

Abstract Submitted
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Study of the Poloidal Variation of Edge Plasma Turbulence in QH-mode with PCI on DIII-D¹ J.C. ROST, M. PORKOLAB, J.R. DORRIS, A. MARINONI, Plasma Science and Fusion Center, MIT, K.H. BURRELL, General Atomics — The Phase Contrast Imaging (PCI) diagnostic has been used on DIII-D to measure plasma turbulence from 2 to 30 cm⁻¹ using three roughly vertical beam paths. Work here focuses on measurements of QH mode plasmas, with stationary plasma parameters and an outer gap scan that allowed the PCI to sample a range in poloidal angle and k_r/k_θ . The results show the largest edge turbulence has $k_\theta \rho_i > 0.4$ and $f > 200$ kHz, consistent with the plasma velocity at the bottom of the E_r well, and a radial coherence length much less than 1 cm. A sharp decrease in turbulence amplitude is seen between the midplane and $|\theta| = 20$ deg away from the X-point with no similar drop between the midplane and $|\theta| = 20$ deg toward the X-point. Another component to the turbulence is seen at roughly similar wavenumbers and $f < 100$ kHz, consistent with the plasma velocity further inside the LCFS.

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