

エンケラドス トーラス OI 630nm 発光のプロセス

Estimation of OI 630nm emission from Enceladus torus by various process

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It has been known that there are H₂O molecules and their dissociative products. Cassini mission discovered plume on Saturn's icy moon, Enceladus. And this small moon supplies molecules and ice grains to the Saturn's magnetosphere. This materials distribute like a torus, so called enceladus torus. If we can monitor distribution and time variation of the Enceladus torus continuously, we can get more clear understanding about Saturn's magnetosphere and its variability. In order to accomplish remote-sensing of the Enceladus for a long period, we made ground-based observation of OI 630nm emission of the Enceladus torus at Haleakala observatory.

We successfully detected the line emission with 1200 minutes total exposure time by ground-based observation carried out in Mar. 2011. In order to derive physical information, we must clear what process cause this emission. We had assumed that main process for this emission is electron impact excitation. But other process is also existing, photo dissociation of H₂O and OH.

In this presentation, I will report the contribution of non electron impact excitation process.

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