ASTRONOMY & ASTROPHYSICS
SUPPLEMENT SERIES

APRIL 1990, PAGE 183

Astron. Astrophys. Suppl. Ser. **83**, 183-204 (1990)

Optical and infrared polarimetry and photometry of blazars

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Received September 12, accepted November 14, 1989

Abstract. — We have carried out a polarization study of 44 blazars and candidate blazars at optical and near-infrared frequencies covering the period 1986 August to 1988 February. The data show flux and polarization properties changing on internight timescales, and commonly exhibit frequency dependence of spectral index, polarization and polarization position angle. The observations of the quasar 1253 – 055(3C279) showed a *U*-band polarization of 45.5 ± 0.9%, the highest ever seen in a blazar. The interpretation of the data is the subject of a further paper (Ballard *et al.*, 1989).

Key words : BL Lacertae objects.

1. Introduction.

We have the results of a continuing programme of simultaneous measurements of the linear Stokes parameters in optical and near-infrared wavebands. This is the fourth paper in the series (see Impey *et al.*, 1982 ; Impey *et al.*, 1984 ; Holmes *et al.*, 1984a). The observations, described in section 2, are tabulated in table III. In all 44 objects were observed at the 3.8m United Kingdom Infrared Telescope (UKIRT) during four observing runs from 1986 July 31 to August 7, from 1987 July 27 to 30, from 1987 September 18 to 21 and from 1988 February 15 to 18. This yielded 135 sets of simultaneous photometric and polarimetric data, 23 sets of polarimetric data without photometric calibration and 23 sets of photometric data with no significant polarization at the 3σ level. The data which lack photometric calibration come from poor observing conditions during the 1987 September run. Consequently, for those objects where no polarization was detected (at 3σ), some of the upper limits are quite high. These data constitute the largest such set of observations yet obtained.

2. Observational techniques.

Two instruments were used to obtain the data presented in this paper. The Mark I Hatfield Polarimeter (as described by Brindle *et al.*(1986), with the addition of an extra optical channel) was used for the observations of 1986. The Mark II instrument, described below, was used for the observations of 1987 and 1988. Both operate at the $f/35$ Cassegrain focus of UKIRT. All the observations were taken with an 8 arcsec aperture.

2.1 THE MARK II HATFIELD POLARIMETER.— The Mark II Hatfield Polarimeter was constructed at the Hatfield Polytechnic and was first used in 1987 July at UKIRT. Its optical layout is shown in figure 1. It is a twin-beam instrument with two beams separated by 50.8 mm., which corresponds to an angular separation on the sky of 81.3 arcsec at the $f/35$ focus of UKIRT. The advantage of this set-up over the Mark I polarimeter is that the optical and infrared measurements are now performed on separate beams so that the wave-plates and other optics have been optimised for the appropriate wavelength ranges.

The infrared beam passes through an IR-achromatic wave-plate ($1 - 2.5\mu$m) and then an IR/optical dichroic. The reflected IR beam passes through a wire-grid analyser and into the observatory cryostat (UKT9). The transmitted optical beam is sent to the UKIRT TV camera for acquisition and guiding. An efficiency correction must be applied to the infrared polarization measurements, due to inefficiencies which arise from the frequency response of the detector and the wire-grid analyser. The appropriate efficiency to use for correcting the measurements is the measured polarization of an unpolarized star with the Glan prism inserted into the IR beam. The wire grid indicated on the calibration slide in figure 1 is only used if calibration at longer wavelengths than *K* is required, where the Glan prism can no longer be used. No such observations are

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presented in this paper.

The optical beam is measured in a similar to the Mark I device. A super-achromatic wave plate is followed by a Foster prism which produces two orthogonally polarized beams. Dichroics are then used to split the beams into *U* and *R* channels, and the *B*, *V* and *I* beams channels with filters used in each beam to form the separate passbands. The polarimeter can thus measure the *U*, *B*, *V*, *R*, *I* wavebands and one IR waveband simultaneously. The filters quite closely reproduce the Cousins *UBVRI* system (Bessell, 1979) and any differences have been ignored. The effective wavelengths of the filters are listed in table I.

The polarimeter is operated in a similar manner to the Mark I device. A cycle consists of four rotations of the wave-plate. At the start of the cycle the object is centred on the optical beam. At the end of the first rotation the telescope is nodded to bring the object into the IR beam and then nodded back after the third rotation. While not centred on the object, the beams are measuring the sky. As for the Mark I device, on-line software updates the polarization and flux measurements and their combined errors — obtained from photon statistics — at the end of each cycle.

The polarimeter returns relative fluxes for each waveband, which are then calibrated by observations of standard stars. The infrared magnitudes were calibrated by observations of stars from the UKIRT standards list and the optical standards were obtained from the catalogue of Landolt (1983). Airmass corrections were performed using observationally determined extinctions. The fluxes have all been corrected for interstellar extinction with the values of $E(B-V)$, taken from Burstein and Heiles (1982), given in table III. The extinction curve is taken from Rieke and Lebofsky (1985).

The degree of polarization observed is subject to a statistical bias which must be corrected. This is inherent in the measurement of a vector quantity in the presence of noise. Wardle and Kronberg (1974) give the expression for the modal value, which is used to relate the true polarization p to the measured polarization p'.

$$p = p'\sqrt{1-\left(\frac{\sigma_p}{p'}\right)^2} \qquad (1)$$

The best estimate of the error on p is the error on the measured polarization σ_p. The measured position angle is the best estimate of the true position angle, but the error is underestimated in the case of poor signal-to-noise (Wardle and Kronberg, 1974).

The glan is used to measure the relative position angles in each band. The zero of position angle on the sky is determined by measurements of polarized standard stars taken from Serkowski (1974). These position angles are only quoted to one degree accuracy and no errors are given. Consequently for many of the measurements given, the position angle error is dominated by the unknown error in these angles.

3. Results.

3.1 INDIVIDUAL OBJECTS.— The shape of the spectrum will be characterised by the use of the (local) spectral index;

$$\alpha(\nu) = -\frac{\mathrm{d}\log S_\nu(\nu)}{\mathrm{d}\log\nu}. \qquad (2)$$

The condition of a frequency-dependent spectral index which results in curvature in the log $S_\nu(\nu)$ – log ν plane is referred to as spectral curvature.

To test spectral curvature, a power-law was fitted to all the UKIRT photometric data. All the Mark I Hatfield Polarimeter data consist of measurements at *H*, *I* and *B* at least. The Mark II data all have one infrared and at least four optical measurements. For some high airmass (sec $z > 1.5$) observations, the *U* data had to be rejected because atmospheric refraction makes the photometry unreliable. Consequently all the data can be fitted by a power-law with at least one degree of freedom. These fits were achieved by minimising the χ^2 statistic, the use of which is only valid if the errors concerned are distributed normally. Unfortunately, this is certainly *not* the case here. The errors on the photometry are not simply the random errors associated with photon counting, but include the systematic uncertainties in the photometric calibration. It is most unlikely that these latter errors are distributed normally. However its use here is justified as the aim is to obtain an idea of the frequency of spectral curvature within the blazar population rather than to reject a power-law fit for any one individual object.

All the data which had two or more polarization measurements were tested for frequency dependence of the degree of polarization (hereafter FDP). The weighted mean of the measured polarizations was calculated and then tested against all the measured polarizations by use of the χ^2 statistic with the loss of one degree of freedom. Similarly the data were also tested for frequency dependence of the position angle of polarization (hereafter FDθ). Polarimetric errors should have an approximately normal error distribution in the case of high signal-to-noise, and the position angle error distribution is also approximately normal for high signal-to-noise observations (Wardle and Kronberg, 1974).

We now give a brief description of the observations of each object.

0048 – 097, OB – 081

This object was confirmed as a blazar by Angel and Stockman (1980) (hereafter AS80). 0048 – 097 was observed extensively in the 1986 August, 1987 July and 1987 September runs. It consistently showed FDP, but not FDθ, in 1986 August. No such behaviour was observed in 1987 July or September. Typically the position angle changed from night to night by a few degrees.

PKS 0106 + 013

This highly polarized quasar, HPQ, (confirmed by Moore and Stockman, 1984) was observed on one night in each of the first three runs. No significant polarizations were recorded during the 1986 July/August and the 1987 September runs. The only significant polarization measured was the U polarization of 1987 July 28 ($p(U) = 14.37 \pm 2.39\%$)

GC 0109 + 224

An AS80 blazar, 0109 + 224 was observed during all three runs. The polarization in 1986 August was highly variable and displayed both FDP and FDθ. Both $dp/d\nu > 0$ and $dp/d\nu < 0$ were observed on successive nights. The polarization observed in 1987 July was $\sim$ 10% but essentially constant. The 1987 September data showed more variation but only one case of FDP.

PKS 0118 – 272

This object was a radio source identification with a smooth IR/optical spectrum (Wilkes *et al.*, 1983). Impey and Tapia (1988) measured one significant (i.e. $> 3\%$) polarization. The observations presented here confirm that this object is a blazar. The polarization was high ($p \sim 17\%$) but constant through 1987 August. FDP was seen in 1987 July with $dp/d\nu > 0$.

0138 – 097

This was another radio source identification with a smooth IR/optical spectrum (Fricke *et al.*, 1983), which was confirmed as a blazar by Impey and Tapia (1988). The polarization in 1986 August was $\sim 6\%$ with marginal indications of $dp/d\nu < 0$. The 1987 July data showed higher polarization ($\sim 20\%$) without FDP, while the 1987 September polarizations were of similar amplitude but with $dp/d\nu > 0$.

PKS 0219 – 164

This object was identified as a blazar by Meisenheimer and Röser (1984). It was observed only once (1987 July 28), when it had (frequency averaged) polarization of $12.63 \pm 0.18\%$ at a position angle of $160.9 \pm 0.5°$. This position angle is consistent with the range predicted by the "oblique rotator" model of Meisenheimer and Röser; though of course this model cannot be confirmed without some data on variability.

0219 + 428, 3C 66A

An AS80 blazar which was observed in all three runs. The polarization behaviour in 1986 August was fairly constant with no marked frequency dependence, and this was also the case in 1987 July. Marginal evidence for FDP was seen in 1987 September. Inoue (personal communication) reports 10 GHz observations of this object on 1987 September 17 which show 2.8% polarization at 5°.

AO 0235 + 164

This is the object for which Impey *et al.* (1982) measured their record polarization of $p(V) = 43.9 \pm 1.4\%$. Two photometric observations of this object were made. The spectrum was very steep $\alpha(B) = 4.61$, but the polarizations were always of the order of 10% . Inoue (personal communication) reports 10 GHz observations on 1987 September 17 which show 1.5% polarization at 14°. This position angle is consistent with the IR/optical data.

0300 + 470, 4C 47.08

This AS80 blazar was observed only once on 1987 September 20 in poor photometric conditions. The data were consistent with $p = 8.91 \pm 0.64\%$ and $\theta = 9.42 \pm 1.92°$, independent of frequency.

1H 0323 + 022

This X-ray selected object was classified as a blazar by Feigelson *et al.* (1986) who, in particular, noted its extremely rapid X-ray variability. They observed it to be optically polarized (2 – 9%) in 1983 and 1984. No significant polarization was observed on 1986 August 1 ($p < 6.3\%; 3\sigma$ upper limit at I). Polarization was measured on 1987 September 21, with the average over all wavebands being $3.56 \pm 0.45\%$.

0336 – 019, CTA 26

This HPQ (Moore and Stockman, 1981), was observed only once on 1986 August 5, and no significant polarization was measured as the object was faint and the integration was accordingly terminated early.

0338 – 214

This is a smooth optical spectrum radio source identification (Wilkes *et al.*, 1983). The polarization was observed to be $\sim$ 10% in both 1986 August and 1987 September with no frequency dependence.

1H 0414 + 009

This X-ray selected object is a candidate blazar. Ulmer *et al.* (1983) classified it as a BL Lac object and Impey and Tapia (1988) reported an optical polarization of $2.76 \pm 0.29\%$. On 1988 February 15 and February 16 the B polarization was $6.4 \pm 0.8\%$. There was no evidence for frequency dependent polarization on either night.

PKS 0422 + 004

This AS80 blazar was observed on 1988 February 16 and 18. There was no evidence for frequency dependent polarization, but the polarization decreased from 21.4 ± 0.3 to $12.4 \pm 0.2\%$ between these dates.

PKS 0735 + 178

This well known blazar was observed on 1987 September 19 in poor photometric conditions. The measured polarization was frequency independent ($p = 6.9 \pm 0.4\%$) but the position angles were marginally frequency dependent (average value 136°). On 1988 February 16 there was evidence for $dp/d\nu > 0$.

PKS 0736 + 017

This AS80 blazar was observed on 1988 February 15, 16 when no significant polarization was detected at the 3% level.

0754 + 100, OI 090.4

0754 + 100 is a well known AS80 blazar which was observed on 1988 February 15, 16, 17 and 18. The polarization showed $dp/d\nu > 0$, the degree of which decreased with time. On the last two nights the position angle was frequency independent at an average angle of 36.2°.

0818 – 128, OJ – 131

This AS80 blazar was observed on 1988 February 15, 16 and 17. During the course of the observations the degree of frequency dependence of the polarization increased. The position angle was frequency independent throughout at an average angle of 81°.

0851 + 202, OJ287

This well known object was the subject of a previous paper (Holmes *et al.*, 1984b), when it displayed notable behaviour, interpreted in terms of a two-component model for the emission. It was observed on 1988 February 15, 16 and 17 to have a polarization around 10% . $dp/d\nu > 0$ was observed on February 16 and 17. The data presented here for OJ287 are satisfactorily fitted by the two-component model.

0906 + 015

0906 + 015 is an AS80 blazar which was observed once in February 1988. At the 3% level no significant polarization was detected.

1101 + 384, Mkn 421

This is an AS80 object, located in a galaxy at redshift, $z = 0.0308$. It was observed once, on 1988 February 15. The fact that the polarization showed complex behaviour and the curvature in the spectrum is in agreement with the hypothesis that the galactic flux significantly contaminates the blazar component.

1147 + 245

This AS80 blazar displayed $dp/d\nu > 0$ and complex position angle behaviour on the single occasion on which it was observed (1988, February 18).

1156 + 295

On 1988 February 15, 16 and 17 this well studied AS80 blazar was observed to have frequency independent polarizations and position angles (frequency averaged) of 24% at 165°.

