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# Electrons as Tracers of Physical Processes within the Martian Magnetosphere

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Electron measurements carried out on the MGS and MEX spacecraft reveal a lot of interesting features which can tell us about physics of the Martian plasma environment. 'Precipitation' maps of suprathermal (40-100 eV) electrons in the regions of strong crustal magnetic fields, at altitudes between 250-600 km, are very different on the day and night sides and are well organized by crustal fields. The patterns are also influenced by the IMF orientation. This provides us with an information about solar wind protrusion and aurora on Mars. Spatially narrow spikes of magnetosheath-like electrons observed by both spacecraft in a wide range of altitudes often resemble electron inverted 'V' structures typical for Earth. Such structures can be a manifestation of the existence of auroral force tubes with parallel potential drops although the unique features of the Martian ionosphere impose the strong constraints on their distribution and characteristics. Another possible mechanism responsible for their formation is a macroscopic potential jump associated with strongly draped configuration of the induced Martian magnetosphere. The features and effects of both mechanisms are discussed.