

Abstract Submitted
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Preliminary results for a measurement of the n=2 Lamb shift in atomic hydrogen¹ N. BEZGINOV, T. VALDEZ, York University, A. C. VUTHA, University of Toronto, K. KATO, T. D. G. SKINNER, E. A. HESSELS, York University — We perform a measurement of the Lamb shift in atomic hydrogen ($n = 2$ $S_{1/2}$ $F = 0$ to $P_{1/2}$ $F = 1$). A beam of protons moving at 0.01 c undergoes charge exchange with hydrogen gas to produce atomic hydrogen in the metastable 2S state. The atoms travel through two microwave regions where we utilize the novel technique of frequency offset separated oscillatory fields (FOSOF) [PRA 92, 052504 (2015)]. The surviving 2S population is observed using a Lyman-alpha detector. The outcome of this experiment will lead to a measurement of the proton radius, contributing to the resolution of the proton radius puzzle. We present preliminary experimental results, along with systematic studies.

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