

Abstract Submitted
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Energy Deposition before Voltage Collapse in Cylindrical Wire Arrays on COBRA SHAAN QAMAR, JOHN GREENLY, BRUCE KUSSE, Cornell University — The COBRA pulsed power generator at Cornell produces 1MA pulses with 100 nsec rise times and has been used to implode cylindrical wire arrays with 8-16 wires.. Because of the design of this machine it has been possible to install an inductive voltage monitor to measure the voltage applied to the load. Upon close examination of this signal, early in the pulse, it is possible to see a precipitous drop in the voltage characteristic of the classic collapse that has been observed in single wire initiation experiments. The resistive component of this voltage signal can be extracted and coupled with load current to estimate the energy deposited in the array wires before the current is diverted from the wire cores to the coronal plasma. Results will be presented for cylindrical arrays with 8 to 16 Tungsten or Aluminum wires of several different diameters. This research was supported by DOE grant DE-FG03-98ER54496, by Sandia National Laboratories contract AO258, and by the NNSA Stockpile Stewardship Academic Alliances program under DOE Cooperative Agreement DE-FC03-02NA00057.

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