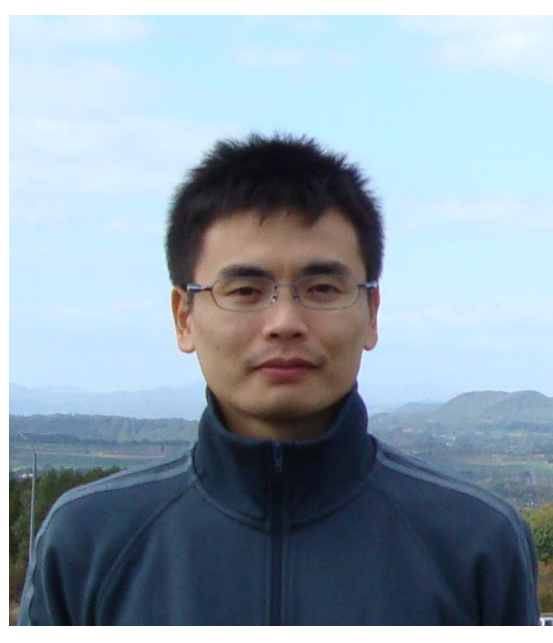




The Sloan Digital Sky Survey Quasar Lens Search

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We have completed the [Sloan Digital Sky Survey Quasar Lens Search](#) (SQLS), that is a lensed quasar survey based on the **SDSS-I and -II** spectroscopically confirmed quasars (from Early Data Release to Data Release 7). From the 44 discoveries and 18 identifications of previously known lensed quasars, the SQLS is now recognized as the current largest lensed quasar survey. In the course of the SQLS, the [UH88 telescope](#) is playing an important role, both for the discoveries and for the detailed follow-up observations of the SQLS lenses. Below we summarize the results obtained mainly from the uses of the UH88 telescope. We are now continuing the lensed quasar survey using the **SDSS-III** data.

