

## **Dependence of the midnight auroral precipitation structure on the IMF ecliptic plane orientation**

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Locations of midnight different type electron precipitation boundaries depending on the IMF orientation in the ecliptic plane were examined using DMSP F7 observations for the whole of 1986. It is found that IMF sector structure affected significantly the location of poleward boundary of the auroral oval (b5e) and the polar cap boundary (b6) while the latitude of the auroral oval equatorward boundary (b2e) depended faintly or not at all on the sign of the IMF sector. During magnetic disturbances the b5e and b6 boundaries were observed at higher latitudes in the northern hemisphere when interplanetary  $B_y > 0$  and  $B_x < 0$  (the positive sector of the IMF) than during  $B_y < 0$  and  $B_x > 0$  (the negative sector of the IMF). On the contrary, in the southern hemisphere the same boundaries were registered at higher latitudes during the negative sector of the IMF than during the positive one. Investigation of the particle precipitation structure during the substorm development showed that the IMF dependent difference in the precipitation boundary location occurred generally during the substorm expansive phase and initial period of the recovery phase. What is more it was found that during magnetic disturbances the b5e and b6 precipitation boundaries were registered in the northern hemisphere at higher latitudes than in the southern hemisphere during the positive IMF sector and vice versa the boundaries occurred in the southern hemisphere at higher latitudes than in the northern one during the negative IMF sector. The results can testify of the effective penetration of the interplanetary  $B_x$  component into the magnetospheric tail.