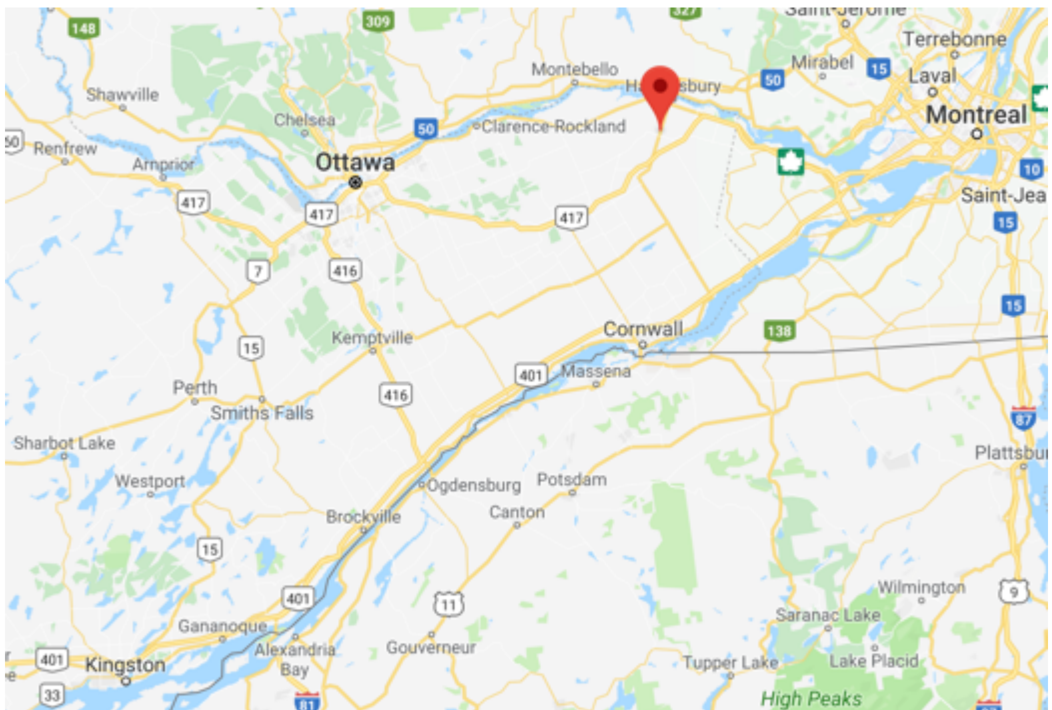
Jasper

From Time to Time

Hometown:

Vankleek Hill, Ontario – pop 1,996 (“Gingerbread capital of Ontario”)

Named after Simeon Vankleek, ‘United Empire Loyalist’ – rode away from the Americans until his horse dropped dead on Vankleek Hill.

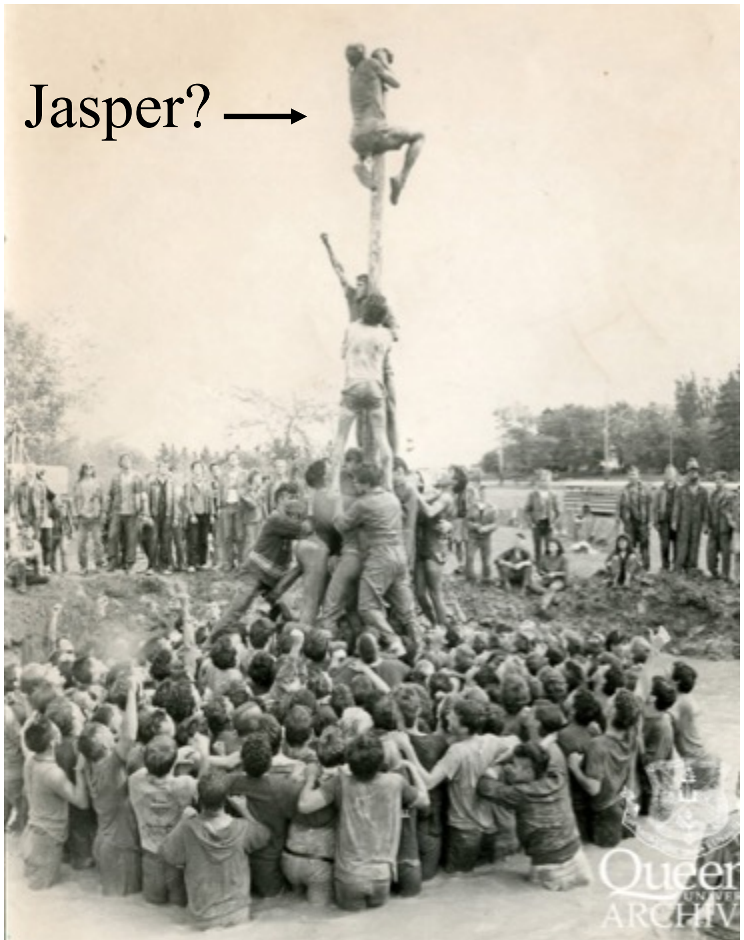


Jasper V. Wall
B.Sc.
Engineering Physics
Vankleek Hill

Queen’s University (1959-1963)

Queen's spirit

Grease Pole Climb – a Queen's engineering tradition



We meet – Mount Stromlo, April 1966

- **Australian days:**
  - **Miller and I mud-wrestling with galactic radio sources, Jasper out in the ethereal purity of the distant universe**

- **Early/mid 70s – Jasper and I both off to Europe**

- **Late 70s – Jasper and I both into optical/IR astronomy**

Mon. Not. R. astr. Soc. (1983) **205**, 819–827

PKS 0400 – 181: a classical radio double from a spiral galaxy?

