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Multifrequency observations of ROSAT selected radio sources*

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Abstract. — We report on results of multifrequency radio continuum observations with the Effelsberg 100-m telescope of 234 radio sources which have counterparts in the ROSAT all-sky survey. Observations have been made at 21 cm, 11 cm, 6 cm and 2.8 cm wavelength in the flux density range above 20 mJy. We have determined the spectrum, size, linear polarization and improved positions of these sources. We give the statistical properties of the ROSAT selected radio sources and compare them with results from unbiased radio source surveys so far available. In general the differences are small. We find a weak excess of flat spectrum sources and a higher fraction of unresolved sources. Cumulative counts of the radio sources become incomplete already at a relatively high flux density level. At 11 cm wavelength we have about three times less sources at 100 mJy than expected and this deficit increases towards lower flux densities. The reason is the limited ROSAT all-sky survey sensitivity making cumulative counts of X-ray sources incomplete below $10^{-12}\,\mathrm{erg\,cm^{-2}\,s^{-1}}$. No global correlation is found between the integrated radio flux densities and the X-ray flux densities for the entire sample. Our sample is not large enough and we do not have enough optical identifications for a general study of correlations for distinct groups of radio sources. Differences are seen, however, between very steep ($\alpha < -0.7$ ($S_\nu \propto \nu^{+\alpha}$)) and very flat spectrum radio sources ($\alpha > -0.3$). About 1/3 of the very flat spectrum radio sources have an unusually small ratio of X-ray to radio emission. Most of them are quasars. The remaining flat spectrum sources show a significant correlation between their X-ray and radio flux densities. Nevertheless, the differences in the properties of radio sources, which have strong enough X-ray emission to be seen in the ROSAT survey, and those which are not seen remain unclear.

Key words: galaxies: active — radio continuum: galaxies, general — X-ray: galaxies

1. Introduction

The ROSAT satellite launched in June 1990 has mapped almost the entire sky with an unprecedented sensitivity in the soft X-ray band between August 1990 and February 1991 (Voges 1992). The limiting sensitivity for point sources is a few times $10^{-13}\,\mathrm{erg\,cm^{-2}\,s^{-1}}$ in the 0.1–2.4 keV energy range depending slightly on the spectral shape of the source and the amount of galactic absorption. The mission and details of its instrumentation have been described by Trümper (1983), Pfeffermann et al. (1986), and Aschenbach (1988).

Current estimates predict that about half of the ~ 50000 compact sources found so far are extragalactic objects, the vast majority of them detected for the first time through their X-ray emission. They form the basis for studies of the evolution of different classes of AGN and their statistical properties. However, their optical identification will require considerable observational efforts over the next years.

We have therefore started to investigate in some detail the nature of those X-ray sources which show radio emission as well and which are most likely of extragalactic origin. The aim is to improve their positions for reliable optical identification and to compare the properties of this X-ray selected sample of radio sources with samples from radio source surveys.

2. Source selection

The deepest radio source survey covering most of the northern sky is that of Condon et al. (1989) carried out at 6 cm wavelength with the former Green Bank 300 ft telescope. We have converted the survey maps from

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* Tables 2 and 3 are also available in electronic form: see the Editorial in A&AS 1994, Vol. 103, No. 1

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FITS-format into NOD2-format (Haslam 1974) for an efficient analysis of compact sources by fitting single elliptical Gaussian surfaces to them. We prepared a catalogue of ≈ 150000 small diameter sources at a flux density level above 15 mJy for declinations between about 0° and 75°. The angular resolution of the survey is about 3.′7 × 3.′3 and the noise in the maps has been measured to be about 5 mJy/beam area, but it increases below 30° declination up to about 8 mJy/beam area at 0° declination. The positional accuracy varies from 10″ for stronger sources to about 30″ for weak sources in both coordinates. The positions of sources detected in the ROSAT all-sky survey have been compared with those of the radio sources. Sources with positional coincidences within 120″ have been selected for further investigations with the Effelsberg 100-m radio telescope.

The ROSAT survey data were processed by a quasi-automatic Standard Analysis Software System (SASS, Voges et al. 1992). A positional accuracy for point-like sources of 20″ was determined for about 68% of the sources. For details and first results see Voges (1992). The sources studied in the present paper are from the early phase of the ROSAT survey and therefore their distribution in the sky is rather nonuniform.

3. Radio observations with the Effelsberg 100-m telescope

We have made quasi-simultaneous observations of the ROSAT selected radio sources at wavelengths 11 cm, 6 cm and 2.8 cm. All three receivers are installed in the secondary focus of the telescope. We list some data of the telescope and the receiver performance in Table 1. Using a special set-up procedure we are able to measure all parameters of one source at the three wavelengths from scans in two orthogonal directions within 30 minutes. The quasi-simultaneously obtained data make our spectral results more significant in comparison with studies where data at different frequencies and epoches have been collected to calculate spectral indices.

Table 1. Observational data for the radio observations with the Effelsberg 100-m telescope

Wavelength [cm]	21	11	6	2.8
Frequency [GHz]	1.448	2.695	4.75	10.55
HPBW [′]	9	4.3	2.4	1.2
cooled	2×HEMT	3×FET	3×PARAM	6×HEMT
Receivers	TP	Corr.	Corr.	TP
T_{sys} [K]	30	60	50	50
Feeds	1	1	1	1(ON) 2(OFF)
Focus	Primary	Secondary	Secondary	Secondary
Instrumental Polarization [%]	—	0.7	1	1
Main calibrator: 3C286 S [Jy]	14.4	10.4	7.5	4.5
Linear Polarization [%]	—	9.9	11.3	11.8

Observations start always at the longest wavelength (11 cm) with the widest beam. From this observation we get an improved position, continue in the same way with 6 cm observations, which result in a further positional improvement and get the most precise position with an accuracy better than 10″ by observing at 2.8 cm, where the beam size of the telescope is 72″. At all three frequencies we measure the Stokes parameter I, U and Q simultaneously, which allows the calculation of the amount of linear polarization. At 21 cm wavelength we used a primary focus receiver, therefore these data were measured independently from the higher frequency observations and not all sources observed at the shorter wavelengths have been looked at. No polarization data were obtained at this wavelength. The cross-scan data were analysed by fitting a Gaussian to the data, which is a very good approximation of all beam shapes of the Effelsberg telescope in this frequency range down to a level of about −10 dB. From these fits the peak flux density and the width have been calculated by correcting for any positional offset. 3C286 served as the main calibrator for total intensity and linear polarization (Table 1). Details of the observation and data reduction are discussed in Neumann (1991).

4. Results of the radio observations

4.1. *Comments on Table 2 and Table 3*

A number of weak candidate sources from the list of ROSAT selected radio sources were not detected in the wavelength range between 11 cm and 2.8 cm. As stated above this is not unexpected as our derived source list contains structures close to the noise of the analysed 6 cm survey. We chose this low significance level for the radio sources in order to identify as many weak radio sources with X-ray emission as possible at the risk of some artifacts resulting from small-scale distortions. Data of some other sources were lost due to bad weather and some are found to be too confused by other emission features so that a reliable determination of their parameters was not possible. About 15% of all sources looked at have extended neighbouring structures, where mapping observations instead of orthogonal scans are required. These sources have been excluded from the present analysis. In total we have satisfactory data for 234 sources at 11 cm and for a few less sources at higher frequencies, due to their weakness, their large extent or some observational problems.

We have separated the 234 sources into two subgroups depending on the positional difference between the centroids of the X-ray and the radio emission. In Table 2 we list 221 sources with an absolute separation of ≤ 2′, which makes a physical association of the X-ray and radio source very likely. A few misidentifications, in particular among the 44 sources with an absolute separation between 1′ and 2′, cannot be ruled out, but will unlikely change our results. 77 sources have been optically identified so far. In Table 3 we list 13 sources with a larger separation, which in most cases results from a redetermined X-ray position. The sources have been named "EF" according to the measured positions (Epoch 1950) with the Effelsberg 100-m telescope.

Although an explanation of the entries is given with Table 2, a few remarks are added here for some of the parameters. The X-ray flux density has been integrated between 0.1 and 2.4 keV and corrected for absorption based on galactic H I column densities (Dickey & Lockman 1990) assuming an energy index of $\alpha = -1.3$. The statistical error of the count rate has been calculated from the total counts and the total observing time.

The integrated radio flux densities as listed in Tables 2 and 3 have been calculated from the peak flux density and the source size based on the Gaussian fit results of the cross-scan data. The deconvolved source sizes are also listed. In the case of point-like sources (PL) peak and integrated flux densities are identical. For most sources the listed degree of polarization is based on the result of a Gaussian fit to the Stokes parameters U and Q. It is corrected for instrumental polarization effects. Due to the weakness of the polarized signal or some baseline distortions or interference, only estimated upper limits could be given in some cases. For a number of sources no estimate was possible. The Effelsberg 21 cm data, which have been measured on different dates from the higher frequency data, have been completed as far as possible by using data from the 1.4 GHz catalogue of White & Becker (1992) which is based on the sky survey by Condon & Broderick (1985, 1986) with the Green Bank 300 ft telescope. These data have been marked by "C", as also some flux densities at 4.85 GHz from the Condon et al. (1989) survey, where for various reasons no Effelsberg data could be obtained.

