N35c Near-Infrared Spectroscopy of the Cool Brown Dwarf, SDSS 1624+00

Tadashi Nakajima (NAO), Takashi Tsuji (IoA, U. of Tokyo), Toshinori Maihara, Fumihide Iwamuro, Ken-taro Motohara, Tomoyuki Taguchi, Ryuji Hata (Kyoto U.), Motohide Tamura (NAO), Takuya Yamashita (Subaru Telescope, NAOJ)

Using the Subaru Telescope, we have obtained multiple near-infrared spectra of the cool brown dwarf, SDSS 1624+00, in search of spectral variability in an 80 minute time span. We have found the suspected variability of water vapor absorption throughout the observations, which requires confirmation with a long time baseline. After coadding the spectra, we have obtained a high-quality spectrum covering from 1.05 to 1.8 μm. There are three kinds of spectral indicators, the water vapor bands, methane band and K I lines at 1.243 and 1.252 μm, which can be used to study temperature and the presence of dust. We compare the spectra of SDSS 1624+00 and Gliese 229B, paying special attention to these indicators. With the help of model spectra, we conclude that SDSS 1624+00 is warmer and dustier than Gliese 229B. (The results of this work have been published in the February 25, 2000 issue of PASJ.)