Abstract Submitted
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Anisotropic ion heating in the MST RFP[1] RICHARD MAGEE, DANIEL DEN HARTOG, GENNADY FIKSEL[2], SANTHOSH KUMAR, VLADIMIR MIRNOV, University of Wisconsin - Madison, DARREN CRAIG, Wheaton College, CENTER FOR MAGNETIC SELF-ORGANIZATION COLLABORATION — In the Madison Symmetric Torus reversed-field pinch, discrete bursts of magnetic reconnection liberate a large amount of energy ($\sim$20 kJ) from the equilibrium magnetic field, a significant fraction of which (10-25%) becomes ion thermal energy, more than doubling T_i in < 100 μsec. Recent charge exchange recombination spectroscopy measurements of the C^{+6} impurity ion temperature reveal that this heating is often anisotropic, such that the rise in perpendicular temperature is greater than or equal to the rise in parallel temperature. Furthermore, the magnitude of the rise in both temperatures is lessened as the plasma density increases, although this effect is more pronounced for the parallel temperature. Models of ion heating are reviewed in light of these observations.

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[2]Presently at Laboratory for Laser Energetics, University of Rochester

Richard Magee
University of Wisconsin - Madison

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