

A study on energy budget of Io Plasma Torus based on the EUV spectroscopic observation

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EXCEED on Hisaki spacecraft has identified more than 50 pairs of brightenings of the Io Plasma Torus (IPT) and aurora. For each pair, auroral brightening was the first and the IPT brightening was lagged by about 10 hours. This unique behavior indicates the existence of the inward flow of hot electrons toward the IPT from the distant region (magnetically connected to the polar region). The inward flow might be “the additional energy transfer” in order to sustain the radiation from IPT. Applying the spectral diagnosis method to EUV spectra obtained by EXCEED, we conclude that some IPT brightenings were due to the increase in hot electron (>100 eV) density.