Magneto-Inertial Fusion, University of Nevada, Reno, and University of California, San Diego,
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Abstract Submitted
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Staged Z-pinch Experiments on Cobra and Zebra[1] FRANK J. WESSEL, Magneto-Inertial Fusion Technologies, Inc., A. ANDERSON, University of Nevada, Reno, J. T. BANASEK, T. BYVANK, Cornell University, F. CONTI, University of California, San Diego, T. W. DARLING, E. DUTRA, University of Nevada, Reno, V. GLEBOV, University of Rochester, J. GREENLY, D. A. HAMMER, W. M. POTTER, S. V. ROCCO, Cornell University, M. P. ROSS, University of California, San Diego, E. RUSKOV, Magneto-Inertial Fusion Technologies, Inc., J. VALENZUELA, F. BEG, University of California, San Diego, A. COVINGTON, University of Nevada, Reno, J. NARKIS, University of California, San Diego, H. U. RAHMAN, Magneto-Inertial Fusion Technologies, Inc. — A Staged Z-pinch (SZP), configured as a pre-magnetized, high-Z (Ar, or Kr) annular liner imploding onto a low-Z (H, or D) target, was tested on the Cornell University, Cobra Facility and the University of Nevada, Reno, Zebra Facility; each characterized similarly by a nominal 1-MA current and 100-ns risetime while possessing different diagnostic packages. XUV-fast imaging reveals that the SZP implosion dynamics is similar on both machines and that it is more stable with an axial (B_z) magnetic field, a target, or both, than without. On Zebra, where neutron production is possible, reproducible thermonuclear (DD) yields were recorded at levels in excess of 10^9/shot. Flux compression in the SZP is also expected to produce magnetic field intensities of the order of kilo-Tesla. Thus, the DD reaction produced tritions should also yield secondary DT neutrons. Indeed, secondaries are measured above the noise threshold at levels approaching 10^6/shot.

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