1253 – 055, 3C 279

This object is a well studied superluminal radio source, which has long been known to be a blazar. The observations of 1986 August show a polarization flare, with the degree of polarization increasing during the course of the run, and consistently showing $dp/d\nu > 0$. The *U* data of 1986 August 5 show a polarization of 45.92 ± 0.98% . This is the largest polarization ever seen in the IR/optical for a blazar (c.f. 0235 + 164 ; Impey *et al.*, 1982). On 1987 July 28 the polarization was still high, but not at the record level. In 1988 February the polarization rose throughout the observations from 19.6 ± 0.8% to 30.7 ± 0.6% in the *U* band.

1413 + 135, OQ 122

This is a radio source with a very steep IR/optical spectrum (Beichman *et al.*, 1981 ; Bregman *et al.*, 1981). The latter gives the only recorded significant polarization of 19 ± 3% at H. This object was observed in 1986 August, but was too faint for IR polarimetry to be feasible in the time available. The spectrum was so steep that only an upper limit is available for the optical flux.

1418 + 546, OQ 530

This AS80 blazar was observed during all four runs. In 1986 August the polarization showed FDP with $dp/d\nu > 0$, which was repeated in the measurements of 1987 July 30, where the polarization increased from 2.5% at H to 8.7% at *U*. This latter was accompanied by significant FDθ. The data of 1987 September were all obtained in poor photometric conditions. However the polarization data still showed FDP but no FDθ. During the 1988 February the position angle was constant at 144° on the 16th and 17th. On the final night significant FDθ was observed, from 132.0 ± 2.5° at H to 156.2 ± 3.9° at *U*.

1424 + 240

This is a smooth spectrum radio source identification which was confirmed as a blazar by Impey and Tapia (1988). Frequency independent polarizations (19.6%) and position angles (116°) were recorded on 1988 February 16, 17 and 18.

PKS 1510 – 089

This object was confirmed to be a blazar by Moore and Stockman (1981) and Smith *et al.* (1987). It is one of the most violently variable HPQ's with $\Delta m = 5.4$ (Moore and Stockman, 1981). It was observed only once on 1986 August 1. The 3σ upper limit to the I polarization was 6.3% .

1514 – 241, AP Lib

One of the original BL Lac objects, 1514 – 241, AP Lib was observed only twice (1986 August 1 and 1987 July 27). The polarization of this object is typically quite low compared to most other blazars (e.g. AS80). Our observations are consistent with this. FDP was seen on 1987 July 27.

1538 + 149, 4C 14.60

An AS80 blazar which was observed on 1986 August 1 when no significant polarization was observed. The 3σ upper limit was high (27%) as the object was faint.

1641 + 399, 3C 345

The behaviour of this object was the subject of a recent paper (Mead *et al.*, 1988).

1652 + 398, Mkn.501

This BL Lac object was observed only once on 1987 September 21. Both the degree and position angle of polarization were observed to be frequency dependent (at the 0.5% level of significance).

1717 + 178, OT 129

This AS80 blazar was observed twice in 1986 August with strong $dp/d\nu < 0$ on the second night. No significant polarization was measured on 1987 July 30 ($p < 21\%$) (upper limit at R).

1727 + 502, 1 Zw. 186

An AS80 blazar which was observed twice in 1986 August, when it showed variable FDP and FDθ. It was also observed on 1987 September 21 when $dp/d\nu > 0$ was observed (without FDθ).

1749 + 096, OT081

An AS80 blazar which was extensively observed in 1986 August. No FDP was seen but significant variations were seen in the polarization. FDθ was seen on 1986 July 31. On 1987 July 27, 1749 + 096 was faint but $dp/d\nu > 0$

1921 – 293, OV – 236

This blazar was first classified as such by Wills and Wills (1981). Confirmation of it being polarized was provided by Impey *et al.* (1982). The observations of 1986 August indicate appreciable photometric variability (a factor of two from 1986 August 6 to August 7). Appreciable FDP was seen on 1986 August 6.

2032 + 107 MC

This candidate blazar was first classified by Zotov and Tapia (1979), who have published the only polarization measurement. Antonucci *et al.* (1987) have confirmed its extragalactic nature. One observation of this object was made on 1987 July 27. Significant polarization was not detected. The 3σ upper limit was 1.32% at R.

PKS 2155 – 304

This is one of the brightest of the AS80 BL Lac objects, and was observed as a part of the 1986 August and 1987 July and September runs, but its polarization is typically quite low (3 – 7% ; AS80). The data of 1986 August showed polarization at about this level and exhibited variability in both amplitude and frequency dependence. The data of 1987 July 27 showed a higher polarization (~ 10%) and both FDP and FDθ. The data of 1987 September 21 were obtained in poor conditions, but the polarization showed FDP.

2200 + 420, BL Lac

BL Lac was observed more often than any other object in this programme. Photometric variability was small over the 1986 August and 1987 July and September runs. Instances of both FDP and FDθ were observed in all three periods. The position angle of the polarization was in the range 10 – 40° for all observations. This is essentially the same position angle seen by Brindle *et al.* (1985). Inoue (personal communication) reports a high 10 GHz polarization of 9.2% at 21° on 1987 September 17. This position angle is somewhat different from that seen in the IR/optical on 1987 September 19 (~ 40°).

PKS 2208 – 137

This is an AS80 blazar which was observed four times in the 1986 August run. On each occasion it was observed to have an abnormally flat IR/optical spectrum and no polarization. The lowest 3σ upper limit was 1.78% at B on 1986 August 4.

2223 – 052, 3C 446

This is violently variable HPQ. During the 1986 August observations the object was faint and no reasonable limits on the optical polarization were obtained. In 1987 July frequency independent polarization was seen varying from 12% to 8% . The observations of 1987 September were obtained in poor photometric conditions. The noisy data showed some evidence for FDP. The 10 GHz polarization data of the 1987 September 17 ($p \approx 4\%$ *and* $\theta \approx 2°$), showed a position oriented roughly at 90° from the IR/optical data (Inoue, personal communication).

2230 + 114, CTA 102

This object is an AS80 blazar and a well known superluminal radio source. It was observed twice in 1986 August and no polarization was detected, the upper limits at B being 3.6% and 5.7% .

2251 + 158, 3CR 454.3

Another superluminal radio source and AS80 blazar, this object was observed once in 1986 August, 1987 July and 1987 September. No polarization was observed in the first two runs, but frequency independent polarization was observed on 1987 September 20 of $p = 3.8 \pm 0.3\%$. This position angle was oriented somewhat differently from the 10 GHz data of Inoue (personal communication) who measured $p \approx 3.2\%$ and $\theta \approx 11°$, on 1987 September 1987.

2254 + 074, OY 091

This AS80 blazar was extensively observed in 1986 August, 1987 July and 1987 September. The polarization behaviour was characterised by strong FDP with little evidence for FDθ in all three runs. On all dates except for 1986 August 6, the FDP was such that $dp/d\nu > 0$.

3.2 Discussion.— The fits to the spectra of the 158 photometric data sets are shown in table II. These fits are separated into polarized and unpolarized samples. This is because it is only when polarizations in excess of the 3% limit are seen, that it is certain the observed flux contains a blazar contribution. The fits were all tested at the 5% significance level. If a power-law was rejected at this level,

then the spectral flux distribution is characterised as having either a convex spectrum ($d\alpha/d\nu > 0$), a concave spectrum ($d\alpha/d\nu < 0$) or a "complex" spectrum. The use of this level of significance is very lenient given the likely non-normal errors involved (it corresponds to a 1.96σ point of the normal distribution).

Table II lists all the polarimetric observations of blazars and whether they were fitted (at the 5% level of significance) by a constant polarization or FDP (either with $dp/d\nu > 0$, $dp/d\nu < 0$ or with more complex behaviour). In order to assign the FDP categories, a power-law polarization behaviour was fitted to these data ($p(\nu)\alpha\nu^{\beta}$). This was an empirical fit whose form was chosen as the polarization degree is contrained to be positive definite and this form allows an unconstrained minimisation to be performed with respect to log p_{14} and β. The two FDP categories ($dp/d\nu > 0$ and $dp/d\nu < 0$) were assigned on the basis of the sign of the fitted value of β. Those objects not fitted (at the 5% level) by this functional form, are described as having "complex" polarization behaviour. This procedure will flag behaviour, such as that seen in 1641 + 399 and 2200 + 420, where the FDP is only significant over a narrow range of the observed frequencies.

Table II also presents the results of testing for frequency dependence of the position angle of polarization. The different categories were assigned using the same method as for FDP.FDθ is seen to be rarer than FDP. There is no evidence suggesting any preference for clockwise over counter-clockwise variations with frequency.

We have presented the results of our observing programme and described the operation of the MkII Hatfield polarimeter. Detailed discussion of individual events and the implications of the statistical properties of the sample is deferred to a further paper (Ballard *et al.*, 1989).

Acknowledgements.

We would like to thank the PATT committee for the generous allocation of telescope time awarded to this project and to the staff of UKIRT for their assistance during the observing program. K. Ballard and A. Mead wish to acknowledge the receipt of SERC studentships.

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TABLE I.— *Effective wavelengths and zero-magnitude flux densities.*

Filter	λ/μm	$\nu/10^{14}$ Hz	S_o/kJy
K	2.18	1.38	0.667
H	1.64	1.83	1.075
J	1.23	2.44	1.603
I	0.80	3.75	2.55
R	0.64	4.68	3.08
V	0.55	5.45	3.64
B	0.44	6.81	4.26
U	0.36	8.33	1.81

TABLE II.— *Summary of the observations.* α_0 $(>0, <0)$ *refers to the spectral index constant (increasing, decreasing) with frequency. This is also indicated for polarization and position angle. Those observations not satisfactorily fitted are labelled complex.*

Object	E(B-v)	Date	Flux	Polarization	Position Angle
0048 − 097*OB* − 081	0.00	86 Jul 31	α_0	$\Delta p > 0$	θ_0
		86 Aug 3	$\Delta\alpha < 0$	$\Delta p > 0$	θ_0
		86 Aug 4	α_0	$\Delta p > 0$	θ_0
		86 Aug 6	α_0	$\Delta p > 0$	θ_0
		86 Aug 7	α_0	$\Delta p > 0$	θ_0
		87 Jul 27	$\Delta\alpha < 0$	p_0	θ_0
		87 Jul 29	α_0	p_0	θ_0
		87 Jul 30	α_0	p_0	θ_0
		87 Sep 18		p_0	θ_0
		87 Sep 19	α_0	p_0	θ_0
		87 Sep 20		p_0	θ_0
PKS 0106 + 013	0.00	86 Aug 4	α_0	unpolarized	
		87 Jul 28	$\Delta\alpha < 0$	p_0	θ_0
		87 Sep 21	α_0	unpolarized	
GC 0109 + 224	0.06	86 Aug 1	α_0	p_0	θ_0
		86 Aug 4	α_0	$\Delta p < 0$	$\Delta\theta < 0$
		86 Aug 5		p_0	$\Delta\theta < 0$
		86 Aug 6		$\Delta p > 0$	θ_0
		86 Aug 7	α_0	$\Delta p > 0$	θ_0
		87 Jul 27	α_0	p_0	θ_0
		87 Jul 30	$\Delta\alpha > 0$	p_0	θ_0
		87 Sep 19	α_0	p_0	θ_0
		87 Sep 20		p_0	θ_0
		87 Sep 21	α_0	$\Delta p > 0$	complex
0118 − 272	0.00	86 Aug 5	α_0	p_0	θ_0
		86 Aug 6		p_0	complex
		86 Aug 7	α_0	p_0	θ_0
		87 Jul 27	$\Delta\alpha < 0$	$\Delta p > 0$	θ_0
		87 Jul 30	α_0	$\Delta p > 0$	θ_0
		87 Sep 20		complex	θ_0
		87 Sep 21	α_0	$\Delta p > 0$	θ_0
0138 − 097	0.00	86 Aug 5	α_0	$\Delta p < 0$	θ_0
		86 Aug 6		p_0	θ_0
		86 Aug 7	α_0	p_0	$\Delta\theta > 0$
		87 Jul 28	α_0	p_0	θ_0
		87 Jul 30	α_0	p_0	θ_0
		87 Sep 19	α_0	$\Delta p > 0$	θ_0
		87 Sep 20	α_0	$\Delta p > 0$	θ_0
		87 Sep 21	α_0	p_0	θ_0

TABLE II (*continued*).

Object	E(B-v)	Date	Flux	Polarization	Position Angle
0219 − 164	0.00	87 Jul 28	α_0	p_0	θ_0
0219 + 428 3C 66A	0.09	86 Aug 1		p_0	$\Delta\theta > 0$
		86 Aug 4		$\Delta p > 0$	θ_0
		86 Aug 6		p_0	θ_0
		86 Aug 7		p_0	θ_0
		87 Jul 27	α_0	p_0	θ_0
		87 Jul 30	α_0	p_0	θ_0
		87 Sep 18		complex	θ_0
		87 Sep 19		p_0	θ_0
		87 Sep 20	α_0	p_0	θ_0
		87 Sep 21		p_0	θ_0
AO 0235 + 164	0.15	87 Jul 28	$\Delta\alpha > 0$	p_0	θ_0
		87 Sep 20	$\Delta\alpha > 0$	complex	θ_0
0300 + 470 4C 47.08	0.15	87 Sep 20		p_0	θ_0
0323 + 022	0.06	86 Aug 1			
		87 Sep 21		p_0	θ_0
0336 − 019	0.06	86 Aug 5		unpolarized	
0338 − 214	0.00	86 Aug 6		p_0	θ_0
		87 Sep 19		p_0	θ_0
0414 + 009	0.12	88 Feb 15	$\Delta\alpha > 0$	p_0	θ_0
		88 Feb 16	$\Delta\alpha > 0$	p_0	θ_0
0422 + 004	0.12	88 Feb 16	$\Delta\alpha > 0$	p_0	complex
		88 Feb 18	$\Delta\alpha > 0$	p_0	complex
PKS 0735 + 178	0.03	87 Sep 19		p_0	$\Delta\theta < 0$
		88 Feb 15	complex	p_0	complex
		88 Feb 16	α_0	p_0	θ_0
		88 Feb 18	α_0	p_0	complex
0736 + 017	0.12	88 Feb 15	complex	unpolarized	
		88 Feb 16	complex	unpolarized	
0754 + 100	0.00	88 Feb 15	$\Delta\alpha > 0$	$\Delta p > 0$	$\Delta\theta > 0$
		88 Feb 16	$\Delta\alpha > 0$	$\Delta p > 0$	complex
		88 Feb 17	α_0	p_0	θ_0
		88 Feb 18	α_0	p_0	θ_0
0818 − 128 OJ-131	0.09	88 Feb 15	complex	$\Delta p > 0$	θ_0
		88 Feb 16	$\Delta\alpha > 0$	$\Delta p > 0$	θ_0
		88 Feb 17	$\Delta\alpha > 0$	$\Delta p > 0$	θ_0
0851 + 202 OJ287	0.00	88 Feb 15	$\Delta\alpha > 0$	p_0	θ_0
		88 Feb 16	α_0	$\Delta p > 0$	θ_0
		88 Feb 17	α_0	$\Delta p > 0$	$\Delta\theta > 0$
0906 + 015	0.00	88 Feb 15	α_0	unpolarized	
1101 + 384	0.00	88 Feb 15	$\Delta\alpha > 0$	complex	θ_0
1147 + 245	0.00	88 Feb 18	α_0	$\Delta p > 0$	$\Delta\theta < 0$
1156 + 295	0.00	88 Feb 15	α_0	p_0	θ_0
		88 Feb 16	α_0	p_0	θ_0
		88 Feb 17	α_0	p_0	θ_0
1253 − 055 3C 279	0.03	86 Aug 1	α_0	p_0	θ_0
		86 Aug 2	α_0	$\Delta p > 0$	$\Delta\theta < 0$
		86 Aug 4	α_0	$\Delta p > 0$	complex
		86 Aug 5	α_0	$\Delta p > 0$	$\Delta\theta < 0$
		86 Aug 6	α_0	$\Delta p > 0$	$\Delta\theta < 0$
		87 Jul 28	$\Delta\alpha > 0$	$\Delta p > 0$	θ_0
		88 Feb 16	α_0	p_0	complex
		88 Feb 17	α_0	p_0	complex
		88 Feb 18	α_0	$\Delta p > 0$	θ_0
1413 + 135	0.03	86 Aug 6	α_0	unpolarized	
1418 + 546 OQ 530	0.03	86 Aug 4		$\Delta p > 0$	θ_0
		86 Aug 5		$\Delta p > 0$	complex

TABLE II (*continued*).

