

Abstract Submitted
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Spectra of two-dimensional MHD plasmas forced by power-law noise CHANG-BAE KIM, Soongsil U — If magneto-hydrodynamic plasmas of two dimensions are forced at an intermediate scale, phenomenological arguments assert the existence of two inertial regimes. One is where the square of the magnetic potential cascades to larger scales and, in the other, the energy is transferred to smaller scales down to the dissipation range. Numerous simulations provide sufficient evidence to endorse such prediction. In both regimes the spectral exponent of relevant quantities are generally independent of the specifics of the forcing, for example, the power of the noise spectrum. Renormalization-group (RG) idea offers a more sophisticated approach in elucidating the spectral behaviors of the forced MHD plasmas. RG, however, predicts the strong dependence of the spectral exponent on the power of the noise spectrum. The main focus of the present work is to reconcile the difference between the two approaches by performing numerical simulations.

Chang-Bae Kim
Soongsil U

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