

Abstract Submitted
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Mitigation of end-effects in wire array z-pinches through hardware modification¹ D.J. AMPLEFORD, C.A. JENNINGS, B. JONES, Sandia National Laboratories, J.P. CHITTENDEN, S.V. LEBEDEV, S.N. BLAND, S.C. BOTT, Imperial College London — Symmetry is a crucial factor for various applications of wire array z-pinches, including Inertial Confinement Fusion and K-shell x-ray source development. Previous work has shown that a non-uniformity is initiated near the cathode wire contact of a z-pinch. An imploding bubble expands axially until it stagnates prematurely on axis prior to the main x-ray pulse, leading to regions near the cathode in which no x-ray output is present at peak emission. The effects of such non-uniformities are likely to be particularly significant for the large initial load diameters used to achieve appropriate plasma conditions for K-shell emission from mid-Z elements at facilities such as Z. We discuss experiments on the Saturn accelerator which attempt to mitigate this effect by placing a step on the cathode to obstruct the propagation of the bubble towards the axis, hence preventing the non-uniformity on axis.

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