Object	E(B-v)	Date	Flux	Polarization	Position Angle
		86 Aug 6		complex	θ_0
		87 Jul 30	α_0	$\Delta p > 0$	complex
		87 Sep 20		$\Delta p > 0$	θ_0
		87 Sep 21		$\Delta p > 0$	θ_0
		88 Feb 16	$\Delta\alpha > 0$	complex	θ_0
		88 Feb 17	$\Delta\alpha > 0$	complex	θ_0
		88 Feb 18	$\Delta\alpha > 0$	p_0	$\Delta\theta > 0$
1424 + 240	0.00	88 Feb 16	complex	p_0	θ_0
		88 Feb 17	$\Delta\alpha > 0$	p_0	θ_0
		88 Feb 18	α_0	unpolarized	
PKS 1510 − 089	0.06	86 Aug 1	α_0	p_0	
1514 − 241 AP Libra	0.15	86 Aug 1		p_0	complex
		87 Jul 27	$\Delta\alpha > 0$	complex	θ_0
1538 + 149 4C 14.60	0.00	86 Aug 1	α_0	unpolarized	
1641 + 399 3C 345	0.00	86 Aug 1	$\Delta\alpha < 0$	complex	θ_0
		86 Aug 2	$\Delta\alpha < 0$	complex	θ_0
		86 Aug 4	$\Delta\alpha < 0$	complex	θ_0
		86 Aug 5	$\Delta\alpha < 0$	complex	θ_0
		86 Aug 6	complex	complex	θ_0
		86 Aug 7		$\Delta p < 0$	θ_0
		87 Jul 28	complex	unpolarized	
		87 Jul 30	$\Delta\alpha < 0$	unpolarized	
		87 Sep 19	$\Delta\alpha < 0$	unpolarized	
1652 + 398 Mkn 501	0.00	87 Sep 21		complex	$\Delta\theta < 0$
1717 + 178 OT 129	0.06	86 Aug 6	α_0	p_0	θ_0
		86 Aug 7		$\Delta p < 0$	θ_0
		87 Jul 30	α_0	unpolarized	
1727 + 502 I Zw 186	0.00	86 Aug 6		p_0	$\Delta\theta < 0$
		86 Aug 7		$\Delta p > 0$	θ_0
		87 Sep 21		$\Delta p > 0$	θ_0
1749 + 096 OT 081	0.15	86 Jul 31		p_0	$\Delta\theta > 0$
		86 Aug 5		p_0	θ_0
		86 Aug 6		p_0	θ_0
		86 Aug 7		$\Delta p > 0$	θ_0
		87 Jul 27	α_0	$\Delta p > 0$	θ_0
1921 − 293 OV-236	0.12	86 Aug 3		p_0	$\Delta\theta > 0$
		86 Aug 6		$\Delta p < 0$	θ_0
		86 Aug 7		p_0	θ_0
		87 Jul 27	complex	unpolarized	
2032 + 107	0.12	87 Jul 27	complex	unpolarized	
PKS 2155 − 304	0.00	86 Aug 1	α_0	$\Delta p > 0$	complex
		86 Aug 5	α_0	p_0	θ_0
		86 Aug 6		p_0	$\Delta\theta > 0$
		86 Aug 7	α_0	p_0	θ_0
		87 Jul 27	α_0	$\Delta p > 0$	$\Delta\theta < 0$
		87 Sep 21		complex	θ_0
2200 + 420 BL Lacertae	0.15	86 Jul 31		$\Delta p > 0$	θ_0
		86 Aug 1		p_0	θ_0
		86 Aug 3	$\Delta\alpha > 0$	complex	$\Delta\theta > 0$
		86 Aug 4		complex	$\Delta\theta > 0$
		86 Aug 5		complex	$\Delta\theta > 0$
		86 Aug 6		complex	θ_0
		86 Aug 7		complex	$\Delta\theta > 0$
		87 Jul 27	$\Delta\alpha > 0$	$\Delta p < 0$	$\Delta\theta < 0$
		87 Jul 28	$\Delta\alpha > 0$	complex	$\Delta\theta < 0$
		87 Jul 30	$\Delta\alpha > 0$	$\Delta p < 0$	$\Delta\theta < 0$
		87 Sep 19	$\Delta\alpha > 0$	complex	complex

TABLE II (*continued*).

Object	E(B-v)	Date	Flux	Polarization	Position Angle
		87 Sep 20		complex	$\Delta\theta > 0$
		87 Sep 21		complex	$\Delta\theta > 0$
PKS 2208 – 137	0.00	86 Aug 3		unpolarized	
		86 Aug 4		unpolarized	
		86 Aug 6	α_0	unpolarized	
		86 Aug 7		unpolarized	
2223 – 052 3C 446	0.03	86 Aug 4	α_0	unpolarized	
		87 Jul 27	α_0	p_0	θ_0
		87 Jul 29	α_0	p_0	θ_0
		87 Jul 30	α_0	p_0	θ_0
		87 Sep 20		$\Delta p > 0$	θ_0
		87 Sep 21		p_0	θ_0
2230 + 114 4C 11.69	0.03	86 Aug 3	α_0	unpolarized	
		86 Aug 4	α_0	unpolarized	
2251 + 158	0.06	86 Aug 5	α_0	unpolarized	
		87 Jul 28	$\Delta\alpha > 0$	unpolarized	
		87 Sep 20		p_0	θ_0
2254 + 074 OY 091	0.06	86 Jul 31		$\Delta p > 0$	θ_0
		86 Aug 1		p_0	θ_0
		86 Aug 3	complex	$\Delta p > 0$	θ_0
		86 Aug 4	$\Delta\alpha > 0$	complex	θ_0
		86 Aug 5		$\Delta p > 0$	θ_0
		86 Aug 6		$\Delta p > 0$	θ_0
		86 Aug 7	α_0	p_0	complex
		87 Jul 28	$\Delta\alpha > 0$	complex	θ_0
		87 Jul 30	$\Delta\alpha > 0$	complex	θ_0
		87 Sep 18		p_0	complex
		87 Sep 21		$\Delta p > 0$	θ_0

TABLE III.— *UKIRT data : 1986 July 31 - August 7, 1987 July 27-30, 1987 September 18-21, 1988 February 15-18.*

Filter	Flux density (mJy)		Polarization (%)		Position angle (deg)	
0048-097 OB-081			E(B-V) = 0.00			
1986 Jul. 31						
H	6.78	(0.63)	11.50	(1.80)	112.29	(4.85)
I	3.69	(0.34)	12.05	(0.52)	118.09	(1.28)
B	1.70	(0.24)	13.91	(0.44)	117.15	(0.83)
1986 Aug. 3						
H	9.63	(0.45)	13.17	(0.78)	116.34	(1.70)
J	5.26	(0.25)	15.09	(1.00)	117.58	(1.68)
I	3.01	(0.23)	14.55	(0.61)	118.13	(1.33)
R	2.34	(0.22)	16.02	(0.52)	116.38	(1.07)
V	1.74	(0.17)	16.59	(0.64)	118.54	(1.34)
B	1.62	(0.16)	16.90	(0.32)	116.45	(0.60)
1986 Aug 4						
H	6.54	(0.18)	14.80	(0.79)	111.71	(1.26)
J	4.71	(0.22)	14.31	(0.74)	112.37	(1.73)
I	3.12	(0.15)	15.67	(0.60)	111.29	(1.13)
V	1.86	(0.15)	17.42	(0.52)	113.68	(1.28)
B	1.73	(0.14)	17.85	(0.35)	111.50	(0.73)
1986 Aug. 6						
H	6.48	(0.30)	12.08	(0.88)	103.04	(1.75)
J	4.84	(0.23)	16.24	(0.68)	102.62	(1.39)
I	3.69	(0.34)	17.98	(0.60)	104.89	(1.02)
R	2.40	(0.23)	18.76	(0.49)	105.90	(0.78)
V	1.95	(0.15)	18.75	(0.57)	107.14	(1.32)
B	1.62	(0.16)	19.39	(0.38)	106.02	(0.57)
1986 Aug. 7						
H	6.60	(0.31)	12.89	(1.15)	106.69	(2.85)
I	3.15	(0.15)	15.79	(0.81)	107.36	(1.31)
B	1.66	(0.10)	18.12	(0.51)	108.82	(0.85)
1987 Jul. 27						
J	4.98	(0.32)	15.53	(1.30)	107.73	(1.95)
I	2.30	(0.11)	17.25	(0.82)	104.74	(1.27)
R	1.68	(0.09)	16.50	(0.80)	104.89	(1.22)
V	1.48	(0.08)	16.12	(0.86)	105.73	(2.43)
B	1.30	(0.08)	16.76	(0.71)	102.56	(1.04)
U	0.95	(0.10)	14.56	(0.75)	102.90	(1.46)
1987 Jul. 29						
K	9.64	(0.89)	19.34	(1.83)	117.44	(2.80)
H	6.24	(0.58)	21.72	(1.13)	117.82	(1.71)
I	2.55	(0.24)	21.17	(1.02)	116.85	(1.45)
R	1.94	(0.18)	21.32	(0.70)	118.82	(1.38)
V	1.59	(0.15)	20.54	(1.41)	118.50	(2.39)
B	1.17	(0.12)	22.69	(0.66)	118.26	(1.14)
U	0.79	(0.08)	23.03	(0.81)	117.66	(1.30)
1987 Jul. 30						
K	8.02	(0.44)	12.08	(1.53)	115.22	(3.67)
H	5.80	(0.11)	11.72	(0.98)	115.47	(2.50)
I	2.33	(0.11)	12.92	(0.59)	115.59	(1.71)
R	1.63	(0.08)	13.55	(0.57)	117.00	(1.32)
V	1.38	(0.07)	13.65	(0.86)	118.35	(2.12)
B	1.05	(0.06)	13.56	(0.57)	113.95	(1.56)
U	0.68	(0.07)	14.48	(1.16)	111.16	(2.42)
1987 Sep. 18						
H			5.40	(0.84)	81.26	(4.09)
I			3.64	(0.76)	78.81	(5.89)
R			4.52	(0.50)	88.50	(3.03)
V			3.60	(1.26)	87.11	(6.75)
B			4.09	(0.41)	94.10	(3.04)
U			3.12	(0.73)	95.17	(9.28)
1987 Sep. 19						
H	8.15	(0.75)	4.52	(0.60)	94.86	(4.07)
J	5.31	(0.49)	4.50	(0.75)	90.39	(4.22)
I	2.80	(0.26)	5.35	(0.50)	97.69	(5.21)
R	2.34	(0.22)	5.93	(0.30)	90.39	(1.37)
V	1.91	(0.18)	6.18	(0.70)	94.85	(2.29)
B	1.55	(0.15)	5.76	(0.44)	92.14	(1.76)
U	0.95	(0.10)	5.71	(0.51)	92.43	(2.25)
1987 Sep. 20						
H			3.18	(0.60)	90.70	(4.31)
I			4.17	(0.54)	86.53	(3.93)
R			4.15	(0.41)	89.69	(2.50)
V			2.46	(0.90)	83.31	(9.45)
B			5.23	(0.50)	88.92	(2.50)
U			4.08	(0.72)	94.61	(5.36)
PKS 0106+013			E(B-V) = 0.00			
1986 Aug. 4						
H	0.43	(0.06)	33.15	(18.62)	127.96	(15.16)
I	0.23	(0.02)	0.00	(7.84)		
B	0.20	(0.02)	12.28	(5.26)	122.37	(8.54)
1987 Jul. 28						
H	0.65	(0.03)	0.00	(13.02)		
I	0.29	(0.02)	17.44	(5.83)	138.64	(8.52)
R	0.19	(0.01)	11.30	(5.55)	146.86	(15.43)
V	0.17	(0.02)	0.00	(8.75)		
B	0.16	(0.01)	7.12	(3.39)	146.48	(9.67)
U	0.11	(0.01)	14.37	(2.39)	130.09	(5.03)
1987 Sep. 21						
H	0.43	(0.10)	36.73	(13.65)	119.33	(9.98)
I	0.28	(0.04)	0.00	(40.86)		
R	0.19	(0.02)	5.64	(4.43)	95.11	(24.59)
V	0.21	(0.03)	0.00	(10.99)		
B	0.15	(0.01)	0.54	(4.57)	56.51	(29.35)
U			0.00	(7.61)		
GC 0109+224			E(B-V) = 0.06			
1986 Aug. 1						
H	7.09	(0.33)	9.06	(1.20)	40.95	(3.55)
I	3.10	(0.29)	10.05	(0.43)	35.64	(1.30)
B	2.14	(0.21)	10.88	(0.34)	34.36	(1.04)
1986 Aug. 4						
H	7.02	(0.26)	5.66	(0.51)	54.70	(4.63)
I	3.07	(0.15)	3.81	(0.50)	42.74	(5.81)
B	1.26	(0.13)	4.13	(0.37)	31.15	(3.22)
1986 Aug. 5						
H	6.96	(0.32)	4.80	(1.90)	61.81	(7.07)
I	3.07	(0.15)	2.70	(0.45)	48.36	(4.71)
B	1.13	(0.07)	1.64	(0.49)	29.07	(7.95)
1986 Aug. 6						
H	6.58	(0.31)	0.00	(1.17)		
I	3.18	(0.15)	0.96	(0.63)	24.63	(3.43)
B	1.35	(0.08)	3.74	(0.47)	13.16	(3.96)
1986 Aug. 7						
H	6.58	(0.31)	1.58	(0.87)	4.06	(8.23)
J	4.70	(0.22)	3.41	(1.06)	22.18	(8.68)
I	2.90	(0.14)	4.95	(0.64)	17.54	(3.90)
R	2.13	(0.16)	6.35	(0.58)	20.31	(2.50)

TABLE III (*continued*).

