Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Autoresonant Excitation of Antiproton Plasmas[1] WILLIAM BERTSCHE, Swansea University, U. K., ALPHA COLLABORATION — We will present results of the first longitudinal autoresonant excitation of a thermal antiproton plasma. We apply a swept-frequency drive field to an antiproton plasma in an anharmonic potential to resonantly control the longitudinal energy of the particles in the potential. We observe autoresonant excitation of the plasma as a macroparticle in the regime of cold, dense plasmas, while warmer, tenuous plasmas are not excited completely (as predicted by theory [1]). This technique has been used for initiating the formation of antihydrogen, as it provides a flexible method for injecting antiprotons into a positron plasma of fluctuating space-charge while minimizing the kinetic energy of the antiprotons possessed by the antiprotons just after injection. As efforts to trap and conduct spectroscopy on antihydrogen require the formation of cold antihydrogen, minimizing energy mismatches in formation is key to successful trapping. **References** [1] Barth, I., *et al,* Phys. Rev. Lett. **103**, 155001 (2009)

[1]This work was supported by CNPq, FINEP (Brazil), ISF (Israel), MEXT (Japan), FNU (Denmark), VR (Sweden), NSERC, NRC/TRIUMF, AIF (Canada), DOE, NSF (USA), EPSRC and the Leverhulme Trust (UK).

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Date submitted: 20 Jul 2010 Electronic form version 1.4