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Ablation studies of low number wire arrays on the GenASIS Linear Transformer Driver (LTD) at 200 kA SIMON BOTT, FARHAT BEG, GILBERT COLLINS IV, MILES ABARR, University of California San Diego — The ablation of wires in a wire array z-pinch remains one of the critical challenges in scaling these systems to drive currents required for Inertial Confinement Fusion (ICF) ignition. Whilst the dynamical evolution of wire arrays is well understood, and multi-dimensional Magneto-Hydrodynamic (MHD) modeling has demonstrated significant progress, a predictive capability has not been realized to date. In addition, recent experimental investigations have highlighted the need to more closely examine the ablation structure and its dependence on the initial parameters of the array. We present investigations on the ablation in wire arrays on a recently completed generator at UCSD. The radial and axial variation of the plasma density is examined quantitatively using laser interferometry, and temperature estimates are made from time integrated and time-gated emission images. Results are compared to analytical models of the ablation process which show that the effective ablation velocity varies continuously in the axial direction as a result of the ablation process at the wire.

Simon Bott
University of California San Diego

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