The radio spectrum from 2695 MHz to 10550 MHz has been integrated to obtain the total radio flux density in this frequency band. If one of the three integrated flux densities is missing the spectral index based on the two remaining values has been used to estimate the missing flux density by inter- or extrapolation. In the case of upper or lower limits the limit itself was used for the integration and the result is marked as an upper or lower limit. For sources where 4.85 GHz flux densities from the Condon et al. (1989) survey have been used only spectral indices are given and no frequency-integration has been performed because the uncertainty would be too large. The errors of spectral indices represent Gaussian errors and have been calculated from the error codes of the flux densities. 7.5%, 12.5%, 19% and 30% have been used for the error codes 1 to 4. In a few cases observations have been made at two epochs or have been repeated as listed in the tables.

4.2. *Statistics of the radio sample*

In Figs. 1 to 3 we show the spectral index distribution of the observed sources for different wavelength intervals. We note that the fraction of flat spectrum sources ($\alpha \simeq 0$) increases with decreasing wavelength and the complementary number of steep spectrum sources ($\alpha \simeq -0.7$, $S_\nu \propto \nu^{+\alpha}$) decreases. This wavelength dependent distribution of spectral indices is well established and can be explained by the increasing flux density fraction of a flat spectrum core component at short wavelengths compared to the steep spectrum lobes. This implies curved spectra for a number of sources, which is in fact observed (see Table 2).

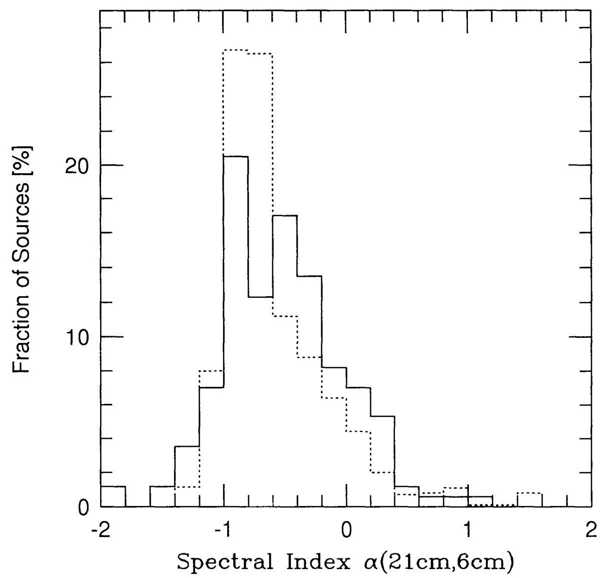

Fig. 1. Fractional distribution of spectral indices for the wavelength interval (21 cm – 6 cm). The total number of sources is 171. For comparison we show the distribution obtained by Owen et al. (1983) (dashed) for an unbiased sample of sources stronger than 35 mJy. The ROSAT selected sample shows a higher fraction of flat spectrum sources

We have investigated the size distribution of the sources at different wavelengths, obtained from the deconvolution with the telescope beam size. 81% of the sources at 11 cm remain unresolved (size $< 90''$), 76% are unresolved at 6 cm (size $< 50''$), and 69% at 2.8 cm (size $< 20''$).

We consider sources to be polarized if the measured polarization exceeds 3%, which is well above any significant influence of the instrumental polarization (see Table 1). The degree of linear polarization or upper limits have been obtained for 193 sources at 11 cm, 173 sources at 6 cm and 150 sources at 2.8 cm. A degree of polarization above 3% is observed for 15% of the sources at 11 cm (29 sources) and 6 cm (26 sources), while the fraction is 25% at 2.8 cm (38 sources). However, for weaker sources the

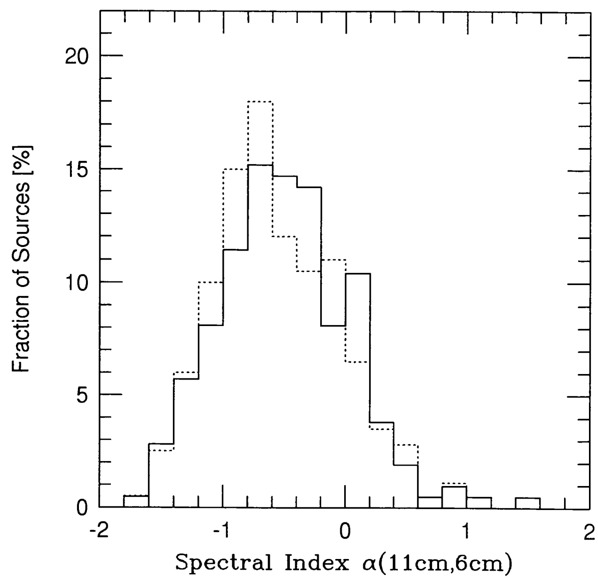

Fig. 2. Fractional distribution of spectral indices for the wavelength interval (11 cm – 6 cm). The total number of sources is 211. For comparison we show the same distribution for 188 sources observed in the direction of the North Ecliptic Pole (dashed) obtained from the observations by Loiseau et al. (1988) and Condon et al. (1989)

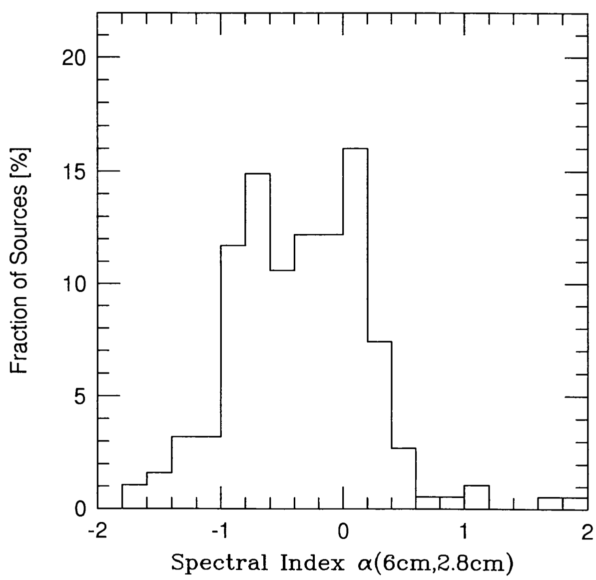

Fig. 3. Fractional distribution of spectral indices for the wavelength interval (6 cm – 2.8 cm). The total number of sources is 188

degree of polarization must be significantly higher to be detectable. Limiting the sample to sources stronger than 200 mJy, where polarization at the 3% level is clearly detectable, we find 26%, 37% and 31% of the sources to be polarized at 11 cm, 6 cm and 2.8 cm wavelength, respectively. This result indicates a weak wavelength dependence of the degree of polarization on average. However, as seen from Table 2, most sources of this group show significant variations of the degree of polarization with wavelength.

In Fig. 4 we show the cumulative number counts at 11 cm wavelength. For comparison, source counts from an unbiased radio source survey by Loiseau et al. (1988) made with the Effelsberg telescope are shown in addition. The ROSAT selected distribution shows a significant flattening or deficit of sources starting at a relatively high flux density level. At 6 cm and 2.8 cm we obtain very similar results.

5. The properties of the X-ray selected radio sample

One basic motivation for this investigation was to recognize any possible difference in the parameters flux density, spectral index, size and degree of polarization between the X-ray selected radio sample and an unbiased radio sample, i.e. X-ray quiet radio sources in terms of the ROSAT all-sky survey sensitivity. We have already noted from our source counts (Fig. 4) a significant incompleteness of the ROSAT selected radio sources below a relatively high flux density level. This effect is also seen in the cumulative source counts of the X-ray flux densities as shown in Fig. 5. Below $10^{-12}\,\mathrm{erg\,cm^{-2}\,s^{-1}}$ a deficit of sources appears, while Hasinger et al. (1991) report a deficit below $2\ 10^{-14}\,\mathrm{erg\,cm^{-2}\,s^{-1}}$ on the basis of deep pointed observations. The deficit of weak sources in the survey sample is certainly an effect of the much lower sensitivity caused by the smaller X-ray survey exposure compared to the Hasinger et al. observations. Thus the ROSAT selected radio sources are quite likely preferentially of local origin and/or sources with an atypically high X-ray luminosity. This can be clarified when more redshift data are available. From the 77 optically identified sources from Table 2 up to now only 48, that is 20% of our sources, have a measured redshift.

5.1. *Spectral index distribution*

To compare the distribution of spectral indices for the wavelength intervals 21 cm/6 cm (Fig. 1) and 11 cm/6 cm (Fig. 2) with the spectral data from flux limited radio source surveys, information from surveys with a similar flux density limit are included in the figures. The ROSAT selected sample has a slightly higher fraction of flat spectrum sources than the data from unbiased surveys. The fraction of sources with spectra flatter than $\alpha = -0.6$ in the range 21 cm/6 cm (Fig. 1) among the ROSAT selected sample is about 20% higher than the corresponding fraction of the unbiased sample. In the wavelength range 11 cm/6 cm (Fig. 2) this excess drops to about 9%. These differences might depend on the two different samples used for the comparison. Unfortunately, up to

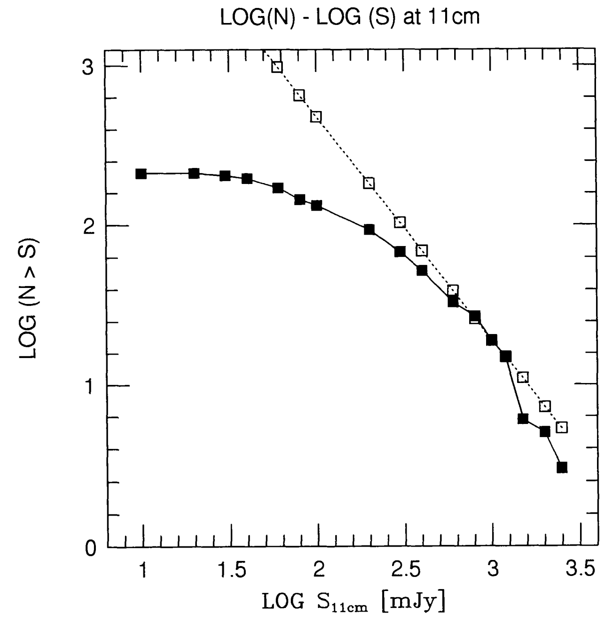

Fig. 4. Cumulative source counts at 11 cm (lower curve) compared with those of Loiseau et al. (1988) (upper curve, slope −1.4). Both counts have been normalized at 1 Jy

