

Abstract Submitted
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Inertial range physics of solar wind turbulence as revealed by 3 second plasma measurements J.J. PODESTA, NASA Goddard Space Flight Center — The 3DP instrument on-board the Wind spacecraft provides the highest time resolution plasma measurements currently available with a time resolution of 3 seconds. This instrument enables almost the entire inertial range to be probed using both velocity and magnetic field data although the dissipation range of the velocity fluctuations is still beyond reach. Analysis of power spectra and structure functions have shown that while the magnetic energy spectrum of the solar wind is a power law with an exponent near $5/3$, the velocity or kinetic energy spectrum often exhibits an exponent near $3/2$. Another important discovery is that the Elsasser ratio, the ratio of energy in the two Elsasser fields, approaches unity at the smallest measurable scales. Thus, as the energy and cross-helicity cascade through the inertial range the fluctuations in the two Elsasser fields evolve toward a state of equipartition, a process called dynamic mixing as opposed to dynamic alignment. These and other results that are improving our knowledge of solar wind turbulence shall be discussed.

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