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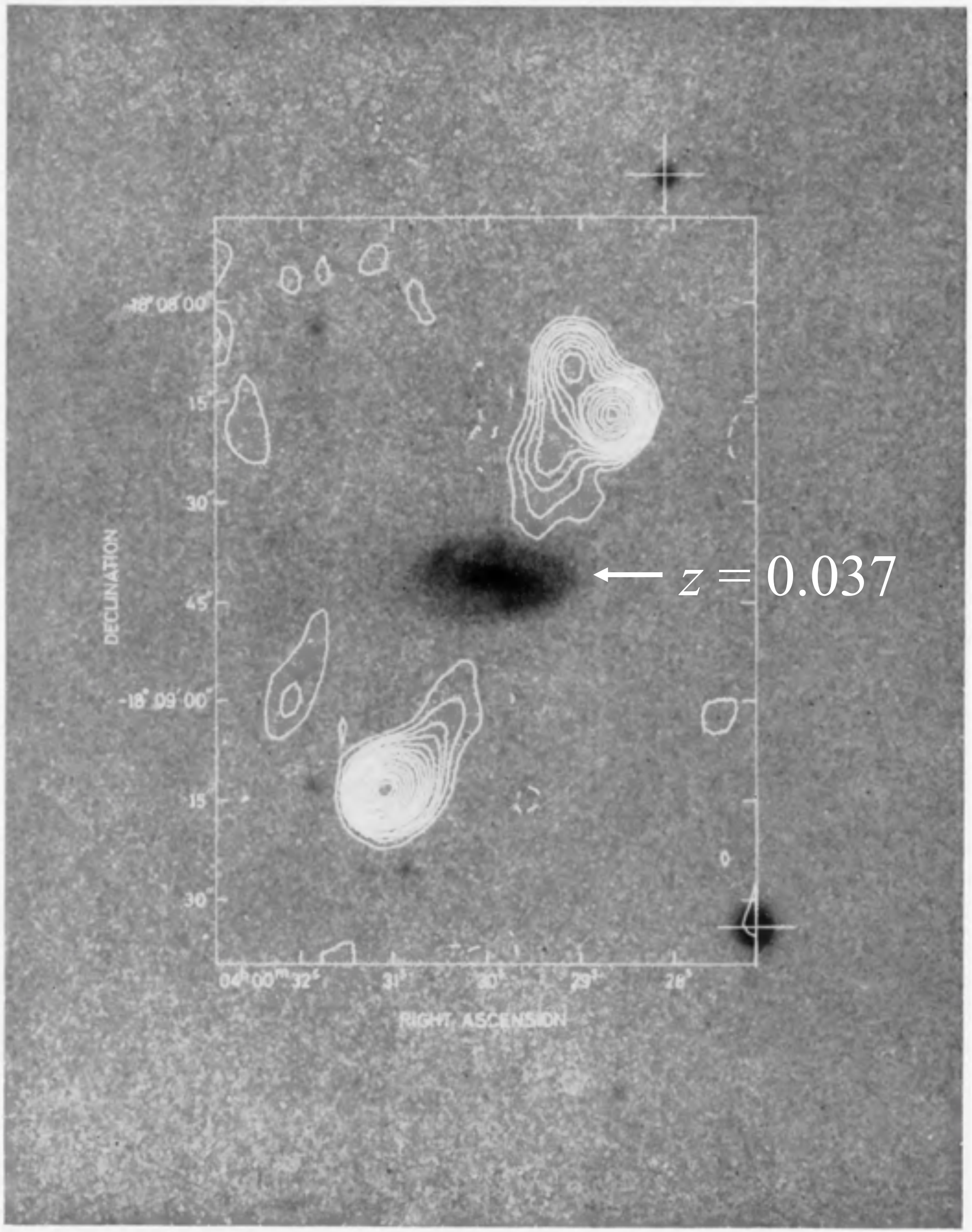


Plate 1. 1.4-GHz contour map of PKS 0400−181 (Fig. 1c) superimposed on a IIIa-J *B* photograph of the field.

