Abstract Submitted
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Diagnostic Progress and Results on the Magnetized Shock Experiment[1] R.J. SMITH, Univ. of Washington, T.E. WEBER, Los Alamos National Laboratory — The Magnetized Shock Experiment (MSX) at LANL is reliably producing Field Reversed Configuration (FRC) plasmas spanning peak densities of $\sim 10^{21-23}$ m^{-3}, combined Te+Ti of 10s-500eV and velocities of 100-300km/s as a means to producing a laboratory supercritical collision-less shock. Visible light images showing discontinuities indicative of shocks and jetting have been obtained on various targets: co-solenoid B field, a metal wall and counter-solenoidal B fields (FRC capture and reconnection). Two chord interferometry, external and internal magnetic probing are routinely employed and x-ray diagnostic capability has recently been added. The pulsed polarimetry technique is being deployed which can measure the local magnetic field using Lidar Thomson scattering. In addition, a fiber optic version of pulsed polarimetry using a new specialty fiber that enhances fiber backscatter with Fiber Bragg Gratings is being developed. Magnetic fields of order $\sim$ 1T have been measured, however a new modified shock chamber geometry and recent machine modifications enabling operation at increased θ-coil voltage are expected to improve translation speed and hence stagnation pressures. Progress on these diagnostics and results will be presented.

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