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Measurement of kHz scale oscillations of the magnetic field inside Tokamak plasmas using the Motional Stark Effect diagnostic L.W. CLARK, Harvard University, E.L. FOLEY, Nova Photonics — The Motional Stark Effect (MSE) diagnostic has become the standard for making internally resolved measurements of the magnetic field pitch angle profile in plasmas. However, ordinary MSE analysis cannot incorporate many important phenomena, including some Magnetohydrodynamic instabilities and turbulence, which can cause oscillations in the pitch angle with frequencies in the range of 1 to 100 kHz. In order to measure such fluctuations using MSE, one must isolate the light intensity signals at the frequencies of beats between the magnetic field fluctuations and the photoelastic modulators used during signal collection. We are writing and optimizing a software package to obtain those signals from MSE measurements. We will apply the complete analysis package to data collected at the National Spherical Torus Experiment. Results will be presented.

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