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[ ] Theory [x] Experiment

**Phase Contrast Imaging Measurements of Edge Turbulence Across an H-mode Transition,\*** J.C. Rost, A. Marinoni, M. Porkolab, *MIT*; K.H. Burrell, *GA* — The Phase Contrast Imaging (PCI) diagnostic on DIII-D provides a line-integrated measurement of density fluctuations. Analysis of previous PCI data taken during QH-mode plasmas has revealed turbulence with short radial wavelengths and high frequencies which is generated by the well in the radial electric field  $E_r$ . Application of these results allows us to study the rapid evolution in turbulence at an L-H transition. The dominant effect of the L-H transition on turbulence is a 70% drop in fluctuation amplitude. However high frequency fluctuations are seen to arise on the same time scale as the L-H transition (*i.e.* a few ms). Interpretation of the 2d spectrum  $S(k,f)$  of the PCI data of the line-integrated fluctuation, especially the Doppler shift and the ratio  $S(k_{\text{pci}})/S(-k_{\text{pci}})$ , indicates that the high frequency fluctuations are located on the inner edge of the  $E_r$  well. There is in addition a region of turbulence the PCI detects which is located outside the minimum of the  $E_r$  well. This ongoing work will provide quantitative information on the evolution of the  $E_r$  well at high time resolution across the L-H transition, important to understanding the interaction between turbulence and flow shear at the H-mode transition.

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