Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

Formation of Buffer-Gas-Trap Based Positron Beams[1] M.R. NATISIN, J.R. DANIELSON, C.M. SURKO, Univ of California - San Diego — Presented here are experimental measurements, analytic expressions and simulation results for pulsed, magnetically guided positron beams formed using a Penning-Malmberg style buffer gas trap.[2] Analytic expressions are developed which describe the evolution of the beam energy distributions, both parallel and perpendicular to the magnetic field, as the beam propagates through regions of varying magnetic field. Simulations of the beam formation process are presented, with the parameters chosen to accurately replicate experimental conditions. The initial conditions and ejection parameters are varied systematically in both experiment and simulation, allowing the relevant processes involved during beam formation to be explored. A new experiment will also be discussed in which positrons are cooled to 50 K prior to beam-formation, thus allowing the creation of a cryogenic positron beam with better energy resolution than previously available.

[1]Work supported by NSF grant PHY-1401794
[2]M. R. Natisin, J. R. Danielson, C. M. Surko, *Phys. Plasma* submitted.

Mike Natisin
Univ of California - San Diego

Date submitted: 29 Jan 2015 Electronic form version 1.4