

Abstract Submitted
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The Fine-scale Structure of the Radial Electric Field in the Scrape-Off-Layer during ICRF Heating in Alcator C-Mod¹ J.L. TERRY, I. CZIEGLER, S.J. WUKITCH, Y. LIN, MIT-PSFC, S.J. ZWEBEN, PPPL — By observing the radial structure in the poloidal dynamics of the SOL turbulence, we find a fine-scale radial structure in the broadband turbulence poloidal phase velocities (V_θ) with the application of ICRF power ($P_{RF} > 0.6$ MW). The radial profiles are very different from typical profiles in Ohmic plasmas. Since $V_\theta(r)$ in the SOL is dominated by V_{ExB} , this structure implies a fine-scale E_r profile is formed in the presence of the ICRF. The existence of such spatial structure is not predicted to be a result of the ICRF since the radial size-scale is much smaller than the fast-wave perpendicular wavelength (~ 10 cm). Such an E_r profile may help to explain the increased impurity content observed with ICRF heating and will be important for SOL flows and transport. Using 2D Gas-Puff-Imaging we find that, in the ~ 3 cm region outside the separatrix, the dominant propagation direction for V_θ reverses up to 3 times. This is found beyond the region where the antenna near-fields are present; the fast wave is propagating there. While the mechanism is still unknown, it must be consistent with the following: the structure is dependent on which antenna is energized; it changes with q_{95} and is present when the RF frequency is 78 or 50 MHz.

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