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Kappa: A New Universal Constant in Turbulent Behaviors C.T. RAYNOR, A.B. ALEXANDER, M. ROBINSON, J.A. JOHNSON III, 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 a turbulent glow discharge plasma. Such a constant would provide a new constraint in the MHD equations for turbulent plasma simulations. Values of κ are calculated for a wide range of noble gases subjected to an axial magnetic field in the range 0-500 gauss. We report first efforts at a determination of the sensitivity of κ to changes in the local molecular constituent and the strength of the local magnetic field. We will also evaluate the implications from these results for new turbulence physics.

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