HYDROMAGNETIC MODEL OF THE MAGNETOSPHERIC CUSPS

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Calculated profiles of the velocity, pressure and magnetic field in the hydromagnetic cusp model are compared with the space measurements in the high-latitude boundary layer (mantle). It is shown that the plasma shearing flows in the dayside cusps and mantle are limited in thickness and width due to the relaxation processes of the normal and tangential stresses under the quasi-viscous flow of the magnetosphere by the solar wind. At Hartman numbers Ha<10^2 the stress relaxation is significant and provides "adherence" condition V=0 inherent for the usual viscous flow of the solid body surface. At high Hartman numbers the "slip" (V>0) of shearing flows observed in non-stationary space situations is possible. The observed inverse flows towards the Sun in cusp are explained by the forced flows electrodynamically connected to the low-latitude boundary layer (LLBL).