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Turbulent resistivity in wavy 2D MHD turbulence[1] SHANE KEATING, PATRICK DIAMOND, University of California, San Diego — The theory of 'wavy' MHD turbulence in 2D is presented. The goal is to explore the theory of quenching of turbulent resistivity in a regime for which the mean field theory can be rigorously constructed at large magnetic Reynolds number Rm. We extend the simple 2D problem to include body forces such as buoyancy or the Coriolis force, which convert large scale eddys into weakly interacting dispersive waves. The turbulence-driven spatial flux of magnetic potential is calculated to fourth order in wave slope. Remarkably, adding an additional restoring force to the already tightly constrained system of high Rm MHD turbulence in 2D can actually increase turbulent resistivity, by admitting a spatial flux of magnetic potential which is not quenched at large Rm, although it is restricted by the conditions of applicability of weak turbulence theory.

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