

Abstract Submitted
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Investigating the Interactions Between MHD Instabilities and Microturbulence in Magnetized Plasmas¹ S.D. JAMES, D.P. BRENNAN, University of Tulsa, C. HOLLAND, University of California San Diego — The effects of small-scale drift-wave microturbulence on the evolution of MHD instabilities are known to be significant. Also important are the influences MHD instabilities have on turbulent fields. Existing codes used to study the behavior of MHD instabilities are typically not capable of investigating their interactions with microturbulence due to the wide range of spatial and temporal scales involved. We present progress towards the development of a new code solving a four field fluid model in slab geometry, which simultaneously models drift-wave turbulence and slow growing MHD instabilities. Our initial motivations are focused on the interactions between an unstable resistive tearing mode and turbulent fields, and the magnitudes and directionality of different nonlinear energy transfer channels. In particular we aim to compare approximate analytic forms for the effects turbulent viscosity and turbulent resistivity in the MHD evolution to the nonlinear simulations.

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