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Generating Long Scale-Length Plasma Jets Embedded in a Uniform, Multi-Tesla Magnetic-Field MARIO MANUEL, CAROLYN KURANZ, ALEX RASMUS, SALLEE KLEIN, JEFF FEIN, PATRICK BELANCOURT, R.P. DRAKE, University of Michigan, BRAD POLLOCK, ANDREW HAZI, JAEBUM PARK, JACKSON WILLIAMS, HUI CHEN, Lawrence Livermore National Laboratory — Collimated plasma jets emerge in many classes of astrophysical objects and are of great interest to explore in the laboratory. In many cases, these astrophysical jets exist within a background magnetic field where the magnetic pressure approaches the plasma pressure. Recent experiments performed at the Jupiter Laser Facility utilized a custom-designed solenoid to generate the multi-tesla fields necessary to achieve proper magnetization of the plasma. Time-gated interferometry, Schlieren imaging, and proton radiography were used to characterize jet evolution and collimation under varying degrees of magnetization. Experimental results will be presented and discussed. This work is funded by the NNSA-DS and SC-OFES Joint Program in High-Energy-Density Laboratory Plasmas, grant number DE-NA0001840, by the National Laser User Facility Program, grant number DE-NA0000850, by the Predictive Sciences Academic Alliances Program in NNSA-ASC, grant number DEFC52-08NA28616, and by NASA through Einstein Postdoctoral Fellowship grant number PF3-140111 awarded by the Chandra X-ray Center, which is operated by the Smithsonian Astrophysical Observatory for NASA under contract NAS8-03060.

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