

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

High-resolution imaging of warm x-ray sources with a Wolter optic on the Z Machine¹ JEFFREY FEIN, DAVID AMPLEFORD, SNL, JULIA VOGEL, BERNIE KOZIOZIEMSKI, CHRIS WALTON, LLNL, MING WU, SNL, JAY AYERS, LLNL, CHRIS BALL, SNL, SUZANNE ROMAINE, Harvard-Smithsonian Center for Astrophysics, PERRY BELL, LLNL, CHRIS BOURDON, SNL, DAVE BRADLEY, LLNL, RICARDO BRUNI, Harvard-Smithsonian Center for Astrophysics, PAUL GARD, CLARK HIGHSTRETE, SNL, KIRANMAYEE KILARU, Universities Space Research Association, PATRICK LAKE, ANDREW MAURER, SNL, LOUISA PICKWORTH, MICHAEL PIVOVAROFF, LLNL, BRIAN RAMSEY, NASA Marshall Space Flight Center — We have developed a Wolter optic to image warm (>15 keV) x-ray sources on the Z Machine, the first-ever instrument of its kind specifically designed and fabricated for HED applications. Adapted from observational astronomy for Z, the optic uses curved x-ray mirrors to form an energy band-limited 2D image of a source with 5-mm FOV and better than measured $100\text{-}\mu\text{m}$ resolution on-axis. The first images obtained by the instrument of Mo wire array z-pinches on the Z Machine demonstrate unprecedented spatial resolution and signal-to-noise compared to pinhole imaging, revealing small-scale structures not previously observed in these sources.

¹Sandia National Laboratories is a multimesion 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 Fein
SNL

Date submitted: 08 Jul 2019

Electronic form version 1.4