Abstract Submitted
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Characterization of electrostatic turbulence in the MST reversed field pinch[1] D.J. THUECKS, A.F. ALMAGRI, UW-Madison, CMSO, Y. REN, PPPL, CMSO, J.S. SARFF, P.W. TERRY, UW-Madison, CMSO — Low-frequency fluctuations (10-30 kHz) associated with tearing modes dominate the fluctuation power spectrum in RFP plasmas. High-frequency turbulence is also present and may play a significant role in particle and energy transport and in anomalous ion heating. Recent magnetic fluctuation measurements suggest the broadband turbulence results from a nonlinear cascade, but the nature of the constituent fluctuations is poorly understood. The present work shows results from high-frequency electrostatic fluctuation measurements made with an insertable multi-tip probe in the edge plasma region. Wave number spectra have both power-law and exponential characteristics, indicating regions of constant energy transfer rate from large to small scales, as well as energy dissipation at small scales. High-frequency magnetic fluctuations have been measured simultaneously, allowing the coherence and relative phases between electrostatic and magnetic fluctuations to be determined. Partitioning of the kinetic and magnetic energy will be discussed, as will candidates for the source of high-frequency turbulence.

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