Abstract Submitted
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Frequency-Poloidal Wave Number Spectral Analysis of Turbulence in QH-mode plasmas Measured with BES on DIII-D[1] M. ONO, SOKENDAI, K. IDA, T. KOBAYASHI, M. YOSHINUMA, NIFS, G.R. MCKEE, Z. YAN, U WISCONSIN, K.H. BURRELL, X. CHEN, GA — Quiescent H-mode (QH) is an ELM-free scenario with good energy confinement, constant density, and radiated power, with a pedestal localized electromagnetic mode (edge harmonic oscillation, EHO) providing continuous particle transport. The features and characteristics of QH-mode plasma turbulence in the wavenumber-frequency domain are crucial to understanding the mechanisms and dynamics of the enhanced particle transport. Frequency-wavenumber spectral analysis was applied to localized density fluctuation data measured with BES on DIII-D in the region of $0.8<\rho<1.0$. In the analysis, a Maximum Entropy Method is applied in the space domain, instead of an FFT, to estimate a well resolved k-spectrum spectrum from truncated data. The fundamental frequency of the EHO was typically $\sim$10 kHz with long poloidal wavelength ($k_\theta \sim 0.02\ cm^{-1}$), while broadband turbulence was observed in the range of 50200 kHz with correlation lengths of a few cm. The broadband turbulence measured at $\rho \sim 0.9$ was found to have poloidal phase velocity of $\sim 10\ km/s$, which corresponds to the E×B velocity.

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