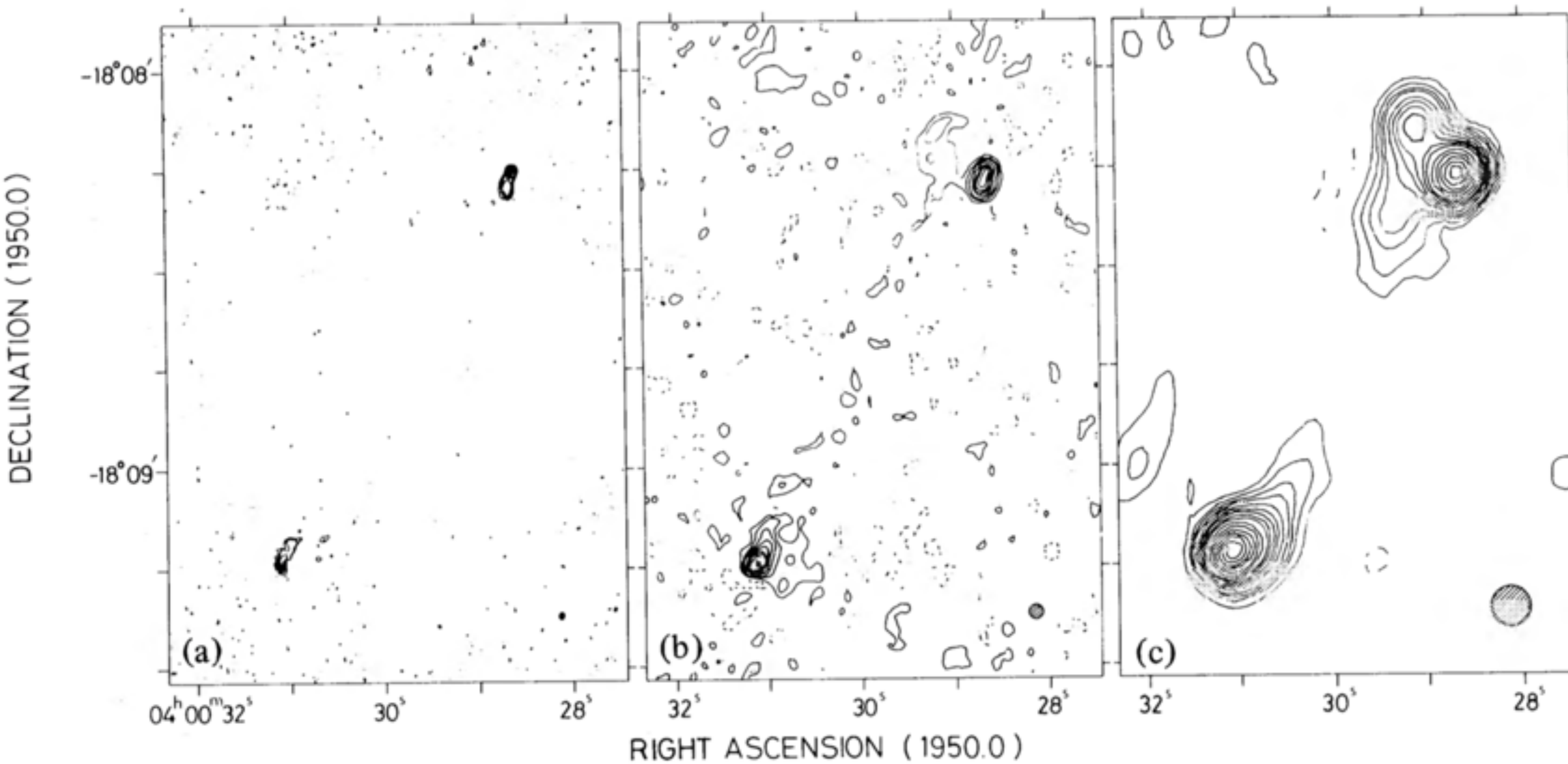
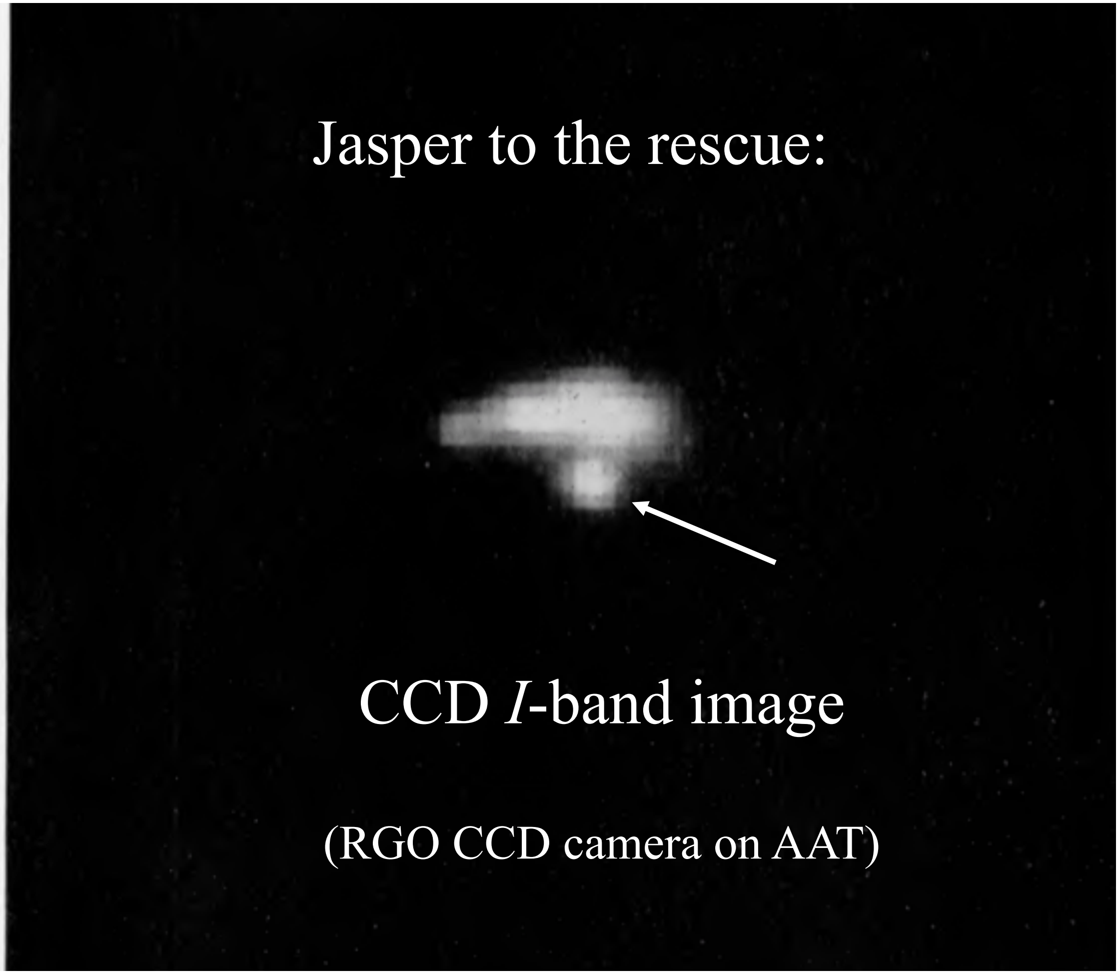


