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**Precision measurement of the lifetime of the $6p\ ^2P_{1/2}$ level of $Yb^{+1}$**
S. OLMSCHENK, D. HAYES, D.N. MATSUKEVICH, P. MAUNZ, C. MONROE, JQI and Department of Physics, University of Maryland, College Park, Maryland, 20742, USA — We present a precise measurement of the lifetime of the $6p\ ^2P_{1/2}$ excited state of a single trapped ytterbium ion ($Yb^+$). We use a time-correlated single photon-counting technique [2] adapted to utilize the features of a single-atom system [3]. In particular, ultrafast pulses excite a single trapped $Yb^+$ ion and the emitted photons are coupled into a single-mode optical fiber. By performing the measurement on a single atom with fast excitation and excellent spatial filtering, we are able to eliminate common systematics. Among other things, experimental measurements of Yb-like ions may be used to test *ab initio* atomic structure calculations [4].

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