

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Development of a Mode Beat Frequency Detection Program for Use with NSTX Data CHARLOTTE JOHANNA BLUMENFELD, SULI (PPPL), E.L. FOLEY, PPPL — The National Spherical Torus Experiment (NSTX) at the Princeton Plasma Physics Lab is a spherical torus used to magnetically confine plasmas for fusion energy research. Confinement ability can be degraded by fluctuations in plasma conditions, including magnetic field. In NSTX-confined plasmas, beat frequencies arise from the interaction of a fluctuating mode in the plasma and the oscillation of the photoelastic modulator that is used to make motional Stark effect (MSE) pitch angle measurements. Over 6,000 plots of magnetic fluctuation data taken during NSTX plasma shots were catalogued according to the presence or absence of these mode beat frequencies. Fewer than five percent of all shot plots generated fit these criteria. Tens of thousands more plasma shot plots will need to be catalogued and this volume of data makes continued human identification of MBFs temporally unfeasible. Development of an IDL-based program that can identify plots containing MBFs has begun. This poster presents a survey of the approaches that can be utilized in the design of such a program and evaluates the expected effectiveness of each.

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Date submitted: 15 Jul 2010

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