

Abstract Submitted
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Investigation of plasma turbulence, cells, and magnetic bubbles in the precursor and stream bubbles in wire array z-pinches¹ V.V. IVANOV, V.I. SOTNIKOV, T.E. COWAN, P.J. LACA, A.L. ASTANOVITSKIY, B. LE GAL-LOUDEC, University of Nevada, Reno, G.S. SARKISOV, Ktech Corporation, B. JONES, C. DEENEY, Sandia National Laboratories, UNIVERSITY OF NEVADA, RENO TEAM, KTECH CORPORATION TEAM, SANDIA NATIONAL LABORATORIES TEAM — Turbulence in the plasma column of Al wire arrays was investigated in 1-MA z-pinch by laser probing diagnostics. Plasma streams from wires imprint the surface of the precursor and seed plasma turbulence in the early stage. Small-scale turbulence and large-scale cells arise in the plasma column in the nonlinear stage before implosion. Magnetic bubbles and current in the precursor were observed by Faraday rotation diagnostics. Scales of excited waves are in agreement with the theoretical model associated with flute mode turbulence. Bubbles in streams indicate breaks in the wire cores and the start of material movement. Bubbles bring the main mass contained in the wires to the array axis. A regime of implosion without a precursor was found in thin-wire arrays.

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