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Analysis of core density and potential fluctuations and tearing modes in MST improved confinement plasmas[1] P.J. FIMOGNARI, D.R. DEMERS, Xantho Technologies, LLC, Madison, WI — A heavy ion beam probe is used to concurrently study spatially localized density and potential fluctuations in the interior of MST. Measurements are acquired simultaneously from two sample volumes during periods of improved confinement. These are strongly influenced by characteristics of the MST reversed field pinch device and plasma. Various analysis techniques (including wavelet transforms and short-time FFTs) are used to unfold the dynamics of $\tilde{n}_e$ and $\tilde{\phi}$ along with tearing mode data measured by magnetic pick-up coils at the plasma edge. The complex relationship between the fluctuations and the modes resonant near the sample locations and those present at other points along the beam trajectory are investigated.

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