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Wire Ablation Plasma Source Development at Sandia National Laboratories[1] M.D. JOHNSTON, K. HAHN, B.V. OLIVER, T.A. MEHLHORN, Sandia National Laboratories, D.W. DROEMER, M.D. CRAIN, National Securities Technologies, Y. MARON, V. BERNSHTAM, E. STAMBULCHIK, Weizmann Institute of Science — Experiments are being conducted to investigate fine wires as potential plasma sources for applications such as intense electron beam transport and propagation. For these studies, a microsecond long, low inductance, capacitive discharge (40kA, 50kV) is driven through a wire(s) to generate a plasma. The plasma expansion is determined by JxB forces which are controlled via changes in geometry and current. High resolution visible spectroscopy is used to spatially and temporally measure plasma parameters throughout the pulse. Lineshapes, ratios, and intensities are compared with time-dependent CR calculations to obtain plasma densities and temperatures. Results are compared with MHD calculations and scaling laws for mass ablation rates from wires.

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