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Structure of Imploding Plasma in Coiled Wire Arrays GARETH HALL, Imperial College, SERGEY LEBEDEV, SIMON BLAND, JEREMY CHITTENDEN, JAMES PALMER, FRANCISCO SUZUKI-VIDAL, ADAM HARVEY-THOMPSON, GEORGE SWADLING, GUY BURDIAK, LOUISA PICKWORTH, NICOLAS NIASSE — Coiled arrays, a cylindrical array in which each wire is formed into a single helix, suppress the modulation of ablation at the fundamental wavelength. Instead, ablation flow is modulated at the wavelength of the coil. Large wavelength coils produce wire beaks with sufficient axial separation that perturbations in the implosion sheath do not merge, producing an organised mode of implosion in which the global instability can be controlled and the perturbations correlated between all the wires in the array. The inductance of the current paths that may be established by an organised implosion are considered. This suggests that, for a given inductive voltage drop across the load, coiled arrays are capable of achieving significantly higher current convergence to the axis than straight arrays. These experiments were carried out on the MAGPIE generator at Imperial College. This research was sponsored by Sandia National Laboratories Albuquerque, the SSAA program of NNSA under DOE Cooperative Agreement DE-FC03-02NA00057.

Gareth Hall
Imperial College

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