

Abstract Submitted
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Mode structure and stability analysis of reversed shear Alfvén eigenmodes with NOVA-K ERIC EDLUND, MIKLOS PORKOLAB, LIANG LIN, NAOTO TSUJII, STEVE WUKITCH, MIT Plasma Science and Fusion Center, GERRIT KRAMER, Princeton Plasma Physics Laboratory — Experimental studies of reversed shear Alfvén eigenmodes (RSAEs) with phase contrast imaging (PCI) on the Alcator C-Mod tokamak will be presented. The PCI system measures the line integral of electron density fluctuations along 32 vertical chords passing through the plasma core, and was configured to measure frequencies up to 5 MHz and wavenumbers up to 8 cm^{-1} for these studies. With the PCI system the location of RSAEs can be determined very accurately. In combination with the strong dependency of the RSAE frequency on the minimum value of q this leads to severe constraints for the equilibrium reconstruction of reversed shear discharges. Interpretation of the PCI signals is aided by simulations from NOVA-K calculations of the electron density fluctuations, via a synthetic PCI. This technique has been used to interpret observations of RSAEs during sawteeth and the current ramp-up. Applied to RSAEs during sawteeth, it is found that q reaches a minimum of about 0.97 prior to the crash. NOVA-K calculations of RSAE stability and corresponding constraints on the fast ion population will be presented. *Work supported by US DoE awards DE-FC02-99-ER54512 and DE-FG02-94-ER54235 and DE-AC02-76CH03073.

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