



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 2176

Type: Oral (Non-Student) / Orale (non-étudiant(e))

Measurement of the 1S-2S Transition in Antihydrogen

Monday 11 June 2018 17:15 (15 minutes)

The precise measurement of the 1S-2S transition in atomic hydrogen via 2-photon spectroscopy determines the value of the Rydberg and constrains our knowledge of the fundamental constants. The prospect of such a measurement in antihydrogen to test CPT motivated the construction two decades ago of the CERN AD and its initial program. The ALPHA collaboration has now measured this transition in antihydrogen with a precision of a few parts per trillion. Its comparison with the hydrogen value is a strong test of CPT symmetry. This talk will discuss the considerable challenges we were faced with, both in the production of the antihydrogen and in spectroscopy in the environment containing the trapped particles. Prospects for improved precision will be presented.

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Session Classification: M3-4 Cold and Trapped Atoms, and Tests of Fundamental Symmetries I (DNP/DTP/PPD/DAMOPC) || Atomes froids et piégés, et tests de symétries fondamentales I (DPN/DPT/PPD/DPAMPC)

Track Classification: Nuclear Physics / Physique nucléaire (DNP-DPN)