Abstract Submitted
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Turbulent Parameter Evolution in Madison Symmetric Torus RFP Plasmas[1] J.B. TITUS, E.D. MEZONLIN, A.B. ALEXANDER, Center for Plasma Science & Technology, Florida Agricultural & Mechanical University, Tallahassee, FL, J.A. JOHNSON III, Pyramid Plasmas, LLC, Lawrenceville, GA, MST TEAM[2] — Using Fourier analysis and chaos theory, the turbulent parameters have been used to characterize turbulence in many different plasma systems. The Fourier components measure the characteristic frequency that is associated with instabilities that drive turbulence, the amount of energy associated with turbulence and the rate at which that energy moves between scales. The chaos components measure the complexity and volatility of the fluctuations. The Madison Symmetric Torus provides a plethora of plasma regimes to study turbulence and its associated transitions. Magnetic field fluctuations measurements have been made during the ramp-up, sawtooth crash, and equilibrium phases of a standard discharge, along with the increased confinement period during poloidal pulse current drive (PPCD). While the Fourier components of the turbulent parameters are independent of plasma current, the chaotic components show that the complexity and volatility are dependent on both plasma current and density.

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