Abstract

Title: The Buried QSO in the Z=2.4 Radio Galaxy 4C+43.15

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We present near infrared observations of 4C+43.15 obtained with the Keck and Hale telescopes. We find a complex and diffuse morphology in the bright [OII] and H-alpha emission lines, with [OIII] covering more than five arcseconds along the slit. In addition there is a broad H-alpha emission line with a FWHM velocity of 17000 km/s from a broad-line region hidden in the rest-frame UV. After accounting for the strong emission lines, 4C+43.15 has a faint, red continuum, with K=19.7 mag, and H-K=1.6 mag. The red continuum and broad H-alpha emission line suggests this object harbors a highly obscured QSO. By comparing the detected broad H-alpha line flux to a limit on the broad Ly-alpha line in the spectrum of Vernet et al. (2001) we estimate the reddening to the broad-line region to be E(B-V)=0.7-1.0 mag. This amount of reddening is consistent with the measured H-K color of the nucleus, if the source has the rest-frame optical colors of an average QSO from Elvis et al. (1994). Taken together, these results imply that the central QSO is dominating the observed K-band light in 4C+43.15