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Phase Contrast Imaging Measurements of Turbulence in ELMing Plasmas[1] J.C. ROST, M. PORKOLAB, J.R. DORRIS, Plasma Science and Fusion Center, MIT, K.H. BURRELL, General Atomics — The Phase Contrast Imaging (PCI) diagnostic on DIII-D has been upgraded since the last study of ELMs. Signal-to-noise and bandwidth have been increased, and a rotating mask system added to spatially localize measurements of electrostatic modes is used here to determine if modes are aligned with the magnetic field. During Type I ELMs, a burst of turbulence coincides with the magnetic perturbation but lasts longer, several milliseconds compared to a few 100 microseconds. ELM-like modes seen between Type I ELMs (possibly Type II ELMs) are smaller and shorter on the magnetics and D_α, but the density perturbations on the PCI are similar in amplitude to that during the Type I ELMs. The turbulence during the ELM-like modes has a phase velocity about one third that of the turbulence during the Type I ELM, indicating a different radial location or different driving instability. Measurements with the mask show that the ELM-related turbulence is aligned with the total background magnetic field, similar to electrostatic modes.

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