

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Experimental Investigations of the Ablation of Wire Arrays on the 250 kA GenASIS Machine¹ S.C. BOTT, Center for Energy Research, University of California San Diego, D.M. HAAS, Y. ESHAQ, U. UEDA, R.E. MADDEN, G. COLLINS, F.N. BEG, Department of Mechanical and Aerospace Engineering, University of California San Diego — We present investigations of exploding wire experiments on a recently completed linear transformer driver (LTD) in the High Energy Density Physics laboratory at UCSD. The GenASIS machine delivers >250kA in 130ns to short circuit and >200kA to a wire array load, via a conical constant gap power feed. Measured load currents compare favorably to circuit modeling. This new generator facilitates ablation studies of multiple wire cylindrical arrays with >25 kA/ wire, and we present laser Schlieren imaging, along with radial and axial electron density profiles inferred from interferometry for Al and W arrays, which are compared to analytical theory. In addition, conical wire arrays are used to generate supersonic plasma jets. We present characterization of high atomic number jets along with estimates of the local sound speed and Mach number.

¹Work is supported by DOE Junior Faculty Grant DE-FG02-05ER54842, and the LTD unit was generously donated by Sandia National Laboratories.

Simon Bott
Center for Energy Research, University of California San Diego

Date submitted: 17 Jul 2008

Electronic form version 1.4