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# Magnetic compressibility and Isotropic Scale-Invariant Dissipation of Solar Wind Turbulence

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The anisotropic nature of solar wind magnetic fluctuations is investigated scale-by-scale using high cadence in-situ magnetic field ACE, and Cluster FGM and STAFF observations spanning five decades in scales from the inertial to dissipation ranges of plasma turbulence. We find an abrupt transition at ion kinetic scales to a single isotropic stochastic process as characterized by the single functional form of the probability density functions (PDFs) of fluctuations that characterizes the dissipation range on all observable scales. In contrast to the inertial range, this is accompanied by a successive scale-invariant reduction in the ratio between parallel and transverse power. We suggest that this reflects the phase space nature of the cascade which operates in a scale-invariant isotropic manner in the (kinetic) dissipation range – distinct from the anisotropic phenomenology in the (magnetohydrodynamic) inertial range. Alternatively, if we assume that non-linear effects are weak in the dissipation range and use the results of the linear dispersion theory of waves; then our measurements of fluctuation anisotropy provide deep insight into the nature of these waves. In particular, using these measurements to form a measure for the scale-by-scale magnetic compressibility, we can distinguish between the competing hypotheses of oblique kinetic Alfven waves Vs Whistler waves dominating the energy transfer in the dissipation range.