

Abstract Submitted  
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**Recent upgrades to MST's soft-x-ray spectroscopy diagnostic<sup>1</sup>** M.

D. PANDYA, A. C. SCHERER, University of Wisconsin - Madison, J. CLARK, Florida AM University, A. M. DUBOIS, A. F. ALMAGRI, B. E. CHAPMAN, University of Wisconsin - Madison — In MST RFP plasmas, electron energization during tearing mode reconnection events was recently observed via soft-x-ray (sxr) emission [1]. X-ray measurements from 3-25 keV during these short-lived ( $< 100 \mu\text{s}$ ) events were achieved with a detector consisting of an avalanche photodiode and a 20 ns Gaussian shaping amplifier (GSA) whose output was digitized at 500 MHz [2]. A radially resolved measurement of x-ray emission from 2-10 keV can also be made with an existing array of six Amptek XR-100CR sxr detectors, each comprised of a Si photodiode, a charge-sensitive preamplifier, a thermoelectric cooler, and a Cremat GSA CR-200-500ns having a pulse FWHM of about 1200 ns [3]. One upgrade to this system entails a CR-200-25ns GSA which will reduce the FWHM to 60 ns. The digitization rate is also increased from 60 MHz to 240 MHz, sufficient to resolve a 60 ns Gaussian pulse. The upgrade will also incorporate improved shielding from IGBT switching noise arising from MSTs Bt and Bp programmable power supplies. Housing the detector assembly within Compac-SRF-series enclosures attenuates noise at 20 MHz by 80 dB. Initial measurements will be presented. [1] A.M.DuBois, et al., PRL submitted [2] A.M.DuBois, et al., RSI, 86, 073512 (2015) [3] D.J.Clayton, et al., RSI, 81, 10E308 (2010)

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