Evidence of New Turbulence Physics in Madison Symmetric Torus Plasmas using a Second Order Phase Transformation Interpretation[1] E.D. MEZONLIN, J.B. TITUS, J.A. JOHNSON III, K.M. WILLIAMS, C.T. RAYNOR, C.A. WEATHERFORD, Florida A&M University — When turbulence physics is characterized as a Ginzburg-Landau phase transformation with the tools from BCS Theory, a new universal constant is derived, defined as κ, which can be determined from measured quantities in the turbulent MST plasmas. Such a constant would provide a new constraint in the MHD equations for fusion plasma simulations. Values of κ are calculated from light and magnetic field fluctuations for a wide range of MST operating conditions. The implications from these results are evaluated for new turbulence physics and new fusion simulation methodologies. We would like to thank the MST group for providing data used in these analyses.

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Date submitted: 17 Jul 2009   Electronic form version 1.4