

## Formation of the Magnetic Island Wall at the Dayside Magnetopause in the Kronian Magnetosphere

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Saturn has a rapid rotation equivalent to Jupiter and has the comparable strength of the magnetic field with Earth. Thus Saturn is often called that the planet has the intermediate character of Jupiter and Earth. In our previous study, we showed that the Kronian magnetosphere always has vortices and turbulent convection which are the result from the interaction of the solar wind and corotation or the solar wind and magnetospheric convection by the global MHD simulation. This suggested that the Kronian magnetosphere can be different from both Jovian and Earth's magnetospheres.

In particular, our simulation results showed that for northward IMF the Kronian magnetosphere reached a quasi-steady state through the some characteristic states unlike Earth and Jupiter. Those states are as follow. i) When the IMF is turning to northward, first dayside reconnection occurs, and a little later tail reconnection occurs. ii) Then the magnetosphere becomes quiet state for less than 10 hours. iii) When tail reconnection becomes to be steady, then the closed magnetic field line's regions start extending to the tail at both dawn and dusk like U-shape on the equatorial plane. iv) Finally the continuous small scale of the plasmoid ejection with short periods occurs at every 1 hour around the tail. These consequences little depend on the solar wind dynamic pressure or the initial condition before northward IMF. These phenomena are not appeared in the simulation of Jovian and Earth's magnetosphere.

In this study, from the analysis of the simulation results, we show that the reconnection point separated two points toward north and south from the subsolar point then the magnetic islands formed at the dayside magnetopause. Additionally, the causes of the extension of the closed magnetic field lines can be explained by the decrease of reconnection rate and the formation of magnetic island wall. Furthermore, the formation of the dayside magnetic islands is said to occur in the two dimensional simulation because of the mild variation of the magnetic field strength, however it is considered not to occur in the three dimensional simulation. In this presentation, we will show the formation of the magnetic island wall and its effects to the configuration and dynamics of the Kronian magnetosphere.