

Abstract Submitted
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Localized measurements of ion flow fluctuations in MST D.A. ENNIS, D. CRAIG, D.J. DEN HARTOG, G. FIKSEL, S. GANGADHARA, University of Wisconsin-Madison and the Center for Magnetic Self-Organization in Laboratory and Astrophysical Plasmas — Fluctuation induced transport, momentum relaxation and the MHD dynamo are important topics for laboratory plasmas as well as astrophysical plasmas. Measurements of ion flow are essential for furthering our understanding of these phenomena in the laboratory. In MST, C VI emission from neutral beam-induced charge exchange recombination at 343.4 nm is collected by a custom built, high-throughput spectrometer yielding measurements of carbon ion flow localized to +/- 1 cm with high time resolution (~ 100 kHz.) We have measured the correlation of poloidal velocity fluctuations with magnetic fluctuations across the plasma radius. Strong correlations are observed for modes with $m=1$, $n=8-10$ near the mid radius ($r/a \sim 0.6$) and the observed phase implies a contribution to the MHD dynamo. Curiously, measurements at high plasma current show no flow correlation with the dominate $m=1$, $n=6$ mode perhaps indicative of undetected, very localized flows. Results of a first localized toroidal flow measurement will be presented, along with the effects of boronization on the charge exchange signal. Work supported by U.S.D.O.E. and N.S.F.

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