

Abstract Submitted
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Evidence of a Second Order Phase Transformation in Turbulent Fusion Plasmas¹ J.A. JOHNSON, III, J.B. TITUS, C.T. RAYNOR, E.-D. MEZONLIN, Florida A&M University, Tallahassee, Florida, J.M. MOLLER, E.B. HOOPER, H.S. MCLEAN, B. HUDSON, C.A. ROMERO-TALAMAS, R.D. WOOD, Lawrence Livermore National Laboratory, Livermore, California — Turbulence physics characterized as a Ginzburg-Landau phase transformation with the tools from BCS Theory predicts a new universal constant for all turbulent systems. At SSPX, with diagnostics for: ion temperature, T_i , from a Compact Neutral Particle Analyzer; electron temperature, T_e , from Profile Thomson Scattering; and electron density, n_e , from CO2 laser interferometry, we can now test these predictions using the influence of variations in the SSPX helicity injection during a single shot on turbulent magnetic field fluctuations. We will report on these successful tests and their implication for the broad class of isolated turbulent fusion plasma regimes.

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