Filter	Flux density (mJy)		Polarization (%)		Position angle (deg)	
V	1.61	(0.16)	7.53	(0.59)	21.90	(2.14)
B	1.29	(0.08)	8.63	(0.30)	17.20	(1.03)
1987 Jul. 27						
H	4.81	(0.22)	13.63	(1.10)	100.66	(2.25)
I	1.77	(0.08)	14.04	(0.90)	103.58	(1.57)
R	1.19	(0.06)	13.79	(0.60)	104.61	(1.74)
V	0.94	(0.05)	15.04	(1.67)	107.92	(2.04)
B	0.73	(0.04)	15.24	(0.60)	105.83	(1.48)
U	0.51	(0.05)	14.15	(0.99)	107.34	(2.19)
1987 Jul. 30						
H	4.86	(0.23)	9.37	(1.12)	109.42	(3.73)
I	1.92	(0.09)	8.91	(0.85)	108.91	(2.25)
R	1.29	(0.07)	9.51	(0.49)	109.15	(2.28)
V	1.01	(0.05)	9.08	(0.94)	104.22	(3.96)
B	0.72	(0.04)	9.12	(0.57)	110.09	(1.60)
U	0.43	(0.03)	8.35	(1.04)	113.16	(4.37)
1987 Sep. 19						
H	7.22	(0.67)	4.12	(0.70)	117.86	(5.10)
I	2.58	(0.24)	3.92	(0.69)	124.48	(3.95)
R	1.88	(0.18)	4.02	(0.40)	115.87	(2.84)
V	1.34	(0.13)	3.89	(1.22)	123.55	(8.53)
B	1.03	(0.10)	3.66	(0.54)	121.28	(4.32)
U	0.67	(0.07)	3.88	(0.81)	123.90	(5.81)
1987 Sep. 20						
H			13.16	(1.03)	107.82	(2.92)
I			11.64	(1.16)	105.58	(2.25)
R			15.01	(0.98)	107.98	(1.41)
V			15.90	(1.66)	110.97	(3.01)
B			14.37	(0.98)	112.02	(1.39)
U			17.26	(1.81)	109.32	(1.80)
1987 Sep. 21						
H	5.48	(0.51)	13.87	(0.74)	105.70	(1.51)
I	1.95	(0.18)	13.81	(0.57)	103.46	(1.54)
R	1.36	(0.13)	15.29	(0.50)	100.78	(0.76)
V	1.02	(0.10)	17.27	(1.37)	98.60	(2.35)
B	0.71	(0.07)	16.44	(0.64)	105.38	(1.14)
U			16.14	(0.82)	102.34	(1.79)
0118-272			E(B-V) = 0.00			
1986 Aug. 5						
H	8.15	(0.38)	15.37	(0.77)	147.79	(1.46)
J	5.98	(0.28)	16.26	(0.91)	148.01	(1.75)
I	4.00	(0.19)	17.82	(0.58)	147.24	(0.97)
R	2.81	(0.14)	17.87	(0.47)	149.97	(0.81)
V	2.19	(0.12)	17.33	(0.63)	149.19	(1.49)
B	1.86	(0.19)	17.21	(0.35)	149.90	(0.59)
1986 Aug. 6						
H	8.08	(0.37)	16.63	(1.02)	148.71	(1.85)
I	3.97	(0.19)	17.50	(0.53)	148.14	(0.89)
B	1.49	(0.09)	17.56	(0.76)	154.44	(1.33)
1986 Aug. 7						
H	8.38	(0.39)	15.96	(1.42)	149.48	(1.89)
I	3.90	(0.19)	16.49	(0.68)	148.94	(1.20)
B	2.06	(0.12)	17.74	(0.65)	151.60	(1.01)
1987 Jul. 27						
H	9.02	(0.42)	12.53	(0.71)	25.62	(1.73)
I	2.65	(0.13)	12.96	(1.15)	29.58	(2.29)
R	2.25	(0.11)	13.92	(0.98)	27.80	(1.83)
V	2.09	(0.11)	14.18	(0.86)	24.41	(1.92)
B	1.89	(0.11)	15.90	(0.57)	26.59	(1.23)
U	1.37	(0.14)	16.02	(1.08)	28.05	(1.97)
1987 Jul. 30						
K	11.48	(0.53)	12.31	(1.15)	28.51	(2.85)
H	8.62	(0.40)	12.82	(0.86)	29.04	(2.20)
I	3.62	(0.17)	14.19	(0.53)	30.66	(1.19)
R	2.68	(0.14)	13.58	(0.50)	30.47	(1.36)
V	2.25	(0.12)	13.94	(0.64)	27.20	(1.85)
B	1.78	(0.11)	15.03	(0.39)	28.54	(1.08)
U	1.44	(0.15)	15.01	(0.39)	27.58	(1.48)
1987 Sep. 20						
H			14.68	(0.54)	150.70	(1.26)
I			16.77	(0.68)	150.14	(1.04)
R			16.21	(0.56)	150.42	(0.73)
V			18.69	(1.01)	151.92	(1.37)
B			18.92	(0.99)	149.22	(0.72)
U			15.23	(1.37)	150.95	(1.84)
1987 Sep. 21						
H	7.44	(0.69)	15.25	(0.66)	148.50	(1.39)
I	3.07	(0.29)	16.00	(0.72)	149.91	(1.30)
R	2.34	(0.22)	15.81	(0.47)	150.33	(0.79)
V	1.91	(0.18)	17.94	(0.96)	152.33	(1.42)
B	1.48	(0.15)	17.95	(0.53)	151.56	(0.64)
U			16.54	(0.88)	150.45	(1.57)
0138-097			E(B-V) = 0.00			
1986 Aug. 5						
H	2.96	(0.22)	10.06	(2.02)	66.88	(6.31)
I	1.18	(0.06)	6.00	(1.08)	63.95	(4.93)
B	0.45	(0.04)	4.24	(1.02)	72.79	(6.52)
1986 Aug. 6						
H	2.82	(0.16)	7.68	(2.25)	64.73	(7.67)
I	1.16	(0.06)	7.63	(3.62)	73.96	(3.67)
B	0.30	(0.02)	5.31	(1.21)	76.10	(6.29)
1986 Aug. 7						
H	3.13	(0.14)	10.35	(2.65)	61.06	(5.41)
I	1.14	(0.05)	3.67	(1.38)	70.41	(8.77)
B	0.46	(0.03)	4.45	(1.24)	92.49	(7.18)
1987 Jul. 28						
H	3.49	(0.16)	14.76	(3.03)	104.72	(3.90)
I	1.34	(0.06)	19.09	(1.33)	103.14	(3.28)
R	1.03	(0.05)	20.56	(1.24)	107.72	(1.83)
V	0.87	(0.05)	19.95	(1.65)	104.91	(2.60)
B	0.71	(0.04)	19.99	(1.01)	104.83	(1.33)
U	0.50	(0.05)	20.88	(1.41)	103.47	(1.92)
1987 Jul. 30						
H	3.07	(0.14)	21.05	(2.94)	104.76	(3.58)
I	1.35	(0.06)	22.86	(2.04)	99.90	(2.08)
R	1.01	(0.05)	18.38	(1.81)	106.11	(2.08)
V	0.85	(0.05)	20.71	(2.38)	105.77	(2.19)
B	0.69	(0.05)	22.29	(1.45)	102.91	(2.26)
U	0.43	(0.04)	20.18	(1.73)	106.91	(2.83)
1987 Sep. 19						
K	4.21	(0.39)	21.61	(2.98)	74.36	(2.34)
H	3.40	(0.31)	20.60	(1.62)	73.96	(2.26)
I	1.34	(0.12)	24.80	(1.08)	71.11	(1.29)
R	1.02	(0.10)	25.86	(0.67)	72.81	(0.77)
V	0.83	(0.08)	26.04	(1.22)	74.30	(1.39)

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
B	0.62 (0.06)	29.25 (0.92)	71.62 (0.83)
U	0.38 (0.04)	26.81 (1.35)	74.89 (1.49)
1987 Sep. 20			
H	2.96 (0.27)	22.23 (1.34)	70.40 (1.66)
I	1.61 (0.15)	21.45 (0.99)	74.33 (1.34)
R	1.23 (0.12)	24.51 (0.66)	73.32 (0.81)
V	1.00 (0.10)	27.33 (1.59)	73.54 (1.66)
B	0.81 (0.08)	27.07 (0.87)	73.53 (0.89)
U		27.05 (1.48)	74.69 (1.58)
1987 Sep. 21			
H	2.96 (0.27)	23.95 (1.44)	72.70 (1.72)
I	1.47 (0.14)	23.53 (1.41)	73.40 (1.80)
R	1.12 (0.11)	24.75 (0.96)	72.79 (1.12)
V	0.91 (0.09)	23.08 (1.82)	71.63 (2.31)
B	0.71 (0.07)	26.63 (1.07)	73.13 (1.13)
U		24.95 (1.47)	76.01 (1.70)
0219-164		E(B-V) = 0.00	
1987 Jul. 28			
K	13.31 (0.61)	14.83 (2.46)	160.96 (4.55)
H	11.15 (0.52)	13.67 (1.84)	170.47 (3.04)
J	7.67 (0.71)	12.85 (1.06)	159.53 (1.54)
I	5.48 (0.26)	12.45 (0.42)	159.96 (1.21)
R	4.14 (0.21)	12.65 (0.34)	161.33 (1.07)
V	3.64 (0.20)	12.37 (0.50)	160.92 (1.52)
B	3.00 (0.18)	12.70 (0.33)	161.16 (1.14)
U	2.10 (0.13)	12.83 (0.68)	160.19 (1.29)
0219+428 3C 66A		E(B-V) = 0.09	
1986 Aug. 1			
H	12.13 (0.56)	8.29 (0.71)	41.07 (2.60)
I	5.66 (0.53)	9.59 (0.24)	43.29 (0.69)
B	1.75 (0.17)	10.05 (0.31)	47.83 (0.78)
1986 Aug 4			
H	9.91 (0.37)	9.57 (0.60)	33.03 (1.75)
I	4.29 (0.21)	10.86 (0.38)	35.17 (0.84)
B	1.51 (0.12)	12.32 (0.53)	35.26 (1.13)
1986 Aug. 6			
H	9.91 (0.46)	9.41 (1.01)	30.80 (3.16)
I	4.80 (0.23)	9.24 (0.43)	34.25 (1.18)
B	1.95 (0.12)	10.85 (0.64)	35.60 (1.45)
1986 Aug. 7			
H	10.47 (0.49)	11.08 (0.74)	30.28 (1.90)
I	4.54 (0.22)	10.19 (0.34)	32.79 (1.05)
B	1.80 (0.11)	10.51 (0.33)	34.41 (1.07)
1987 Jul. 27			
H	11.17 (0.52)	12.53 (0.61)	164.20 (1.65)
I	3.92 (0.19)	11.20 (1.02)	162.63 (1.93)
R	2.47 (0.15)	12.52 (0.72)	162.87 (1.98)
V	2.34 (0.13)	14.25 (0.69)	161.93 (1.70)
B	1.81 (0.14)	13.16 (0.62)	163.65 (1.63)
U	1.34 (0.14)	14.47 (1.02)	165.89 (2.02)
1987 Jul. 30			
H	9.55 (0.44)	13.30 (0.99)	159.89 (2.39)
I	4.58 (0.22)	11.72 (1.34)	158.10 (2.97)
R	3.29 (0.17)	12.54 (0.88)	159.94 (2.13)
V	2.64 (0.14)	13.93 (0.76)	164.56 (1.63)
B	2.02 (0.12)	14.39 (0.50)	162.82 (1.20)
U	1.34 (0.14)	12.15 (1.53)	158.73 (2.19)

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
1987 Sep. 18			
H		14.80 (0.49)	22.16 (0.98)
I		13.38 (0.78)	22.86 (1.71)
R		13.49 (0.43)	24.04 (0.89)
V		15.43 (0.73)	24.19 (0.37)
B		14.59 (0.73)	23.28 (1.17)
U		12.15 (1.07)	22.06 (2.16)
1987 Sep. 19			
H		14.11 (0.53)	22.86 (1.06)
I		14.19 (0.80)	24.47 (1.69)
R		13.73 (0.38)	24.06 (0.76)
V		15.14 (0.74)	26.87 (1.48)
B		15.29 (0.53)	24.75 (0.95)
U		13.98 (0.61)	24.79 (1.18)
1987 Sep. 20			
H	11.27 (1.04)	14.11 (0.43)	23.50 (0.95)
I	4.71 (0.44)	15.46 (0.55)	26.52 (1.05)
R	3.68 (0.35)	14.30 (0.37)	25.95 (0.76)
V	3.09 (0.30)	15.94 (0.69)	25.80 (1.35)
B	2.30 (0.23)	14.38 (0.46)	26.50 (0.96)
U		14.25 (0.64)	28.47 (1.39)
1987 Sep. 21			
H		12.50 (0.55)	24.90 (1.25)
I		12.82 (0.69)	27.53 (1.54)
R		13.31 (0.37)	27.40 (0.84)
V		14.26 (0.60)	28.07 (1.21)
B		13.43 (0.35)	28.92 (0.73)
U		12.10 (0.68)	30.04 (1.64)
AO 0235+164		E(B-V) = 0.15	
1987 Jul. 28			
K	11.79 (0.54)	12.05 (1.04)	42.55 (2.92)
H	6.97 (0.32)	11.77 (1.02)	45.41 (3.25)
J	3.26 (0.30)	14.73 (4.42)	33.01 (9.88)
I	0.96 (0.05)	15.52 (1.59)	49.44 (3.04)
R	0.41 (0.02)	10.18 (1.58)	56.00 (3.80)
V	0.22 (0.01)	14.52 (3.67)	50.30 (9.31)
B	0.09 (0.01)	12.08 (3.73)	43.43 (8.36)
U	0.03 (0.00)	33.02 (10.17)	47.91 (8.59)
1987 Sep. 20			
K	5.80 (0.54)	1.66 (1.90)	47.71 (18.00)
H	3.97 (0.37)	5.78 (0.95)	52.70 (4.58)
J	2.47 (0.23)	8.59 (1.26)	56.59 (4.42)
I	0.99 (0.09)	11.04 (0.83)	55.91 (1.59)
R	0.56 (0.05)	10.10 (0.70)	55.26 (1.84)
V	0.31 (0.03)	10.00 (2.24)	57.95 (5.46)
B	0.14 (0.01)	11.65 (1.34)	60.67 (3.26)
U		8.28 (3.42)	68.16 (9.88)
0300+470 4C 47.08		E(B-V) = 0.15	
1987 Sep. 20			
H		9.55 (1.16)	9.00 (3.39)
I		9.44 (1.52)	1.76 (4.48)
R		8.69 (1.02)	13.96 (2.97)
V		5.05 (4.91)	
B		6.58 (2.12)	8.84 (8.92)
U		7.53 (5.37)	4.07 (11.70)
0323+022		E(B-V) = 0.06	
1986 Aug. 1			
H	2.16 (0.14)	0.00 (7.42)	

