

Abstract Submitted
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Neutral Gas Density Measurements to Predict Z-Pinch Implosion Dynamics¹ S.L. JACKSON², B.V. WEBER, D.D. HINSHELWOOD, D.P. MURPHY, R.J. COMMISSO, Plasma Physics Division, Naval Research Laboratory, D.G. PHIPPS, D. MOSHER, S.J. STEPHANAKIS, L-3 Titan Group, R.C. HAZELTON, E.P. CARLSON, J.J. MOSCHELLA, HY-Tech Research, Inc. — Neon z-pinch implosions were investigated using the Hawk pulsed power generator [1]. The gas pressure in the inner and outer shells of an 8-cm-diameter shell-on-shell nozzle was varied to change the initial gas distribution and determine its effect on the z-pinch dynamics and K-shell x-ray emission. A holographic interferometer was used to record the z-pinch density distribution at various times during the implosion [2]. In this work, the neutral gas distribution from the nozzle is measured using a high-sensitivity, multichord interferometer. The interferograms and initial gas density are correlated with radiation traces and plasma-radius histories from the measured load inductance. Snow-plow modeling based on the measured gas distributions is compared with the measurements. [1] D.P. Murphy et al., Proc. Beams 2004, St. Petersburg, Russia, p. 7048. [2] D.G. Phipps et al., ICOPS 2006, Book of Abstracts, p. 314.

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