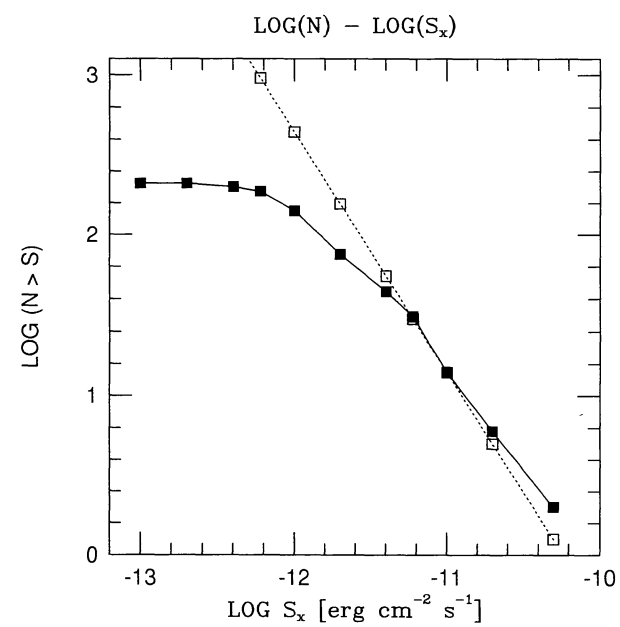

Fig. 5. Cumulative source counts of 211 ROSAT survey sources (soft X-ray band 0.1–2.4 keV) with radio counterparts. The dashed line shows the distribution expected for a uniform source density with a slope of −1.5. Both counts have been normalized at 10^{-11} [erg cm^{-2} s^{-1}]

now no data for the wavelength range 6 cm/2.8 cm are available for a comparison, where the absolute fraction of flat spectrum sources is highest.

5.2. *Size distribution*

A number of investigations of the size distribution of extragalactic radio sources exist. The results depend largely on the angular resolution of the observations used. We have therefore compared the observed size distribution at 11 cm with that derived from the Loiseau et al. (1988) source list of 350 sources obtained from a survey of the North Ecliptic Pole with the 100-m telescope and we find noticeable differences. While in our sample only about 7% of the sources have an extent exceeding 150 arcsec this fraction is about 30% in the Loiseau et al. sample. We have inspected our 6 cm source list obtained from the Condon et al. survey and find that out of 99700 sources at galactic latitudes $|b| > 20°$ about 52% are unresolved, 16% have sizes between 1.′2 and 2.′1 and 32% have sizes larger than 2.′1. This can be compared with 350 sources from this list with a counterpart in the ROSAT survey: 62% are unresolved, 21% have sizes between 1.′2 and 2.′1 and only 17% are larger in extent. No data exist for a comparison at 2.8 cm wavelength. The 11 cm and 6 cm results indicate that the ROSAT selected source sample contains more compact sources than the radio flux limited samples. However, the search radius of about 120″ used to find coincidences between the ROSAT and radio peak emission positions may introduce some bias. Well resolved large diameter sources may have been rejected if the radio and X-ray emission centres differ by more than the search radius.

5.3. *Polarization distribution*

To our knowledge no flux limited radio sample at cm-wavelength exists for which the distribution of the degree of linear polarization has been derived. From our sample of complete polarization data for sources with flux densities above 200 mJy we find no clear wavelength dependence of the fraction of polarized sources, which is around 30%.

Okudaira et al. (1993) found that 30% of a sample of strong flat spectrum sources ($\alpha > -0.5$) have a degree of linear polarization larger than 3% at 10 GHz. This is very close to our result, based on a sample of 53% steep ($\alpha < -0.5$) and 47% ($\alpha > -0.5$) flat spectrum sources. Simard-Normandin et al. (1982) observed the linear polarization of 68 sources at 10.5 GHz. These sources were known to be polarized at low frequencies, yet not more than 43% of them are polarized above 3%.

6. Correlation of the radio and X-ray flux densities

6.1. *Global properties*

In Fig. 6 we show the relation of frequency-integrated radio and X-ray flux densities for 211 sources, where flat and steep spectrum radio sources are marked by different symbols. There is a spread of about two orders of magnitude in each of the flux density distributions and we see no indication of a correlation between the radio and X-ray flux densities for the entire sample. The same result has been noted by Brinkmann et al. (1994) when comparing 408 MHz flux densities with ROSAT counts and does not rule out the existence of a correlation when luminosities are compared.

We like to remark on two sources in the sample. First, the source EF B1615+3628 appears as the weakest X-ray source in Table 2 and Fig. 6. The reason is an unusually long exposure in the first days of the ROSAT all-sky survey. A second remarkable source in our sample is the QSO EF B1745+6228 with an exceptional redshift of $z = 3.87$. This source has been detected previously with the EINSTEIN IPC. Subsequent radio observations with the VLA have been made by Becker et al. (1992). Fink & Briel (1993) have discussed the ROSAT data and Stickel (1993) its radio and optical properties. Despite its extreme redshift the source has $S_{\rm rad}\,[{\rm erg\,cm^{-2}\,s^{-1}}] = 0.414\ 10^{-13}$ and $S_{\rm x}\,[{\rm erg\,cm^{-2}\,s^{-1}}] = 0.11\ 10^{-11}$, which is in no way unusual as seen from Fig. 6.

Figure 6 demonstrates that a separation of the sources into two groups with radio spectra steeper and flatter than $\alpha = -0.5$ does generally not make a significant difference for the comparison of the flux densities. We show in Fig. 7 the ratio of X-ray to radio flux densities. The maximum number of sources with a flat spectrum has a slightly smaller ratio than that for steep spectrum sources. The most remarkable difference between the two samples seems to be that for $\log(S_{\rm x}/S_{\rm rad})$ below 1.2 all except one source have a flat radio spectrum.

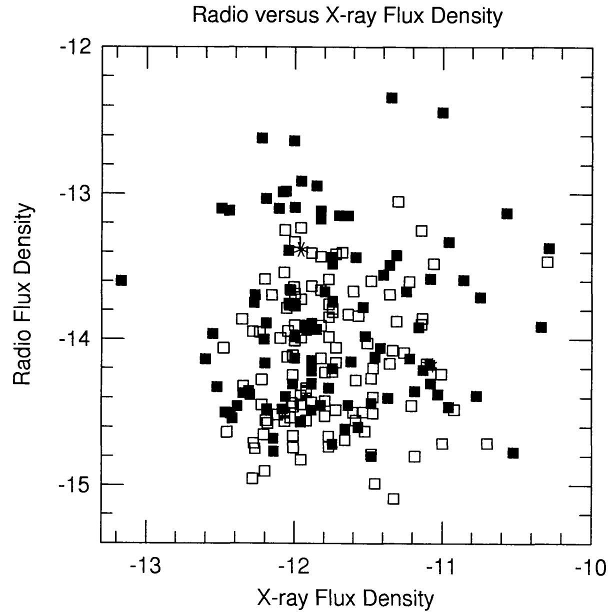

Fig. 6. Frequency-integrated radio flux densities $S_{\rm rad}$ (11 cm, 2.8 cm) $[{\rm erg\,cm^{-2}\,s^{-1}}]$ versus soft X-ray flux densities $S_{\rm X}$ (0.1–2.4 keV) $[{\rm erg\,cm^{-2}\,s^{-1}}]$. The total number of sources is 211. 98 sources shown as filled squares have a flat spectrum (α (11 cm/6 cm) > -0.5) and 112 sources shown as open squares have steep spectra (α (11 cm/6 cm) < -0.5). The flat spectrum source EF B1745+6228 (see Sect. 6.1) with extreme redshift is marked by a star

6.2. *Spectral dependence*

We have further selected the radio sources with more extreme spectral properties and show in Fig. 8 flat spectrum sources with spectral indices larger than $\alpha = -0.3$ in relation to their X-ray emission. A similar plot is shown in Fig. 9 for sources with spectra steeper than $\alpha = -0.7$ and in Fig. 10 for sources with a curved spectrum in the sense of a steep spectrum at low and a flat spectrum at high frequencies, i.e. objects with steep spectrum lobes and a flat compact core.

Two groups of flat spectrum sources can easily be distinguished in Fig. 8: 14 sources have a high radio flux and low X-ray emission and the rest of sources indicates a correlation between radio and X-ray flux density. We will comment on these sources in the following section. The steep spectrum sources have neither very weak X-ray sources among them nor very strong radio sources. The group of sources with curved spectra is, with a few exceptions, similar to the group of steep spectrum sources. The distribution of ratios $\log(S_{\rm x}/S_{\rm rad})$ for the selected steep and flat spectrum sources (Fig. 11) shows minor differences with the exception that sources with the smallest ratios are flat spectrum sources.

