

## **Energetic electron asymmetries at Mars: Mars Express ASPERA-3 observations**

**E. Roussos** (1), M. Fraenz (1), E. Dubinin (1), C. Martinecz (1), U. Motschmann (2), S. Barabash (3), J. Woch (1), R. Lundin (3), R. Frahm (4), J.D. Winningham

(1) Max Planck Institute for Solar System Research (roussos@mps.mpg.de) (2) University of Braunschweig, Department of Theoretical Physics, (3) Swedish Institute of Space Physics, (4) Southwest Research Institute

Energetic electron fluxes from more than two years of ASPERA-3 observations are organized in various coordinate systems for the investigation of possible asymmetries in the global configuration and dynamics of the Martian induced magnetospheric cavity. Statistically significant asymmetries are found for high-flux events (electron “beams”) with respect to the solar wind convective electric field direction ( $E_{sw}$ ). These beams, that seem to be of magnetosheath origin, are more frequently detected at the terminator region and at the hemisphere that the  $E_{sw}$  is pointing, while they also seem to extend in the Martian wake. A detailed investigation of the electron fluxes at the terminator region shows that the largest contribution to the  $E_{sw}$  asymmetry comes from regions of moderate or strong crustal fields. Such observations have implications about reconnection processes in the terminator region and provide new insights on magnetic anomaly effects in the global dynamics of the Mars - solar wind interaction.