Geophysical Research Abstracts
Vol. 16, EGU2014-1911-1, 2014
EGU General Assembly 2014
© Author(s) 2014. CC Attribution 3.0 License.

On the Behavior of the Frequency Break Between Fluid and Kinetic Regimes in Solar Wind Fluctuations During Radial Expansion

Roberto Bruno and Lorenzo Trenchi

INAF, Istituto di Astrofisica e Planetologia Spaziali, Rome, Italy (roberto.bruno@iaps.inaf.it, 0039 0645488242)

We investigate the radial dependence of the spectral break located at the border between fluid and kinetic regimes during the wind expansion between 0.42 and 5.3 AU. We exploited radial alignments between MESSENGER and WIND for the inner heliosphere and between WIND and ULYSSES for the outer heliosphere. We found that this spectral break moves to lower and lower frequencies as heliocentric distance increases, following a power law dependence. Our results would support conclusions from previous studies which require that a cyclotron-resonant dissipation mechanism must participate into the spectral energy cascade together with other possible kinetic noncyclotron-resonant mechanisms.

Research partially supported by the Agenzia Spaziale Italiana, contract ASI/INAF I/013/12/0 and by the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 313038/STORM