

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Real-time Detection of Locked Modes¹ S. ANGELINI, R.S. GRANETZ, S.M. WOLFE, (MIT) — Disruptions are one of the largest problems facing tokamaks. In a large-scale experiment such as ITER, disruptions would cause crippling damage and severe setbacks in experimentation. One method for disruption mitigation involves the use of a gas jet which has been tested on both normally running plasmas and vertical displacement events (VDEs) on Alcator C-Mod. In both cases, the jet was successful in mitigating disruption effects. The gas jet has not yet been tested on other types of disruptions. Locked-mode major disruptions are easily created in C-Mod and could be used to test the effectiveness of the gas jet as a mitigation method if the jet could be fired early enough. It has been empirically observed that the electron cyclotron emissions (ECE) signal displays a flattening of the normally-present sawteeth before the current quench occurs in certain locked-mode major disruptions. A procedure is being written which will detect the ECE flattening by reading changes in the standard deviation of the signal. This procedure will be programmed into the digital plasma control system (DPCS) for real-time testing.

¹This work is supported by DE-FC02-99ER54512

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Date submitted: 22 Jul 2007

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