Diagnostics and results from coaxial plasma gun development for the PLX-α project*1 A. CASE, S. BROCKINGTON, E. CRUZ, F. D. WITHERSPOON, HyperV Technologies — We present results from the diagnostics used during development of the contoured gap coaxial plasma guns [1] for the PLX-α project at LANL. Plasma-jet diagnostics include fast photodiodes for velocimetry, a ballistic pendulum for total plasmoid momentum, and interferometry for line integrated density. Deflectometry will be used for line integrated perpendicular density gradients. Time-resolved high-resolution spectroscopy using a novel detector and time-integrated survey spectroscopy are used for measurements of velocity and temperature, as well as impurities. We will also use a Faraday cup for density, fast imaging for plume geometry, and time-integrated imaging for overall light emission. Experimental results are compared to the desired target parameters for the plasma jets (up to $n \approx 2 \times 10^{16} \text{cm}^{-3}$, $v \approx 50 \text{km/s}$, mass $\approx 5 \text{gm}$, radius $= 4 \text{cm}$, and length $\approx 10 \text{cm}$).


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