

Abstract Submitted  
for the DPP07 Meeting of  
The American Physical Society

**Correlations of Turbulent Magnetic Field Parameters with Electron and Ion Temperature Measurements in SSPX Plasmas<sup>1</sup>** J.A. JOHNSON III, J.B. TITUS, E.-D. MEZONLIN, Florida A&M University, J.M. MOLLER, E.B. HOOPER, H.S. MCLEAN, B. HUDSON, C.A. ROMERO-TALAMAS, R.D. WOOD, Lawrence Livermore National Laboratory, FLORIDA A&M UNIVERSITY COLLABORATION, LAWRENCE LIVERMORE NATIONAL LABORATORY COLLABORATION — A new approach to turbulence physics provides a new context for turbulent diagnostic parameters in SSPX magnetic field fluctuations. Using the diagnostics for: ion temperature,  $T_i$ , from a Compact Neutral Particle Analyzer; electron temperature,  $T_e$ , from Profile Thomson Scattering and time resolved soft X-ray ratios; and electron density,  $n_e$ , from CO<sub>2</sub> laser interferometry, we can now study the impact of variations in the SSPX helicity injection during a single shot on magnetic field fluctuations. We will report on changes in the complexity, changes in the rate of energy transfer through the various lengths scales, changes in characterizing fluctuation frequencies along with changes in the turbulent energy in the magnetic field fluctuations for a variety of shots with special attention on the relationships between these changes and the helicity, electron temperature and ion temperature determinations.

<sup>1</sup>Research supported in part by grants from DOE and NSF.

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Date submitted: 20 Jul 2007

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