あかつき紫外イメージャ初期報告と感度特性評価
Initial Results and Radiometric Properties of Ultraviolet Imager on AKATSUKI

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Introduction:
The beautiful UV images of the Venusian cloud top were previously performed by several spacecraft such as Mariner 10 [Bruce et al., 1974], Pioneer Venus [Travis et al., 1979; Rossow et al., 1980], Galileo [Belton et al., 1991], Venus Express [Markiewicz et al., 2007a, 2007b; Titov et al., 2008]. These previous instruments have taken images at the wavelength around 365-nm, but what material distribution reflects the contrasting density has been unknown yet. Under wavelength of 320nm, SO_2 absorption consistent with Pioneer Venus measurements [Pollack et al., 1979], and images in this wave length can clarify the distribution of SO_2.
The ultraviolet imager (UVI) on the AKATUSKI satellite takes ultraviolet images of the solar radiation scattered at the Venusian cloud top level at the both 283- and 365-nm wavelengths. There are absorption bands of SO_2 and unknown absorber in these wave-length regions. UVI result into measurements of the SO_2 and the unknown absorber distributions, and the sequential images lead to understand the velocity vector of the wind at the cloud top altitude.
First Image of Venus:
UVI has taken the two UV wavelength images of Venus immediately after the operation of the Venus orbit insertion last year. The first memorial images by the AKATSUKI “satellite” of Venus were taken at the positions of ~72,000 km far from the Venus center. The solar phase angle at the sub-observer point was ~45 degrees with the evening terminator. The UVI image at a wavelength of 283 nm presents solar radiation attenuated by SO_2 absorption near the cloud top altitudes. This is the first time to capture the snapshot of Venus with this wavelength. Together with the 365-nm images, the continuous UVI images will be used to derive horizontal cloud-tracked velocities near the cloud top altitudes (62–70 km) [e.g., Ogohara et al., 2012; Kouyama et al., 2013].
Although UVI had experienced under interplanetary radiation environment for an unexpected long time, the performance of UVI is fortunately very high because CCD is strongly shielded. Estimated radiance from the first image is from 50 to 200 $W/m^2/sr/\mu m$. It is very reasonable for brightness of the Venusian cloud top. The image quality is very comfortable suite to study scientific objectives before launch. We expect the interesting results from the UVI images of Venus.

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