Abstract Submitted
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**Collisionless Trapped Electron Mode Turbulence** JIANYING LANG, YANG CHEN, SCOTT PARKER, University of Colorado — Collisionless Trapped Electron Mode (CTEM) turbulence is a likely canidate for explaining anomolous transport in tokamak discharges that have a strong density gradient relative to the ion temperature gradient[1]. Here, CTEM turbulence is investigated using the Gyrokinetic $\delta f$ GEM code.[2] GEM is electromagnetic, includes full drift-kinetic electrons, generaly axisymmetric equilbria, collisions and minority species. Here, the flux-tube limit is taken and $\beta$ is so small that the simulations are essentially electrostatic. Linear theory[3] predicts that the instability occurs at $\frac{\sqrt{2\varepsilon}R}{L_n} > 1$, which agrees very well with the simulation results. With increasing density gradient, it is observed that the most unstable mode transitions from a CTEM to drift wave mode and the short-wavelength modes are most unstable ($2 > k_\perp \rho_i > 1$). Nonlinear simulations are underway to address the parametric dependence of particle and energy transport. The importance of zonal flows for CTEM turbulence, is still not well understood and is under investigation.

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