Abstract Submitted
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Traps for Antimatter: The ALPHA Antihydrogen Apparatus R. HYDOMAKO, R.I. THOMPSON, Dept. of Physics & Astronomy, Univ. of Calgary, M.C. FUJIWARA, D.R. GILL, L. KURCHANINOV, K. OLCHANSKI, A. OLIN, J.W. STOREY, TRIUMF, Vancouver, W.N. HARDY, D.J. JONES, Dept. of Physics & Astronomy, Univ. of British Columbia, M.E. HAYDEN, Dept. of Physics, Simon Fraser Univ., H. MALIK, S. MENARY, Dept. of Physics & Astronomy, York Univ., ALPHA COLLABORATION — Antihydrogen is the simplest atomic system composed entirely of antiparticles. Analogous to hydrogen, antihydrogen contains a positron and an antiproton. The creation and storage of antihydrogen is a challenge that combines the technologies of ion trapping (nested Penning traps to accumulate and mix the positrons and antiprotons) and atom trapping (a magnetic bottle to confine the antihydrogen atoms) with the difficulties associated with working in a particle accelerator facility. The ALPHA project is an international collaboration based at CERN's Antiproton Decelerator. ALPHA has constructed an innovative and versatile apparatus with the goal of trapping antihydrogen atoms. This talk will describe the ALPHA apparatus and its operation. Results will be given from the first run, including antihydrogen production and the storage of antimatter plasmas in the multipole trap [1]. [1] G. Andresen *et al.* (ALPHA Collaboration) *Phys. Rev. Lett.* **98**, 023402 (2007).

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