

木星内部磁気圏急変現象の探査

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Investigation on rapid variations of Jupiter's inner magnetosphere

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It is known that Jupiter's synchrotron radiation (JSR) has information on dynamics of the deep inner magnetosphere. Our Tohoku University group has made JSR observations at several hundreds MHz for more than a decade, and has showed that JSR at the frequencies generally shows short term variations by more than several tens percent with the time scale of days to weeks. Furthermore, it is revealed that JSR (quite) occasionally shows sudden flux variations (SFV) by more than 100% within two day. It is quite difficult to explain its physical process by present theories on particle transport, such as radial diffusion. 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 SFV events in JSR, we have tried to investigate relationship between the SFV events and electromagnetic phenomena in Jupiter's magnetosphere. We have surveyed plasma data observed by Galileo and also radio flux data in the hectometer wave range (HOM) using the WIND/WAVES data. For searching the SFV events, we have used the daily JSR monitoring data at 327MHz observed using the large radio telescopes of STE Lab, Nagoya University. In the presentation, we will show preliminary results of characteristics of the SFV events and their relation to substorm-like events.