Figure 1. Total intensity contour maps of the radio source PKS 0400 − 181. The half-power beamwidth is indicated by the cross-hatched circle in the lower right-hand corner of each map. (a) 4.9-GHz map of resolution 0.6 arcsec (FWHM); contours are − 3, 3, 5, 10, 20, . . . , 90 per cent of 10.4 mJy per beam area. (b) 1.4-GHz map of resolution 2.0 arcsec (FWHM); contours are − 2, 2, 5, 10, 20, . . . , 90 per cent of 36.0 mJy per beam area. (c) 1.4-GHz map of resolution 6.0 arcsec (FWHM); contours are − 2, 2, 4, 6, 8, 12, 16, 20, 25, 30, 40, . . . , 90 per cent of 106 mJy per beam area.



→ Likely a background radio galaxy at $z \sim 0.5$

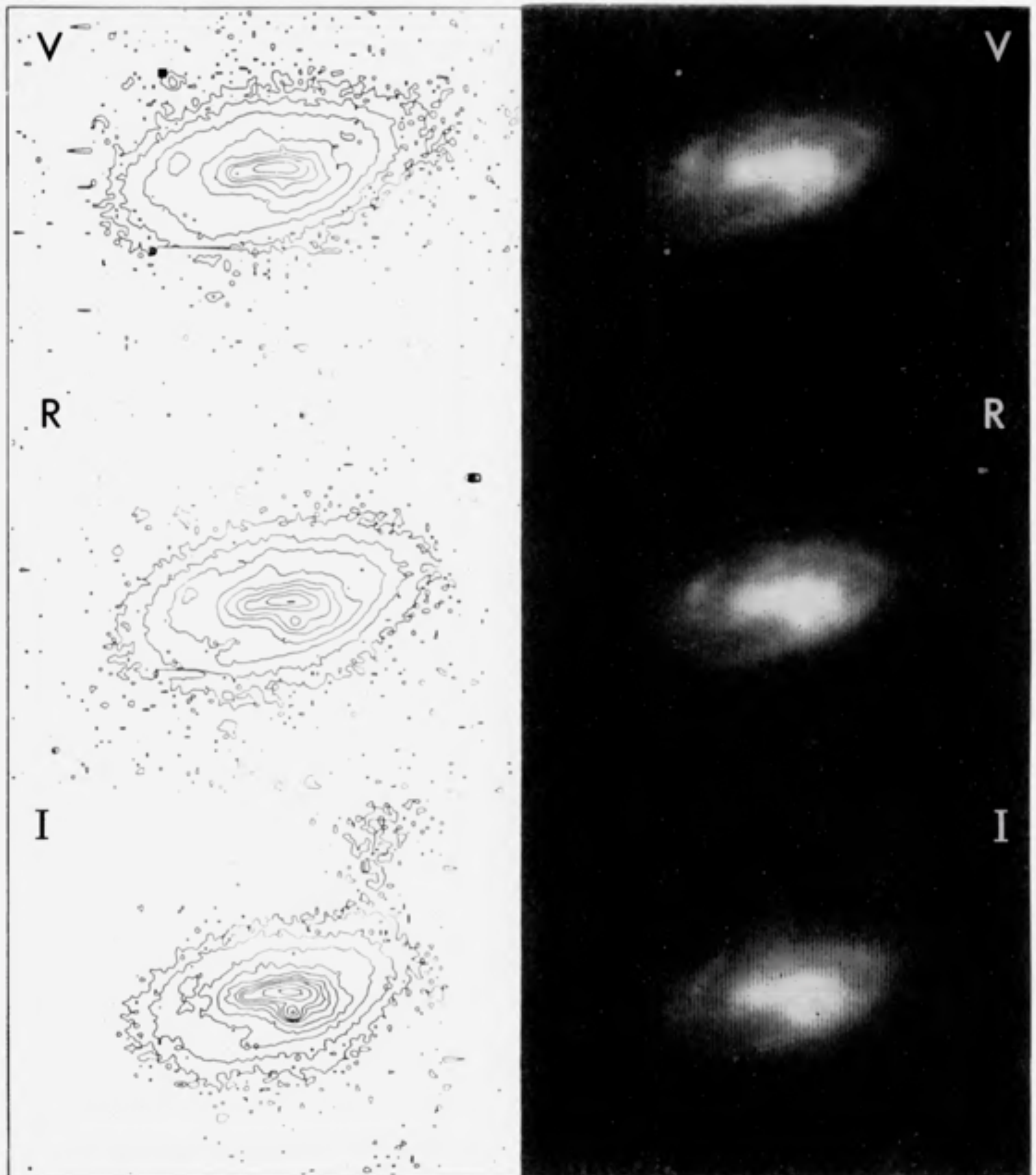
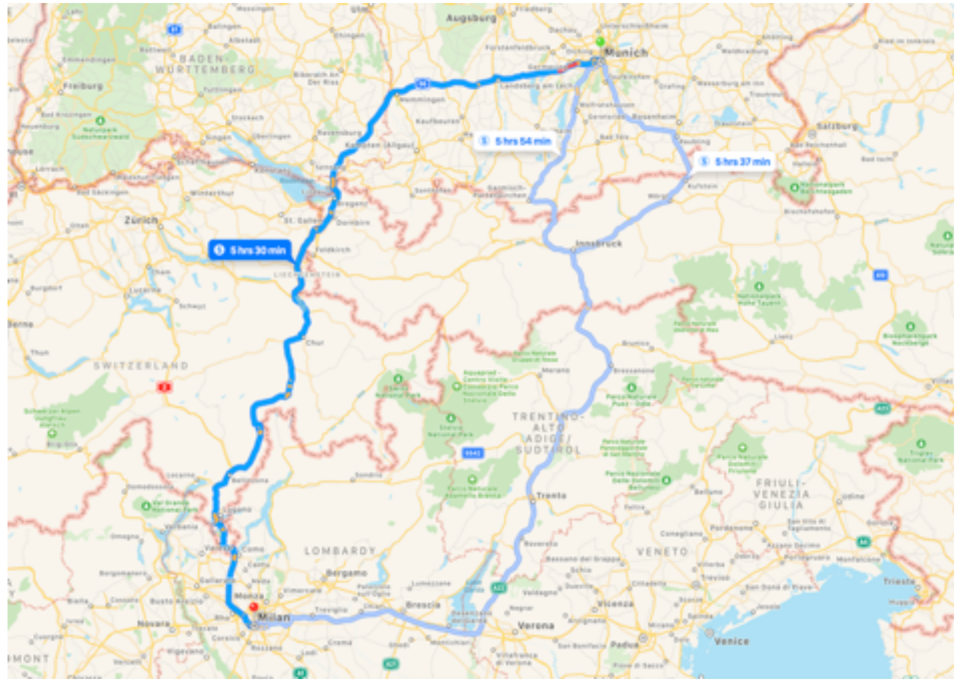


