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The Structure of Ablated Plasma from Coiled Wire Arrays G.N. HALL, S.N. BLAND, S.V. LEBEDEV, J.P. CHITTENDEN, J.B.A. PALMER, F.A. SUZUKI-VIDAL, Imperial College London, S.C. BOTT, University of California, San Diego — Coiled arrays, a cylindrical array in which each wire is formed into a helix, suppress the modulation of ablation at the fundamental wavelength. Outside the vicinity of the wire cores, ablation flow from coiled arrays is modulated at the coil wavelength and has a 2- stream structure in the r,? plane. Within the vicinity of the helical wires, ablation is concentrated at positions with the greatest azimuthal displacement and plasma is axially transported from these positions such that the streams become aligned with sections of the coil furthest from the array axis. The GORGON MHD code accurately reproduces this observed ablation structure, which can be understood in terms of axial JxB forces that result from the interaction of the global magnetic field with radial components of a helical current path as well as additional current paths suggested by the simulations. These experiments were performed on MAGPIE (1MA, 240ns) at Imperial College. 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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