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Short-Wavelength Solar Wind Turbulence: Kinetic Alfven vs. Whistler Fluctuations S. PETER GARY, Los Alamos National Laboratory — The inertial range of solar wind turbulence corresponds to magnetic power spectra which scale as $f^{-\alpha}$ with $\alpha \simeq 5/3$. Many observations show, however, that at observed frequencies $f \sim 0.2$ Hz, there is a "breakpoint" such that power spectra at higher frequencies follow a steeper power-law dependence with $\alpha > 5/3$. The constituent modes of this high-frequency, short-wavelength regime are often attributed to kinetic Alfvén modes which propagate at strongly oblique directions relative to the background magnetic field. However, whistler fluctuations represent an alternative hypothesis to describe short-wavelength turbulence in the solar wind and, indeed, in any collisionless, magnetized, homogeneous plasma. Particle-in-cell simulations have shown that the whistler cascade yields steep power-law power spectra consistent with observations [1]. This poster will describe a comparison of linear theory properties of kinetic Alfvén waves and whistler fluctuations, and will apply these results to recent simulations and observations of short-wavelength turbulence in the solar wind.

[1] Saito, S., S. P. Gary, H. Li, and Y. Narita (2008), Whistler turbulence: Particle-in-cell simulations, *Phys. Plasmas*, *15*, 102305.

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