Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

A Multicell Trap for Positron Storage[1] 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 recent progress in the design and construction of a novel multicell Penning-Malmberg (PM) trap to store in excess of 5×10^{11} positrons.[2] The construction and planned objectives of a test electrode structure will be discussed. A key issue to be determined is the quality of confinement in off-axis cells in the less uniform portions of the magnetic field near the ends of the magnet. Protocols for filling off-axis cells and handling plasmas with kiloelectron volt levels of space charge will be described. A new scenario to rapidly dump the contents of the multicell trap will be discussed.

[1]This work supported by the U. S. DTRA.
[2]J. R. Danielson, T. R. Weber, and C. M. Surko, *Phys. Plasmas* **13**, 123502 (2006).

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Date submitted: 14 Jul 2011 Electronic form version 1.4