place this abstract near those of my other colleagues from:
Magneto-Inertial Fusion, University of Nevada, Reno, and University of California, San Diego,
and in the special section for projects funded by the ARPA-E.

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Analysis of staged Z-pinch implosion trajectories from experiments on Zebra[1] MIKE P. ROSS, F. CONTI, University of California, San Diego, T. W. DARLING, University of Nevada, Reno, E. RUSKOV, Magneto-Inertial Fusion Technologies, Inc., J. VALENZUELA, University of California, San Diego, F. J. WESSEL, Magneto-Inertial Fusion Technologies, Inc., F. BEG, J. NARKIS, University of California, San Diego, H. U. RAHMAN, Magneto-Inertial Fusion Technologies, Inc. — The Staged Z-pinch plasma confinement concept relies on compressing an annular liner of high-Z plasma onto a target plasma column of deuterium fuel. The interface between the liner and target is stable against the Magneto-Rayleigh-Taylor Instability, which leads to effective fuel compression and makes the concept interesting as a potential fusion reactor. The liner initiates as a neutral gas puff, while the target plasma is a partially ionized (Z_{eff} < 10 percent column ejected from a coaxial plasma gun. The Zebra pulsed power generator (1 MA peak current, 100 ns rise time) provides the discharge that ionizes the liner and drives the Z-pinch implosion. Diverse diagnostics observe the 100-300 km/s implosions including silicon diodes, photo-conducting detectors (PCDs), laser shadowgraphy, an XUV framing camera, and a visible streak camera. The imaging diagnostics track instabilities smaller than 0.1 mm, and Z-pinch diameters below 2.5 mm are seen at peak compression. This poster correlates the data from these diagnostics to elucidate implosion behavior dependencies on liner gas, liner pressure, target pressure, and applied, axial-magnetic field.

[1]* Funded by the Advanced Research Projects Agency - Energy, DE-AR0000569

Frank Wessel
Magneto-Inertial Fusion Technologies, Inc.

Date submitted: 14 Jul 2017 Electronic form version 1.4