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Remote sensing of planetary and satellite atmospheres and aurorae through ultraviolet spectroscopy

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Tenuous gas and plasma distributed around planets and satellites are excited through various processes such as electron impact, charge exchange, resonant scattering of sunlight, and so on. Many emission lines and bands exist in the far and extreme ultraviolet wavelength ranges. Extreme ultraviolet (EUV) spectroscopy is a useful to probe magnetospheres, ionospheres and exospheres of planets and satellites in the solar system. Here, we will show dynamic behaviors of the Jovian magnetosphere and the Venusian upper atmosphere recently obtained from observations with an EUV spectroscope onboard an earth orbiting satellite HISAKI. The HISAKI satellite is the first EUV spectroscope satellite whose scientific targets are dedicated for the solar system planets and satellites. The high-sensitivity observation of EUV spectra from gasses around the planets is useful for not only the planetary science but identification of new energy levels of ions.

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