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
I	1.03 (0.10)	0.00 (2.09)	
B	0.31 (0.03)	0.00 (2.25)	
1987 Sep. 21			
H		4.65 (1.63)	8.60 (6.61)
I		3.84 (1.02)	3.53 (8.40)
R		3.78 (0.70)	14.46 (5.13)
V		0.00 (1.84)	
B		3.49 (0.90)	
U		5.27 (0.86)	11.59 (6.65)
0336-019		E(B-V) = 0.06	
1986 Aug. 5			
H	0.76 (0.13)		
I	0.32 (0.02)		
B	0.10 (0.01)		
0338-214		E(B-V) = 0.00	
1986 Aug. 6			
H	4.01 (0.22)	11.39 (1.92)	31.92 (4.61)
I	1.47 (0.07)	10.45 (1.40)	29.31 (3.75)
B	0.29 (0.03)	10.60 (1.47)	37.32 (7.71)
1987 Sep. 19			
H		11.48 (1.60)	70.46 (3.69)
I		11.07 (1.56)	62.59 (3.88)
R		10.62 (0.95)	65.86 (2.00)
V		15.58 (2.90)	65.05 (6.33)
B		12.37 (1.13)	64.02 (3.21)
U		8.15 (3.39)	60.82 (11.61)
0414+009		E(B-V) = 0.12	
15th. Feb 1988			
H	1.63 (0.15)	2.29 (2.07)	158.56 (24.65)
J	1.19 (0.04)	4.14 (1.92)	174.45 (10.58)
I	0.68 (0.02)	4.24 (1.64)	159.87 (9.55)
R	0.46 (0.01)	3.87 (0.66)	153.22 (4.61)
V	0.32 (0.01)	5.08 (1.43)	170.57 (7.70)
B	0.23 (0.01)	6.41 (0.79)	157.69 (3.60)
U	0.15 (0.01)	4.94 (1.08)	153.76 (6.11)
16th. Feb 1988			
H	1.56 (0.12)	6.20 (2.01)	146.42 (1.38)
I	0.70 (0.03)	7.82 (2.25)	154.03 (8.43)
R	0.45 (0.02)	5.72 (1.08)	155.71 (5.44)
V	0.33 (0.01)	4.73 (1.89)	151.40 (9.96)
B	0.23 (0.01)	3.93 (0.97)	157.80 (7.44)
U	0.15 (0.01)	7.38 (1.44)	159.53 (6.16)
0422+004		E(B-V) = 0.12	
16th. Feb 1988			
H	7.47 (0.28)	20.27 (0.64)	155.80 (1.04)
I	2.60 (0.10)	20.79 (1.12)	148.91 (1.38)
R	1.71 (0.06)	21.84 (0.65)	151.77 (0.81)
V	1.22 (0.05)	23.30 (1.07)	153.20 (1.50)
B	0.78 (0.04)	21.47 (0.75)	151.76 (0.91)
U	0.47 (0.03)	22.14 (0.97)	150.93 (1.47)
18th. Feb 1988			
K	10.56 (1.07)	12.32 (0.73)	147.60 (1.09)
H	7.75 (1.15)	11.25 (0.87)	148.00 (1.38)
I	2.93 (0.19)	12.55 (0.67)	141.90 (1.51)
R	1.74 (0.07)	12.25 (0.34)	140.42 (0.69)
V	1.25 (0.08)	12.93 (0.69)	140.24 (1.34)
B	0.79 (0.06)	12.48 (0.48)	136.95 (0.96)
U	0.44 (0.03)	13.69 (0.83)	141.36 (1.44)
PKS 0735+178		E(B-V) = 0.03	
1987 Sep. 19			
H		6.64 (0.68)	144.76 (2.88)
I		8.08 (0.88)	132.34 (3.03)
R		6.77 (0.61)	137.22 (2.85)
V		7.44 (1.52)	131.02 (5.49)
B		6.59 (0.93)	130.39 (3.66)
U		5.68 (1.59)	129.65 (8.10)
15th. Feb 1988			
H	7.96 (0.22)	16.24 (0.54)	131.37 (1.06)
I	2.40 (0.07)	15.48 (1.02)	125.56 (1.64)
R	1.84 (0.05)	17.17 (0.47)	130.41 (0.65)
V	1.33 (0.04)	18.05 (1.00)	127.83 (1.71)
B	0.96 (0.04)	16.80 (0.56)	130.68 (1.15)
U	0.62 (0.03)	17.57 (1.03)	136.73 (1.90)
16th. Feb 1988			
H	8.41 (0.31)	15.23 (0.61)	130.73 (0.94)
I	2.73 (0.11)	17.66 (0.82)	132.51 (1.44)
R	2.00 (0.07)	17.90 (0.51)	129.97 (0.79)
V	1.46 (0.06)	17.19 (1.06)	130.60 (1.32)
B	1.05 (0.05)	17.49 (0.73)	130.98 (0.99)
U	0.67 (0.04)	17.94 (1.26)	132.36 (1.66)
18th. Feb 1988			
H	8.65 (1.36)	20.50 (0.89)	127.25 (0.78)
I	3.14 (0.44)	21.90 (0.98)	126.70 (1.14)
R	2.19 (0.31)	21.15 (0.68)	126.60 (0.73)
V	1.66 (0.27)	22.50 (1.00)	128.80 (1.11)
B	1.21 (0.20)	22.50 (0.82)	124.00 (0.89)
U	0.80 (0.14)	21.80 (0.93)	125.90 (1.11)
0736+017		E(B-V) = 0.12	
15th. Feb 1988			
J	2.20 (0.06)	1.53 (0.93)	105.58 (17.81)
I	1.66 (0.05)	2.98 (1.24)	172.76 (9.01)
R	0.96 (0.03)	0.77 (0.67)	7.56 (18.61)
V	0.75 (0.03)	0.49 (1.00)	152.87 (64.32)
B	0.60 (0.03)	0.22 (0.64)	73.87 (83.42)
U	0.46 (0.03)	1.28 (0.78)	107.22 (19.18)
16th. Feb 1988			
J	2.16 (0.10)	4.43 (2.04)	171.13 (11.22)
I	1.50 (0.05)	0.53 (1.39)	46.94 (83.32)
R	0.82 (0.03)	1.53 (0.93)	91.61 (16.10)
V	0.67 (0.03)	2.89 (1.92)	9.21 (18.86)
B	0.52 (0.02)	0.77 (0.81)	15.05 (28.29)
U	0.40 (0.02)	0.96 (1.25)	56.86 (40.83)
0754+100		E(B-V) = 0.00	
15th. Feb 1988			
K	14.33 (0.40)	8.58 (0.49)	40.50 (1.37)
H	10.17 (0.29)	10.56 (0.42)	41.31 (0.81)
I	4.08 (0.09)	11.22 (0.51)	43.20 (1.00)
R	2.89 (0.08)	12.33 (0.24)	44.15 (0.58)
V	2.15 (0.07)	12.22 (0.43)	46.12 (0.92)
B	1.62 (0.07)	13.39 (0.29)	46.39 (0.66)
U	1.07 (0.06)	14.39 (0.48)	48.43 (0.87)

TABLE III (*continued*).

Filter	Flux density (mJy)		Polarization (%)		Position angle (deg)	
16th. Feb 1988						
K	13.81	(0.38)	10.34	(0.38)	34.40	(1.28)
H	9.63	(0.27)	10.96	(0.42)	35.20	(1.23)
I	3.62	(0.08)	12.39	(0.48)	30.20	(1.23)
R	2.27	(0.08)	12.59	(0.32)	34.74	(0.76)
V	1.86	(0.06)	13.22	(0.57)	35.45	(1.24)
B	1.36	(0.06)	13.10	(0.42)	35.69	(0.81)
U	0.91	(0.05)	13.25	(0.62)	38.54	(1.30)
17th. Feb 1988						
H	9.71	(0.36)	11.41	(0.51)	34.80	(1.67)
I	3.69	(0.24)	11.09	(0.59)	34.60	(1.95)
R	2.36	(0.12)	11.80	(0.39)	34.70	(1.23)
V	1.88	(0.10)	10.07	(0.58)	37.20	(2.27)
B	1.40	(0.07)	11.52	(0.54)	36.30	(1.27)
U	0.93	(0.06)	12.09	(0.77)	39.60	(2.27)
18th. Feb 1988						
K	14.73	(1.22)	8.67	(0.69)	36.20	(1.41)
H	10.75	(1.59)	8.17	(0.67)	39.00	(1.25)
I	3.75	(0.12)	9.28	(0.67)	32.33	(2.06)
R	2.73	(0.14)	8.65	(0.32)	36.67	(0.93)
V	2.08	(0.13)	8.43	(0.62)	36.40	(1.34)
B	1.55	(0.12)	6.95	(0.40)	36.35	(1.49)
U	1.03	(0.08)	7.56	(0.63)	38.28	(2.36)
0818-128 OJ-131			E(B-V) = 0.09			
15th. Feb 1988						
K	3.02	(0.14)	17.13	(1.60)	82.16	(2.81)
H	2.19	(0.10)	18.66	(1.72)	85.68	(2.15)
I	0.84	(0.03)	24.73	(1.66)	79.09	(1.92)
R	0.47	(0.02)	22.45	(0.72)	80.44	(1.01)
V	0.34	(0.01)	25.33	(1.81)	82.30	(1.85)
B	0.23	(0.01)	24.09	(0.86)	79.49	(1.04)
U	0.13	(0.01)	24.92	(1.66)	81.51	(1.99)
16th. Feb 1988						
K	3.16	(0.15)	15.48	(1.82)	79.61	(2.72)
J	1.32	(0.07)	21.87	(1.88)	83.54	(2.54)
I	0.68	(0.03)	21.92	(2.07)	88.24	(2.70)
R	0.38	(0.01)	22.22	(1.02)	81.56	(1.23)
V	0.28	(0.01)	25.68	(2.32)	81.85	(2.44)
B	0.19	(0.01)	26.75	(1.45)	80.49	(1.56)
U	0.11	(0.01)	27.67	(2.29)	81.59	(2.27)
17th. Feb 1988						
J	3.47	(0.16)	17.41	(1.62)	78.40	(2.33)
R	0.97	(0.04)	21.66	(2.43)	83.30	(3.20)
V	0.66	(0.04)	19.54	(1.21)	79.86	(1.85)
B	0.48	(0.03)	23.19	(2.78)	85.80	(3.03)
U	0.13	(0.01)	23.65	(1.55)	81.00	(1.83)
0851+202 OJ287			E(B-V) = 0.00			
15th. Feb 1988						
H	6.60	(0.19)	17.33	(0.59)	61.99	(0.96)
I	2.50	(0.08)	18.36	(1.22)	57.81	(1.91)
R	1.65	(0.06)	17.20	(0.59)	60.17	(0.99)
V	1.26	(0.05)	17.80	(1.13)	60.25	(1.53)
B	0.96	(0.04)	18.49	(0.65)	59.57	(0.88)
U	0.63	(0.04)	15.90	(1.06)	63.12	(2.07)
16th. Feb 1988						
H	6.54	(0.30)	15.62	(0.64)	60.40	(1.12)
I	2.50	(0.12)	15.20	(1.02)	66.07	(1.90)
R	1.65	(0.08)	15.55	(0.63)	61.96	(1.22)
V	1.31	(0.06)	17.38	(0.99)	63.58	(1.53)
B	1.00	(0.06)	18.55	(0.72)	62.56	(1.16)
U	0.70	(0.04)	17.65	(1.02)	64.89	(1.54)
17th. Feb 1988						
K	10.10	(0.28)	18.81	(0.50)	64.20	(0.77)
H	6.85	(0.19)	18.90	(0.58)	64.80	(0.88)
I	2.60	(0.08)	18.06	(0.66)	63.88	(1.08)
R	1.82	(0.09)	19.72	(0.33)	65.78	(0.48)
V	1.37	(0.05)	18.43	(0.74)	67.90	(1.17)
B	1.05	(0.05)	20.14	(0.44)	66.77	(0.65)
U	0.71	(0.04)	20.83	(0.76)	69.26	(0.99)
0906+015			E(B-V) = 0.00			
15th. Feb 1988						
H	0.48	(0.42)	51.43	(51.89)	142.20	(16.30)
I	0.37	(0.04)	48.40	(13.40)	49.50	(10.30)
R	0.36	(0.02)	2.08	(3.92)	6.20	(56.00)
V	0.35	(0.02)	8.33	(5.13)	73.90	(14.90)
B	0.31	(0.02)	2.16	(2.90)	35.50	(47.30)
U	0.24	(0.02)	10.10	(5.38)	135.10	(10.20)
1101+384			E(B-V) = 0.00			
15th. Feb 1988						
K	50.13	(0.94)	3.64	(0.30)	43.91	(2.17)
H	46.07	(1.29)	3.22	(0.14)	40.85	(1.19)
J	36.72	(0.74)	3.50	(0.20)	44.60	(1.09)
I	22.83	(0.90)	3.73	(0.13)	42.21	(0.90)
R	18.22	(0.63)	3.86	(0.08)	42.12	(0.55)
V	13.97	(0.55)	3.82	(0.11)	40.55	(0.82)
B	11.31	(0.53)	4.68	(0.10)	41.83	(0.58)
U	7.55	(0.43)	4.64	(0.13)	42.26	(0.83)
1147+245			E(B-V) = 0.00			
18th. Feb 1988						
H	8.62	(0.16)	1.52	(0.40)		
J	6.04	(0.12)	1.82	(0.54)	177.50	(8.05)
I	3.33	(0.10)	2.71	(0.67)	168.71	(6.70)
R	2.52	(0.11)	2.50	(0.26)	162.87	(3.05)
V	1.91	(0.10)	2.99	(0.46)	160.49	(4.41)
B	1.52	(0.09)	4.29	(0.32)	150.46	(2.08)
U	1.02	(0.07)	4.34	(0.52)	153.51	(3.62)
1156+295			E(B-V) = 0.00			
15th. Feb 1988						
H	2.35	(0.13)	23.04	(1.63)	168.83	(1.86)
I	0.97	(0.05)	24.07	(2.38)	162.06	(2.82)
R	0.77	(0.03)	24.37	(0.90)	164.87	(1.11)
V	0.62	(0.02)	24.76	(1.66)	166.81	(1.85)
B	0.53	(0.02)	22.83	(0.80)	164.20	(1.00)
U	0.35	(0.02)	24.25	(1.33)	163.78	(1.55)
16th. Feb 1988						
H	2.49	(0.21)	24.15	(2.53)	164.95	(1.55)
I	1.01	(0.05)	26.42	(2.87)	168.59	(3.25)
R	0.77	(0.03)	23.85	(1.02)	164.46	(1.16)
V	0.63	(0.03)	19.35	(2.46)	161.88	(3.68)
B	0.54	(0.03)	21.88	(1.24)	164.78	(1.64)
U	0.35	(0.02)	25.06	(2.17)	168.22	(2.41)
17th. Feb 1988						
H	2.37	(0.11)	28.06	(1.58)	166.80	(1.55)
I	0.88	(0.04)	27.27	(2.08)	161.20	(2.32)

