



The shape of the expanded magnetopause under the radial IMF conditions

Gilbert Pi (1,2), Zdenek Němeček (1), Jana Šafránková (1), Ya-Hui Yang (2), and Kostiantyn Grygorov (1)

(1) Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic., (2) Institute of Space Science, National Central University, Taoyuan, Taiwan.

The phenomenon of the magnetopause expansion under the radial interplanetary magnetic field (IMF) conditions has been well proved by observation and simulation studies, but the shape of the expanded magnetopause is still under debated. Two structures have been suggested: the global and the bullet-like expansion. One of the possibilities leading to the magnetopause expansion is the hot flow anomalies (HFAs). During the radial IMF, the spontaneous HFAs are formed near the subsolar point in the foreshock region. The changes of the solar wind direction of the HFAs can highly decrease the effective dynamic pressure for the magnetopause. It may result in the bullet-like magnetopause expansion. In this study, the THEMIS and Cluster data are used to observe the HFAs and the magnetopause locations simultaneously. We will show the initial results of the relationship between the HFAs and the expansion of the magnetopause under the radial IMF conditions.