Scaling properties of intermittent solar wind turbulence and their solar cycle dependence.

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Quantifying the properties of solar wind turbulence is important for our understanding of the fundamentals of MHD turbulence, the evolution of the solar wind, and for the propagation of energetic particles. A hallmark of turbulence is scaling in statistical measures of fluctuations in the flow. In data this is quantified by testing for scaling in the Probability Density Functions (PDF) of fluctuations either directly, or via structure function analysis. Comparisons can then be made, at least in principle, with turbulence phenomenologies. Having determined the scaling exponents from the data we can also derive a Fokker-Planck model along with the associated Langevin equation- this provides a stochastic dynamical equation for the fluctuations in the time series of in- situ plasma parameters. Differences in the scaling exponents found for different plasma parameters constructed to more closely track distinct phenomenologies (Alvenic, or compressive) may reflect both local and nonlocal processes, with implications for our understanding of the evolving solar wind.