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Dissipation Range of Anisotropic Magnetic Fluctuations in MST plasmas[1] JAMES TITUS, Florida AM Univ, ABDUL ALMAGRI, JOHN SARFF, PAUL TERRY, University of Wisconsin - Madison, EPHREM MEZONLIN, Florida AM Univ — Previous measurements of broadband magnetic fluctuations in the MST reversed field pinch (RFP) revealed a turbulent cascade that is anisotropic with respect to the large-scale (equilibrium) magnetic field and characterized by a power spectrum with exponential falloff at scales larger than expected for classical processes. The cascade is supported by tearing instabilities at the global scale that undergo strong nonlinear coupling, especially through poloidal mode m=1 and m=0 fluctuations. The non-classical dissipation feature may be indicative of the powerful non-collisional ion heating observed in MST plasmas. The previous measurements were done with pickup coils separated in both the toroidal and poloidal directions that allowed a resolution of $|k|<1.5$ cm^{-1}. We report new measurements with increased spatial resolution, from increasing the number of coil sets (from 2 to 7). This enables an increase in the amount of two-point correlated spectra to be ensemble. Calibration analysis show the new probe measurements agree with the previous probe measurements at the same insertion depth. As the new probe is inserted deeper into the plasma, towards the reversal surface, the exponential component dominates as the power law component goes to zero. This is either due to stronger dissipation or the change in wavenumber resistivity.

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