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 \(R_m\). 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 \(R_m\) MHD turbulence in 2D can actually increase turbulent resistivity, by admitting a spatial flux of magnetic potential which is not quenched at large \(R_m\), although it is restricted by the conditions of applicability of weak turbulence theory.

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