

EXCEEDによるイオプラズマトーラス極端紫外観測 Plasma dynamics of Io plasma torus seen from the EXCEED

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Major ions in Io plasma torus have many allowed transition lines in the EUV and their radiation easily escapes to become observable from outside the region. In other words, Jovian inner magnetosphere is able to be monitored by the EUV spectral observation remotely. Moreover, with the atomic database which provides the cross sections to the ambient electron, transition probabilities, and these temperature dependence, EUV observations can be a very important diagnostic of ion densities, electron density, and its temperature.

The EUV spectroscope EXCEED on the Hisaki spacecraft has started to observe the Jovian magnetosphere from the Earth orbit since the end of 2013. The spacecraft is dedicated for the solar system planets so that all the observation window is spared for planetary science. The spectral range is from 52 to 148 nm and its resolution is 0.3 nm with one of the narrowest slit. The field of view is 400 arc-seconds which corresponds to around 18 RJ. Therefore, it can observe whole region of Io plasma torus at one time. Moreover, it can achieve better spatial resolution than 1 RJ. It is the first time to get a whole spectral images of Io plasma torus in the EUV with such a high performance instrument. In this presentation, we will show the first results of EXCEED observation with its high spectral resolution slit for Io plasma torus.

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