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Core Localized Anisotropic Electron Energization During Magnetic Reconnection in RFP Plasma ALEXANDER SCHERER, ABDULGADER ALMAGRI, MIHIR PANDYA, AMI DUBOIS, University of Wisconsin-Madison — We investigate the generation of an anisotropic electron tail during magnetic reconnection events in the MST RFP device. We have observed a strong, high-energy tail in the electron bremsstrahlung x-ray spectrum for a view perpendicular to the toroidal magnetic field and a relatively weak tail in the x-ray spectra for parallel and antiparallel views[1]. Runaway mechanisms are ruled out for this energization due to symmetry between the parallel and antiparallel spectra. These experimental observations have been reproduced by a bremsstrahlung calculation using the CQL3D code in which a distribution function with a large $v_\perp$ tail is input and localized to a core with a 9 cm radius around the magnetic axis[1]. An experiment to isolate the spatial extent of this core region is performed by scanning a fast response x-ray detector, with an output pulse width of 20 ns, along a series of radial, chord-like views. The presence of a strong tail in the chord spectra determines the extent of this core region. Spectra viewing the poloidal magnetic field near the reversal surface are also investigated for runaway energization and compared with toroidal results. Work supported by the US DOE.
[1]A.M. DuBois, et al., *Phys. Rev. Lett.* 118, 075001

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