## Abstract Submitted for the DPP17 Meeting of The American Physical Society

Soft X-ray studies on MST: Measuring the effects of toroidicity on tearing mode phase and installation of a multi-energy camera<sup>1</sup> PATRICK VANMETER, LISA REUSCH, Univ of Wisconsin, Madison, PAOLO FRANZ, Consorzio RFX, JOHN SARFF, JOHN GOETZ, Univ of Wisconsin, Madison, LOUIS DELGADO-APARICIO, Princeton Plasma Physics Laboratory, DANIEL DEN HARTOG, Univ of Wisconsin, Madison — The soft X-ray tomography (SXT) system on MST uses four cameras in a double-filter configuration to measure the emitted brightness along forty distinct lines of sight. These measurements can then be inverted to determine the emissivity, which depends on physical properties such as temperature, density, and impurity content. The SXR emissivity should correspond to the structure of the magnetic field; however, there is a discrepancy between the phase of the emissivity inversions and magnetic field reconstructions when using the typical cylindrical approximation to interpret the signal from the toroidal magnetics array. This discrepancy was measured for two distinct plasma conditions using all four SXT cameras, with results supporting the interpretation that it emerges from physical effects of the toroidal geometry. In addition, a new soft x-ray measurement system based on the PILATUS3 photon counting detector will be installed on MST. Emitted photons are counted by an array of pixels with individually adjustable energy cutoffs giving the device more spectral information than the double-filter system.

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