

Abstract Submitted
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Measurement of the adiabatic index through the temperature scaling of reversed shear Alfvén eigenmodes E.M. EDLUND, M. PORKOLAB, Y. LIN, N. TSUJII, S.J. WUKITCH, MIT PSFC, L. LIN, UCLA, G.J. KRAMER, PPPL — Reversed shear Alfvén eigenmodes (RSAEs) have been excited in Alcator C-Mod during the current ramp phase at ITER relevant densities of $n_{e0} \leq 1.5 \times 10^{20} \text{ m}^{-3}$ with (2-5) MW of ICRH power absorbed by H minority heating [1]. We have studied the scaling of the minimum frequency of the RSAEs by varying the temperature of the electrons and majority ions and compare the results to theoretical scalings from the code NOVA [2] and an analytic dispersion relation [3]. Taking the adiabatic index (γ) as a free parameter, a best fit to the data indicates $\gamma = 1.40 \pm 0.15$, excluding the ideal gas limit of $\gamma = 5/3$. A limiting value of $\gamma = 3/2$ is predicted from consideration of the energy and pressure of shear Alfvén waves [4]. Kinetic electron response is considered as a possible correction to the theoretical treatment. Work supported by DOE under DE-FG02-94-ER54235 and DE-FC02-99-ER54512.

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