

Observation of corotation deviation of the Io plasma torus

Masato Kagitani[1]; Shoichi Okano[1]; Hiroaki Misawa[1]

[1] PPARC, Tohoku Univ.

Plasma originated from volcanic eruption on Jovian satellite Io forms a donut-shaped region of dense plasma along Io's orbit, which is called Io plasma torus (IPT). Spectral line emissions from singly charged sulfur ions, [SII], at 671.6 nm and 673.1 nm in IPT are strong enough to be observable from the ground. Imaging observation of sulfur ion emission with sufficient spectral resolution will enable us to monitor two-dimensional distributions of ion temperatures, line-of-sight velocities of ions, and emission intensity.

In order to attain such purpose, ground-based Doppler resolved imaging observation of [SII] 671.6 nm emission was carried out using an Fabry-Perot Imager ($l/d \sim 61,000$) coupled to a 35 cm Schmitt-Cassaigrain telescope at Haleakala Observatory (20.7N, 156.3W) from February 15 to 21, 2004.

Based on our observation, maximum corotation deviation varied from 7 km/sec to 3 km/sec at the ribbon region of the east side of Jupiter during several hours on February 17. The corotation deviations observed during the whole period appear to have no dependency on Io phase angle nor system III longitude of Io.

In this presentation, observation result of one week on February, 2004 and a preliminary result of a period from late February to late March, 2005 will be presented, and possible mechanism of mass loading will be discussed.