Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Electron Temperature Measurement on MST Using SXR Brightness[1] MEGHAN MCGARRY, University of Wisconsin - Madison, PAOLO FRANZ, Consorzio RFX - Padua, Italy, DANIEL DEN HARTOG, JOHN GOETZ, University of Wisconsin - Madison — A new soft x-ray (SXR) tomography diagnostic is being constructed and commissioned on the Madison Symmetric Torus (MST). The diagnostic measures electron temperature using the two-color technique, which takes the ratio of chord-averaged bremsstrahlung brightness in two different spectral bands. Initial measurements in the core plasma using a prototype detector array show an electron temperature around 350eV for a 400 kA standard MST plasma, which is consistent with Thomson scattering temperature measurements. Four detector arrays are under construction and will provide complete SXR tomographic measurements of emissivity. The two-color technique will also be applied to this reconstructed emissivity to create a two-dimensional temperature map. These two temperature measurements will be used in conjunction with SXR topology to study the relationship between long-wavelength magnetic fluctuations and electron temperature evolution.

[1]This work supported by U.S. D.O.E. and NSF.

Meghan McGarry
University of Wisconsin - Madison

Date submitted: 14 Jul 2011 Electronic form version 1.4