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
R	0.71 (0.02)	24.99 (0.99)	164.90 (1.02)
V	0.57 (0.02)	22.54 (2.12)	162.20 (2.44)
B	0.48 (0.02)	23.08 (0.82)	164.60 (1.07)
U	0.31 (0.02)	24.87 (1.78)	168.10 (2.02)
1253-055 3C 279		E(B-V) = 0.03	
1986 Aug. 1			
H	25.17 (1.17)	28.19 (0.55)	120.52 (0.72)
I	11.71 (1.09)	29.17 (0.76)	120.62 (0.37)
B	6.03 (0.60)	30.03 (0.96)	119.88 (0.76)
1986 Aug. 2			
H	25.64 (1.42)	28.71 (0.59)	121.63 (0.60)
J	17.32 (1.28)	28.18 (1.06)	120.15 (0.39)
I	12.84 (1.20)	29.88 (0.36)	118.44 (0.47)
V	6.67 (0.64)	30.46 (0.79)	117.47 (0.55)
B	5.50 (0.55)	30.91 (0.28)	116.94 (0.28)
1986 Aug. 4			
H	23.82 (0.67)	33.22 (0.26)	125.35 (0.25)
J	17.64 (1.31)	34.66 (0.33)	126.97 (0.28)
I	12.15 (0.58)	36.57 (0.30)	125.01 (0.26)
R	8.49 (0.65)	37.70 (0.29)	127.32 (0.19)
V	7.38 (0.71)	38.17 (0.44)	126.12 (1.05)
B	5.55 (0.41)	39.24 (0.18)	126.09 (0.18)
U	3.64 (0.37)	41.30 (1.09)	127.66 (0.51)
1986 Aug. 5			
H	21.52 (1.00)	37.87 (0.60)	133.34 (0.40)
J	14.81 (0.69)	39.80 (0.54)	132.65 (0.28)
I	10.68 (1.00)	41.58 (0.55)	131.92 (0.30)
R	6.44 (0.61)	43.67 (2.02)	130.75 (0.52)
V	5.30 (0.51)	44.28 (0.97)	131.99 (1.05)
B	4.57 (0.46)	43.95 (0.78)	131.63 (0.31)
U	2.76 (0.40)	45.92 (0.98)	131.77 (0.62)
1986 Aug. 6			
H	17.10 (0.64)	38.13 (0.60)	136.70 (0.47)
J	12.09 (0.57)	38.53 (0.77)	136.30 (0.45)
I	8.10 (0.61)	40.51 (0.89)	136.29 (0.74)
R	6.15 (0.47)	43.07 (0.48)	135.52 (0.31)
V	5.75 (0.56)	43.31 (0.64)	136.14 (0.80)
B	3.70 (0.37)	44.36 (0.64)	134.73 (0.32)
U	2.68 (0.27)	45.47 (0.89)	135.51 (0.48)
1987 Jul. 28			
K	21.88 (2.02)	26.69 (0.77)	108.71 (1.15)
H	13.96 (1.29)	27.53 (0.68)	109.21 (1.12)
J	7.77 (0.72)	31.01 (0.84)	108.87 (1.17)
I	4.45 (0.42)	32.43 (0.77)	110.57 (0.95)
R	2.89 (0.27)	34.10 (0.61)	110.90 (0.94)
V	1.92 (0.19)	34.78 (1.14)	106.41 (1.14)
B	1.26 (0.13)	35.56 (1.43)	109.41 (1.11)
U	0.63 (0.06)	35.43 (2.29)	107.74 (1.50)
16th. Feb 1988			
H	29.07 (1.35)	21.36 (0.70)	114.44 (0.79)
I	12.55 (0.94)	20.94 (0.70)	110.07 (0.97)
R	9.22 (0.63)	20.08 (0.59)	111.38 (0.83)
V	7.00 (0.49)	19.58 (0.64)	109.58 (0.91)
B	5.17 (0.39)	19.47 (0.66)	109.65 (0.65)
U	3.29 (0.26)	19.65 (0.81)	112.30 (1.15)
17th. Feb 1988			
H	28.80 (0.55)	26.10 (0.20)	113.60 (0.24)
I	9.78 (0.30)	26.30 (0.42)	111.90 (0.46)
R	6.49 (0.23)	26.30 (0.36)	112.10 (0.39)
V	5.17 (0.20)	26.40 (0.53)	112.40 (0.58)
B	3.74 (0.17)	25.70 (0.42)	110.20 (0.38)
U	2.30 (0.12)	25.50 (0.67)	112.60 (0.69)
18th. Feb 1988			
H	32.17 (0.61)	30.12 (0.21)	113.80 (0.21)
I	10.53 (0.24)	31.30 (0.36)	113.70 (0.33)
R	7.12 (0.25)	31.30 (0.33)	113.30 (0.30)
V	5.56 (0.22)	31.50 (0.39)	114.10 (0.36)
B	3.96 (0.17)	30.70 (0.33)	113.30 (0.30)
U	2.57 (0.13)	30.70 (0.58)	114.90 (0.53)
1413+135		E(B-V) = 0.03	
1986 Aug. 6			
H	0.75 (0.11)		
I	0.06 (0.01)		
B	0.00 (0.01)		
1418+546 OQ 530		E(B-V) = 0.03	
1986 Aug. 4			
H	9.40 (0.26)	3.56 (0.64)	138.41 (3.62)
I	4.02 (0.19)	4.62 (0.31)	142.15 (2.03)
B	1.18 (0.10)	5.82 (0.46)	138.46 (2.28)
1986 Aug. 5			
H	9.48 (0.44)	4.55 (0.60)	140.42 (3.95)
I	3.23 (0.30)	4.83 (0.52)	149.43 (3.03)
B	2.89 (0.29)	6.41 (0.39)	138.75 (2.24)
1986 Aug. 6			
H	8.65 (0.40)	1.73 (0.78)	122.26 (11.51)
I	3.29 (0.16)	4.94 (0.64)	134.68 (3.63)
B	0.91 (0.05)	5.09 (0.70)	134.51 (3.88)
1987 Jul. 30			
H	8.49 (0.39)	2.50 (0.64)	54.32 (7.65)
J	5.79 (0.27)	4.12 (2.29)	41.04 (5.74)
I	2.94 (0.04)	3.69 (0.44)	52.71 (3.63)
R	2.00 (0.19)	5.17 (0.39)	64.37 (2.02)
V	1.46 (0.14)	5.71 (0.71)	64.43 (3.86)
B	1.05 (0.10)	7.31 (0.41)	65.58 (1.86)
U	0.69 (0.07)	8.68 (0.96)	60.93 (2.70)
1987 Sep. 20			
H		8.21 (0.99)	3.96 (2.42)
I		15.37 (2.82)	3.45 (4.35)
R		11.30 (2.23)	15.26 (5.02)
V		17.53 (4.76)	−0.66 (12.40)
B		0.00 (6.11)	
U		0.00 (35.16)	
1987 Sep. 21			
H		7.22 (1.46)	15.39 (7.78)
I		8.99 (1.48)	7.56 (5.26)
R		12.83 (1.12)	3.12 (2.95)
V		13.13 (3.13)	14.46 (4.09)
B		9.78 (2.52)	8.53 (6.39)
U		12.93 (7.57)	19.81 (15.08)
16th. Feb 1988			
K	19.96 (1.11)	2.49 (0.37)	134.85 (4.33)
H	16.88 (0.63)	2.90 (0.30)	142.21 (4.51)
J	12.27 (0.25)	3.57 (0.29)	143.80 (2.48)

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
I	7.49 (0.36)	3.12 (0.31)	146.58 (3.09)
R	5.25 (0.27)	3.06 (0.18)	140.00 (1.87)
V	3.64 (0.20)	3.31 (0.39)	146.85 (3.50)
B	2.59 (0.15)	4.38 (0.23)	143.90 (1.55)
U	1.49 (0.10)	4.89 (0.50)	147.29 (2.56)
17th. Feb 1988			
K	17.38 (0.48)	4.09 (0.48)	142.10 (3.71)
H	12.92 (0.36)	4.04 (0.32)	145.50 (1.85)
J	8.97 (0.18)	4.06 (0.29)	138.90 (3.07)
I	4.81 (0.11)	4.48 (0.27)	142.63 (1.88)
R	3.38 (0.09)	4.51 (0.18)	142.82 (1.09)
V	2.34 (0.08)	5.05 (0.35)	146.93 (1.91)
B	1.70 (0.07)	6.28 (0.23)	144.21 (1.11)
U	0.96 (0.05)	5.88 (0.43)	147.41 (1.86)
18th. Feb 1988			
H	14.43 (0.41)	3.38 (0.25)	132.01 (2.63)
I	5.68 (0.13)	3.56 (0.51)	140.80 (4.60)
R	4.25 (0.12)	3.11 (0.25)	146.20 (2.27)
V	2.97 (0.10)	2.96 (0.55)	142.80 (5.86)
B	2.34 (0.10)	3.20 (0.38)	150.00 (3.49)
U	1.49 (0.08)	4.05 (0.64)	156.20 (3.86)
1424+240		E(B-V) = 0.00	
16th. Feb 1988			
H	9.28 (0.26)	4.86 (0.36)	119.82 (2.12)
I	5.74 (0.28)	4.98 (0.66)	121.54 (3.78)
R	4.21 (0.12)	4.70 (0.36)	113.04 (2.18)
V	3.81 (0.21)	3.46 (0.50)	116.21 (4.07)
B	3.17 (0.15)	4.63 (0.30)	113.05 (1.95)
U	1.81 (0.09)	4.32 (0.48)	115.97 (3.12)
17th. Feb 1988			
H	9.19 (0.26)	4.92 (0.40)	123.82 (2.24)
I	4.95 (0.11)	4.24 (0.53)	114.60 (3.52)
R	3.84 (0.13)	4.48 (0.31)	119.20 (1.86)
V	3.26 (0.13)	4.36 (0.38)	114.20 (2.33)
B	2.76 (0.13)	4.45 (0.24)	117.80 (1.88)
U	1.91 (0.11)	4.35 (0.58)	116.60 (3.38)
18th. Feb 1988			
H	9.36 (0.35)	5.01 (0.44)	122.58 (2.21)
I	4.95 (0.11)	5.14 (0.55)	120.30 (3.00)
R	4.06 (0.11)	4.93 (0.30)	118.30 (1.65)
V	3.38 (0.11)	4.99 (0.49)	116.30 (2.87)
B	2.87 (0.12)	4.56 (0.30)	114.20 (1.90)
U	2.12 (0.10)	4.42 (0.58)	113.20 (3.85)
PKS 1510-089		E(B-V) = 0.06	
1986 Aug. 1			
H	2.26 (0.13)	9.07 (5.34)	177.65 (7.87)
I	1.23 (0.11)	1.65 (2.09)	
B	0.71 (0.03)	0.00 (2.32)	
1514-241 AP Libra		E(B-V) = 0.15	
1986 Aug. 1			
H	15.96 (0.74)	1.70 (0.44)	177.65 (7.87)
I	6.87 (0.64)	1.86 (0.28)	3.27 (3.94)
B	1.16 (0.12)	2.38 (0.37)	170.79 (4.07)
1987 Jul. 27			
K	23.09 (0.07)	5.11 (0.72)	19.56 (4.28)
H	19.01 (1.76)	3.70 (0.62)	16.72 (3.85)
J	14.21 (1.32)	5.42 (0.44)	14.28 (2.05)
I	6.87 (0.64)	4.76 (0.30)	12.37 (1.61)
R	4.07 (0.39)	5.12 (0.24)	15.40 (1.35)
V	2.86 (0.28)	4.83 (0.34)	18.72 (2.25)
B	1.39 (0.14)	6.13 (0.23)	17.41 (1.22)
U	0.86 (0.04)	6.92 (0.65)	16.50 (2.56)
1538+149 4C 14.60		E(B-V) = 0.00	
1986 Aug. 1			
H	0.90 (0.14)	0.00 (16.62)	
I	0.34 (0.03)	10.99 (9.54)	
B	0.13 (0.01)	4.97 (7.54)	
1641+399 3C 345		E(B-V) = 0.00	
1986 Aug. 1			
H	4.40 (0.20)	16.37 (1.24)	51.41 (1.82)
J	2.43 (0.20)	14.52 (2.64)	43.60 (5.34)
I	1.45 (0.11)	13.85 (0.73)	54.84 (1.60)
R		12.80 (0.98)	55.96 (2.17)
V	0.91 (0.09)	11.32 (0.79)	52.63 (2.02)
B	0.98 (0.10)	7.85 (0.30)	52.76 (1.04)
1986 Aug. 2			
H	4.16 (0.23)	17.23 (0.95)	52.15 (1.35)
J	2.56 (0.14)	17.24 (1.02)	55.10 (1.39)
I	1.49 (0.11)	15.83 (0.82)	53.83 (1.46)
R	1.06 (0.08)	14.96 (0.66)	51.63 (1.40)
V	0.92 (0.07)	12.57 (0.79)	55.55 (1.72)
B	0.90 (0.05)	8.70 (0.29)	52.48 (0.90)
1986 Aug 4			
H	4.12 (0.19)	17.87 (0.78)	55.65 (0.99)
J	2.59 (0.12)	16.27 (0.79)	53.01 (1.35)
I	1.43 (0.07)	15.01 (0.68)	55.18 (1.34)
R	1.07 (0.04)	12.87 (0.51)	56.74 (1.13)
V	0.97 (0.09)	11.83 (0.46)	53.85 (1.36)
B	0.85 (0.07)	8.61 (0.57)	56.64 (1.67)
U	0.60 (0.06)	7.92 (0.67)	58.14 (1.13)
1986 Aug. 5			
K	8.02 (0.74)	17.93 (1.57)	63.05 (2.51)
H	4.16 (0.19)	19.56 (1.91)	55.29 (2.64)
I	1.39 (0.13)	16.09 (1.14)	59.64 (2.03)
B	0.89 (0.09)	7.73 (0.68)	57.20 (2.57)
1986 Aug. 6			
H	3.98 (0.18)	20.27 (1.30)	57.17 (1.96)
J	2.52 (0.12)	20.03 (1.23)	62.31 (1.75)
I	1.44 (0.07)	14.98 (0.72)	57.00 (1.39)
V	0.87 (0.03)	11.14 (0.81)	60.17 (2.30)
B	0.90 (0.04)	8.65 (0.38)	57.24 (1.22)
1986 Aug. 7			
H	4.05 (0.19)	18.59 (1.55)	60.72 (2.06)
I	1.45 (0.07)	14.39 (0.81)	58.34 (1.61)
B	0.91 (0.05)	9.60 (0.71)	58.48 (2.48)
1987 Jul. 28			
K	2.66 (0.12)	1.52 (2.19)	179.39 (17.65)
H	1.92 (0.09)	0.00 (1.93)	
J	1.15 (0.05)	2.32 (3.51)	72.37 (23.98)
I	0.58 (0.03)	2.32 (1.28)	50.69 (13.47)
R	0.47 (0.02)	3.41 (0.95)	123.12 (7.39)
V	0.43 (0.02)	3.47 (1.24)	119.39 (9.18)

