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[**X**] Theory [ ] Experiment

Studies of Gyrokinetic Turbulence Models for Edge Plasmas,* E.A. Belli, J. Candy, P.B. Snyder, *General Atomics* – Gyrokinetic computational models are developed for studying tokamak edge plasmas. A 5D δf Eulerian gyrokinetic code which uses ($\vec{R}$, μ, $v_{//}$) 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 (μ, $v_{//}$) velocity space formulation with nonlinear dynamics are explored. Extensions of the δf 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 $O(\rho_*^2)$ effects neglected for core plasma simulations, such as the parallel nonlinearity, may now be important.

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