Alfvén eigenmode activity during the sawtooth phase in Alcator C-Mod

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 ($n_e l \sim 0.6 \times 10^{20}$ m$^{-2}$) 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.


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