6.3. *The flat spectrum sources*

With four exceptions the first group of 14 flat spectrum sources with log $S_{\rm x}/S_{\rm rad}$ below 1.6 are identified as QSOs. One of the other sources is the planetary nebula EF B1758+6638 or NGC 6543, which is the only planetary nebula among the optically identified sources (marked in Fig. 8). Since just about 1/3 of our sources have been optically identified we can not rule out a few more of these probably highly obscured galactic sources in our sample, but they do not seem statistically significant. Two of the sources EF B0502+0455 and EF B1600+2654 are to our knowledge unidentified so far. One source is the well studied BL Lac Mrk 501 (EF B1652+3950). The ten remaining sources (EF B0035+4120, EF B0123+2543, EF B0300+4704, EF B0336-0155, EF B0954+2529, EF B1532+0141, EF B1547+5047, EF B1606+1036, EF

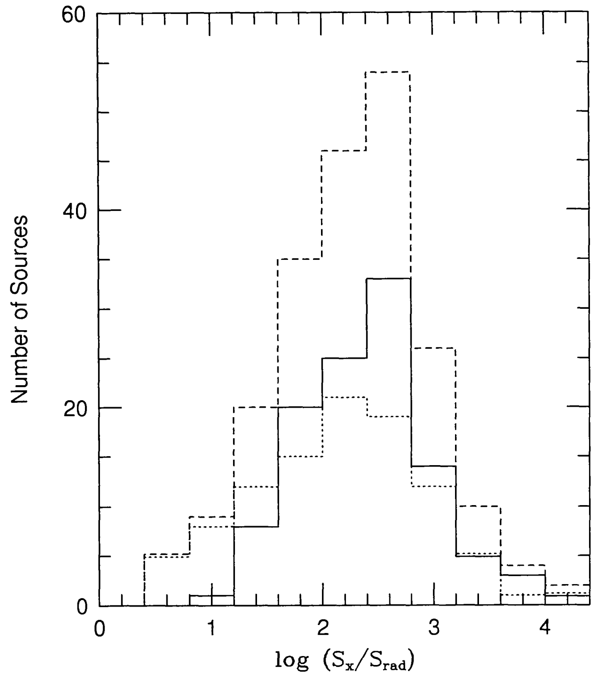

Fig. 7. Logarithm of the ratio of the soft X-ray flux densities $S_{\rm x}$ (0.1–2.4 keV) and the frequency-integrated radio flux densities $S_{\rm rad}$ (11 cm, 2.8 cm). The distribution for all 211 sources is shown by long dashes, while 99 flat spectrum sources (α (11 cm/6 cm) > -0.5) are shown by short dashes and 112 steep spectrum sources (α (11 cm/6 cm) < -0.5) by a full line

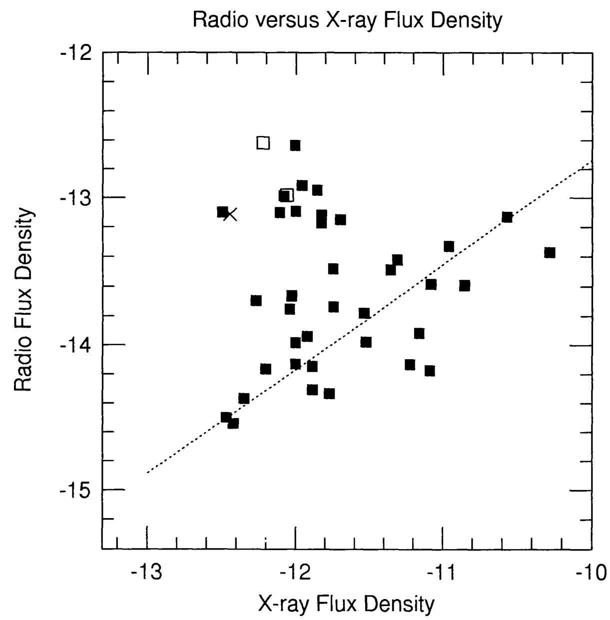

Fig. 8. Frequency-integrated radio flux densities $S_{\rm rad}$ (11 cm, 2.8 cm) versus soft X-ray flux densities $S_{\rm x}$ (0.1–2.4 keV) for flat spectrum sources (α (11 cm/6 cm), α (6 cm/2.8 cm) > -0.3). The total number of sources is 40. The source identified with a planetary nebula is showed by a cross and the two EGRET detected sources are shown by an open square. The dotted line is the result of a regression analysis for the group of sources with $\log (S_{\rm x}/S_{\rm rad}) > 1.6$ (see Sect. 6.3)

B1611+3420 and EF B1842+6806) are all optically identified as QSOs (see Table 2).

We have less information about the individual objects of the second larger group of 26 flat spectrum sources where just 8 sources are optically identified (two galaxies, one BL Lac and 5 QSOs). For these sources a correlation between the integrated radio and X-ray flux densities exists. We have performed a regression analysis following the methods discussed by Isobe et al. (1990) and find a linear dependence of $\log S_{\rm rad} = A + B \log S_{\rm x}$ with $A = -5.578 \pm 0.899$ and $B = 0.716 \pm 0.076$. A and B are the mean of an ordinary least-squares regression with either $S_{\rm x}$ or $S_{\rm rad}$ as the independent variable. The correlation coefficent is 0.72 and the significance of the correlation is better than 99.9% based on Student's t-test. The fit is included in Fig. 8.

In a study of the X-ray to radio core emission in radio quasars using EINSTEIN and VLA data Kembhavi et al. (1986) and Kembhavi (1993) found that the X-ray and radio luminosity for flat spectrum sources is roughly proportional, which might not be inconsistent with the result we obtained for flux densities of the second group. However, there is no indication in their data on the existence of two groups of flat spectrum sources. Although this difference might be smeared out in a luminosity versus luminosity plot, real differences of the physical conditions within these two groups of flat spectrum sources seem to exist. For the second group, the radio–X-ray correlation

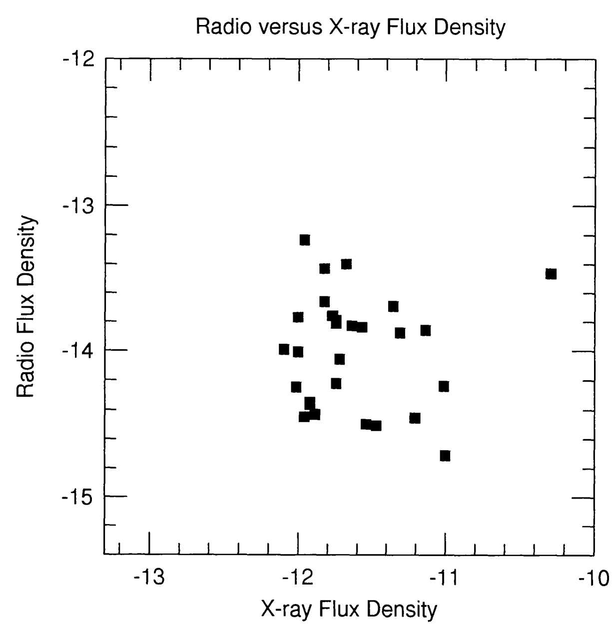

Fig. 9. Frequency-integrated radio flux densities $S_{\rm rad}$ (11 cm, 2.8 cm) versus soft X-ray flux densities $S_{\rm x}$ (0.1–2.4 keV) for steep spectrum sources (α (11 cm/6 cm), α (6 cm/2.8 cm) $<$ -0.7). The total number of sources is 28

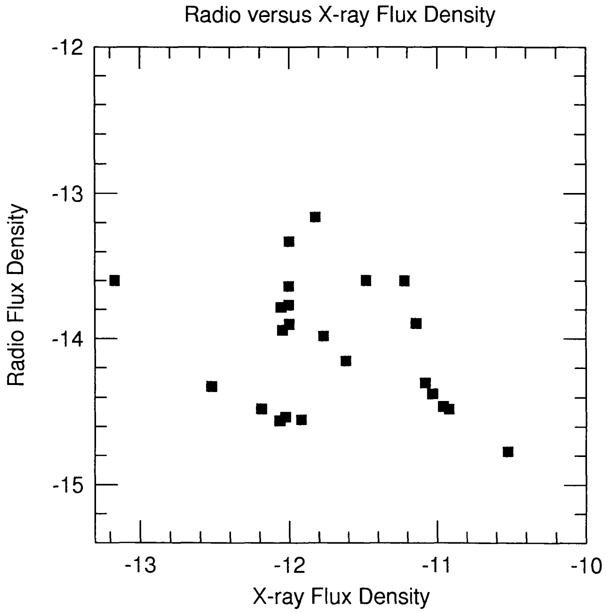

Fig. 10. Frequency-integrated radio flux densities $S_{\rm rad}$ (11 cm, 2.8 cm) versus soft X-ray flux densities $S_{\rm X}$ (0.1–2.4 keV) for sources having curved spectra (α (21 cm/11 cm) < -0.6 and α (6 cm/2.8 cm) > -0.4). The total number of sources is 23

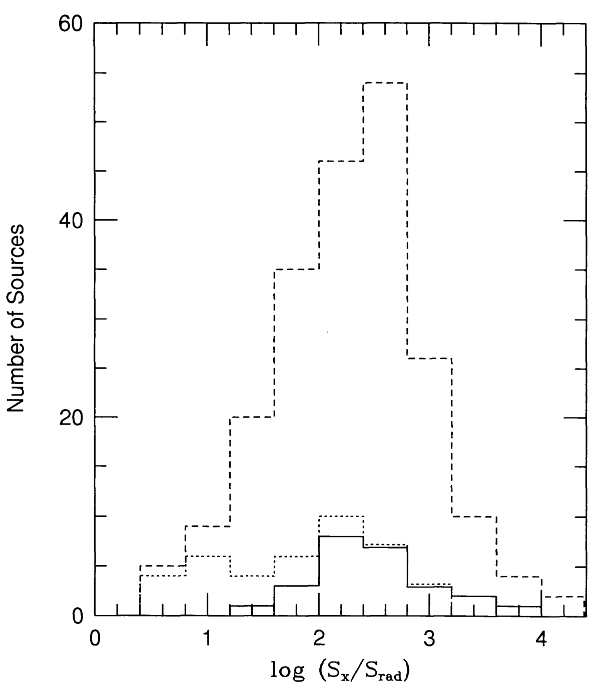

Fig. 11. Logarithm of the ratio of the soft X-ray flux density $S_{\rm X}$ (0.1–2.4 keV) and the frequency-integrated radio flux density $S_{\rm rad}$ (11 cm, 2.8 cm). The distribution for all 211 sources is shown by long dashes. These for the 40 flat spectrum sources (α (11 cm/6 cm), α (6 cm/2.8 cm) > -0.3) by short dashes and for the 28 steep spectrum sources (α (11 cm/6 cm) ,α (6 cm/2.8 cm) < -0.7) by a full line

can be understood by recalling that flat spectra are a sign of a dominating active core and that the radio emission from these sources contains a directed jet component. Kembhavi (1993) presents a model where for flat spectrum radio quasars the proportionality of luminosities is explained by a dominating relativistically beamed X-ray and radio component.

