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Physics of Turbulence in a Stochastic Magnetic Field[1] PATRICK DIAMOND, MINGYUN CAO, University of California, San Diego — Motivated by recent observations that RMPs tend to raise the L-H Power Threshold, we revisit the classic problem of instability dynamics in a stochastic magnetic field. The resistive interchange, in the collisional regime, is examined as a simple prototypical case. This problem is intrinsically a multi-scale one, and must be dealt with by the method of averaging. A key point is that maintaining divergence-free current on all scales forces the appearance of perpendicular currents (and thus, convective cell flows) in order to maintain charge balance in the presence of parallel current convergences (due to small scale magnetic fields). This is in **marked** contrast to test particle theories, such as the classic by Rechester and Rosenbluth. The microscale cells drive turbulent viscosity and diffusion. These cells may be the cause of RMP pump-out. Turbulent transport and stochastic bending modify the large-scale cell. This analysis parts company with the extensive ancient history of this subject.

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