Abstract Submitted
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Scale Invariance in Madison Symmetric Torus RFP Turbulent Plasmas[1] JAMES B. TITUS, EPHREM MEZONLIN, JOSEPH A. JOHNSON[2], Florida A&M University - Tallahassee, FL, FEDOR CHERNYSHEV, Ioffe Physical-Technical Institute of the Russian Academy - St. Petersburg, Russia, MADISON SYMMETRIC TORUS (MST) COLLABORATION[3] — Recent studies have shown that turbulence may be a second-order phase transition. Lambda-like profiles of the turbulent parameters have been seen in various types of plasmas, including reversed-field pinch, glow discharge, and laser-induced plasmas. Another signature characteristic of any second-order phase transition is scale invariance. The Hurst exponent characterizes scale invariance by finding negative or positive autocorrelations in a long time series. The Hurst exponent, already found in previous RFP plasmas at RFX, has been found and studied on Madison Symmetric Torus (MST) RFP plasmas. Given the right Hurst exponent, this may show that turbulence is scale invariant, giving more evidence towards turbulence being a second-order phase transition.

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