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Fast electron studies using a multichord x-ray spectrometer on MST[1] J.D. LEE, University of Wisconsin-Madison, A.F. ALMAGRI COLLABORATION, J.A. GOETZ COLLABORATION, B.E. CHAPMAN COLLABORATION, J.S. SARFF COLLABORATION, R.W. HARVEY COLLABORATION — The X-ray spectroscopy diagnostic on MST consists of six SXR detectors and six HXR detectors capable of measuring photons in the energy range $3-25$ keV and $10-60$ keV, respectively. The detectors can be installed on any of 17 ports viewing a poloidal cross-section, with impact parameters from $\frac{r}{a}=0.87$ inboard to $\frac{r}{a}=0.84$ outboard. An updated code processes the digitized signals, providing the time and energy of photons incident on each detector, and is capable of resolving individual photons arriving at the detector less than 50 ns apart. The spatial resolution of the system may allow improved diagnosis of the QSH tearing mode on MST, including the x-ray enhancement and spatial structure. The system may be able to probe electron heating during magnetic reconnection, the counterpart to noncollisional ion heating observed during magnetic reconnection on MST. X-ray flux from multiple view chords are compared with prediction from the kinetic code CQL3D. X-ray measurements can be used to constrain CQL3D in order to estimate Z_{eff} and radial diffusion profiles. Additionally, radially-localized x-ray measurements from lower hybrid current drive experiments are shown.

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