Abstract Submitted
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Many mini-Maxwellian method for full 6D kinetic simulation of drift wave turbulence[1] R.E. WALTZ, J.M. CANDY, GA — It was recently shown that expansion of the full kinetic velocity distribution function as a sum of Gaussian Radial Basis Functions can exactly solve the nonlinear inverse-square force Fokker-Planck collision operator [1]. Here we apply this method of *many mini-Maxellians* to develop a new code for full 6D kinetic simulation of electrostatic drift wave turbulence with ion temperature gradient modes and adiabatic electrons in tokamak geometry. A linear Krook collision model keeps the local ion distribution function close to Maxwellian. The code is spectral in toroidal modes and formulated for delta-f and full-f, linear and nonlinear, local and global radial slice simulations. Suppression of irrelevant high-frequency ion cyclotron motion and short Debye length scales pose significant challenges for 6D simulations. The field solve compares a quasi-neutrality model with solution of the Poisson equation at large relative Debye length.

[1] E. Hirvijoki, J. Candy, E. Belli, and O. Embreus, "The Gaussian Radial Basis Function Method for Plasma Kinetic Theory," submitted to Phys. Lett. A

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R.E. Waltz
GA

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