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Local Core Turbulence Dynamics via BES During q-Triggered Internal Transport Barriers[1] M.W. SHAFER, R.J. FONCK, G.R. MCKEE, D.K. GUPTA, D.J. SCHLOSSBERG, U. Wisconsin-Madison, M.E. AUSTIN, U. Texas-Austin, R.J. GROEBNER, GA — Low order rational q surfaces have been associated with the triggering of ITBs in negative central shear L-mode discharges on DIII-D. Using the high sensitivity beam emission spectroscopy (BES) diagnostic, core fluctuation measurements were obtained for $r/a \sim 0.3 - 0.7$. Fluctuation levels are found to drop transiently during the appearance of low-order rational q surfaces, where the largest drop is found to be near the rational q surface. Local poloidal turbulence flow is simultaneously found to increase by ∼50% during the event and is compared to CER E×B flow. A spatial transition from broadband turbulence at larger radii to coherent modes in the core is observed. The coherent modes are present before and after the onset of the ITB. The time evolving spatial structure of these coherent modes is analyzed. The phase coupling of the coherent modes to broadband turbulence is examined using wavelet-based cross bicoherency for the non-stationary data.

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