pulsar as a long-wavelength oscillation of the superfluid vortex lattice.

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Quasar Absorption Lines and Radio Polarization

Conway and Gilbert[1] have recently reported that the mean linear polarization at 49 cm is lower for quasars with absorption-line spectra than for those with pure emission-line spectra. Although the sample size is small, they "believe that the depolarization is due to Faraday rotation in the same regions as are responsible for the absorption lines". To examine the effect in more detail we list in Table 1 the mean values of percentage polarization $\bar{m}$ at 11 cm (ref. 2 and unpublished work of Whiteoak, Gardner and Morris) and 6 cm (ref. 3) for the two classes of quasars with $z > 1{\cdot}25$, together with those at 49 cm (ref. 1). The sample sizes given in parentheses are small, but it is notable that the differences are comparable at all wavelengths. At 11 cm and 6 cm a consideration of median values, less influenced by individual high polarizations, leads to the same result. We conclude that the polarization difference is due to a lower intrinsic polarization for the absorption-line sources rather than to a larger Faraday depolarization because the latter would increase by at least λ^2, that is, by sixty-six times between 6 and 49 cm wavelengths. The difference would contribute in part to the observed decrease of polarization with redshift[1], because the relative abundance of absorption-line sources for redshifts exceeding 1·25 is about seven times that at lower redshifts[4].

Table 1. PERCENTAGE POLARIZATION FOR QUASARS WITH REDSHIFTS $z > 1{\cdot}25$

	$\bar{m}_{49}$ (per cent)	$\bar{m}_{11}$ (per cent)	$\bar{m}_{6}$ (per cent)
Absorption lines	0·56±0·21 (7)	2·3±0·2 (6)	3·5±1·2 (6)
No absorption	1·38±0·29 (18)	4·7±1·0 (11)	5·3±1·8 (9)
Difference	0·82±0·36	2·4±1·0	1·8±2·1

A fuller account of the relationship between redshift and polarization at 6, 11 and 20 cm will be published elsewhere.

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Circular Polarization of Quasars at X49 Cm

IT has been suggested that radio sources emitting by the synchrotron process may show a small degree of circular polarization, as well as the well known linear polarization[1,2]. Previous measurements at shorter wavelengths have failed to detect circular polarization[3,4] or have been near the limit of measurement[5,6].

We have made measurements of the circular polarization of twenty quasars at λ49 cm (610 MHz) using the Mk I and Mk II telescopes at Jodrell Bank as an interferometer with a spacing of 865 wavelengths. Each telescope is illuminated by a pair of crossed linearly polarized feeds. The circular polarization is determined from the output of the interferometer in the four possible combinations of feed polarity.

The instrumental polarization was measured by assuming that the radio galaxy 3C 295 has precisely zero circular polarization. The instrumental correction was found to be less than 0·5 per cent, varying in a repeatable manner with elevation. Daily measurements of 3C 295 lead us to believe that at any elevation above 12° the instrumental contribution is known with a standard error of 0·03 per cent. Extra confirmation comes from observations of 3C 123 and 3C 147, which seem to have the same polarization as 3C 295 to within 0·03 per cent. If all three sources are in fact circularly polarized with a non-zero value, then this value must be added algebraically to all the other sources in our list.

Table 1. CIRCULAR POLARIZATION AT 49 CM (RIGHT-HAND POSITIVE)

Source	p_c (%)		$\lvert p_c/\text{error}\rvert$
3C 48	+0·01±0·04		0·2
3C 123	−0·01	0·03	0·3
3C 138	−0·01	0·04	0·2
3C 147	−0·01	0·03	0·3
3C 196	+0·01	0·04	0·2
PKS 1127–14	−0·11	0·06	1·8
PKS 1148–00	+0·09	0·11	0·8
3C 273	−0·02	0·03	0·7
3C 279	+0·03	0·05	0·6
3C 286	+0·03	0·05	0·6
3C 295	0·00	Calibrator	—
3C 309·1	−0·04	0·04	1·0
PKS 1510–08	+0·11	0·10	1·1
3C 345	+0·04	0·07	0·6
3C 380	−0·05	0·08	0·6
VRO 42.22.01	+0·14	0·07	2·0
PKS 2203–18	+0·18	0·06	3·0
3C 446	+0·04	0·05	0·8
CTA 102	−0·17	0·05	3·4
3C 454·3	−0·04	0·07	0·6
NRAO 140	+0·02	0·30	0·1
DA 344	−0·08	0·30	0·2

Table 1 shows the circular polarization p_c measured for the twenty quasars and two radio galaxies after correction for instrumental polarization. The errors quoted are standard errors and allow for the uncertainty in the instrumental correction and the probable effect of confusion as well as the scatter of the data due to noise. The sources were all observed on at least two occasions and for most the total integration time was over six hours.