

## Venus upper atmosphere derived from the Hinode's high resolution images acquired during the transit of Venus

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The solar satellite 'Hinode' observed the Venus transit of 5th and 6th Jun. 2012. Hinode's Solar optical telescope (SOT) detected a ring-shaped emission from the Venusian atmosphere between 1st contact (22:15:46) and 2nd contact (22:29:53). We studied data when the emission ranged from latitude N87 to S17 of Venus.

The estimated altitude of the ring emission ranges from 65km to 74km, where the altitude is lower in the northern polar region than in the mid-latitude region. The strength of the integrated emission along the altitude increases with higher latitude.

The emission is assumed to be the refracted solar light, and the refraction angle is calculated using a Venusian CO<sub>2</sub> atmosphere model with temperature and density parameters. We show that the refracted ray passes through Venus atmosphere from 50km to 90km altitude. Based on comparisons between the observations and calculations of the extinction coefficient of the Rayleigh scattering in the CO<sub>2</sub> atmosphere, we consider the distribution of the cloud particles in the Venus atmosphere.

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