

Abstract Submitted  
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**Measurement of the lifetime of the  $7S_{1/2}$  state in atomic cesium using asynchronous gated detection**<sup>1</sup> YAO DE GEORGE TOH, JOSE A. JARAMILLO-VILLEGAS, NATHAN GLOTZBACH, Purdue University, JONAH QUIRK, University of Southern Indiana, IAN C. STEVENSON, JUNGO CHOI, ANDREW M. WEINER, DANIEL S. ELLIOTT, Purdue University — Our group is making progress towards new parity violation measurements in cesium. Atomic lifetime measurements provide sensitive tests of theoretical models of the cesium atom, which play a central role in parity violation measurements. We report a measurement of the lifetime of the cesium  $7s^2 S_{1/2}$  state using time-correlated single photon counting spectroscopy. We excite the atoms using a Doppler-free two-photon transition from the ground state, and detect the  $1.47 \mu m$  photons from spontaneous decay. We introduce an asynchronous detection technique using gated single photon detectors, allowing us to capture the fluorescence profile for a time window much larger than the detector gate length.

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Yao De George Toh  
Purdue University

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