Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Current Rise-Rate Scaling for Radial Wire Arrays M. MITCHELL, K. CHANDLER, Idaho State University, S. BLAND, F. SUZUKI, G. HALL, A. THOMSON, A. LEBEDEV, J. CHITTENDEN, Imperial College, London, R. MCBRIDE, S. PIKUZ, T. SHELKOVENKO, D. HAMMER, B. KUSSE, Cornell University — Radial wire arrays offer the potential for higher energy density of radiated x-rays compared to cylindrical arrays. Higher radiated energy density would allow for more compact hohlraums thus easing power requirements for ICF. In an effort to explore how radiated power scales with the rise-rate of the current we performed experiments on two 1 MA pulsed power generators with very different rise rates—MAGPIE at Imperial College with about 300 ns rise time and COBRA at Cornell with about 100 ns rise time. Comparisons of radiated power from 16-wire Al and Cu arrays over a range of masses are presented. Results from these initial experiments suggest that radiated power for a given material is similar when implosion times are matched to the current rise time. We also present comparisons of radiated power with modified array geometries such as wire length and cathode diameter. Some results from Ti/Ni and Fe/Ni arrays are also presented.

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Date submitted: 20 Jul 2010 Electronic form version 1.4