Abstract Submitted
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**Studies of Gyrokinetic Turbulence Models for Edge Plasmas**[1] E.A. BELLI, J. CANDY, P.B. SNYDER, General Atomics — Gyrokinetic computational models are developed for studying tokamak edge plasmas. A 5D $\delta f$ Eulerian gyrokinetic code which uses ($\vec{R}$, $\mu$, $v_\parallel$) coordinates has been developed and benchmarked with the GS2 gyrokinetic code in the linear, collisionless, electrostatic limit, including trapped electron dynamics. Various collisional and numerical dissipation algorithms for the ($\mu$, $v_\parallel$) velocity space formulation with nonlinear dynamics are explored. Extensions of the $\delta f$ gyrokinetic formulation to full $F(F = F_0 + \delta f)$ are also presented. We discuss studies of turbulence and transport in the tokamak edge/scrape-off region, where $\delta f \sim F_0$ so $O\left(\rho_*^2\right)$ effects neglected for core plasma simulations, such as the parallel nonlinearity, may now be important.

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