Abstract Submitted
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Investigations of Turbulent Transport Channels in Gyrokinetic Simulations[1] A.M. DIMITS, LLNL, J. CANDY, GA, W. GUTTENFELDER, PPPL, C. HOLLAND, UCSD, N. HOWARD, MIT, W.M. NEVINS, E. WANG, LLNL — Magnetic-field stochasticity arises due to microtearing perturbations, which can be driven linearly [1] or nonlinearly (in cases where they are linearly stable [2]), even at very modest values of the plasma beta. The resulting magnetic-flutter contribution may [1] or may not [2] be a significant component of the overall electron (particle and thermal) transport. Investigations of the effect of ExB flow shear on electron-drift magnetic-flutter diffusion coefficient $D_{edr}(r,v_{||})$ using perturbed magnetic fields from simulations, using the GYRO code [3], of ITG turbulence show a significant effect for electrons with parallel velocities $v_{||}$ surprisingly far from the resonant velocity. We further examine changes in the radial dependence of this diffusion coefficient vs. $v_{||}$ and which resonant magnetic-field perturbations are important to the values and radial structure of D_{edr}. The resulting electron transport fluxes are compared with the simulation results. Improvements over [2] in treating the ambipolar field in the relationship between the magnetic (or drift) diffusion coefficients and the transport have been made in these comparisons.

[1] W. Guttenfelder, et al., Phys. Plasmas **19**, 056119 (2012).
[2] E. Wang, et al., Phys. Plasmas **18**, 056111 (2011).
[3] J. Candy and R. E. Waltz, J. Comput. Phys. **186**, 545 (2003).

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