

NEAR-INFRARED OBSERVATIONS OF A TYPE-2 QSO AT $z = 0.9$

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We report the results of near-infrared observations of a type-2 QSO, AX J08494+4454 at $z = 0.9$ which was identified in our optical follow-up observations of the *ASCA* Lynx deep survey. This object has a hard X-ray spectrum with an X-ray luminosity of about 1×10^{44} erg s^{-1} in 2-10 keV. The optical spectrum shows high-excitation and high-ionization lines but no significant broad $H\beta$ emission. These properties strongly suggest that this object is a “type-2” QSO (Ohta et al. 1996).

In order to examine the $H\alpha$ emission line profile, we made a near-infrared J-band spectroscopic observation of this object using UKIRT with CGS4 and found the FWHM of the $H\alpha$ emission line is ~ 500 km s^{-1} confirming that this object is “type-2”. Although the signal-to-noise ratio of the spectrum is low, we could not recognize a broad wing component of the $H\alpha$ emission line. A large [O I] 6300/ $H\alpha$ line intensity ratio supports the idea that this object has an active nucleus.

A K-band image obtained with the QUIRC detector on the UH88 telescope shows that the object has a point-like structure, in contrast to the diffuse features seen in optical light (I-band). The optical-NIR color of this object is significantly redder than those of normal galaxies and QSOs. These properties may suggest the presence of a large amount of dust in this object. That is to say, we can see the nucleus directly at K-band, therefore this object appears like point source, on the other hand the nucleus is obscured in the I-band. Another possibility is that we see thermal emission from very hot dust (~ 1500 K $^\circ$) associated with the nucleus at K-band.