

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Fokker-Planck simulation of positron and antiproton equilibration in antihydrogen production CHUKMAN SO, University of California Berkeley, JONATHAN WURTELE, JOEL FAJANS, University of California Berkeley, Lawrence Berkeley National Laboratory, ALPHA COLLABORATION — Antihydrogen atoms are produced in the ALPHA experiment by autoresonantly exciting the axial oscillation of antiprotons confined adjacent to a positron plasma in a nested Penning–Malmberg trap. After gaining enough energy, the antiprotons overcome the electrostatic barrier and enter the positron plasma. Antihydrogen is then formed by a three–body combination process. This poster presents the first results of simulating the temperature re-equilibration between injected antiprotons and positrons, where the initial velocity distribution for the antiprotons is obtained from our Vlasov solver that models the injection process[1]. The frictional and diffusive coefficients in the Fokker-Planck equation are obtained through a Monte-Carlo simulation of collisions between and within the antiproton and positron distributions in the intermediate magnetized limit.

[1] C. Amole et. al, Phys Plasma 20, 043510 (2013)

Chukman So
University of California Berkeley

Date submitted: 12 Jul 2013

Electronic form version 1.4