



Is there a turbulent cascade in the solar wind?

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It is an almost direct observational fact that the cooling of the solar wind plasma with distance is less than adiabatic. The heat flux alone does not explain this delayed cooling: an extra heating is still necessary, usually believed to be turbulent (e.g., Cranmer et al., ApJ, 2009).

If heating is indeed due to a cascade of coherent energy starting from the energy containing scales, then in particular the alfvénic spectral range should be at least partly transformed into heat.

We revisit here this issue, starting from a finding by Grappin Mangeney and Marsch (1990) that the daily turbulent amplitude in this range is almost perfectly correlated to the ion temperature in the inner heliosphere.