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**Anomalous Resistivity Generated By Ion Acoustic Instabilities in Weakly Collisional Plasmas** C. BLACK, A. BHATTACHARJEE, K. GERMASCHEWSKI, University of New Hampshire, C.-S. NG, University of Alaska Fairbanks — The anomalous resistivity associated with the current-driven ion-acoustic instability has been proposed as a mechanism for magnetic reconnection, and other forms of transport and dissipation. Recently, it has been shown that the underlying eigenmode spectrum of weakly collisional plasmas in the limit of small collisions is fundamentally different from that of collisionless plasmas [C. S. Ng, A. Bhattacharjee, and F. Skiff, Phys. Rev. Lett. 83, 1974 (1999)]. This raises the question of how quasilinear predictions of anomalous resistivity derived from the Vlasov equation differ from those obtained from a weakly collisional theory, even in the limit of zero collisions. We have reformulated traditional quasilinear theory for the Vlasov equation by including the Lenard-Bernstein collision operator. We compare the predictions of quasilinear theory with simulation results obtained from a code which integrates the kinetic Lenard- Bernstein equation coupled to the Poisson equation. We compare our results with classical estimates given by Sagdeev in the absence of collisions, and extend these estimates to the collisional regime. Comparisons will be made also with other numerical studies in the collisionless regime.

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