Plunger with unsafe Coulomb excitation in inverse kinematics. Due to limited statistics imposed by the use of a radioactive ^{94}Sr beam, a likelihood ratio χ^2 method was derived and used to compare experimental data to Geant4-simulated lineshapes. The $B(E2; 2_1^+ \rightarrow 0_1^+)$ value extracted from the lifetime measurement of $7.80_{-0.40}^{+0.50}$ (stat.) ± 0.07 (sys.) ps is approximately 25% larger than previously reported while the relative uncertainty has been reduced by a factor of approximately 8. A baseline deformation has been established for Sr isotopes with $N \leq 58$ which is a necessary condition for the Quantum Phase Transition interpretation of the onset of deformation in this region. A summary of the experiment, description of the data analysis methods, and a comparison to existing theoretical models will be presented.

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