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Transition from weakly to strongly anisotropic dynamics in magnetohydrodynamic turbulence JANE PRATT, Georgia State University, ANGELA BUSSE, University of Glasgow, WOLF-CHRISTIAN MUELLER, Technische Universitt Berlin — Magnetohydrodynamic (MHD) turbulence is an essential aspect of a wide range of astrophysical systems, among them convection in stellar interiors, mixing of accreted material into stars, and the dynamics of stellar winds. In each of these astrophysical settings, large-scale structuring of the magnetic field has been observed or is predicted. A large-scale magnetic field produces an anisotropy in the turbulent dynamics of the plasma. We investigate the structure of anisotropic MHD turbulence from the Lagrangian viewpoint based on the trajectories of Lagrangian tracer particles, the natural point of view to study mixing and diffusion. We produce standard Lagrangian statistics such as single-particle diffusion curves, two-particle dispersion curves, and velocity autocorrelation functions. We also demonstrate new Lagrangian statistics developed to understand anisotropic turbulence, including the convex hull and the turning time. Simulation results will be presented that are performed using grid sizes up to 2048^3.

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