Abstract Submitted
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Observation of TAEs destabilized by energetic particles in Alcator C-Mod[1] J. SEARS, A. BADER, W. BURKE, MIT PSFC, G. KRAMER, PPPL, R.R. PARKER, MIT PSFC, J.A. SNIPES, ITER Organization — Toroidicity-induced Alfvén Eigenmodes (TAEs) are weakly damped MHD modes in toroidal plasmas. The modes occur at discrete frequencies near $\omega_{TAE} = v_A/2qR$, $(v_A = B/\sqrt{\mu_0 \rho})$ in a gap of the continuous spectrum of Alfvén waves. In Alcator C-Mod L-mode plasmas with ICRF heating up to 4.5 MW, damping rates of stable TAEs have been measured to decrease from $\sim 5\%$ at 2.5 MW of ICRF to $\sim 0.5\%$ at 4 MW of ICRF. Unstable modes are also observed during ICRF heating at 3.5 MW and higher. Measurements of charge exchanged neutral particles indicate that the damping decreases as the population of energetic particles near the mode resonance increases. Measured TAE structure, frequency and damping rate are compared to computational results from NOVA-K.

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Jason Sears
MIT PSFC

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