Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Study of ELM Density Turbulence using the Upgraded Phase Contrast Imaging on DIII-D[1] J.C. ROST, E.M. DAVIS, A. MARINONI, M. PORKOLAB, MIT, K.H. BURRELL, General Atomics — Recent studies of the turbulent density fluctuations accompanying ELMs in mixed ELM-type discharges have exploited the expanded wavenumber range of the upgraded Phase Contrast Imaging (PCI) diagnostic. The PCI data demonstrate the difference between the fluctuations generated by Type I ELMs, which are broadband in frequency and wavelength, and those generated by Type III ELMs, which are similar in amplitude but restricted to long wavelengths, suggesting that turbulence may play a significant role in Type I ELM transport. The high frequency response of PCI makes it ideal for studying the ELM-associated density fluctuations, which are observed at frequencies up to several MHz, evolve on time scales of 10s of μs, and persist after the magnetic component of the ELM has decayed away. The upgraded PCI, with independent systems for long and short wavelength detection ($k < 5$ cm^{-1} and $1 < k < 30$ cm^{-1} respectively), demonstrated coverage of the full wavenumber range of interest.

[1]Work supported in part by the US Department of Energy under DE-FG02-94ER54235, DE-FC02-04ER54698, and DE-FC02-99ER54512.

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Date submitted: 15 Jul 2016 Electronic form version 1.4