Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Pulsed Polarimetry and magnetic sensing on the Magnetized Shock Experiment (MSX)[1] R.J. SMITH, T.M. HUTCHINSON, Univ. of Washington, Seattle, T.E. WEBER, LANL, Los Alamos, S.F. TAYLOR, Univ. of Wisconsin, Madison, S.C. HSU, LANL, Los Alamos — MSX is uniquely positioned to generate the conditions for collision-less magnetized supercritical shocks with Alvenic Mach numbers (M_A) of the order 10 and higher. Significant operational strides have been made in forming plasmas over wide parameter ranges: (T_e+T_i) of 10-200 eV, average $n_e$of 5-60x10^{+21} m^{-3}, speeds up to 150 km/s and fields up to 1T with a highest plasma flow M_A of 5 to date. The MSX plasma is unique in regards to large plasma size of 10 cm and average β higher than 0.8 making the FRC and the magnetized shock structure candidates for the application of Pulsed Polarimetry, a polarization sensitive Lidar technique. The shock dynamics are presently being investigated using internal probes, interferometry and imaging. Internal probe results and an assessment of the shock parameters will dictate the use of the UW pulsed polarimeter system in which internal n_e, $T_e$and B are to be measured. Recent results will be presented.

[1]Supported by DOE Office of Fusion Energy Sciences Funding DE-FOA-0000755.

Roger Smith
Univ. of Washington, Seattle

Date submitted: 11 Jul 2014 Electronic form version 1.4