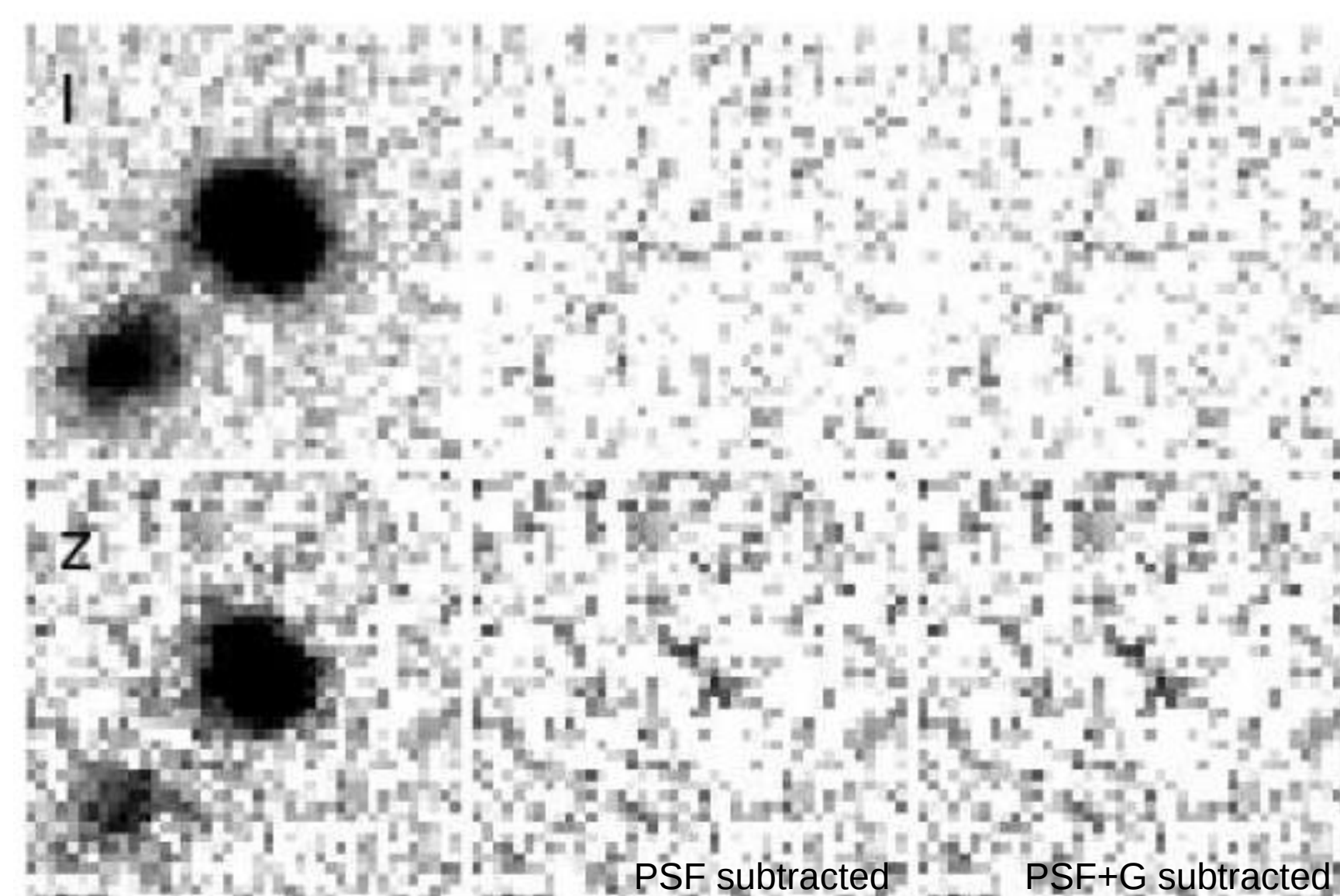
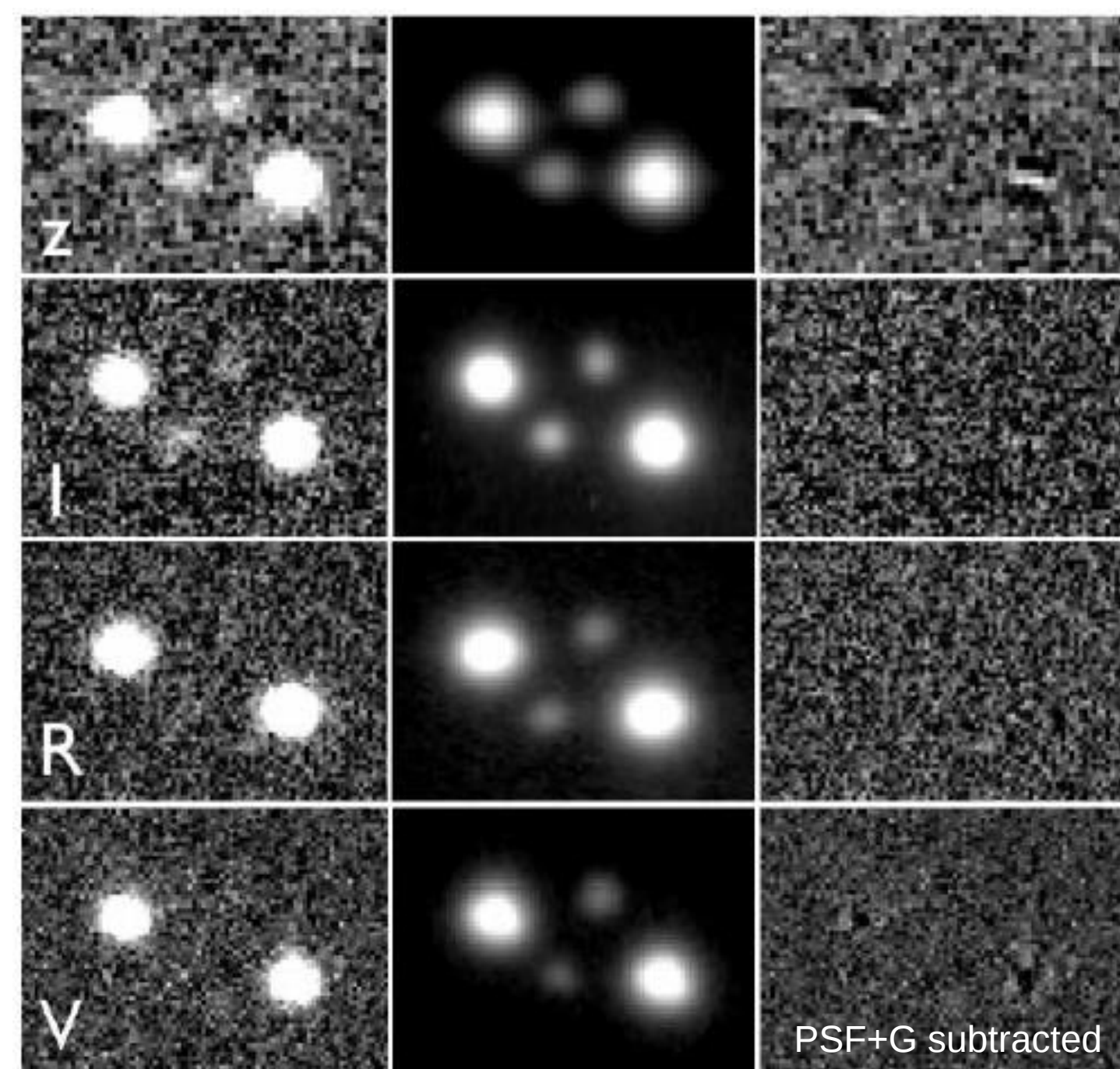
Awarded UH88 nights for the SQLS from 2004A:

year	instrument	# of nights	condition
2004A	UH8k	2	unknown
2004B	UH8k	2	unknown
2005A	QUIRC	2	unknown
	WFGS2	2	○、○
2005B	WFGS2	2	○、○
2006A	Optic	1	○
	WFGS2	2	×、○
2006B	Optic→tek2k	2	○、○
	WFGS2	1	○
2007A	WFGS2	1	○
	Tek2k	1	○
2007B	—	—	—

year	instrument	# of nights	condition
2008A	Tek2k	2	○、×
	WFGS2	3	△、○、○
2008B	Tek2k	2	△、○
	WFGS2	1	○
2009A	Tek2k	3	×、×、○
	WFGS2	2	○、×
2009B	Tek2k	2	○、○
2010	Tek2k	2	○、○
	WFGS2	3	△、△、△
2011	Tek2k	2	×、×

40 nights in total !

