

# Four Micron Polar Continuum of Jupiter

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Spectra of the 4 micron continuum of the polar regions of Jupiter were obtained at the Canada-France-Hawaii Telescope. These spectra were compared with a low resolution spectrum of the equatorial region obtained at the United Kingdom Infrared Telescope. The comparison shows that the continuum level of the equatorial spectrum is at least 5 times higher than those of the polar spectra. It was also found that the continuum levels of the north polar spectra are 2-3 times higher than that of a south polar spectrum. Continuum models of polar and equatorial regions were constructed for comparisons with observed spectra. We considered reflection of sunlight by clouds, absorption by polar haze and by molecules, and thermal radiation from the deep atmosphere in the models. We found that the reflection of sunlight is a dominant component of the 4 micron continuum compared with the thermal emission. Overtone and combination bands of  $\text{NH}_3$  as well as  $\text{CH}_4$  and  $\text{PH}_3$  fundamental bands were identified in absorption in both polar and equatorial regions. We searched for heavy molecules that can possibly condense in the stratosphere of the polar regions forming the polar haze. We found that  $\text{C}_6\text{H}_6$  and possibly  $\text{C}_4\text{H}_2$  and/or undetected trace heavy hydrocarbons (C atoms greater than 5 or 6) can be the major components possibly creating the polar haze approximately at 20 mbar pressure levels.