

Abstract Submitted
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Gyrokinetic Secondary Stability Theory For Toroidal ETG Modes

GABRIEL PLUNK, STEVE COWLEY, UCLA — Secondary stability theory has been invoked to explain the large disparity in the non-linear behavior of Ion Temperature Gradient (ITG) and Electron Temperature Gradient (ETG) driven turbulence. In particular, the existence of persistent “streamer” structures in ETG turbulence indicates a significant weakening of the secondary instabilities which tend to isotropize ITG tokamak turbulence. We use the electrostatic non-linear gyrokinetic equation to solve for the secondary stability of the local two-dimensional “toroidal” branch of the Electron Temperature Gradient (ETG) mode. We address the issue of stable streamer structures and relate our findings to recent ETG simulations.

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