

## Study of the Io plasma torus through the EUV spectral analysis

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Io, one of the Galilean satellites of Jupiter, is the most active volcanic body in the solar system. The volcanism generates a dense plasma ring (Io plasma torus) around the Io's orbit in the Jovian magnetosphere. As the main source of plasma, the torus plays a central role in the Jovian magnetosphere.

The Io plasma torus is composed mainly of sulfur ions, oxygen ions, and electrons trapped in Jupiter's strong magnetic field. These ions are collisionally excited by ambient electrons and emit bright lines in EUV spectral range. Spectroscopic observations enable us to deduce the plasma parameters of the Io plasma torus because the brightness of the EUV lines from the ions strongly depend on electron density, electron temperature and ion density. By using a spectral model that incorporates the atomic database 'CHIANTI', we analyzed the spectral data obtained by Cassini spacecraft.

In this presentation, we will show the method of our analysis, and discuss the temporal and spatial variabilities of the plasmas in the Io torus.