The situation seems different for the first group i.e., sources with a low $S_{\rm X}/S_{\rm rad}$ ratio, where the radio emission is enhanced by a factor up to 10 or even more when compared with the other flat spectrum sources at similar X-ray flux densities. It is of interest to note that the only two sources in our sample, which have been detected so far by EGRET on board of CGRO in the GeV range, EF B1606+1036 and EF B1611+3420 (Thompson et al. 1994; Hartmann et al. 1994) belong to this group of flat spectrum sources. The γ-ray emission of AGN is highly variable and believed to be beamed, otherwise extreme luminosities would be implied. Reich et al. (1993) have shown that γ-ray flares for the majority of sources are followed by a subsequent radio flare. This connection and the fact that many of the presently known γ-ray AGN are superluminal sources indicates a radio jet very close to the line of sight which dominates the radio emission of these sources.

7. Conclusion

We have studied an X-ray selected radio sample of 234 sources by multifrequency radio observations between 21 cm and 2.8 cm wavelength with the Effelsberg 100-m telescope complemented by a few published flux densities. In Table 2 and Table 3 we list the results of the radio observations and the derived parameters for the sources and have included optical identifications for about 1/3 of them. The X-ray flux densities are based on the ROSAT SASS processing assuming an energy spectral index of $\alpha = -1.3$ and galactic absorption.

The radio properties of these sources have been compared with sources from unbiased samples. We find relatively small differences in general. There is a marginal excess of flat spectrum sources and the sources are slightly more compact than those from purely radio selected samples. Cumulative counts show that the sample becomes incomplete at a quite high flux density level due to the realtively short exposure time of the ROSAT all-sky survey. For about 30% of our sources stronger than 200 mJy we find a degree of linear polarization of 3% or larger. It is not evident from the present study what makes the difference between those radio loud AGN which are strong enough to be seen in the ROSAT all-sky survey and the others which are weaker X-ray sources.

The comparison of radio and X-ray flux densities for the entire sample and also for steep spectrum or curved spectrum sources reveals no apparent correlation. A small group of flat spectrum radio sources, about 6% of the entire sample, is outstanding by its unusual small ratio of log S_x/S_{rad}. With a few exceptions these are quasars. Among them are two QSOs, which have been detected by EGRET in the GeV range. Dominating relativistically beamed radio emission seems to be typical for this group. There is a second larger group of flat spectrum sources with correlated X-ray and radio flux densities.

We continue our multifrequency observations of X-ray selected radio sources with the Effelsberg 100-m telescope on the basis of the nearly complete ROSAT all-sky source list by concentrating on sources at the 100 mJy level or stronger. For this sample, which is about twice as large as that presented here, the fraction of optically identified sources is larger. The combined data will give a better insight into the characteristics of the sample of ROSAT selected radio sources and meaningful correlations of luminosities for different groups of sources will become possible.

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Table 2. Data for ROSAT selected radio sources with a position difference of $\leq$ 2'

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
00 05 54.0	16 09 38	-2	0	0.260	827	495	341	248	-0.85	0.2	0.600E-11
00 03 19.9	15 52 56			0.037	1	1	1	1	-0.66	0.2	1990.60
EF B0003+1552 PKS0003+157 4C15.01 HB2					PL	PL	PL	PL	-0.40	0.1	0.249E-13
PHL568 OB+106, QSO mvis=15.95 z=0.450					-	< 3	< 4	< 3			1990.79
00 08 00.6	47 12 09	7	0	0.049	299	102	95	60	-1.79	0.4	0.180E-11
00 05 24.8	46 55 27			0.010	3	2	3	3	-0.13	0.4	1990.65
EF B0005+4655					477*414	150*PL	121*94	PL	-0.58	0.3	0.630E-14
					-	< 5	-	< 5			1991.42
00 08 49.2	45 53 18	54	-104	0.091	83	49	33	< 6	-0.88	0.6	0.330E-11
00 06 13.3	45 36 36			0.014	3	4	3	-	-0.70	0.6	1990.60
EF B0006+4535					PL	PL	63*PL	-	<-2.14	-	<0.164E-14
					-	< 6	<14	-			1991.42
00 10 32.0	10 58 40	-2	0	0.470	217	216	254	456	-0.01	0.2	0.140E-10
00 07 57.8	10 41 58			0.033	2	1	1	1	0.29	0.2	1990.60
EF B0007+1041 PKS0007+10 3ZW2 HB1					PL	PL	PL	PL	0.73	0.1	0.256E-13
QSO mvis=15.4 z=0.089					-	< 9	<10	< 3			1990.79
00 15 43.6	49 07 23	-14	11	0.022	449	263	154	76	-0.89	0.2	0.800E-12
00 13 05.1	48 50 42			0.006	1	2	3	3	-0.94	0.4	1990.66
EF B0013+4850					PL	PL	PL	PL*60	-0.89	0.3	0.102E-13
					-	< 2	< 6	12			91.37+93.11
00 17 35.4	72 12 22	·41	-25	0.032	408	235	131	65	-0.92	0.2	0.190E-11
00 14 47.1	71 55 42			0.008	1	1	1	2	-1.03	0.2	1990.73
EF B0014+7155 4C71.01					PL	PL	PL	PL	-0.88	0.2	0.877E-14
					-	< 5	< 5	5			1991.07
00 23 11.6	44 46 53	-31	92	0.038	236	146	84	44	-0.80	0.4	0.970E-12
00 20 31.6	44 30 15			0.012	3	2	3	3	-0.98	0.4	1990.66
EF B0020+4431					PL*350	PL	32*PL	PL	-0.81	0.3	0.568E-14
					-	< 4	< 8	< 5			1991.42
00 27 42.3	45 14 52	6	11	0.041	78	82	96	88	0.08	0.4	0.130E-11
00 25 00.9	44 58 16			0.009	3	3	2	3	0.28	0.4	1990.66
EF B0025+4458					PL	197*PL	65*86	PL	-0.11	0.3	0.714E-14
					-	<11	<11	< 2			1991.42
00 36 51.9	37 43 31	46	35	0.076	266	107	27	29	-1.51	0.4	0.860E-12
00 34 10.3	37 27 00			0.012	2	3	4	4	-2.43	0.6	1990.65
EF B0034+3727 B3 0034+374					PL*509	PL	PL	PL	0.09	0.5	0.275E-14
					-	-	<16	< 4			1991.42
00 38 24.8	41 37 12	-2	0	0.028	796	1008	1069	948	0.39	0.2	0.320E-12
00 35 41.6	41 20 43			0.007	1	1	1	1	0.10	0.2	1990.66
EF B0035+4120 5C3.50 B3 0035+413 DON					PL	PL	PL	PL	-0.15	0.1	0.794E-13
STK QSO mvis=19.5, z=1.353					-	3	5	3			1991.42
00 43 43.3	37 25 34	23	90	0.120	262^C	113	51	15	-1.28	-	0.340E-11
00 41 00.3	37 09 09			0.015	-	1	1	3	-1.40	0.2	1990.65
EF B0041+3710					-	PL	PL	PL	-1.53	0.3	0.312E-14
					-	<10	<10	<15			1991.77
00 44 00.4	73 43 43	-3	2	0.030	708	418	261	138	-0.88	0.2	0.170E-11
00 40 45.0	73 27 18			0.008	1	1	1	2	-0.83	0.2	1990.74
EF B0040+7327 4C73.01 STI					PL	PL	PL*57	PL*50	-0.80	0.2	0.174E-13
QSO mvis=19.5					-	< 1	< 1	< 2			1991.07
01 09 27.7	31 49 57	-2	7	0.051	419	308	270	258	-0.51	0.3	0.160E-11
01 06 41.9	31 33 58			0.010	2	2	1	1	-0.23	0.3	1990.66
EF B0106+3134 NRAO058					PL	PL	PL	PL	-0.06	0.1	0.212E-13
					-	< 3	6	3			1991.42
01 10 11.9	68 05 38	11	-4	0.015	1758	1197	940	720	-0.64	0.2	0.150E-11
01 06 49.6	67 49 40			0.005	1	1	1	1	-0.43	0.2	1990.73
EF B0106+6749 4C67.04					PL	PL	PL	PL	-0.33	0.1	0.686E-13
					-	3	< 2	< 1			1990.90
01 12 05.5	22 44 31	7	23	0.190	300	398	462	528	0.47	0.2	0.490E-11
01 09 23.4	22 28 36			0.020	2	1	1	1	0.26	0.2	1990.65
EF B0109+2228 ASI0109+22 HB2					PL	PL	PL	PL	0.17	0.1	0.378E-13
QSO BLL mvis=16.41 var.					-	7	< 5	5			1991.42
01 13 20.7	25 18 54	20	-9	0.020	62	52	77	110	-0.29	0.4	0.630E-12
01 10 37.3	25 03 01			0.007	3	2	1	1	0.69	0.3	1990.66
EF B0110+2502					PL	PL	PL	PL	0.45	0.1	0.683E-14
					-	<10	< 5	< 2			1991.77
01 13 24.3	29 58 13	4	26	0.058	786	556	395	211	-0.58	0.2	0.170E-11
01 10 38.8	29 42 20			0.011	2	1	1	2	-0.60	0.2	1990.66
EF B0110+2942 4C29.2 B2.1 0110+29 OC+218					PL	PL	PL	43*45	-0.79	0.2	0.259E-13
HB2 SHB022 QSO mvis=17.0 z=0.363					-	< 2	< 3	< 3			1991.42
01 15 59.1	26 27 22	38	-18	0.096	57	70	20^C	-	0.34	0.4	0.300E-11
01 13 14.8	26 11 32			0.014	3	3	-	-	-	-	1990.66
EF B0113+2611					PL	111*310	PL	-	-	-	-
					-	<20	-	-			1991.77

