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, Michigan State University, GREG HACKMAN, TRIUMF, JACK HENDERSON, Lawrence Livermore National Laboratory, KRZYSZTOF STAROSTA, Simon Fraser University, PHILIP VOSS, Albion College, JONATHAN WILLIAMS, Simon Fraser University, GAMMA-RAY SPECTROSCOPY AT ISAC COLLABORATION — The TIGRESS Integrated Plunger (TIP) device [1] has been constructed to enable Doppler-shift lifetime measurements at TRIUMF's ISAC-II facility. TIP was commissioned using a stable ^{84}Kr beam by coupling the recoil distance method with unsafe Coulomb excitation in inverse kinematics [2]. A high-precision lifetime measurement of the 2_1^+ state in ^{94}Sr was performed using the same Coulex-RDM technique. The data set had low statistics due to the luminosity of the radioactive ^{94}Sr beam. A lifetime of $\tau = 7.80^{+0.50}_{-0.40}$ $(stat.) \pm 0.04$ $(sys.)$ ps was determined by comparing experimental data to Geant4 simulations using a likelihood ratio χ^2 method. The corresponding $B(E2; 2_1^+ \rightarrow 0_1^+)$ value is approximately 25% larger than previously reported while the relative error has been reduced by a factor of approximately 8. A baseline deformation has been established for Sr isotopes with N$\leq$58 [3]. The experimental results, data analysis methods, and a comparison to existing theoretical models are presented. [1] Voss et al., NIM A 746 87–97 (2014). [2] Chester et al., NIM A 882 69–83 (2018). [3] Chester et al., PRC 96 011302(R) (2017).

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