

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Alfvén eigenmode activity during the sawtooth phase in Alcator C-Mod¹ E.M. EDLUND, M. PORKOLAB, L. LIN, S.J. WUKITCH, and the ALCATOR C-MOD TEAM, G.J. KRAMER, PPPL — Recent current ramp experiments in Alcator C-mod have utilized early ICRF heating ($P_{RF} \sim 3$ MW) and low densities ($n_e \sim 0.6 \times 10^{20} \text{ m}^{-3}$) to destabilize core localized Alfvén eigenmodes [1]. This results in creation of Alfvén cascades, chirping modes highly sensitive to small changes in the minimum of the q-profile [2,3]. This great sensitivity makes Alfvén cascades particularly useful as a diagnostic and MHD monitor [3]. The phase contrast imaging (PCI) system has observed modes similar to the cascades, but preceding sawteeth in sufficiently low density plasmas. The hybrid kinetic-MHD code NOVA-K [4] has provided results showing the theoretical existence of q=1 cascade modes under plasma conditions taken from actual discharges. Implications for post-crash current profiles will be presented.

[1] M. Porkolab *et al.*, IEEE Trans. on Plasma Science **34**, 229 (2006).

[2] H. L. Berk *et al.*, Physical Review Letters **87**, 185002 (2001).

[3] S.E. Sharapov *et al.*, Physics Letters A **289**, 127 (2001).

[4] C.Z. Cheng and M.S. Chance, J. of Comp. Physics **71**, 124 (1987).

¹Supported by DoE contract awards DE-FC02-99ER54512 and DE-AC02-76CH03073.

Eric Edlund
MIT PSFC

Date submitted: 24 Jul 2006

Electronic form version 1.4