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The Effect of Electron Cyclotron Heating on Multi-Scale Fluctuations in ITER Baseline Scenario Discharges on DIII-D[1] A. MARONINI, J.C. ROST, M. PORKOLAB, E.M. DAVIS, MIT, R.I. PINSKER, K.H. BURRELL, G.M. STAEBLER, GA, B.A. GRIERSON, PPPL — Experiments on DIII-D simulating the ITER Baseline Scenario show that torque-free pure electron heating (ECH) modifies profiles and affects density fluctuations at electron and at ion scales in different ways. The Phase Contrast Imaging diagnostic is used to measure the time evolution of density fluctuations going from mixed beam/ECH to pure beam heating at fixed β_N. The intensity of fluctuations at scales between 2 and 5 cm^{-1} increases promptly after turning off ECH; at larger scales, in contrast, it decreases only after other equilibrium quantities have evolved to a new stationary state. Non-linear gyrokinetic simulations suggest that the former response is due to ETG modes that also generate a prompt inward particle pinch; the latter is consistent with the dominant ITG modes being weakened by the increased flow shear in the new state. Such fluctuations in ITER might affect fusion performance via modifications to steady-state profiles.

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