Plate 2. CCD V, R and I contour maps (left) and images (right) of the spiral galaxy and the red object. Exposure times at the AAT prime focus were 600 s, in photometric conditions. North-east is at the top left corner.

1993 – Jasper’s old castle was given to his old university

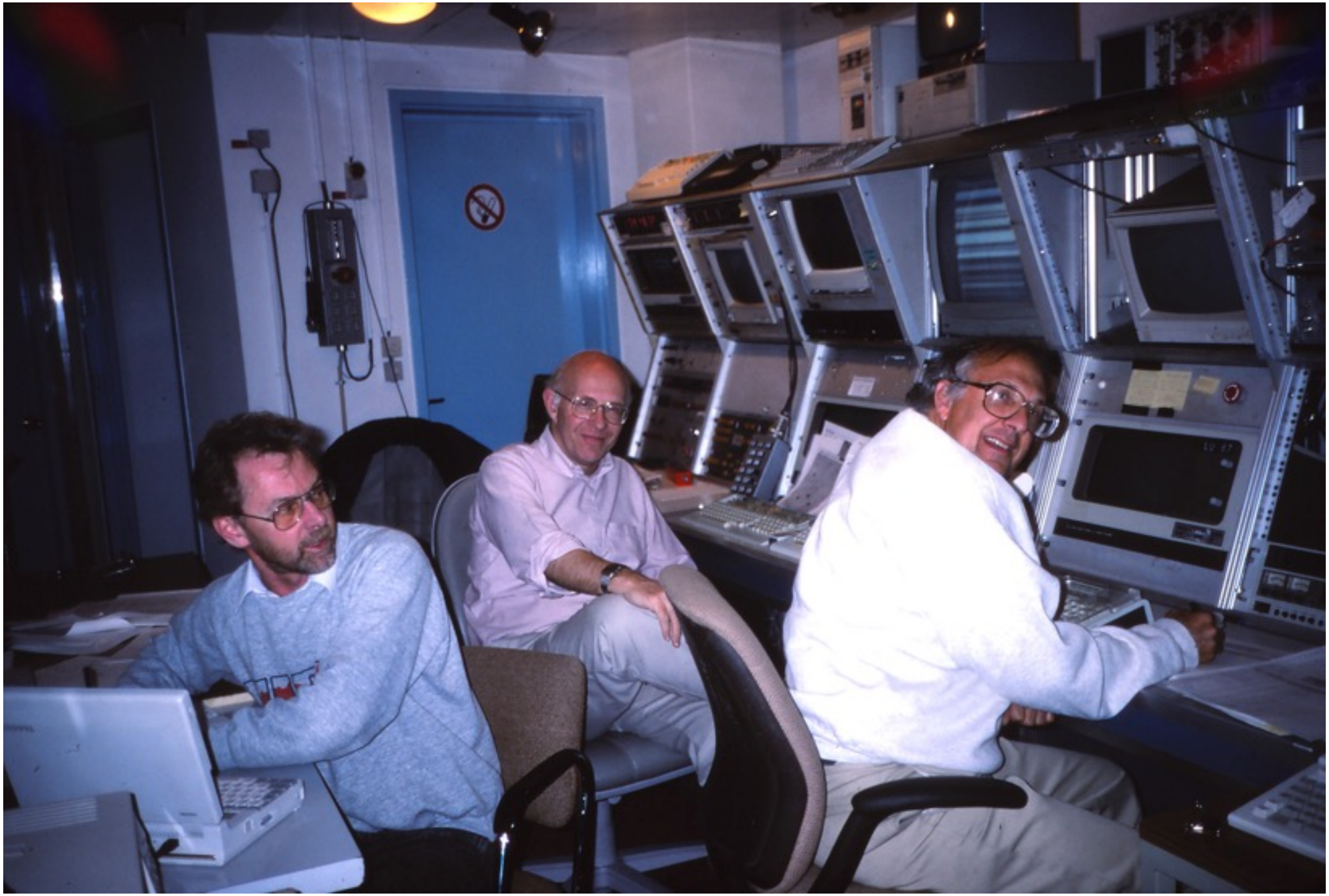
International Symposium on Observational Cosmology, Milan



1993 – We began search for *z* > 5 quasars

- Flat-spectrum radio sources in PKS catalogue (between 6 and 11 cm) and blank in *B*-band

- If any found – very useful
- If none found – information on decline at high *z*.