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
B	0.44 (0.03)	1.76 (0.46)	131.81 (7.22)
U	0.25 (0.02)	2.62 (0.81)	127.29 (8.41)
1987 Jul. 30			
H	1.69 (0.08)	2.74 (1.78)	30.62 (13.86)
I	0.58 (0.05)	0.86 (1.97)	131.75 (26.86)
R	0.47 (0.04)	1.61 (1.29)	127.34 (16.72)
V	0.44 (0.04)	0.00 (3.39)	
B	0.43 (0.04)	1.38 (0.77)	123.69 (12.96)
U	0.24 (0.02)	1.99 (1.09)	73.13 (13.91)
1987 Sep. 19			
H	1.55 (0.14)	4.02 (3.28)	169.86 (18.80)
I	0.49 (0.05)	11.15 (3.89)	82.71 (8.74)
R	0.37 (0.04)	0.00 (1.62)	
V	0.36 (0.04)	0.00 (1.47)	
B	0.39 (0.04)	0.00 (1.41)	
U	0.24 (0.03)	1.49 (2.13)	138.80 (26.06)
1652+398 Mkn 501		E(B-V) = 0.00	
1987 Sep. 21			
K		1.34 (0.26)	138.09 (4.81)
H		1.24 (0.19)	125.70 (4.83)
J		1.57 (0.20)	124.98 (3.85)
I		1.56 (0.16)	126.94 (2.52)
R		1.95 (0.11)	122.09 (1.55)
V		2.50 (0.18)	124.08 (2.06)
B		3.53 (0.14)	124.06 (1.18)
U		3.76 (0.22)	119.20 (1.62)
1717+178 OT 129		E(B-V) = 0.06	
1986 Aug. 6			
H	1.34 (0.06)	15.55 (3.97)	39.16 (8.07)
I	0.39 (0.02)	17.82 (3.62)	45.33 (5.08)
B	0.12 (0.01)	20.92 (3.67)	45.37 (4.54)
1986 Aug. 7			
H	1.13 (0.05)	18.59 (1.55)	60.72 (2.06)
I	0.37 (0.02)	14.39 (0.81)	58.34 (1.61)
B	0.10 (0.01)	9.60 (0.71)	58.48 (2.48)
1987 Jul. 30			
H	0.55 (0.10)	16.85 (11.90)	103.02 (13.86)
I	0.16 (0.02)	0.00 (11.88)	
R	0.10 (0.01)	6.33 (7.03)	150.64 (19.41)
V	0.08 (0.01)	10.37 (11.63)	34.78 (20.79)
B	0.04 (0.01)	7.11 (7.81)	134.50 (21.14)
U	0.02 (0.00)	0.00 (16.81)	
1727+502 I Zw 186		E(B-V) = 0.00	
1986 Aug. 6			
H	4.16 (0.19)	2.36 (1.55)	142.17 (15.26)
I	1.80 (0.09)	2.51 (0.82)	91.15 (7.55)
B	0.23 (0.01)	4.16 (0.88)	78.49 (6.95)
1986 Aug. 7			
H	4.20 (0.19)	0.43 (0.98)	56.35 (31.99)
I	2.08 (0.10)	2.44 (0.54)	91.88 (6.24)
B	0.65 (0.04)	4.67 (0.59)	92.73 (3.94)
1987 Sep. 21			
H		1.55 (1.62)	118.80 (20.70)
I		0.00 (0.84)	
R		0.92 (0.41)	95.85 (12.45)
V		1.10 (1.92)	126.27 (25.93)
B		3.14 (1.02)	96.91 (6.26)
U		5.96 (1.30)	110.38 (6.50)
1749+096 OT 081		E(B-V) = 0.15	
1986 Jul. 31			
H	4.35 (0.40)	16.70 (1.49)	153.42 (2.43)
I	1.44 (0.13)	16.53 (0.95)	165.69 (1.31)
B	0.32 (0.03)	18.41 (0.88)	169.93 (1.39)
1986 Aug. 5			
H	4.64 (0.22)	5.66 (1.85)	16.41 (8.04)
I	1.31 (0.06)	6.64 (1.13)	5.80 (4.53)
B	0.71 (0.04)	7.42 (1.18)	6.29 (4.29)
1986 Aug. 6			
H	5.00 (0.23)	10.92 (1.35)	27.54 (6.42)
I	1.48 (0.07)	9.62 (0.72)	35.81 (1.89)
B	0.38 (0.04)	9.76 (0.85)	34.36 (2.87)
1986 Aug. 7			
H	4.16 (0.19)	7.80 (1.15)	
I	1.27 (0.06)	8.16 (0.90)	3.99 (2.90)
B	0.30 (0.02)	10.87 (0.89)	1.85 (2.69)
1987 Jul. 27			
J	1.34 (0.09)	4.06 (2.23)	18.99 (16.94)
I	0.41 (0.02)	9.96 (3.87)	35.57 (12.25)
R	0.22 (0.01)	9.71 (4.01)	13.91 (10.32)
V	0.14 (0.01)	18.96 (6.76)	
B	0.07 (0.00)	23.85 (3.78)	0.71 (5.88)
U	0.04 (0.00)	13.87 (7.20)	
1921-293 OV-236		E(B-V) = 0.12	
1986 Aug. 3			
H	1.33 (0.12)	9.78 (3.71)	104.12 (12.02)
I	0.57 (0.05)	6.34 (4.13)	100.10 (17.85)
B	0.11 (0.02)	16.89 (4.53)	160.42 (7.29)
6th. Aug 1986			
H	5.08 (0.24)	13.94 (1.91)	126.06 (4.92)
I	1.54 (0.07)	6.98 (1.82)	117.72 (6.59)
B	0.43 (0.04)	5.76 (1.85)	109.18 (8.79)
1986 Aug. 7			
H	2.52 (0.12)	7.10 (2.03)	119.56 (7.91)
I	0.54 (0.03)	8.13 (1.65)	135.93 (6.78)
B	0.08 (0.01)	5.97 (3.04)	111.08 (13.03)
1987 Jul. 27			
J	1.11 (0.06)	6.01 (3.86)	85.18 (15.94)
I	0.79 (0.05)	3.91 (2.92)	130.94 (17.44)
R	0.69 (0.07)	5.60 (2.26)	105.55 (10.49)
V	0.19 (0.02)	0.00 (5.44)	
B	0.15 (0.01)	0.00 (3.32)	
2032+107		E(B-V) = 0.12	
1987 Jul. 27			
J	8.61 (0.40)	0.56 (0.47)	
I	4.36 (0.21)	0.86 (0.40)	
R	1.98 (0.19)	1.08 (0.44)	
V	1.03 (0.06)	1.38 (1.08)	

TABLE III (*continued*).

Filter	Flux density (mJy)		Polarization (%)		Position angle (deg)	
B	0.28	(0.02)	0.00	(1.15)		
U	0.04	(0.00)	0.00	(7.18)		
PKS 2155-304			E(B-V) = 0.00			
1986 Aug. 1						
H	27.76	(1.29)	2.03	(0.30)	148.06	(3.24)
J	21.72	(1.02)	3.11	(0.36)	149.47	(4.93)
I	21.02	(1.58)	3.10	(0.12)	141.54	(1.18)
R	14.74	(1.40)	3.62	(0.08)	137.15	(0.76)
B	14.11	(1.41)	4.03	(0.07)	138.80	(0.53)
1986 Aug. 5						
H	30.44	(1.41)	1.24	(0.35)		
I	20.63	(0.99)	0.72	(0.19)	3.60	(8.10)
B	13.23	(0.79)	0.80	(0.19)	13.33	(7.97)
1986 Aug. 6						
H	28.02	(1.30)	0.73	(0.21)		
I	26.70	(2.49)	0.45	(0.16)	21.52	(9.23)
B	14.11	(1.41)	0.69	(0.21)	75.08	(7.70)
1986 Aug. 7						
H	29.88	(1.38)	1.85	(0.19)	147.57	(1.89)
J	26.12	(1.22)	1.67	(0.17)	149.75	(3.11)
I	20.82	(1.00)	1.94	(0.16)	149.14	(2.42)
R	18.90	(1.45)	2.03	(0.18)	145.32	(2.46)
V	15.60	(1.51)	2.06	(0.18)	146.78	(2.63)
B	13.47	(1.12)	2.11	(0.12)	142.71	(1.36)
1987 Jul. 27						
K	67.94	(3.14)	9.16	(0.24)	175.89	(1.11)
H	60.73	(2.81)	9.40	(0.70)	176.16	(1.51)
J	55.58	(3.61)	10.14	(0.97)	172.93	(1.01)
I	36.52	(2.74)	10.29	(0.23)	171.83	(1.07)
R	27.07	(2.56)	10.46	(0.23)	171.20	(1.07)
V	26.13	(2.06)	10.69	(0.21)	170.48	(1.03)
B	24.29	(1.81)	10.91	(0.15)	169.39	(0.94)
U	18.10	(1.85)	10.93	(0.16)	169.14	(0.96)
1987 Sep. 21						
K			7.14	(0.42)	170.19	(1.82)
H			7.60	(0.21)	170.00	(0.75)
I			8.33	(0.17)	170.41	(0.62)
R			8.52	(0.12)	169.67	(0.41)
V			9.05	(0.18)	169.96	(0.60)
B			8.61	(0.10)	169.91	(0.44)
U			8.35	(0.16)	171.62	(0.58)
2200+420 BL Lacertae			E(B-V) = 0.15			
1986 Jul. 31						
H	19.01	(1.76)	11.83	(0.48)	30.74	(1.17)
I	5.21	(0.49)	12.02	(0.50)	33.50	(0.76)
B	0.73	(0.07)	14.03	(0.65)	35.33	(1.14)
1986 Aug. 1						
H	21.04	(0.97)	12.52	(0.73)	26.56	(1.37)
I	3.96	(0.37)	11.36	(0.43)	27.93	(1.03)
B	0.61	(0.06)	12.57	(0.53)	30.78	(1.24)
1986 Aug. 3						
H	19.54	(0.91)	12.36	(0.24)	20.87	(0.81)
J	11.93	(0.56)	12.49	(0.24)	21.63	(0.57)
I	4.46	(0.33)	12.93	(0.34)	22.46	(0.72)
R	2.04	(0.19)	12.80	(0.42)	25.87	(1.06)
V	1.37	(0.13)	14.24	(0.45)	24.56	(1.32)
B	0.55	(0.06)	16.70	(0.39)	26.09	(0.71)
1986 Aug. 4						
H	18.32	(0.51)	12.24	(0.44)	17.50	(1.09)
I	4.54	(0.22)	13.34	(0.40)	19.62	(0.85)
B	0.61	(0.05)	17.17	(0.71)	22.74	(1.19)
1986 Aug. 5						
H	19.01	(0.88)	14.33	(0.36)	15.36	(0.58)
I	4.42	(0.21)	14.00	(0.43)	18.43	(0.94)
B	0.54	(0.03)	17.52	(0.74)	23.13	(1.22)
1986 Aug. 6						
H	15.96	(0.74)	14.92	(0.72)	19.39	(1.29)
I	5.21	(0.49)	14.15	(0.37)	22.31	(0.85)
B	0.63	(0.06)	17.24	(0.71)	23.17	(1.22)
1986 Aug. 7						
H	18.83	(0.87)	13.95	(0.38)	22.59	(0.83)
I	4.63	(0.22)	13.81	(0.40)	22.51	(0.89)
B	0.60	(0.04)	16.88	(0.68)	25.91	(1.12)
1987 Jul. 27						
K	28.53	(1.32)	10.42	(0.26)	16.50	(1.11)
H	20.84	(1.35)	9.60	(0.35)	16.44	(1.44)
J	13.32	(0.62)	8.52	(0.40)	16.12	(1.74)
I	5.12	(0.25)	7.83	(0.35)	15.57	(1.41)
R	3.12	(0.16)	8.40	(0.23)	14.93	(1.12)
V	1.60	(0.11)	8.50	(0.56)	10.96	(1.96)
B	0.67	(0.07)	8.30	(0.44)	10.56	(1.57)
U	0.30	(0.03)	8.32	(1.05)	11.59	(2.99)
1987 Jul. 28						
K	32.76	(1.51)	13.23	(0.42)	22.96	(1.24)
H	23.49	(1.09)	11.93	(0.19)	19.73	(0.91)
J	14.88	(1.10)	12.12	(0.41)	17.12	(1.31)
I	5.36	(0.31)	10.26	(0.40)	16.80	(1.16)
R	2.55	(0.13)	10.56	(0.41)	14.99	(1.12)
V	1.55	(0.08)	9.77	(0.70)	9.98	(1.82)
B	0.69	(0.04)	12.27	(0.59)	9.47	(1.46)
U	0.28	(0.02)	11.42	(1.20)	5.74	(2.79)
1987 Jul. 30						
H	23.28	(1.08)	13.85	(0.32)	18.81	(1.25)
I	5.56	(0.27)	12.57	(0.62)	16.96	(1.29)
R	2.84	(0.14)	12.01	(0.55)	12.54	(1.16)
V	1.60	(0.09)	10.36	(1.10)	15.46	(2.48)
B	0.74	(0.04)	13.25	(0.60)	10.06	(1.34)
U	0.29	(0.02)	13.04	(1.54)	4.75	(1.96)
1987 Sep. 19						
H	13.15	(1.21)	8.35	(0.61)	31.50	(2.36)
I	3.00	(0.28)	8.11	(0.59)	40.95	(1.84)
R	1.70	(0.16)	8.37	(0.35)	38.41	(1.38)
V	0.95	(0.09)	8.35	(1.24)	45.04	(3.82)
B	0.38	(0.04)	14.04	(0.69)	37.46	(1.42)
U	0.18	(0.02)	10.53	(1.60)	37.37	(4.74)
1987 Sep. 20						
H			6.96	(0.29)	25.96	(1.21)
I			8.43	(0.55)	32.97	(1.87)
R			9.07	(0.39)	31.05	(1.24)
V			10.52	(0.94)	38.75	(3.07)
B			13.09	(0.87)	38.30	(2.03)

TABLE III (*continued*).

