Physics with Trapped Antihydrogen
MICHAEL CHARLTON, Swansea University

For more than a decade antihydrogen atoms have been formed by mixing antiprotons and positrons held in arrangements of charged particle (Penning) traps [1,2]. More recently, magnetic minimum neutral atom traps have been superimposed upon the anti-atom production region, promoting the trapping of a small quantity of the antihydrogen yield [3-5]. We will review these advances, and describe some of the first physics experiments performed on antihydrogen including the observation of the two-photon 1S-2S transition [6], investigation of the charge neutrality of the anti-atom [7,8] and studies of the ground state hyperfine splitting [9]. We will discuss the physics motivations for undertaking these experiments and describe some near-future initiatives.

4. G.B. Andresen et al. (ALPHA Collaboration), Nature Phys. 7 (2011) 558
7. C. Amole et al. (ALPHA Collaboration), Nature Commun. 5 (2014) 3955
8. M. Ahmadi et al. (ALPHA Collaboration), Nature 529 (2016) 373