

Current status of design and development of scientific instruments on board the space telescope TOPS

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We propose multi-spectral planetary imaging observations using space telescopes on board a low-earth orbiting small-scale satellite, TOPS (Telescope Observatory for Planets on Small-satellite). The observation with TOPS is characterized by the wide wavelength range from 100 nm to 1 μ m with high-spatial resolutions (0.2 arcsec, max). The scientific instruments on board TOPS consist of four cameras and optical components as follows. (1) Sunshade plate is installed to provide a shadow where the telescopes are placed. (2) TOPS consists of two telescopes. One is an extreme ultraviolet telescope, and the other is a ultra-violet, visible and near infrared telescope. The diameter of objective mirrors are 300 mm. (3) Extreme ultraviolet camera covers the wavelength range of 100 - 200 nm with a MCP sensor. (4) Ultraviolet and visible camera covers the wavelength range of 200 - 589 nm using narrow-band interference filters and occulting mask. (5) Near-infrared camera covers the wavelength range of 650 - 1100 nm with a crystal variable filter and DMD (digital micro-mirror device) variable occulting mask. (6) Near infrared scanner covers the wavelength of 1200 - 1400 with InGaAs line sensor. In the presentation, we report the current status of design of these optical components, weight and size, and observation modes in detail.