Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Plasma Parking into Off-axis Storage Traps J.R. DANIELSON, N.C. HURST, C.J. BAKER, C.M. SURKO, University of California - San Diego — Advanced uses of positrons benefit by the development of efficient techniques for particle accumulation, storage and delivery.[1] The multicell Penning-Malmberg trap is being developed as a way to obtain high-capacity antimatter traps.[2] The multicell test structure at UCSD consists of multiple aligned storage cells, with one cell on the magnetic axis, and three off-axis.[3] Described here are tests of the process by which plasma, first located in a large diameter master cell, is autoresonantly excited into a large amplitude diocotron mode and then transferred into off-axis cells. Through the use of bounce-average orbits[4] and other manipulation techniques, the plasma position during transfer can be controlled precisely, and the plasma can be "parked" at any radial or azimuthal location within a storage cell. Other experiments in the test structure, including plasma lifetime studies and experiments with large space charge, will also be described.

[1]J. R. Danielson, et al., *Rev. Mod. Phys.* **87**, 247 (2015).
[2]J. R. Danielson, et al., *Phys. Plasmas* **13**, 125002 (2006).
[3]C. J. Baker, et al., *Phys. Plasmas* **22**, 022302 (2015).
[4]N. C. Hurst, et al., *Phys. Rev. Lett.* **113**, 025004 (2014).

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Date submitted: 24 Jul 2015 Electronic form version 1.4