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Transport, noise, and conservation properties in gyrokinetic plasmas¹ THOMAS JENKINS, W.W. LEE, J.L.V. LEWANDOWSKI, PPPL — The relationship between various transport properties (such as particle and heat flux, entropy production, heating, and collisional dissipation) [1] is examined in electrostatic gyrokinetic simulations of ITG modes in simple geometry. The effect of the parallel velocity nonlinearity on the achievement of steady-state solutions and the transport properties of these solutions is examined; the effects of nonadiabatic electrons are also considered. We also examine the effectiveness of the electromagnetic split-weight scheme [2] in reducing the noise and improving the conservation properties (energy, momentum, particle number, etc.) of gyrokinetic plasmas.

[1] W. W. Lee and W. M. Tang, Phys. Fluids **31**, 612 (1988).

[2] W. W. Lee, J. L. V. Lewandowski, T. S. Hahm, and Z.Lin, Phys. Plasmas 8, 4435 (2001).

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