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Spectral study of anisotropic magnetohydrodynamic turbulence

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— A spectral analysis of anisotropic magneto-hydrodynamic turbulence, in presence
of a constant magnetic field, is presented using direct numerical simulations. A
method of decomposing the spectral space into ring structures is presented and the
energy transfers between such rings are studied. This decomposition method takes
into account the angular dependency of transfer functions in anisotropic systems,
while it allows to recover easily the known shell-to-shell transfers in the limit of
isotropic turbulence. For large values of the constant magnetic field, the dominant
energy transfers appear to be in the direction perpendicular to the mean magnetic
field. The linear transfer due to the constant magnetic also appear to be important
in redistributing the energy between the velocity and the magnetic fields.

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