Fun & games at the ESO 3.6m

Mon. Not. R. Astron. Soc. **278**, L11–L15 (1996)

PKS 1251 − 407: a radio-loud quasar at $z = 4.46$

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ABSTRACT

During the course of a search for $z > 5$ radio-loud quasars, the radio source PKS 1251 − 407 was found to be identified with a quasar at $z = 4.46$. This is the highest redshift radio-loud quasar found to date, and one of only two at $z > 4$. It has B and Gunn-i magnitudes of $m_B = 23.7$ and $m_i = 19.9$, and a flux density at 2.7 GHz of 0.25 Jy. The corresponding luminosities are typical of radio-loud quasars at lower redshifts. The Lyα, N v and C iv emission lines are exceptionally narrow, even for the class of narrow-line QSOs. It is likely that PKS 1251 − 407 is the highest redshift quasar in the parent sample of 896 flat-spectrum Parkes sources, and this would be consistent with a fall-off in the space density of such objects at high redshifts.

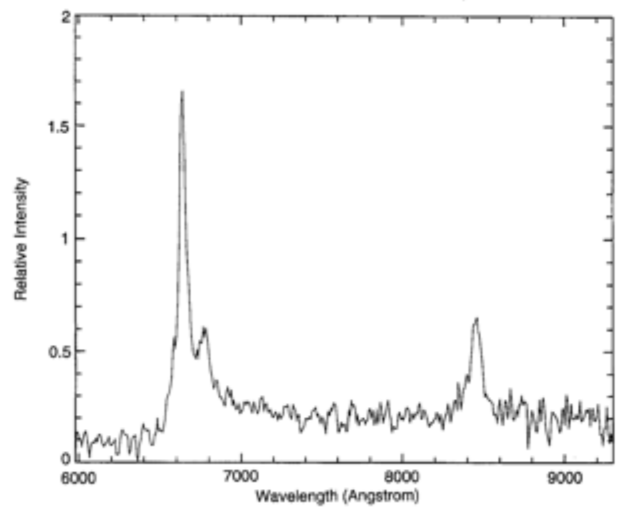

Figure 2. Optical spectrum of PKS 1251 − 407.

Decrease in the space density of quasars at high redshift

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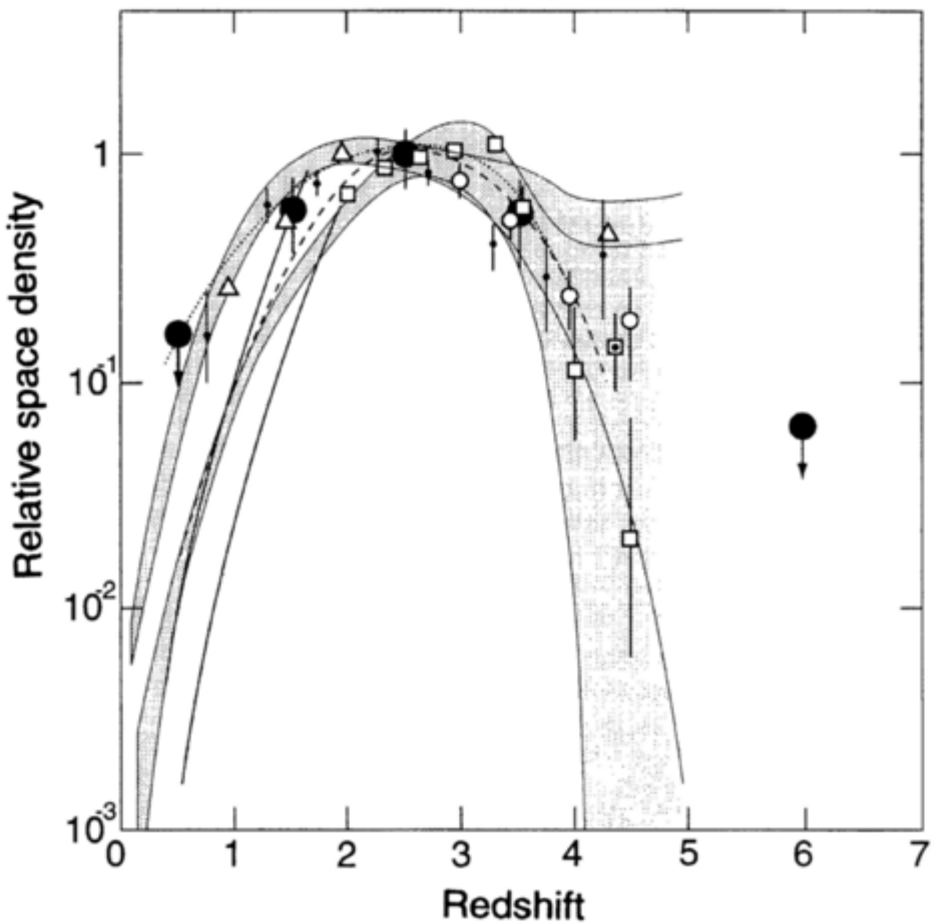

FIG. 2 Space densities, co-moving, normalized to $z \approx 2-3$ and plotted as a function of redshift, for the Parkes flat-spectrum radio-loud quasars

2002 – at Ken Kellermann's "retirement" party

Rad expounds on flying & sailing

The Parkes quarter-Jansky flat-spectrum sample

III. Space density and evolution of QSOs

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Astron. Astrophys. 434, 133-148 (2005)

