Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Initial measurements from the new radial x-ray spectrometer on MST[1] J.D. LEE, A.F. ALMAGRI, B.E. CHAPMAN, J.S. SARFF, UW Madison, D.J. CLAYTON, Johns Hopkins Univ., R.W. HARVEY, CompX, Del Mar, CA — X-ray spectra in the MST are used to investigate the transport of energetic electrons and to estimate the effective ionic charge, Z_{eff}. The x-ray diagnostic consists of six Amptek XR-100CR detectors, each of which can be placed on any of 17 ports covering $\frac{r}{a}$ values from 0.87 inboard to 0.84 outboard. The detectors are connected to Cremat Gaussian shaping amplifiers with a shaping time of 500 ns. The shaping amplifier output is digitized, and a new code is used to identify the times and amplitudes of the pulses. With this configuration, in the best case, an x-ray spectrum can be generated for time periods of one millisecond or less. Measurements have been taken in quasi-single helicity plasmas over MST's entire range of plasma currents. Work has begun on modeling D_r and Z_{eff} radial profiles using the CQL3D code constrained by measured x-ray spectra.

[1]Work supported by DOE.

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Date submitted: 21 Jul 2011 Electronic form version 1.4