

Abstract Submitted
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Spherical Wire-Array Implosion Experiments G.N. HALL, S.V. LEBEDEV, S.N. BLAND, S.C. BOTT, J.P. CHITTENDEN, D.J. AMPLEFORD, C.A. JENNINGS, Imperial College London, A. CIARDI, Observatoire de Paris, J.B.A. PALMER, J. RAPLEY, Imperial College London — The results of the first spherical wire array z-pinch implosion experiments are presented. Arrays were driven by the MAGPIE generator (1MA, 240ns) and consisted of $8 \times 25 \mu\text{m}$ aluminium wires forming the lines of longitude of a sphere with an equatorial diameter of 21mm. Plasma dynamics around each pole of the spherical array are comparable to those observed in radial wire array z-pinch experiments. The smaller radius at the poles produces a higher magnetic field than at the equator, leading to a higher rate of ablation of the wires into plasma. The ablated plasma from each pole forms a jet; and the jets from the poles collide near the centre of the sphere to produce a high-density precursor plasma. Later in time the array implodes, with a pair of plasma bubbles being launched from the poles towards the centre of the array, driving a pair of shock waves onto the precursor plasma. This research was sponsored by Sandia National Laboratories Albuquerque, the SSAA program of NNSA under DOE Cooperative Agreement DE-FC03-02NA00057.

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