

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Engineering design of the PLX- α coaxial gun¹ EDWARD CRUZ, SAMUEL BROCKINGTON, ANDREW CASE, MARCO LUNA, DOUGLAS WITHERSPOON, HyperV Technologies Corp., SAMUEL LANGENDORF, LANL — We describe the engineering and technical aspects of the coaxial gun designed for the 60-gun scaling study of spherically imploding plasma liners as a standoff driver for plasma-jet-driven magneto-inertial fusion [1]. Each coaxial gun incorporates a fast, dense gas injection and triggering system, a compact low-weight pfn with integral sparkgap switching, and a contoured gap designed to suppress the blow-by instability [2]. Alpha1 and Alpha2 guns are compared, with emphasis on the improvements on Alpha2, which include a faster more robust gas valve, an improved electrode contour, a custom 600- μ F, 5-kV pfn, and a set of six inline sparkgap switches operated in parallel. The switch and pfn configurations are mounted directly to the back of the gun, and are designed to reduce inductance, cost, and complexity, maximize efficiency and system reliability, and ensure symmetric current flow. We will provide a detailed overview of the design choices made for the PLX- α coaxial gun. [1] Hsu et al., IEEE Trans. Plasma Sci. **40**, 1287 (2012). [2] Witherspoon et al., Rev. Sci. Instr. **80**, 083506 (2009).

¹This work supported by the ARPA-E ALPHA Program.

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Date submitted: 15 Jul 2016

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