

Abstract Submitted
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Overview and Status of the new HJ1 Coaxial Plasma Gun for PLX- α ¹ F DOUGLAS WITHERSPOON, ANDREW CASE, EDWARD CRUZ, SAMUEL BROCKINGTON, MARCO LUNA, ROBERT BECKER, ADAM COOK, HyperV Technologies & HyperJet Fusion, LANL PLX- α TEAM — An overview of the HJ1 coaxial plasma gun for the PLX experiment at LANL is presented, highlighting upgrades over the previous Alpha2guns and the current status of gun testing. Improvements include a faster, more robust high mass gas valve, field distortion sparkgap switches with smaller jitter, a new pre-ionization system using a self-switching glow discharge, and a re-engineered more compact 7.5kJ pfn structure. A total of 36 guns are planned, to be delivered in two groups of 18. As of July 2019, the first 18 guns have been assembled, with the first 6 HJ1 guns installed on PLX and undergoing test. The next 12 are being prepared for shipping during July/August. The 2nd set of 18 guns are mostly manufactured, with assembly and delivery scheduled for Fall 2019. Gas valve and switch lifetime testing continues, along with experimental parameter scans designed to establish the optimal operating configuration. Best repeatable shots to date are about 1 mg argon plasma, up to 67 km/s, jet lengths 10-30 cm, at $2 \times 10^{16} \text{ cm}^{-3}$. [1] Hsu et al., IEEE Trans. Plasma Sci. **40**, 1287 (2012). [2] Y. C. F. Thio et al., Fus. Sci. Tech., accepted (2019); <https://doi.org/10.1080/15361055.2019.1598736>.

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