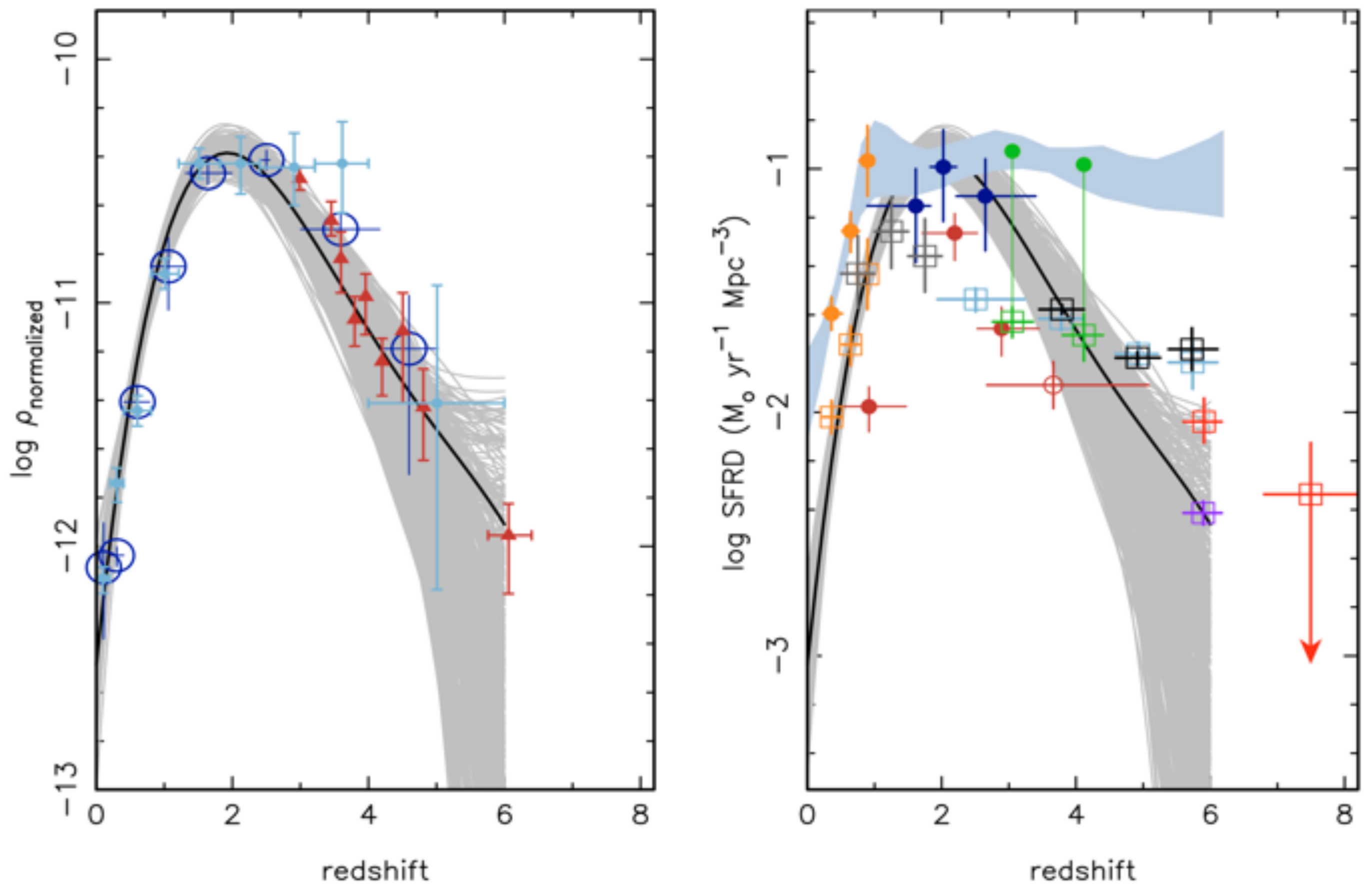

Fig. 11. *Left*: relative space density of QSOs (ρ) as a function of redshift. The shaded area and black line represent the current QSO space-density determination from Fig. 10. Light blue filled circles show the soft X-ray data from Chandra and XMM-Newton surveys (Hasinger et al. 2004; Hasinger 2004), while the dark blue open circles show the results from combined Chandra and ROSAT surveys (Silverman et al. 2004). Space density behaviour of optically-selected QSOs is given by the set of dark red triangles; the data are from Schmidt et al. (1995), Fan et al. (2001b) and Fan et al. (2004). The point at $z \sim 6$ is taken from Fan et al. (2004) and due to conversion between geometries there is uncertainty in the ordinate of 0.1. The X-ray and optical QSO data were scaled vertically to match the current determination of space density at redshifts 2 to 2.5. *Right*: star formation rate density (SFRD; units adopted by Blain et al. 2002), with the shaded area and black line again showing the current estimate of radio QSO space density. Data in optical and near-IR bands are distinguished as squares: orange (Lilly et al. 1996), grey (Connolly et al. 1997), green (Steidel et al. 1999), light blue (Bouwens et al. 2004a), black (Giavalisco et al. 2004), purple (Bunker et al. 2004) and red (Bouwens et al. 2004b). In general these data have not been corrected for extinction. Green dots show results of the extinction correction of 4.7 suggested by Steidel et al. (1999) for their data; the light blue band represents an estimate of the SFR determined from these and other points as analyzed by Bouwens et al. (2004b). Measurements from Far-IR and sub-mm observations are shown as circles: FIR as orange filled circles from Flores et al. (1999), and sub-mm as dark red filled and open circles and blue filled circles from Chapman et al. (2004), discussed in the text. The current space density determination (black curve) was scaled to match the Lilly et al. (1996) points, the orange open squares.

