

Abstract Submitted
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The role of cross-helicity in magnetohydrodynamic turbulence

STANISLAV BOLDYREV, University of Wisconsin-Madison, FAUSTO CATTANEO, JOANNE MASON, University of Chicago, JEAN CARLOS PEREZ, University of Wisconsin-Madison — We argue that conservation of cross-helicity plays a fundamental role in driven magnetohydrodynamic turbulence. Turbulent regions exhibit a scale-invariant hierarchy of positive and negative cross-helical domains (eddies). We propose that this structure is consistent with the scale-dependent dynamic alignment of the velocity and magnetic fluctuations, and with the exact analytic results known for MHD turbulence. We then discuss the spectra of both weak and strong cross-helical (or imbalanced) MHD turbulence, and compare the results with the solar wind observations.

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