

Abstract Submitted
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Experimental Observations of I-Phase at DIII-D¹ D. ELDON, P.H. DIAMOND, G.R. TYNAN, UCSD, T.L. RHODES, L. SCHMITZ, UCLA, G.R. MCKEE, U. Wisconsin, R.J. GROEBNER, P.B. SNYDER, T.H. OSBORNE, M.A. VAN ZEELAND, T.E. EVANS, J.D. KING, R.L. BOIVIN, GA — Intermediate or I-phase has received much attention in the context of L-H transitions, but similar behavior is observed in H-L transitions as well. I-phase has been described as a predator prey interaction between Zonal Flows and turbulence [1]. Direct measurements of ZF speed and density fluctuation turbulence are possible with Doppler backscattering and beam emission spectroscopy (BES). Broadband turbulence with frequency of order ~ 100 kHz has been observed with intensity modulation at ~ 1 kHz, narrow band. Modulation frequency is an inverse function of pedestal density, which grows during L-H and decays during H-L. Activity at the modulation frequency is observed through many channels: an $n=0$ magnetic signature on the shelf probes, electron density and temperature fluctuations localized to the pedestal steep gradient region, and filterscope signals. Unlike other radially resolved measurements (BES, ECE), the mode seen by filterscopes is localized to the scrape off layer. BES measures a phase lag between chords separated poloidally (order ~ 10 km/s flow) but not radially.

[1] K. Miki, et al., Phys. Plasmas 19, 092306 (2012).

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