Abstract Submitted
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Burst Electron Heating Measured with High-Repetition-Rate Thomson Scattering on the MST Reversed-Field Pinch[1] WILLIAM YOUNG, L.A. MORTON, E. PARKE, D.J. DEN HARTOG, Univ of Wisconsin, Madison, CMSO, MST TEAM — Improved operation of a high-repetition-rate laser allows MST Thomson scattering measurements at rates up to 200 kHz. The new laser will be applied to improving electron temperature measurements during spontaneous periods of improved confinement with RFP plasmas, where ensembled data shows a 4% increase in core electron temperature during bursts of magnetic activity associated with edge-resonant m=0 modes. This heating is concurrent with a reduction of core parallel current and magnetic energy, then followed by an inward propagating cold pulse consistent with previous SXR data. The Thomson scattering diagnostic uses a 1064 nm high-repetition-rate laser currently employing a Nd:YVO_4 oscillator, four Nd:YAG amplifier stages, and a final Nd:glass amplifier. This laser can operate under a variety of modes while maintaining 1.5 J pulse energies necessary for Thomson scattering, including 4 ms long bursts at 10 kHz pulsing rate, ten bursts of 15 pulse at 75 kHz, or bursts of 5 pulses at 200 kHz.

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