Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Precision spectroscopy of the 1S-2S transition in antihydrogen GRAHAM STUTTER, Aarhus University, ALPHA COLLABORATION — Recent years have seen rapid progress in the field of antimatter research. One of the major milestones passed during this period was the observation and characterization of the 1S–2S transition in trapped antihydrogen by the ALPHA experiment at CERN[1,2]. Doppler-free laser spectroscopy of the corresponding transition in hydrogen has been performed to a precision of 4.2 parts in 10^{15}[3], which makes it an extremely promising candidate for stringent tests of charge-parity-time (CPT) symmetry[4]. We present a description of the ALPHA experimental apparatus and our latest spectroscopy results, as well as prospects for achieving hydrogen-like precision in our apparatus.

[1] Nature **541**, 506–510 (2017)
[2] Nature **557**, 71–75 (2018)
[3] Phys. Rev. Lett., **107**, 203001 (2011)
[4] Phys. Rev. D **92**, 056002 (2015)

Graham Stutter
Aarhus University

Date submitted: 29 Jan 2019 Electronic form version 1.4