**Critical Turbulent Energies for Magnetic Reconnection Events in RFP Plasmas** J.A. JOHNSON III, Pyramid Plasmas, LLC, Lawrenceville GA, C.A. WEATHERFORD, E.D. MEZONLIN, J. TITUS, Florida Agricultural & Mechanical University, Tallahassee, FL, MST TEAM, MADISON WI COLLABORATION — An approximation for the nonlinear Schroedinger equation, which applies to turbulent MHD flow, is solved. These solutions are applicable to both fusion and astrophysical plasmas. These results are used to interpret new data on magnetic reconnection events at the Madison Symmetrical Torus using the interpretation of transition to turbulence as a second order Landau-Ginzburg event. We find that the critical turbulent energies from edge magnetic field fluctuations are manipulated by changes in the fusion plasma current. Further, the transport properties can be controlled as well by changing the critical turbulent energies.

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