Abstract Submitted
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A 'shoelace' antenna system for direct excitation of C-Mod's quasi-coherent mode and boundary layer turbulence[1] B. LABOMBARD, T. GOLFINOPOULOS, R. PARKER, W. BURKE, R. LECCACORVI, R. VIEIRA, J. ZAKS, R. GRANETZ, M. GREENWALD, E. MARMAR, M. PORKOLAB, S. WOLFE, P. WOSKOV, S. WUKTICH, MIT Plasma Science and Fusion Center — Experiments indicate that short wavelength, drift-Alfvenic turbulence largely sets the transport levels in the plasma edge: pressure gradients in L and H-mode are 'clamped' at canonical values of the MHD parameter (α_{MHD}); broadband and coherent fluctuations have strong magnetic signatures, with $k_\perp \rho_s \sim 0.1$ being prominent. A quasi-coherent mode (50 kHz $<$ f $<$ 150 kHz, $1 < k_\perp < 2$ cm^{-1}) drives particle transport in C-Mod's EDA H-modes, making them steady-state without ELMs. With the idea of exciting, controlling or otherwise exploiting this transport behavior, we are developing a novel, high $k_\perp$ antenna system to drive drift-Alfvenic modes at the outer midplane with $k_\perp \sim 1.5$ cm^{-1}. A 'shoelace' style winding is placed in close proximity to the last-closed flux surface. In principle, this scheme inductively drives parallel current fluctuations that mimic intrinsic plasma fluctuations but at larger amplitude. Details of the antenna system design, its planned modes of operation and initial results will be presented.

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Brian LaBombard
MIT Plasma Science and Fusion Center

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