

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

Theory Experiment

Localized Measurement of Short Wavelength Plasma Fluctuations With the DIII-D Phase Contrast Imaging Diagnostic,* J.R. Dorris, J.C. Rost, M. Porkolab, *MIT* – The DIII-D phase contrast imaging (PCI) turbulence diagnostic measures density fluctuations previously line-integrated over the entire viewing chord. In 2004, a rotating mask system was installed that takes advantage of the vertical variation of radial magnetic field to make localized measurements along the PCI chord. The region of localization is proportional to wavenumber, making this technique more favorable for short wavelength modes ($k > 15/\text{cm}$). This year the PCI has been fitted with Fiber Optic Links for data transmission, new low-noise amplifiers and high-pass filters. With these upgrades, we have improved S/N, measured wavenumber response to $35/\text{cm}$ using ultrasonic calibration, and extended the frequency response to 5 MHz. Results from this new configuration will be presented with particular focus on localized measurements.

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