Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Development of a Wolter Optic X-ray Imager on Z[1] JEFFREY R FEIN, DAVID J. AMPLEFORD, Sandia Natl Labs, JULIA K. VOGEL, BERNIE KOZIOZIEMSKI, CHRISTOPHER C. WALTON, Lawrence Livermore Natl Lab, MING WU, Sandia Natl Labs, JAY AYERS, Lawrence Livermore Natl Lab, CHRIS J. BALL, CHRIS J. BOURDON, ANDREW MAURER, Sandia Natl Labs, MIKE PIVOVAROFF, Lawrence Livermore Natl Lab, BRIAN RAMSEY, NASA Marshall Space Flight Center, SUZANNE ROMAINE, Harvard-Smithsonian Center for Astrophysics — A Wolter optic x-ray imager is being developed for the Z Machine to study the dynamics of warm x-ray sources with energies above 10 keV. The optic is adapted from observational astronomy and uses multilayer-coated, hyperbolic and parabolic x-ray mirrors to form a 2D image with predicted 100-μm resolution over a 5x5-mm field of view. The imager is expected to have several advantages over a simple pinhole camera. In particular, it can form quasi mono-energetic images due to the inherent band-pass nature of the x-ray mirrors from Bragg diffraction. As well, its larger collection solid angle can lead to an overall increase in efficiency for the x-rays in the desirable energy band. We present the design of the imaging system, which is initially optimized to view Mo K-alpha x-rays (17.5 keV). In addition, we will present preliminary measurements of the point-spread function as well as the spectral sensitivity of the instrument.

[1]Sandia National Laboratories is a multimission laboratory managed and operated by NTESS, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. DOE's NNSA under contract DE-NA-0003525.

Jeffrey R Fein
Sandia Natl Labs

Date submitted: 14 Jul 2017 Electronic form version 1.4