Abstract Submitted
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Initial Measurements of Electrostatic Turbulence in Local Helicity Injection Plasmas[1] A.T. RHODES, G.M. BODNER, M.W. BONGARD, R.J. FONCK, J.L. PACHICANO, J.M. PERRY, J.A. REUSCH, N.J. RICHNER, University of Wisconsin-Madison — Investigation of the edge turbulence during local helicity injection (LHI) in the Pegasus Toroidal Experiment is being pursued using a pair of triple Langmuir probes. Temperature and density profiles in the plasma edge have been measured during LHI, showing 100 eV and 4×10^{19} m^{-3}, and agree with Thomson scattering to within measurement uncertainty. Fluctuation spectra of the probe measurements show a shift in spectral power density from low (10–100 kHz) to high (300–400 kHz) frequency between the early and later times of the discharge. This change in the frequency spectra is aligned with a spontaneous reduction of the $n = 1$ MHD signature observed by magnetics diagnostics. Correlation with magnetic fluctuations is observed in the higher frequency range of the probes. Experiments are being conducted to measure electric potential fluctuations in the edge for a larger frequency range (up to 2 MHz) to understand the effects of the MHD transition on the edge turbulence. Additionally, recent LHI plasmas with $\beta_t \sim 100\%$ have shown a minimum $|B|$ well spanning $\sim 50\%$ of the plasma volume. This $|B|$ well is theoretically predicted to be stabilizing of drift wave turbulence. Measurements to explore the turbulence behavior in high-β LHI plasmas are in progress.

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