



Direct and inverse cascades in the geodynamo

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The rapid rotation of planets causes cyclonic thermal turbulence in their cores which may generate the largescale magnetic fields observed outside the planets. We investigate numerically a model based on the geodynamo equations in simplified planar geometry, which enables us to reproduce the main features of small-scale geostrophic flows in physical and wave vector spaces. We find fluxes of kinetic and magnetic energy as a function of the wave number and demonstrate the co-existence of forward and inverse cascades. We also explain the mechanism of magnetic field saturation at the end of the kinematic dynamo regime.