

Abstract Submitted
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Gas-Puff Imaging Observations of the Edge Mode Driven by the “Shoelace” Antenna¹ WOONGHEE HAN, J. TERRY, T. GOLFINOPOULOS, S. BAEK, D. BRUNNER, P. ENNEVER, B. LABOMBARD, E. MARMAR, MIT PSFC — Gas-Puff Imaging (GPI) routinely measures the spatially-resolved edge fluctuations in C-Mod plasmas. During the 2016 C-Mod campaign, the “Shoelace” antenna has been used to drive fluctuations in the edge plasma at frequencies and wavenumbers typical of the Quasi-Coherent Mode (QCM) which drives particle transport in the pedestal of ELM-less Enhanced D_α H-mode discharges. A “Shoelace”-driven mode has been detected on fluctuation diagnostics that are magnetically mapped to the antenna. These diagnostics include GPI, the Mirror Langmuir Probe, the reflectometer, and Phase Contrast Imaging, and they all detect a mode in the plasma at the same driven frequency. GPI measures the radial profile of the mode amplitude and phase with the radial width of 6 mm. The poloidal wavenumber of the mode is evaluated to be $k_\theta \approx 1.5 \text{ cm}^{-1}$ near the low-field-side midplane, matching the structure imposed by the antenna winding. The measured mode amplitude, phase, and the poloidal wavenumber will be compared with those calculated from other diagnostics in order to characterize the property of the “Shoelace”-driven mode in the edge plasma, which may provide further insight to QCM.

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