Abstract Submitted for the DPP05 Meeting of The American Physical Society

Results from Real-time Open-loop Alfvén Eigenmode excitation in Alcator C-Mod¹ J. SEARS, W. BURKE, R.R. PARKER, J. SNIPES, V. TANG, S. WOLFE, MIT PSFC, A. FASOLI, CRPP - Swiss Federal Institute of Technology, Association Euratom - Swiss Confederation — The Active MHD diagnostic system excites Alfvén eigenmodes in Alcator C-Mod and measures their damping rates, or margin to instability. Resonant modes are stimulated with two moderate-n antennas positioned above and below the outboard midplane. The antennas are fed by power amplifiers equipped with automatically tuned capacitive networks capable of matching in the range of 30 kHz to 1 MHz. The driving frequency follows in realtime the center of the Toroidal Alfvén Eigenmode gap, $f_{TAE} = v_A/4\pi q R$, making small excursions away from the gap to observe the modes' damping characteristics. The effect of shear on mode damping rate was studied during an elongation scan of inner wall limited plasmas. The destabilizing effect of ICRF-heated fast ions with energies above 1/3 the Alfven speed, $v_A = B/\sqrt{\mu_0\rho}$, was also studied. Finally the diagnostic regularly records mode damping rates in plasmas tailored to other experiments. Results are presented.

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