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Spectral properties and the effect on redshift cut-off of compact active galactic nuclei from the AT20G survey

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(vii) The effect of *K*-correction shown by Jarvis & Rawlings (2000) is important at high frequencies as discussed by Shaver et al. (1996) and Wall et al. (2005) for flat-spectrum sources and also for steep-spectrum sources (Rigby et al. 2011). However, this should not affect the results of Shaver et al. (1996) and Wall et al. (2005) as they used low-frequency spectral index to select compact sources. Hence, the conclusion that the compact sources show a strong redshift cut-off is supported by our data.

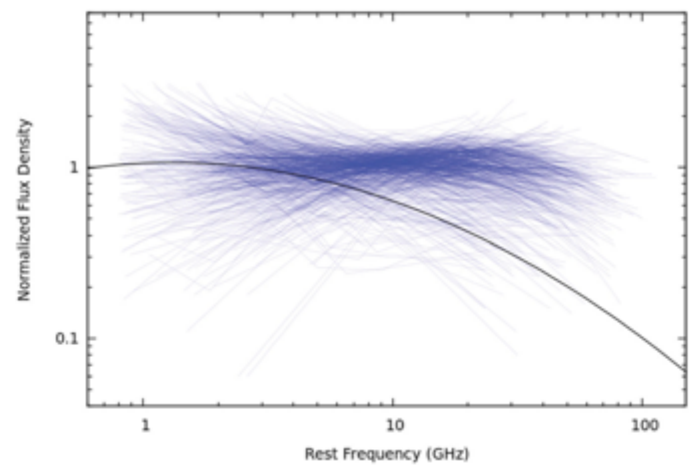

Figure 8. Rest-frame radio spectra of 671 compact AT20G sources. Sources have flux density observations at a subset of 0.8, 1.4 and 4.8, 8.6 and 20 GHz. All observed frequencies are converted to the rest frame and the flux densities are normalized by their average flux density over all frequencies present. The solid black line is the fit to the spectra of the most luminous Parkes half-Jansky flat-spectrum sample carried out by Jarvis & Rawlings (2000) normalized at the 2.7-GHz survey frequency.

Exploring Reionization-Era Quasars III: Discovery of 16 Quasars at $6.4 \lesssim z \lesssim 6.9$ with DESI Legacy Imaging Surveys and UKIRT Hemisphere Survey and Quasar Luminosity Function at $z \sim 6.7$

Feige Wang,[1,2,3] Jinyi Yang,[3,2] Xiaohui Fan,[3] Xue-Bing Wu,[2,4] Minghao Yue, ...

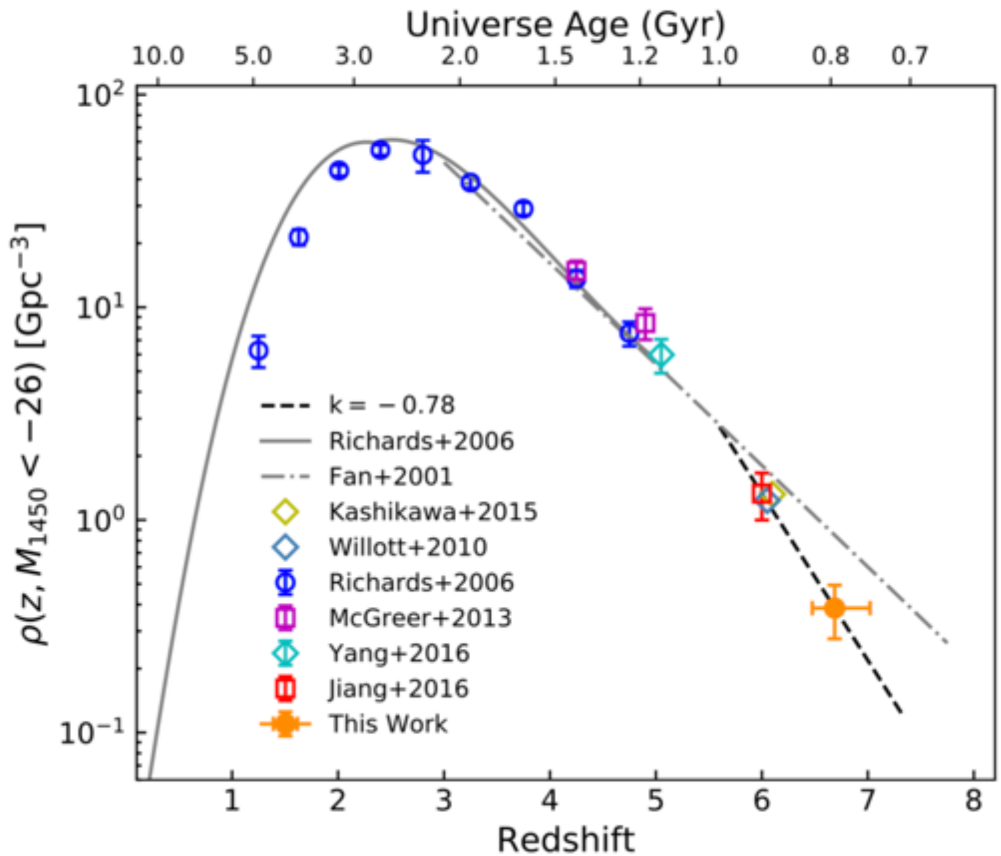

Figure 10. Density evolution of luminous quasars.

Happy Birthday Jasper

May our paths continue to cross!