

Short-term variation of Jupiter's synchrotron radiation: Their relation with the magnetospheric events

Hiroaki Misawa^{1*}, Takahiro Mizuguchi¹

¹Planetary Plasma and Atmospheric Research Center, Tohoku University

It is known that Jupiter's synchrotron radiation (JSR) has information on dynamics of the deep inner magnetosphere. Our Tohoku University group has implied that Jupiter's synchrotron radiation in several tens MHz sometimes shows rapid flux variations (RFV) by more than several tens % within a few to several days. It is quite difficult to explain its physical process by present theories on particle transport, such as radial diffusion because of their too fast change. This phenomena recalls the fast particle acceleration and transport in the earth's magnetosphere during substorm events. It is already confirmed that there are substorm like events also in Jupiter's magnetosphere, however, and it has not been revealed whether the events affect the deep inner region.

In order to reveal unknown dynamics of the RFV events in JSR, we have tried to investigate relationship between the RFV events and electromagnetic phenomena in Jupiter's magnetosphere. We have surveyed plasma and magnetic field data observed by Galileo. For searching the RFV events, we have used the daily JSR monitoring data at 327MHz observed using the large radio telescopes of STE Lab, Nagoya University. In this presentation, we show some results of characteristics of the RFV events and make preliminary discussion on their origin.

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