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	ν = 1.476	ν = 2.695	ν = 4.750	ν = 10.55	α	Δα	Flux/Epoch
01 20 01.7	26 43 19	51	-25	0.023	38	26	23	-	-0.63	0.5	0.720E-12
01 17 16.8	26 27 35			0.007	4	2	3	-	-0.22	0.4	1990.66
EF B0117+2627					PL	PL	PL	-	-	-	0.171E-14
					-	-	-	-			1991.77
01 21 39.9	25 17 47	81	14	0.034	196	104	52	26	-1.05	0.2	0.110E-11
01 18 55.4	25 02 05			0.009	2	1	1	3	-1.22	0.2	1990.66
EF B0119+2502 B2.2 0119+25					PL	PL	PL	PL	-0.87	0.3	0.357E-14
					-	<10	<10	<10			1991.77
01 23 42.4	26 15 15	9	12	0.029	> 198	220	215	240	< 0.17	-	0.910E-12
01 20 57.2	25 59 36			0.008	2	1	1	1	-0.04	0.2	1990.66
EF B0120+2559					-	PL	PL	PL	0.14	0.1	0.177E-13
					-	<10	<10	<10			1991.77
01 26 42.0	25 59 28	10	-31	0.047	774	1137	1055	843	0.64	0.2	0.150E-11
01 23 56.5	25 43 54			0.010	2	1	1	1	-0.13	0.2	1990.66
EF B0123+2543 4C25.05 PKS 0123+257 SHB029					PL	PL	PL	PL	-0.28	0.1	0.764E-13
B2.2 0123+25 SHB029 HB2 QSO mvis=17.5 z=2.358					-	12	2	3			1991.77
01 39 42.4	17 53 10	6	-24	0.035	467	373	305	226	-0.37	0.2	0.930E-12
01 36 59.8	17 37 58			0.009	2	1	1	1	-0.36	0.2	1990.66
EF B0137+1737 MG0139+1752 SBW HB2					PL	PL	PL	PL	-0.38	0.1	0.219E-13
QSO mvis=18.5 z=2.73					-	<13	9	6			1991.77
01 56 22.3	05 37 43	-46	13	0.047	900	508	279	98	-0.95	0.2	0.100E-11
01 53 45.5	05 23 04			0.010	2	1	1	1	-1.06	0.2	1990.66
EF B0153+0523 4C05.10 PKS0153+053 NGC741					PL	PL	96*PL	67*PL	-1.31	0.1	0.170E-13
3ZW038 E0-GAL mvis=13.2 z=0.0185					-	< 5	3	6			1991.77
01 59 23.0	58 31 24	-91	-29	0.620	41	< 20	38^C	-	<-1.19	-	0.510E-10
01 55 56.0	58 16 51			0.033	3	-	-	-	-	-	1990.72
EF B0155+5816					PL	-	537*PL	-	-	-	-
					-	< 7	-	-			1991.42
02 14 18.2	51 44 54	-12	-3	0.383	450	344	273	196	-0.45	0.2	0.180E-10
02 10 58.4	51 30 55			0.026	2	1	1	1	-0.41	0.2	1990.72
EF B0210+5130					PL	PL	PL*60	PL	-0.42	0.1	0.194E-13
					-	5	4	3			1991.07
02 46 00.9	53 11 08	11	7	0.022	351	180	86^C	-	-1.11	0.4	0.140E-11
02 42 28.8	52 58 32			0.006	2	3	-	-	-	-	1990.75
EF B0242+5258 4C52.06					390*288	303*PL	360*216	-	-	-	-
					-	< 4	-	-			1991.07
02 48 58.7	44 40 07	-95	-73	0.081	29	28	39	-	-0.06	0.4	0.330E-11
02 45 41.1	44 27 40			0.013	2	3	3	-	0.58	0.5	1990.74
EF B0245+4426					323*PL	PL	PL	-	-	-	0.366E-14
					-	<20	17	-			1990.79
02 50 21.0	39 34 56	-69	-19	0.026	2290	1349	847	-	-0.88	0.2	0.860E-12
02 47 10.4	39 22 33			0.007	1	1	2	-	-0.82	0.3	1990.74
EF B0247+3922 3C73 4C39.10 B2.3 0247+39					225*171	154*PL	183*PL	-	-	-	0.562E-13
HB1 GAL mvis=18.0 z=0.204					-	5	5	-			1990.90
02 51 34.5	43 14 37	6	39	0.016	1614	1228	1275	1066	-0.45	0.2	0.640E-12
02 48 18.5	43 02 18			0.006	1	1	1	1	0.07	0.2	1990.74
EF B0248+4302 ASI0284+43 HB2					PL	PL	PL	PL	-0.22	0.1	0.927E-13
QSO mvis=17.65 z=1.316					-	10	< 2	< 1			1990.90
02 53 59.5	36 25 55	15	6	0.036	98	77	66	57	-0.40	0.4	0.130E-11
02 50 52.2	36 13 43			0.009	3	3	2	2	-0.27	0.4	1990.72
EF B0250+3613 ZWG524.032 MCG+06-07-018					PL	PL	PL	PL	-0.18	0.2	0.498E-14
S0-GAL mvis=15.7					-	<12	<12	< 6			1991.07
02 54 41.8	39 31 42	15	-3	0.121	363	269	326	411	-0.50	0.2	0.400E-11
02 51 30.5	39 19 32			0.015	1	1	1	1	0.34	0.2	1990.73
EF B0251+3919 B3 0251+393					250*178	PL	PL	PL	0.29	0.1	0.278E-13
					-	< 3	< 3	2			1990.90
02 57 07.8	33 57 19	4	17	0.036	80	46	28	42	-0.92	0.6	0.120E-11
02 54 03.0	33 45 16			0.009	4	3	3	3	-0.88	0.5	1990.72
EF B0254+3345					PL	PL*298	PL	27*33	0.51	0.3	0.278E-14
					-	<17	<14	< 7			1991.07
03 01 50.2	35 49 09	28	77	0.070	677	377	225	102	-0.97	0.2	0.270E-11
02 58 42.5	35 37 21			0.012	2	1	1	2	-0.91	0.2	1990.73
EF B0258+3538 4C35.06 ABCG407 UGC2489					PL	PL	PL	PL	-0.99	0.2	0.145E-13
5ZW311 BLL mvis=17.21					-	< 2	< 4	< 2			1991.07
03 03 30.9	47 15 57	17	10	0.028	1391	1372	1445	1446	-0.02	0.2	0.140E-11
03 00 05.9	47 04 14			0.007	1	1	1	2	0.09	0.2	1990.74
EF B0300+4704 4C47.08 ASI0300+47 HB2					PL	PL	PL	27*PL	0.00	0.2	0.113E-12
QSO mvis=17.21					-	< 2	1	2			1991.42
03 07 46.8	37 05 05	46	20	0.020	88	83	38	29	-0.10	0.4	0.770E-12
03 04 36.6	36 53 35			0.006	3	3	3	3	-1.38	0.5	1990.74
EF B0304+3653					PL	165*PL	PL	PL	-0.34	0.3	0.304E-14
					-	<12	<11	12			1991.07

