Abstract Submitted
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Trapping and Storage of Non-neutral Plasmas in an Off-axis Penning-Malmberg Trap[1] N.C. HURST, C.J. BAKER, J.R. DANIELSON, C.M. SURKO, University of California, San Diego — There are many potential applications of high-capacity and/or portable antimatter traps, including multiplexing the output of high-flux positron beams, study of electron-positron plasmas, and eventually the construction of an annihilation gamma-ray laser at 0.51 MeV. We describe the details of a new experiment to test and validate several aspects of the multicell Penning-Malmberg (PM) trap for non-neutral plasma storage.[2,3] Progress has been made in several key areas, including the successful trapping of plasmas in off-axis cells and confinement without particle loss for hours. Details of the trapping process will be presented, as will the first studies of plasma lifetime in the off-axis cells. The effect on confinement due to using electrodes with different diameters is also investigated. Future plans to study the confinement and stability of plasmas with kilovolt levels of space charge will also be discussed.

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[2]Danielson, Weber, Surko, *Phys. Plasmas* **13**, 123502 (2006).
[3]Danielson, Hurst, Surko, AIP Conf. Proc. **1521**, 101 (2013).

James Danielson
University of California, San Diego

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