

Abstract Submitted
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Magnetic Flux Advection in Ablation Streams of Wire Array Z-Pinches¹ JOHN GREENLY, MATTHEW MARTIN, ISAAC BLESENER, DAVID CHALENSKI, PATRICK KNAPP, BRUCE KUSSE, Cornell University — Magnetic probes are used to measure the field advected inward toward the axis of wire-array Z-pinches on the COBRA 1 MA driver. The probes are 0.7 mm outer diameter, with area ~ 0.1 mm². The probes are insulated by Kapton tubing and reliably give signals that track the ablation and implosion phases. Pairs of probes are placed at different radial locations inside the array. Typically, probes 2 mm inside the wires (e.g., at 4 mm radius in a 6 mm radius, 16 wire array), show a nearly linearly rising field throughout the ablation phase, from the onset of inward ablated flow until the start of the final implosion. Nearer the axis (at 2 mm radius) the magnetic field begins to rise later, then rises faster than at 4 mm for some time, but then ceases to rise for a significant time interval before implosion while the field at 4 mm is still linearly rising. This appears to be the signature of deceleration and stagnation of the ablation streams at the precursor column near the axis. These results will be compared with analytic modeling and with the results of computer simulations.

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