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
03 08 05.3	30 49 45	88	-49	0.030	-	47	32^C	-	-	-	0.110E-11
03 05 02.7	30 38 17			0.008	-	3	-	-	-	-	1990.73
EF B0305+3036					-	122*233	364*PL	-	-	-	-
					-	<13	<13	-			1991.07
03 08 56.0	26 45 44	26	-15	0.081	-	28	34	< 8	-	-	0.330E-11
03 05 57.8	26 34 18			0.014	-	3	-	-	0.34	0.5	1990.73
EF B0305+2634					-	PL	PL*51	27*35	<-1.81	-	<0.159E-14
					-	<18	<20	<18			1991.07
03 09 09.3	41 52 40	0	59	0.207	98	64	69	57	-0.71	0.4	0.830E-11
03 05 52.0	41 41 15			0.020	3	2	2	2	0.13	0.3	1990.74
EF B0305+4142					PL	PL	PL*51	27*35	-0.24	0.2	0.497E-14
					-	<14	< 7	9			1991.07
03 10 25.0	39 11 05	10	-11	0.086	36	76	135	68	1.24	0.4	0.350E-11
03 07 11.5	38 59 44			0.019	3	3	3	2	1.01	0.5	1990.74
EF B0307+3859					PL	PL	186*PL	PL*30	-0.86	0.3	0.758E-14
					-	< 8	< 5	< 6			1991.07
03 12 27.9	39 16 13	-12	27	0.179	1825	1237	796	503	-0.65	0.2	0.720E-11
03 09 13.9	39 04 58			0.019	1	1	1	1	-0.78	0.2	1990.74
EF B0309+3905 ZWG524.065 NGC1233 4C39.11					PL	PL	PL	PL*43	-0.58	0.1	0.561E-13
B3 0309+390B HB1 GAL mvis=18.2 z=0.161					-	3	4	4			1991.07
03 12 36.0	24 23 08	1	24	0.018	874	396	182	194	-1.31	0.3	0.880E-12
03 09 40.0	24 11 54			0.006	2	2	1	4	-1.37	0.3	1990.73
EF B0309+2412 4C24.05 PKS0309+242					PL	PL	PL	43*176	0.08	0.4	0.164E-13
NRAO127					-	9	7	15			1991.77
03 12 51.1	36 15 26	-15	-1	0.106	145	109	82	87	-0.47	0.3	0.440E-11
03 09 41.2	36 04 13			0.015	2	2	3	3	-0.50	0.4	1990.74
EF B0309+3604 5ZW326					PL	PL	68*PL	55*PL	0.07	0.3	0.684E-14
GAL mvis=17.6					-	< 6	< 4	< 2			1991.07
03 13 23.1	26 25 36	8	-18	0.097	677	223	158	62	-1.84	0.2	0.310E-11
03 10 24.9	26 14 25			0.015	2	1	2	1	-0.61	0.3	1990.73
EF B0310+2614 4C26.11 PKS0310+262					PL	PL	PL	PL	-1.17	0.2	0.941E-14
B2.2 0310+26 NRAO129					-	< 8	< 6	6			1991.77
03 16 10.7	09 04 42	36	1	0.140	284	66	58	45	-2.42	0.2	0.930E-11
03 13 29.1	08 53 40			0.030	2	1	2	2	-0.23	0.3	1990.72
EF B0313+0853					PL	PL	PL	PL	-0.32	0.2	0.419E-14
					-	<20	<20	< 5			1991.77
03 16 19.1	44 48 49	5	-14	0.105	501	320	195	109	-0.74	0.2	0.490E-11
03 12 55.7	44 37 47			0.014	1	1	1	3	-0.87	0.2	1990.75
EF B0312+4437 4C44.09 B3 0312+446					PL	PL	98*PL	88*37	-0.73	0.3	0.133E-13
					-	< 2	< 6	9			1990.90
03 17 29.8	48 51 14	79	77	0.031	37	27	28	36	-0.52	0.4	0.220E-11
03 13 58.7	48 40 15			0.008	2	3	3	3	0.06	0.5	1990.75
EF B0314+4841					PL	114*PL	152*63	91*108	0.31	0.3	0.244E-14
					-	<16	<15	-			1990.90
03 17 38.4	20 42 12	-6	-31	0.049	295	43	30	-	-3.20	0.3	0.220E-11
03 14 45.7	20 31 15			0.010	3	1	3	-	-0.64	0.4	1990.73
EF B0314+2030					PL	PL	PL	-	-	-	0.205E-14
					-	-	<10	-			91.77+93.11
03 20 39.3	43 05 29	-14	-40	0.052	1255^C	716	738	196	-0.86	-	0.260E-11
03 17 18.1	42 54 41			0.010	-	1	3	4	0.05	0.4	1990.75
EF B0317+4254 4C42.09 PUB					-	PL	75*201	PL*123	-1.66	0.4	0.367E-13
					-	1	4	14			1991.07
03 24 35.7	35 04 21	-22	-113	0.026	96	58	24	< 7	-0.84	0.4	0.110E-11
03 21 25.8	34 53 47			0.007	3	3	3	-	-1.56	0.5	1990.74
EF B0321+3451					PL	290*PL	152*PL	-	<-1.54	-	<0.150E-14
					-	<11	<15	-			1991.07
03 24 42.2	34 10 52	-5	-5	0.256	527	560	581	625	0.10	0.2	0.110E-10
03 21 33.5	34 00 18			0.023	2	1	1	1	0.06	0.2	1990.74
EF B0321+3400					PL	PL	PL	PL	0.09	0.1	0.469E-13
					-	3	5	4			1991.07
03 26 22.1	49 24 57	-79	-79	0.035	52	43	48	> 16	-0.32	0.4	0.270E-11
03 22 47.9	49 14 28			0.009	3	3	3	-	0.19	0.5	1990.76
EF B0322+4913					PL	117*PL	90*111	-	>-1.38	-	>0.251E-14
					-	<10	<19	-			1991.07
03 30 30.2	41 02 07	-34	-16	0.033	1644	963	577	261	-0.89	0.2	0.150E-11
03 27 10.7	40 51 53			0.008	1	1	1	1	-0.90	0.2	1990.75
EF B0327+4051 MW0327+40 4C40.11 STK					PL	PL	PL	PL	-0.99	0.1	0.370E-13
GAL mvis=18.5, z=0.201					-	5	5	9			1990.90
03 34 17.2	39 21 25	15	4	0.029	1044	757	559	371	-0.53	0.2	0.130E-11
03 30 59.8	39 11 24			0.008	1	1	1	1	-0.54	0.2	1990.75
EF B0331+3911 B2.3 0331+39 B3 0331+391					PL	PL	PL	PL	-0.51	0.1	0.391E-13
4C39.12 ZWG525.041 QSO mvis=17.5 z=0.852					-	< 3	< 2	2			1990.90

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
03 36 04.5	22 35 25	-7	38	0.028	-	100	87	61	-	-	0.130E-11
03 33 08.5	22 25 31			0.009	-	1	1	1	-0.25	0.2	1990.74
EF B0333+2226					-	PL	PL	PL	-0.44	0.1	0.605E-14
					-	<10	< 5	< 2			1991.77
03 39 32.4	-1 45 36	9	-3	0.029	2246	2348	2866	3193	0.07	0.2	0.990E-12
03 37 59.0	-1 55 17			0.009	1	1	1	1	0.35	0.2	1990.72
EF B0336-0155 CTA26 SHB073					PL	PL	PL	PL	0.14	0.1	0.231E-12
QSO mvis=17.5 z=0.852					-	4	2	2			1990.79
03 43 00.1	27 49 00	-27	-5	0.042	-	47	65	65	-	-	0.130E-11
03 39 57.5	27 39 30			0.010	-	2	2	1	0.57	0.3	1990.75
EF B0339+2739					-	PL	PL	PL	-	0.2	0.493E-14
					-	<20	<10	< 3			1991.77
03 43 10.5	38 54 42	-25	77	0.043	-	83	46	25	-	-	0.290E-11
03 39 52.6	38 45 12			0.011	-	2	1	2	-1.04	0.3	1990.76
EF B0339+3843 B2.3 0339+38B					-	PL	PL	PL	-0.76	0.2	0.317E-14
					-	<10	<13	<20			1991.77
03 50 00.0	06 41 01	75	43	0.074	192	93	60	-	-1.20	0.4	0.340E-11
03 47 19.8	06 31 57			0.014	3	2	2	-	-0.77	0.3	1990.74
EF B0347+0632					PL	PL	115*68	-	-	-	0.401E-14
					-	-	<10	-			1991.77
03 51 16.4	17 42 57	-27	12	0.065	457^C	215	101	27	-1.15	-	0.180E-11
03 48 24.8	17 33 58			0.014	-	1	1	2	-1.33	0.2	1990.75
EF B0348+1734 4C17.09 PKS0348+176 BOZ					-	PL	PL	PL	-1.65	0.2	0.598E-14
GAL mvis=17.0					-	<15	< 8	< 5			1991.79
03 52 41.7	21 26 40	-13	-36	0.057	630^C	394	225	121	-0.72	-	0.180E-11
03 49 45.9	21 17 46			0.013	-	1	1	2	-0.99	0.2	1990.75
EF B0349+2117 PKS0349+212 ZWG0349.8+2117					-	PL	PL	PL	-0.78	0.2	0.154E-13
GAL mvis=16.4 z=0.1325					-	< 5	8	8			1991.77
03 58 19.2	25 34 54	41	22	0.150	-	31	13	-	-	-	0.470E-11
03 55 18.1	25 26 20			0.023	-	4	4	-	-1.53	0.7	1990.76
EF B0355+2526					-	PL	PL	-	-	-	0.810E-15
					-	-	-	-			1991.77
04 00 50.2	19 40 10	-14	15	0.037	-	63	26	21	-	-	0.170E-11
03 57 55.9	19 31 46			0.011	-	2	1	3	-1.56	0.3	1990.76
EF B0357+1932					-	174*PL	PL	PL	-0.27	0.3	0.216E-14
					-	-	<15	-			1991.79
04 13 23.5	23 43 31	-10	12	0.038	-	68	62	53	-	-	0.170E-11
04 10 23.7	23 35 55			0.010	-	1	1	1	-0.16	0.2	1990.76
EF B0410+2336 MG0413+2649					-	PL	PL	PL	-0.20	0.1	0.462E-14
					-	-	<10	-			1991.79
04 13 40.3	11 12 17	16	-13	0.140	3931^C	2256	1245	749	-0.85	-	0.500E-11
04 10 54.9	11 04 43			0.022	-	1	1	1	-1.05	0.2	1990.76
EF B0410+1104 3C109 4C11.18 PKS0410+110					-	PL	PL	34*62	-0.64	0.1	0.887E-13
BUR WYN NRAO169 N-GAL mvis=17.88 z=0.3056					-	15	5	5			1991.77
04 18 21.8	38 01 38	-2	4	0.200	13532^C	8240	6230	2316	-0.76	-	0.100E-10
04 15 01.2	37 54 21			0.020	-	1	1	1	-0.49	0.2	1990.77
EF B0415+3754 3C111 4C37.12 B2.3 0415+37 LON					-	143*PL	176*68	41*27	-1.24	0.1	0.361E-12
NRAO171 SAR CTA30 Sy1-GAL mvis=18.0 z=0.0485					-	-	3	-			1991.77
04 25 29.1	17 55 08	-61	14	0.071	854^C	525	312	147	-0.74	-	0.440E-11
04 22 35.7	17 48 20			0.020	-	1	1	1	-0.92	0.2	1990.77
EF B0422+1748 4C17.25 PKS0422+178					-	PL	PL	PL	-0.94	0.1	0.203E-13
MG0425+1754					-	11	< 3	4			1991.77
04 32 07.4	31 30 26	-12	43	0.029	140^C	226	169	129	0.73	-	0.150E-11
04 28 55.9	31 24 04			0.008	-	1	1	1	-0.51	0.2	1990.78
EF B0428+3124 MG0432+3130					-	PL	PL	PL	-0.34	0.1	0.124E-13
					-	-	< 5	< 3			1991.79
04 33 38.8	29 06 13	-15	-18	0.066	389^C	435	428	390	0.17	-	0.440E-11
04 30 30.7	28 59 57			0.012	-	1	1	1	-0.03	0.2	1990.78
EF B0430+2859					-	PL	PL	PL	-0.12	0.1	0.324E-13
					-	-	3	3			1991.79
04 36 43.8	10 03 19	5	-16	0.140	272^C	99	49	28	-1.54	-	0.620E-11
04 33 59.1	09 57 17			0.019	-	1	1	1	-1.24	0.2	1990.77
EF B0434+0957					-	PL	PL	PL*45	-0.70	0.1	0.351E-14
					-	<20	-	<15			1991.77
04 39 01.8	05 20 51	12	-6	0.270	-	117	145	175	-	-	0.690E-11
04 36 22.3	05 14 58			0.027	-	1	1	1	0.38	0.2	1990.77
EF B0436+0514 MG0439+0521					-	PL	PL	PL	0.24	0.1	0.121E-13
					-	<10	< 6	3			1991.77
04 41 08.7	33 04 51	0	-88	0.023	-	36	27	17	-	-	0.170E-11
04 37 54.2	32 59 06			0.007	-	2	1	2	-0.51	0.3	1990.79
EF B0437+3257					-	PL	PL	PL	-0.58	0.2	0.185E-14
					-	-	<20	-			1991.79

