Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Alcator C-Mod's Quasi-Coherent Mode Antenna: Experimental Results and Interpretation[1] T. GOLFINOPOULOS, B. LABOMBARD, R.R. PARKER, W. BURKE, E.M. DAVIS, R. GRANETZ, M. GREENWALD, E. MARMAR, M. PORKOLAB, J.L. TERRY, S.M. WOLFE, P.P. WOSKOV, MIT-PSFC, X. XU, LLNL, ALCATOR C-MOD TEAM — A new "Shoelace" antenna has been installed on Alcator C-Mod. Its goal is to interact with edge fluctuations, and particularly the quasi-coherent mode (QCM) associated with the steady-state EDA H-mode. With $k_\perp = 1.5$ cm^{-1} and frequency range, $40 < f < 300$ kHz, the antenna is matched to the QCM and the Weakly Coherent Mode (WCM) of the I-mode regime. Here, we present initial results from the first operation of the antenna into ohmic, ohmic EDA H-mode, and I-mode plasmas. The antenna response observed on fluctuations diagnostics, including Mirnov coils and a Gas Puff Imaging (GPI) system, is discussed and compared with `BOUT++` simulations. The coherent response on Mirnov coils reveals an antenna-driven field perturbation that competes with background turbulence. The edge plasma stability to antenna perturbations is investigated by searching for poles in the coil response. A reciprocating probe scans through the scrape-off layer. Mounting a magnetic coil head on the probe gives the perturbation's radial decay rate, $k_R \approx 0.3 - 1.0$ cm^{-1}; a Langmuir probe head examines the antenna's effect on radial transport.

[1]This work is supported by USDoE award DE-FC02-99ER54512.

Theodore Golfinopoulos
MIT-PSFC

Date submitted: 19 Jul 2012 Electronic form version 1.4