

0116–0043

The sightline towards the quasar Q0116–0043 ($V = 18.7$, $z_{em} = 1.282$) contains a subDLA system at $z_{abs} = 0.9127$ with a column density of $\log N(\text{HI}) = 19.95^{+0.05}_{-0.11} \text{ cm}^{-2}$ (RTN06). Only J, H, K images are available for this field.

Three σ surface brightness limits and seeing measurements for these observations are given. These limits indicate that a galaxy with diameter $d = 10 \text{ kpc}$, as faint as $L_J = 0.12L_J^*$, $L_H = 0.20L_H^*$, and $L_K = 0.15L_K^*$ can be detected at the absorber redshift.

Images:

$30'' \times 30''$ J, H, K images are shown. North is up and east is to the left. The images correspond to $\approx 234 \times 234 \text{ kpc}^2$ at the absorber redshift. The quasar has been masked in all three frames, and the position of its center is marked by a “+”. The quasar PSF could not be subtracted, as there were no suitable PSF stars in the field.

Photo-z’s:

A photometric redshift of $z_{phot} = 0.278 \pm 0.180$ is reported for Object 1 in the SDSS database. SDSS optical photometry is used to supplement our infrared photometry for this field. The best-fit stellar population synthesis model to our photometry and AB-converted SDSS photometry for Object 1 is shown. The photometric redshift we derive for Object 1 (see Table) is not in agreement with the one in the SDSS database, however, it is marginally consistent with the absorption redshift, $z_{abs} = 0.9127$. As can be seen from the photo-z fit, the SDSS photometry has significantly larger errors than our IR data; the addition of the IR data helps constrain the fit and results in a more accurate photo-z determination. Object 1 is selected as the candidate absorber. A photometric redshift could not be determined for Object 2 because it is detected in fewer than four bands.

Table 1: 3σ Surface Brightness Limits (μ) and Seeing Measurements (Θ)

Q0116-0043					
μ_J	μ_H	μ_K	Θ_J	Θ_H	Θ_K
(mags/arcsec ²)			(arcsec)		
22.4	21.8	22.1	0.9	0.9	0.8

Table 2: Q0116-0043 Infrared Photometry

Q0116-0043									
$z_{abs} = 0.9127$									
Object	$\Delta\alpha^a$	$\Delta\delta^a$	θ^a	$J \pm \sigma_J$	DS (N_{pix}) ^b	$H \pm \sigma_H$	DS (N_{pix}) ^b	$K \pm \sigma_K$	DS (N_{pix}) ^b
	"	"	"						
QSO	0.0	0.0	0.0	17.72 ± 0.01	12.8 (79)	16.91 ± 0.01	11.6 (68)	16.95 ± 0.01	11.4 (58)
1	+8.0	+1.5	8.1	21.68 ± 0.10	2.5 (25)	21.06 ± 0.09	2.7 (23)	20.71 ± 0.06	3.2 (38)
2	+11.0	-2.2	11.2	23.28 ± 0.23	2.4 (6)	22.56 ± 0.17	2.4 (9)

^aRelative to the QSO.

^b N_{pix} is the number of pixels within the detection isophote.

Table 3: Q0116–0043 Photometric Redshift Fits

Galaxy			Stellar Population Synthesis Model Parameters					
#	θ^a	b	Age	τ	$E(B - V)$	Z	$z_{phot} \pm \sigma_{z_{phot}}$	
	"	kpc	Gyr					
1	8.1	63.5	1.00	3.00	0.30	0.0500	0.717 ± 0.248	

^aRelative to the QSO



