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Hyper-resistivity due to viscous tearing mode turbulence JOHN FINN, Los Alamos National Laboratory — The quasilinear hyper-resistivity coefficient D for flattening of a current profile (e.g. in RFPs) in resistive magnetohydrodynamics (MHD) is computed. It is found that D is independent of Delta-prime, the constant-psi matching parameter, for viscous tearing modes. This is in contrast with the situation for inertial tearing modes, for which D scales as Delta-prime to the -1/5 power. This situation for inertial tearing modes is problematic because D appears to go to infinity as quasilinear saturation is achieved[J. Krommes and C.-B. Kim, personal communication, 1989], and because D becomes complex for negative Delta-prime. It makes physical sense to compute D for viscous rather than for inertial tearing modes for because inertial tearing modes cross over to viscous modes near quasilinear saturation, when their growth rates are sufficiently small.

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