Filter	Flux density (mJy)	Polarization (%)	Position angle (deg)
U		19.57 (2.06)	31.48 (3.00)
1987 Sep. 21			
K		8.56 (0.51)	20.69 (1.59)
H		8.44 (0.40)	24.40 (1.26)
I		9.34 (0.50)	31.11 (1.52)
R		9.88 (0.36)	33.51 (0.97)
V		12.19 (1.44)	32.25 (3.41)
B		13.90 (0.82)	33.18 (1.71)
U		18.59 (2.31)	35.95 (3.53)
PKS 2208-137		E(B-V) = 0.00	
1986 Aug. 3			
H	1.87 (0.09)	4.11 (4.16)	152.96 (15.06)
I	0.89 (0.07)	1.40 (1.55)	51.88 (20.48)
B	1.07 (0.11)	0.00 (0.74)	
1986 Aug. 4			
H	1.82 (0.08)	0.00 (3.20)	
I	0.97 (0.05)	1.95 (1.00)	114.07 (15.56)
B	1.10 (0.09)	0.39 (0.56)	66.94 (23.78)
1986 Aug. 6			
H	1.70 (0.13)	9.32 (4.21)	157.41 (12.16)
I	1.19 (0.11)	0.00 (2.28)	109.04 (30.02)
B	1.17 (0.12)	0.99 (0.74)	77.88 (13.63)
1986 Aug. 7			
H	1.35 (0.09)	2.62 (5.23)	74.70 (31.35)
I	0.87 (0.04)	1.31 (1.67)	45.38 (20.74)
B	1.00 (0.06)	0.31 (0.75)	132.34 (21.31)
2223-052 3C 446		E(B-V) = 0.03	
1986 Aug. 4			
H	0.58 (0.08)	3.65 (20.99)	116.30 (28.41)
I	0.27 (0.02)	2.80 (7.93)	105.49 (23.25)
B	0.15 (0.01)	0.75 (5.65)	142.91 (28.84)
1987 Jul. 27			
J	1.38 (0.09)	12.99 (3.11)	76.27 (6.18)
I	0.65 (0.03)	11.64 (1.87)	70.41 (4.34)
R	0.47 (0.02)	13.21 (1.24)	76.03 (2.95)
V	0.33 (0.02)	17.42 (2.35)	75.44 (4.28)
B	0.22 (0.01)	11.59 (1.20)	68.41 (2.77)
U	0.16 (0.02)	9.75 (1.84)	71.52 (6.29)
1987 Jul. 29			
H	2.06 (0.19)	9.29 (1.48)	88.83 (5.65)
I	0.61 (0.06)	5.87 (2.05)	87.07 (9.47)
R	0.44 (0.04)	7.90 (1.35)	82.59 (4.89)
V	0.33 (0.03)	7.35 (2.75)	73.49 (7.78)
B	0.24 (0.02)	9.57 (1.15)	73.00 (4.41)
U	0.17 (0.02)	8.34 (2.17)	78.73 (6.83)
1987 Jul. 30			
H	1.98 (0.11)	9.04 (1.83)	77.89 (5.61)
I	0.64 (0.03)	7.23 (2.44)	55.10 (8.95)
R	0.45 (0.02)	7.02 (1.88)	71.52 (7.08)
V	0.31 (0.02)	7.80 (3.33)	84.66 (11.35)
B	0.22 (0.01)	9.77 (1.88)	68.42 (5.38)
U	0.15 (0.01)	6.08 (2.51)	60.98 (10.71)
1987 Sep. 20			
H		6.55 (0.91)	92.16 (3.88)
I		7.98 (1.12)	91.95 (3.90)
R		9.03 (0.59)	94.03 (1.77)
V		12.35 (2.00)	97.50 (4.37)
B		10.30 (0.86)	92.58 (2.30)
U		8.89 (1.24)	99.50 (4.12)
21st. Sep 1987			
H		9.29 (1.09)	97.70 (3.28)
I		11.90 (1.21)	98.72 (2.58)
R		9.76 (0.59)	101.84 (2.04)
V		11.64 (2.03)	106.59 (3.92)
B		10.86 (0.83)	100.67 (2.06)
U		8.92 (1.19)	103.30 (4.37)
2230+114 4C 11.69		E(B-V) = 0.03	
1986 Aug. 3			
H	1.18 (0.10)	8.29 (4.76)	154.21 (14.60)
I	0.64 (0.05)	3.77 (1.97)	52.35 (12.08)
B	0.42 (0.04)	0.00 (1.20)	
1986 Aug. 4			
H	1.02 (0.05)	7.70 (7.49)	136.84 (23.37)
I	0.64 (0.03)	3.86 (2.13)	109.45 (16.37)
B	0.39 (0.03)	0.00 (1.89)	100.39 (34.85)
2251+158		E(B-V) = 0.06	
1986 Aug. 5			
H	1.97 (0.16)	6.40 (2.91)	152.90 (14.99)
I	1.12 (0.05)	1.11 (1.31)	27.84 (19.01)
B	0.65 (0.04)	0.00 (0.68)	
1987 Jul. 28			
H	2.41 (0.16)	4.62 (2.06)	10.28 (9.32)
I	1.16 (0.06)	0.55 (1.18)	61.84 (22.04)
R	0.98 (0.05)	1.38 (0.87)	24.86 (14.17)
V	0.85 (0.05)	0.00 (1.21)	
B	0.60 (0.04)	0.00 (0.63)	
U	0.36 (0.03)	1.17 (0.97)	155.83 (24.63)
1987 Sep. 20			
H		7.35 (1.22)	161.96 (4.66)
I		4.18 (0.96)	160.62 (6.32)
R		3.92 (0.45)	162.27 (3.31)
V		3.72 (1.10)	159.21 (7.36)
B		3.49 (0.47)	161.95 (4.52)
U		2.37 (0.79)	163.02 (9.09)
2254+074 OY 091		E(B-V) = 0.06	
1986 Jul. 31			
H	2.08 (0.19)	7.06 (4.13)	46.26 (12.00)
I	0.93 (0.09)	10.09 (1.30)	57.36 (3.64)
B	0.20 (0.03)	18.91 (2.53)	57.23 (3.77)
1986 Aug. 1			
H	1.78 (0.12)	7.90 (5.62)	45.31 (12.85)
I	0.85 (0.08)	10.77 (1.48)	52.72 (4.24)
B	0.16 (0.02)	14.75 (1.57)	43.95 (3.99)
1986 Aug. 3			
H	2.50 (0.12)	10.54 (1.37)	52.66 (4.66)
J	1.75 (0.08)	12.91 (1.55)	41.11 (5.37)
I	0.84 (0.06)	11.80 (1.08)	47.70 (2.50)
R	0.52 (0.05)	12.28 (0.93)	43.97 (2.91)
V	0.23 (0.02)	15.40 (1.93)	45.59 (4.41)
B	0.18 (0.02)	18.71 (1.12)	42.44 (1.48)

TABLE III (*continued*).

Filter	Flux density (mJy)		Polarization (%)		Position angle (deg)	
1986 Aug. 4						
H	2.30	(0.06)	10.31	(1.15)	44.45	(3.18)
J	1.72	(0.08)	9.03	(1.30)	43.38	(3.54)
I	0.85	(0.04)	8.99	(0.90)	48.91	(2.77)
R	0.52	(0.03)	10.27	(0.63)	45.69	(1.84)
V	0.36	(0.03)	10.92	(0.87)	47.60	(2.92)
B	0.18	(0.02)	19.17	(0.95)	44.17	(1.40)
U	0.12	(0.01)	18.36	(4.04)	47.46	(5.98)
1986 Aug. 5						
H	2.39	(0.11)	7.69	(2.40)	55.64	(6.75)
I	0.90	(0.04)	8.44	(1.31)	40.39	(3.05)
B	0.20	(0.01)	15.80	(1.33)	48.81	(2.32)
1986 Aug. 6						
H	2.48	(0.11)	4.22	(2.19)	59.06	(14.98)
I	1.18	(0.11)	7.38	(0.98)	57.42	(3.80)
B	0.21	(0.01)	11.63	(1.21)	55.39	(3.22)
1986 Aug. 7						
H	2.01	(0.11)	7.91	(4.38)	60.36	(11.00)
I	0.44	(0.02)	10.74	(3.18)	4.26	(7.83)
B	0.11	(0.01)	2.30	(3.42)	54.50	(26.31)
1987 Jul. 28						
H	2.46	(0.11)	11.55	(1.19)	136.59	(3.17)
I	1.04	(0.05)	9.07	(0.94)	138.02	(3.07)
R	0.67	(0.03)	11.87	(0.83)	142.79	(2.18)
V	0.45	(0.02)	13.76	(1.51)	148.83	(2.17)
B	0.24	(0.01)	17.40	(1.16)	141.65	(2.19)
U	0.12	(0.01)	14.28	(1.82)	146.91	(4.89)
1987 Jul. 30						
H	2.74	(0.13)	13.62	(1.48)	139.19	(2.72)
I	1.06	(0.05)	12.06	(1.26)	143.84	(3.05)
R	0.67	(0.03)	9.89	(1.09)	142.96	(2.96)
V	0.47	(0.03)	12.09	(1.72)	141.55	(4.19)
B	0.24	(0.01)	15.76	(1.30)	148.76	(2.21)
U	0.13	(0.01)	17.52	(2.94)	139.69	(4.49)
1987 Sep. 18						
H			3.34	(3.89)	45.57	(22.10)
I			9.65	(1.45)	47.85	(4.14)
R			11.81	(0.75)	38.76	(1.82)
V			14.12	(2.43)	58.38	(5.14)
B			14.26	(1.13)	39.71	(2.57)
U			13.74	(2.16)	56.63	(4.34)
1987 Sep. 21						
H			7.01	(1.83)	50.27	(6.09)
I			8.10	(1.55)	42.91	(5.73)
R			9.76	(0.85)	42.30	(2.62)
V			14.37	(3.06)	30.83	(5.90)
B			14.63	(1.31)	38.52	(2.67)
U			13.47	(2.73)	40.60	(6.88)

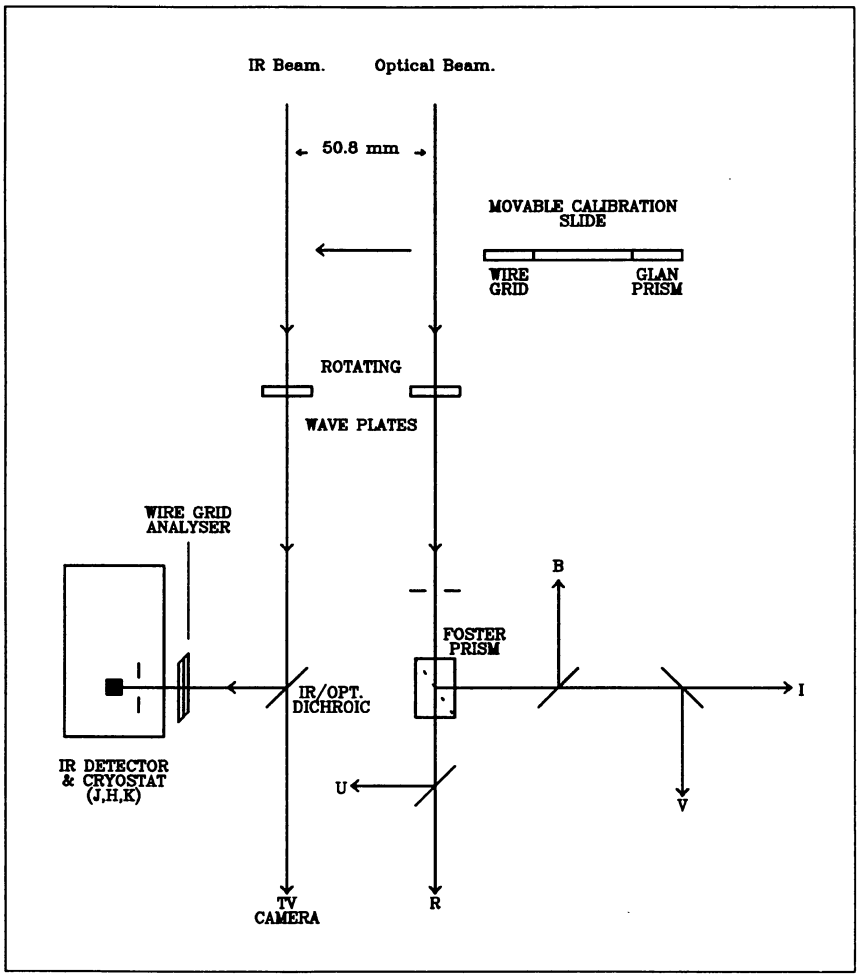

FIGURE 1.— The Mark II Hatfield Polarimeter.

Commission paritaire N° 62.321

Directrice de la Publication : Jeanne BERGER

Saisie composition MATHOR3-TEX
Impression JOUVE, 18, rue Saint-Denis, 75001 PARIS
N° 12862. Dépôt légal : Mars 1990