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Verification of the Spectral Shift Paradigm for ExB Shear Suppression of Transport[1] G. STAEBLER, R.E. WALTZ, J. CANDY, J.E. KINSEY, General Atomics — Detailed study of the way in which shear in the mean field ExB velocity Doppler shift impacts the non-linear spectrum of electric potential fluctuations in gyro-kinetic simulations has lead to a deeper understanding of the suppression mechanism [1]. The impact of the Doppler shear can be interpreted with a simple analytic model, which shows that the spectrum shifts in the direction where the Doppler shear is linearly destabilizing but non-linear mixing re-centers the spectrum about a finite radial wavenumber at reduced peak amplitude. This new paradigm leads to a model of the finite radial wavenumber shift induced by the Doppler shear that is solely responsible for the reduction of turbulence. Including parallel velocity shear leads to interesting asymmetries. The verification of the new model, implemented in the TGLF quasi-linear transport code, with a large number of simulations with the GYRO gyro-kinetic turbulence code will be presented.

[1] G.M. Staebler, *et al.*, A New Paradigm for Suppression of Gyro-Kinetic Turbulence by Velocity Shear submitted to Phys. Rev. Lett. (2012).

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