Abstract Submitted
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Shell-Like Loads and Spherical Arrays Driven by a Two-Stage Wire-Array Configuration GARETH HALL, SERGEY LEBEDEV, ESSA KHOORY, JEREMY CHITTENDEN, FRANCISCO SUZUKI-VIDAL, GEORGE SWADLING, SIMON BLAND, ADAM HARVEY-THOMPSON, GUY BURDIAK, PHILIP DE GROUCHY, LOUISA PICKWORTH, JONATHAN SKIDMORE, LEE SUTTLE, MATTHEW BENNETT, Plasma Physics Group, Imperial College London — Experiments were carried out on the MAGPIE facility, which delivers a 1.4MA current pulse with a rise time of 240ns. In a two-stage wire-array configuration, an inverse array [1] is used to pre-conditioned the wires of an imploding array before acting as a fast current switch to provide a drive current of ∼1MA with a rise time of ∼100ns. Pre-conditioned imploding arrays driven in this way do not exhibit the familiar extended ablation phase but instead display 0D-like implosion dynamics [2]. We will present an investigation of the modifications to implosion dynamics that can be achieved through utilization of the pre-conditioning technique. Examples include the creation of shell-like loads through the merging of neighboring pre-conditioned wires prior to implosion, and the implosion of pre-conditioned spherical arrays. This research was sponsored by the DOE under Cooperative Agreements DE-F03-02NA00057 and the Imperial College Junior Research Fellowship scheme.

[1] A. Harvey-Thompson et al., PoP 16, 022701 (2009).
[2] A. Harvey-Thompson et al., PRL 106, 205002 (2011)

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