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Fast and Slow solar wind: Energy transferrate in compressible MHD trubulence.

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The role of compressible fluctuations in the energy cascade in the fast and slow solar wind is investigated. A focus is put on comparing the energy cascade rates estimated using the exact laws derived for incompressible MHD turbulence [Politano and Pouquet, 1998] (PP98) and for compressible isothermal turbulence recently derived by Galtier and Banerjee, PRE, 2013 (BG13). New features are evidenced using the BG13 model in comparison with the PP98 model: i) broader inertial range (more than two decades of scales); ii) higher energy cascade rate (up to ~ 4 times); iii)
less anisotropic cascade rates (along and perpendicular to the local mean field). Furthermore, a term-by-term analysis of the compressible model emphasized the relative importance of the new flux term in the BG13 model, and provided new insight into the role played by the compressible fluctuations in the solar wind.