

Abstract Submitted
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Interactions between Drift-Wave Microturbulence and the Tearing Mode¹ S.D. JAMES, University of Tulsa, D.P. BRENNAN, Princeton University, O. IZACARD, C. HOLLAND, University of California San Diego — Turbulent dynamics are known to be affected by the presence of a magnetic island. The evolution of a magnetic island is also known to be affected by evolving turbulent fields. Capturing this interaction is a challenging computational problem due to the disparate scales involved. Using a Hasegawa-Wakatani model for the small spatial and temporal scale drift-wave microturbulence and coupling it to Ohm's Law for evolving the larger-scale magnetic island we can capture the dynamics of this interaction self-consistently. We have developed a new code, TURBO, to simulate this system using an equilibrium with prescribed turbulent drives and magnetohydrodynamic stability properties. We present progress toward understanding this interaction via comparisons with analytic predictions for a turbulent resistivity and turbulent viscosity. These two transport coefficients are calculated as integrals over the wave spectrum and the scaling with wave number is investigated. An extension to a five-field model including the ion temperature gradient is also presented.

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