

**Abstract Submitted for the 53rd Annual Meeting
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Category Number and Subject: 5.6.2. DIII-D Tokamak

Type Category: 2. Experimental/Observational

Theory Experiment Combined/General

Study of the Poloidal Variation of Edge Plasma Turbulence in QH-mode with PCI on DIII-D,* 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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