

Dynamics of the Jovian Magnetosphere for Northward IMF

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The solar wind with interplanetary magnetic field (IMF) plays an important role on interaction with the planetary magnetosphere.

It has not been always explained how Jovian magnetosphere behaves to variation of the solar wind. Jupiter has the marked character such as rapid rotation and strong magnetic field. Therefore, the Jovian magnetosphere is remarkably different from the Earth's magnetosphere. In this study we have carried out the 3-D global magnetohydrodynamic (MHD) simulation to investigate the structure of Jovian magnetosphere and influence of northward IMF.

We use a Modified Leap-Frog Method to solve 3-D MHD and Maxwell's equations. The grid number of simulation is $(n_x, n_y, n_z) = (600, 400, 200)$, and the grid interval is $1.5 R_j$. We simulated Jovian magnetosphere with northward IMF starting from a steady state for no uniform IMF. In this time, we have simulated it when the IMF turned from southward to northward.

As the result of these simulations, we found quasi-periodical emissions of pasmoids toward the tail and fluctuations of the magnetopause at 12LT. We will discuss the causes of these phenomena in the presentation.