

Abstract Submitted
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Precision Measurements of Excited State Atomic Lifetimes in Rb and K¹ JERRY SELL, BRIAN PATTERSON, ALINA GEARBA, MARK LINDSAY, DERALD MADSON, JEREMIAH WELLS, JEREMY SNELL, RANDY KNIZE, United States Air Force Academy — Measurements of excited state atomic lifetimes are presented for the rubidium $5P_{3/2}$ state and the potassium $4P_{3/2}$ state using a combination of continuous and ultrafast lasers. These measurements provide the associated transition dipole matrix element, which can be compared to theoretical calculations. Additionally, these results can be used in combination with polarizability and tune-out wavelength measurements to further constrain atomic parameters and test atomic theory. The experimental apparatus to carry out these measurements employs counter-propagating atomic beams and a pump-probe (excitation-ionization) technique based on a mode-locked ultrafast laser. We will discuss the various systematic errors which are present in our measurements.

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