Abstract Submitted
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Reversed magnetic shear suppression of electron-scale turbulence on NSTX[1] HOWARD Y. YUH, F.M. LEVINTON, Nova Photonics, R.E. BELL, J.C. HOSEA, S.M. KAYE, B.P. LEBLANC, E. MAZZUCATO, PPPL, D.R. SMITH, UW-Madison, C.W. DOMIER, N.C. LUHMANN, UC Davis, H.K. PARK, POSTECH — Electron thermal internal transport barriers (e-ITBs) are observed in reversed (negative) magnetic shear NSTX discharges[1]. These e-ITBs can be created with either neutral beam heating or High Harmonic Fast Wave (HHFW) RF heating. The e-ITB location occurs at the location of minimum magnetic shear determined by Motional Stark Effect (MSE) constrained equilibria. Statistical studies show a threshold condition in magnetic shear for e-ITB formation. High-k fluctuation measurements at electron turbulence wavenumbers[3] have been made under several different transport regimes, including a bursty regime that limits temperature gradients at intermediate magnetic shear. The growth rate of fluctuations has been calculated immediately following a change in the local magnetic shear, resulting in electron temperature gradient relaxation. Linear gyrokinetic simulation results for NSTX show that while measured electron temperature gradients exceed critical linear thresholds for ETG instability, growth rates can remain low under reversed shear conditions up to high electron temperatures gradients. [1]H. Yuh, et. al., PoP **16**, 056120 [2]D.R. Smith, E. Mazzucato et al., RSI **75**, 3840 [3]E. Mazzucato, D.R. Smith et al., PRL **101**, 075001

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