Abstract Submitted
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Alignment of Velocity and Magnetic Fluctuations in Anisotropic MHD Turbulence[1] C.S. NG, Geophysical Institute, University of Alaska Fairbanks, A. BHATTACHARJEE, Center for Integrated Computation and Analysis of Reconnection and Turbulence, and Center for Magnetic Self-Organization, University of New Hampshire — There has been recent theoretical interest in the effect of the alignment of velocity and magnetic fluctuations in three-dimensional (3D) MHD turbulence with a large-scale magnetic field [Boldyrev 2005, 2006]. This theory predicts that the angle θ between the velocity and magnetic fluctuation vectors has a scaling of $\theta \propto \lambda^{1/4}$, where λ is the spatial scale of the fluctuations. There have also been simulations on 3D forced MHD turbulence that supports this prediction [Mason *et al.* 2006, 2007]. Based on decaying two-dimensional (2D) turbulence, we have found the scaling of $\theta \propto \lambda^{1/4}$ within a range of time interval and spatial scales, despite the fact that Boldyrev's phenomenological theory relies on physical mechanisms operative in fully 3D turbulence in the presence of a strong external field. Higher resolution simulations and scaling analysis, based on pseudo-Alfven waves in 2D, will be presented.

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