

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

New soft x-ray spectrometer on MST¹ J.D. LEE, A.F. ALMAGRI, D.R. BURKE, B.E. CHAPMAN, D.J. CLAYTON, C.B. FOREST, J.S. SARFF, University of Wisconsin-Madison — Measurements of x-ray spectra in the MST are used to investigate the transport of energetic electrons and to estimate the effective charge Z_{eff} . A new set of x-ray detectors is being implemented on the MST to detect x-rays in the energy range of 2-10 keV. The new detectors are six Amptek XR-100CR modules with preamplifier and cooling. The detectors are connected to Cremat Gaussian shaping amplifiers with shaping times of either 500 or 100 ns. The shaping amplifier output is directly digitized at 60 MHz, and the x-ray pulses are processed using a new code capable of correctly fitting multiple overlapping pulses. This configuration should allow a maximum count rate of 2-5 MHz. The detectors can be placed in any of 17 ports covering r/a values from 0.87 inboard to 0.84 outboard allowing measurements of inboard-outboard symmetry. The new detectors compliment the current system composed of 13 CdZnTe detectors detecting hard x-rays in the 10-150 keV energy range. The composite energy spectra of these x-ray diagnostics will be used with CQL3D Fokker-Planck modeling to constrain key parameters such as the electron radial diffusion coefficient and Z_{eff} .

¹Work supported by USDOE.

J.D. Lee
University of Wisconsin-Madison

Date submitted: 19 Jul 2010

Electronic form version 1.4