

Abstract Submitted
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Magnetized Plasma Guns for the PLX PJMIF Project¹ F.D. WITHERSPOON, A. CASE, E. CRUZ, M. LUNA, A. COOK, R. BECKER, HyperJet Fusion Corp, & THE PLX TEAM — In plasma jet driven magneto-inertial fusion (PJMIF), an array of discrete supersonic plasma jets is used to form a spherically imploding plasma liner, which then compresses a magnetized plasma target to fusion conditions[1]. We plan to form the target by stagnating a number of magnetized plasma jets in the center of the target chamber. Magnetized coaxial plasma guns are being developed by adapting the previously developed contoured gap plasma liner gun to form a magnetized plasma jet by adding a bias field coil to the gun. We aim to achieve a magnetized hydrogen plasma jet with $\sim 3 \times 10^{14} \text{ cm}^{-3}$ muzzle density, temperature above 5 eV, 100 km/s, with an embedded field of ~ 1 kG. We will provide an overview of the experimental results, along with plans for providing up to 12 magnetized guns to LANL for a planned integrated liner-on-target experiment on PLX using the 36 liner guns installed from the ALPHA program[2]. [1] Hsu et al., IEEE Trans. Plasma Sci. **40**, 1287 (2012). [2] Yates et al., Phys. Plasmas **27**, 062706 (2020).

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