

Abstract Submitted
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The Largest Multi-Planar Wire Arrays on Zebra with LCM and their Applications. A.S. SAFRONOVA, V.L. KANTSYREV, M.E. WELLER, V.V. SHLYAPTSEVA, I.K. SHRESTHA, M.Y. LORANCE, A. STAFFORD, K.A. SCHULTZ, University of Nevada, Reno, C.A. COVERDALE, Sandia National Laboratories, A.S. CHUVATIN, Ecole Polytechnique — Two new approaches of i) simultaneous study of implosion and radiative characteristics of different materials in wire array Z-pinch plasma in one shot [Safronova et al, PoP 21, 031205 (2014)] and ii) investigation of larger sized wire arrays (to enhance energy coupling to plasmas and provide better diagnostic access) were further developed in experiments with 1.7 MA Zebra with a Load Current Multiplier. In particular, the largest multi-Planar Wire Arrays with two outer planes from alloyed Al wires placed as far from each other as at 19 mm (compare with 6 and 9 mm studied before) and with a modified central plane from Ni-60 (mostly Cu), were investigated. Though K-shell Al and L-shell Cu plasmas have similar temperatures and densities, the ablation dynamics and radiation of Al and Cu planes is somewhat different, which was investigated in detail using the full set of diagnostics and modeling. Advantages of using such wire arrays at higher currents to study plasma flow and radiation from different materials and jets are highlighted. This work was supported by NNSA under DOE Cooperative Agreement DE-NA0001984 and in part by DE-NA0002075. SNL is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Company, for the U.S. DOE under Contract DE-AC04-94AL85000.

Alla Safronova
University of Nevada, Reno

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