

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**C-Mod MHD stability analysis with LHCD**<sup>1</sup> FATIMA EBRAHIMI, A. BHATTACHARJEE, L. DELGADO, S. SCOTT, J. R. WILSON, PPPL, G. M. WALLACE, S. SHIRAIWA, R. T. MUMGAARD, PSFC, MIT — In lower hybrid current drive (LHCD) experiments on the Alcator C-Mod, sawtooth activity could be suppressed as the safety factor  $q$  on axis is raised above unity. However, in some of these experiments, after applying LHCD, the onset of MHD mode activity caused the current drive efficiency to significantly drop. Here, we study the stability of these experiments by performing MHD simulations using the NIMROD code starting with experimental EFIT equilibria. First, consistent with the LHCD experiment with no signature of MHD activity, MHD mode activity was also absent in the simulations. Second, for experiments with MHD mode activity, we find that a core  $n=1$  reconnecting mode with dominate poloidal modes of  $m=2,3$  is unstable. This mode is a resistive current-driven mode as its growth rate scales with a negative power of the Lundquist number in the simulations. In addition, with further enhanced reversed-shear  $q$  profile in the simulations, a core double tearing mode is found to be unstable.

<sup>1</sup>This work is supported by U.S. DOE cooperative agreement DE-FC02-99ER54512 using the Alcator C-Mod tokamak, a DOE Office of Science user facility.

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Date submitted: 15 Jul 2016

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