

Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Effects of a Center Wire on Conical Wire Array Z-Pinches¹ DAVID MARTINEZ, RADU PRESURA, LUCAS WANEX, Nevada Terawatt Facility, University of Nevada, Reno, DAVID AMPLEFORD, Sandia National Laboratories, Albuquerque, NM — Recent experiments have shown that plasma dynamics of conical wire arrays can help elucidate aspects of z-pinch dynamics [Ampleford et. al. Phys of Plasma 14 102704, (2007)]. At the Nevada Terawatt Facility we investigated the implosion dynamics of conical wire arrays with an additional wire located on the axis of the pinch. These experiments were conducted on Zebra, a 2 TW pulse power device capable of delivering a 1 MA current in 100 ns [Bauer et al AIP Conf. Proc. 409, 153 (1997)]. Normally a conical wire array generates an imploding plasma with an axial velocity component. The additional center wire generates an axial current carrying plasma that serves as a target for the plasma accelerated from the outer wires, leading to the growth of the Kelvin-Helmholtz instability. This poster compares the dynamics and x-ray emission of the traditional and modified conical wire array pinches. In addition, we explore the effect of the center wire by including in the comparison cylindrical wire arrays with and without a center wire.

¹Work supported by NNSA grant DE-FC52-06NA27616.

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Date submitted: 11 Jan 2008

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