Recently discovered lenses:



SDSSJ1334+3315; a two-image lensed quasar with $\theta = 0.8''$. The lensing hypothesis is confirmed by LGS+AO188 of the Subaru telescope.

SDSSJ1320+1644; lensed by a galaxy group with $\theta = 8.6''$, although the possibility of a binary quasar cannot be fully excluded.

Constraints on Cosmological Parameters:

From our extensive follow-up observations using the UH88 and other telescopes, we are constructing statistical samples of lensed quasars. We use the 19 lensed quasars from the SDSS DR7 (50,826 quasars), for the final statistical analysis.

Again, [the SQLS represents the current largest statistical lens sample](#), in terms of both the numbers of source quasars and lenses. By comparing the observed abundance of lenses with theoretical expectations, we obtain constraints on cosmological parameters, to be

$$w = -1.44^{+0.22}_{-0.25}(\text{stat.}) + 0.17^{+0.17}_{-0.18}(\text{syst.})$$

$$\Omega_m = 0.25^{+0.03}_{-0.03}(\text{stat.}) + 0.03^{+0.03}_{-0.02}(\text{syst.})$$

See [Oguri et al. 2012 AJ 143 120](#) for more details.

References:

See the following papers for more details.

Oguri et al. 2012 AJ 143 120; SDSS Quasar Lens Search VI
Inada et al. 2012 AJ 143 119; SDSS Quasar Lens Search V
Inada et al. 2010 AJ 140 403; SDSS Quasar Lens Search IV
Oguri et al. 2008 AJ 135 512; SDSS Quasar Lens Search III
Inada et al. 2008 AJ 135 496; SDSS Quasar Lens Search II
Oguri et al. 2006 AJ 132 999; SDSS Quasar Lens Search I
Rusu et al. 2013 ApJ 765 139; SDSSJ1320+1644
Rusu et al. 2011 ApJ 738 30; SDSSJ1334+3315
McGreer et al. 2010 AJ 140 370; current most distant lens QSO
Kayo et al. 2010 AJ 139 1614; discovery of 8 new lenses
Inada et al. 2009 AJ 137 4118; discovery of 5 new lenses
Oguri et al. 2008 MNRAS 391 1973; SDSSJ1330+1810

+ more than 10 papers!

Table 1. DR7 Statistical Sample from Paper V

Object	N_{img}	z_s^a	z_l^b	i_{PSP}^c	θ_{max}^d	I_{QSO}^e	I_{gal}^f	Ref.
SDSS J0246-0825	2	1.686	0.723	17.76	1.09	17.80	20.78	1,2,3
SDSS J0746+4403	2	1.998	0.513	18.71	1.08	18.71	19.62	4,5
SDSS J0806+2006	2	1.538	0.573	18.89	1.49	18.43	20.16	2,6,7
SBS 0909+523	2	1.378	0.830	16.17	1.11	15.94	18.81	3,8,9
SDSS J0924+0219	4	1.523	0.394	18.12	1.81	18.40	19.36	3,9,10,11
FBQ0951+2635	2	1.246	0.260	17.24	1.10	16.54	19.66	2,3,12
SDSS J1001+5027	2	1.841	0.415	17.32	2.86	17.32	19.63	13,14
SDSS J1021+4913	2	1.720	0.451	18.99	1.14	18.85	19.82	14,15
SDSS J1055+4628	2	1.249	0.388	18.76	1.15	18.86	19.73	5,14
PG1115+080	4	1.735	0.311	15.97	2.43	16.40	18.91	3,16,17
SDSS J1206+4332	2	1.789	0.748	18.46	2.90	18.05	19.51	13
SDSS J1216+3529	2	2.013	0.55 ± 0.05	19.08	1.49	18.30	20.31	18
SDSS J1226-0006	2	1.126	0.517	18.23	1.26	18.67	19.71	3,19,20
SDSS J1313+5151	2	1.877	0.194	17.70	1.24	17.10	17.49	21
SDSS J1335+0118	2	1.571	0.440	17.54	1.63	17.17	19.40	3,20,22
SDSS J1353+1138	2	1.624	0.25 ± 0.05	16.47	1.41	16.36	17.80	6
SDSS J1405+0959	2	1.810	0.66	19.05	1.98	18.70	19.70	23,24
SDSS J1455+1447	2	1.424	0.42 ± 0.1	18.22	1.73	18.21	18.51	5
SDSS J1515+1511	2	2.054	0.742	18.05	1.95	17.53	20.02	23

↑ Our statistical sample of 19 lensed quasars. .

→ Constraints on cosmological parameters under dark energy model, combining with the SDSS BAO result.

