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Doppler-shift lifetime measurements in ^{94}Sr using the TIGRESS Integrated Plunger AARON CHESTER, Simon Fraser Univ — Neutron-rich Sr isotopes are characterized by a sudden onset of quadrupole deformation at neutron number $N = 60$ demonstrated by a dramatic drop in excitation energy of the first 2_1^+ state. Though the emphasis is usually put on the sudden onset of collectivity at $N = 60$, it is equally surprising that there is no onset of collectivity when adding up to 8 neutrons beyond the $N = 50$ shell closure, as indicated by a previous measurement of low $B(E2)$ values of ≈ 10 W.u. in even-even Sr isotopes from ^{90}Sr to ^{96}Sr [1]. A high precision Doppler shift lifetime measurement of the first excited state in ^{94}Sr using the TIGRESS Integrated Plunger (TIP) [2] can help elucidate whether the onset of collectivity is as sudden as generally assumed. An experiment aimed towards a high-precision ($< 10\%$) measurement of the $B(E2, 2_1^+ \rightarrow 0_1^+)$ reduced transition probability in ^{94}Sr was performed in December 2015 using inelastic scattering near the Coulomb barrier coupled with an recoil distance method lifetime measurement of a radioactive ^{94}Sr beam. The device, experimental approach, analysis, and preliminary results will be presented and discussed. [1] Mach et al., Nucl. Phys. A 523 (1991) 197; [2] Voss et al., Nucl. Inst. and Meth. A 746 (2014)

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