



Control mechanisms of the electron energetics in the solar wind

Štěpán Štverák (1,2), Pavel M. Trávníček (3,1), Petr Hellinger (1,2)

(1) Astronomical Institute, CAS, Ondřejov, Czech Republic (stepan.stverak@asu.cas.cz), (2) Institute of Atmospheric Physics, CAS, Prague, Czech Republic, (3) Space Sciences Laboratory, UC Berkeley, Berkeley, CA, USA

Recent understanding of the heat transport and dissipation in the expanding solar wind propose number of complex control mechanisms down to even kinetic scales. Also real measurements exhibit deviations from predictions based on a simple collisional adiabatic radial expansion. We investigate the electron energetics and examine the effect of Coulomb collisions and electron heat flux based on the in situ observations of Helios I&II spacecraft. We show the internal electron energy transport coefficients to be sufficient to support the observed non-adiabatic temperature gradients. Finally we present the observed electron temperature and heat flux properties in terms of potential constraints and/or cross-correlations wrt. the overall solar wind properties.