



The origin of energetic electron asymmetries in the induced magnetosphere of Mars

E. Roussos (1), M. Fraenz (1), E. Dubinin (1), J. Woch (1), C. Martinecz (1), S. Barabash (2), R. Lundin (2), A. J. Coates (3) and the ASPERA-3 Team

(1) Max Planck Institut fuer Sonnensystemforschung, Katlenburg-Lindau, 37191, Germany,
(2) Swedish Institute of Space Physics, Box 812, 98128 Kiruna, Sweden (3) Mullard Space Science Laboratory, UCL, UK

By organizing two years energetic electron (>40 eV) flux data collected by the ASPERA-3 experiment of Mars Express in different coordinate systems, it has been found that: (a) Behind the terminator plane, high flux events of energetic electrons are more frequent in the hemisphere where the convective electric field of the solar wind is pointing (E+ hemisphere) and (b) that when crustal magnetic anomalies are contained close to the terminator plane of the E+ hemisphere, this asymmetry of high flux events is strongly enhanced. The distribution of electron fluxes in the magnetosheath and the tail region indicates that these high electron fluxes might have their origin in magnetosheath, however this is not yet well established. In order to investigate the possible existence of this link, or to identify another mechanism that explains the origin of these events, we study a series of single high flux events. Electron spectra from different magnetospheric regions are compared, while coincident events in the recently acquired low energy ion data (<100 eV) are also considered.