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Development of MiniRailguns for the Plasma Liner Experiment (PLX)[1] F.D. WITHERSPOON, S. BROCKINGTON, A. CASE, S.J. MESSER, L. WU, R. ELTON, HyperV Technologies Corp., S.C. HSU, LANL, J.T. CASSIBRY, UAH, M.A. GILMORE, UNM, THE PLX TEAM — Plasma guns are being developed for use on the Plasma Liner Experiment (PLX) located at LANL. The collapsing plasma liner will be formed via merging of 30 dense, high Mach number plasma jets (n$\sim 10^{16-17}$ cm^{-3}, M $\sim$10–35, v $\sim$50–70 km/s, $r_{\rm jet}$ $\sim$5 cm) in a spherically convergent geometry. Small parallel-plate railguns are being developed for this purpose. Each gun will operate at $\sim$300-600 kA peak current, and launch up to $\sim$8000 μg of high-Z plasma (Ar, Xe) using a $\sim$50 kJ pfn. We now routinely operate with very fast gas valve injection of Ar, and have recently achieved $\sim$4000 μg at 40 km/s at $\sim$400 kA. Work continues to increase both the mass and velocity using higher current and pulse shaping aided by MACH2 simulations. We describe these experimental efforts and the first prototype gun recently installed on PLX.

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