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Electron temperature fluctuations from tearing modes in MST HILLARY STEPHENS, DANIEL DEN HARTOG, CHRIS HEGNA, ROB O'CONNELL, JOSHUA REUSCH, University of Wisconsin - Madison — Electron temperature fluctuations (temporal and spatial) associated with the largest magnetic tearing mode (m=1, n=6) have been observed in MST. The rational surface for the m=1, n=6 modes is well defined by the temperature structure in standard discharges. Evidence that the temperature fluctuations may be slightly out of phase with the magnetics is observed. Results are presented for both 400kA standard and Quasi-Single Helicity (QSH) MST discharges. During standard plasmas the temperature structure around the rational surface is approximately 20 percent of the minor radius with temperature fluctuations approximately 4 percent of the mean. This spatial structure may be associated with a magnetic island in the plasma. Electron temperature is measured using a multi-point, multi-pulse Thomson scattering diagnostic. Magnetic data is collected with toroidal and poloidal magnetic coil arrays. The data are collected over an ensemble of similar plasma shots with temperature measured at 21 spatial locations for two time points during standard discharges and four time points during QSH discharges. A Bayesian analysis is used on the ensemble to map the temperature structure near the tearing mode. The research was performed under appointment to the Fusion Energy Sciences Fellowship Program and supported by US DOE and CMSO.

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