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	ν = 1.476	ν = 2.695	ν = 4.750	ν = 10.55	α	Δα	Flux/Epoch
04 41 28.8	04 08 48	2	-8	0.033	322^C	224	166	134	-0.55	-	0.100E-11
04 38 50.6	04 03 05			0.009	-	1	1	1	-0.53	0.2	1990.78
EF B0438+0402					-	PL	PL	PL	-0.27	0.1	0.125E-13
					-	10	4	3			1991.77
04 47 59.5	10 37 02	5	-14	0.100	361^C	227	116	70	-0.71	-	0.460E-11
04 45 14.0	10 31 46			0.016	-	1	1	2	-1.18	0.2	1990.78
EF B0445+1031					-	PL	PL	47*PL	-0.63	0.2	0.840E-14
					-	< 5	< 7	< 6			1991.77
04 50 16.7	20 37 34	18	-54	0.090	-	88	98	91	-	-	0.600E-11
04 47 19.1	20 32 27			0.014	-	1	1	1	0.19	0.2	1990.79
EF B0447+2031					-	PL	PL	PL	-0.09	0.1	0.737E-14
					-	<10	<10	< 5			1991.77
05 03 06.7	06 08 18	-22	88	0.230	504^C	297	164	125	-0.81	-	0.720E-11
05 00 26.1	06 04 06			0.023	-	1	1	2	-1.05	0.2	1990.79
EF B0500+0605 MG0503+0609					-	PL	PL	33*75	-0.34	0.2	0.127E-13
					-	12	7	18			1991.77
05 05 23.1	04 59 30	-9	15	0.056	659^C	949	871	925	0.56	-	0.200E-11
05 02 43.8	04 55 27			0.012	-	1	1	1	-0.15	0.2	1990.79
EF B0502+0455					-	PL	PL	PL	0.08	0.1	0.709E-13
					-	5	5	4			1993.34
09 34 33.4	03 06 41	-38	-60	0.060	387^C	169	108	63	-1.27	-	0.150E-11
09 31 57.5	03 20 04			0.015	-	1	1	2	-0.79	0.2	1990.99
EF B0931+0319					-	PL	PL	PL	-0.68	0.2	0.741E-14
					-	<10	6	10			1991.77
09 54 07.3	21 22 53	0	-14	0.170	868^C	576	304	276	-0.63	-	0.330E-11
09 51 19.7	21 37 04			0.019	-	2	1	2	-1.13	0.3	1990.98
EF B0951+2136 4C21.26 PKS0951+216 MER					-	PL	PL	137*PL	-0.12	0.2	0.252E-13
QSO mvis=20.0					-	< 5	7	6			1991.77
09 54 56.4	09 30 17	9	-28	0.028	417^C	255	173	88	-0.75	-	0.580E-12
09 52 16.8	09 44 30			0.008	-	1	1	1	-0.68	0.2	1990.99
EF B0952+0944 4C09.35 MG0954+0930					-	PL	PL	PL	-0.85	0.1	0.112E-13
SHB145 HB2 QSO mvis=17.24 z=0.298					-	< 5	<10	4			1991.77
09 56 50.0	25 15 11	2	0	0.062	723^C	1449	1545	1604	1.06	-	0.110E-11
09 53 59.9	25 29 28			0.012	-	1	1	1	0.11	0.2	1990.98
EF B0954+2529 SHB146 HB2					-	PL	PL	PL	0.05	0.1	0.122E-12
QSO mvis=17.13 var. z=0.712					-	2	3	2			1991.77
09 57 59.5	19 16 28	10	-18	0.061	390^C	253	148	85	-0.66	-	0.110E-11
09 55 13.8	19 30 48			0.014	-	1	1	1	-0.95	0.2	1990.99
EF B0955+1930					-	PL	PL	42*43	-0.69	0.1	0.103E-13
					-	< 5	< 5	< 5			1991.77
10 15 07.8	31 27 56	-26	-94	0.081	202^C	124	63	32	-0.75	-	0.120E-11
10 12 15.7	31 42 52			0.014	-	1	1	1	-1.19	0.2	1990.99
EF B1012+3141 MG1015+3127					-	PL	PL	PL	-0.85	0.1	0.433E-14
					-	<10	<15	< 5			1991.79
10 20 14.2	23 41 03	-57	59	0.036	130^C	64	45	20	-1.08	-	0.640E-12
10 17 27.9	23 56 08			0.009	-	2	1	1	-0.62	0.3	1991.00
EF B1017+2357					-	PL	PL	PL	-1.02	0.1	0.278E-14
					-	-	<10	<15			1991.79
10 34 16.9	18 37 38	57	-3	0.055	-	91	60	> 20	-	-	0.980E-12
10 31 34.8	18 53 08			0.012	-	1	1	-	-0.73	0.2	1991.01
EF B1031+1853					-	PL	96*63	>47	>-1.38	-	>0.346E-14
					-	<10	<10	-			1991.79
11 03 13.2	30 14 51	2	-10	0.059	253^C	171	186	267	-0.60	-	0.990E-12
11 00 29.7	30 31 00			0.014	-	1	1	1	0.15	0.2	1991.01
EF B1100+3030 B2.1 1100+30B MG1103+3014					-	PL	PL	PL	0.45	0.1	0.170E-13
QSO mvis=17.0 z=0.39					-	<10	<10	< 3			1991.79
13 16 25.6	28 37 32	-89	-69	0.037	81	60	49	26	-0.50	0.4	0.370E-12
13 14 03.7	28 53 20			0.008	2	3	3	4	-0.36	0.5	1990.60
EF B1314+2853					PL	114*PL	146*73	102*PL	-0.79	0.4	0.312E-14
					-	<15	<13	-			1990.90
14 16 28.1	12 42 10	-2	-8	0.018	134	111	96	85	-0.31	0.4	0.250E-12
14 14 02.9	12 56 02			0.006	3	3	2	2	-0.26	0.4	1990.66
EF B1414+1255					PL	PL	PL	PL	-0.15	0.2	0.731E-14
					-	< 5	< 3	< 1			1991.42
14 23 31.1	14 12 56	-7	-6	0.041	47	33	24	19	-0.59	0.4	0.540E-12
14 21 07.3	14 26 30			0.009	3	3	4	3	-0.56	0.6	1990.66
EF B1421+1426					PL	PL	PL	PL	-0.29	0.4	0.179E-14
					-	<15	-	<12			1991.42
14 25 51.4	24 04 03	6	-3	0.107	1442	959	597	282	-0.68	0.2	0.190E-11
14 23 35.4	24 17 31			0.014	1	1	1	1	-0.84	0.2	1990.65
EF B1423+2417 4C24.31 PKS1423+24					PL	PL	PL	PL	-0.94	0.1	0.385E-13
SHB290 HB2 QSO mvis=17.2 z=0.649					-	3	3	3			1991.37

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
14 27 00.4	23 48 00	17	-12	0.470	465	397	356	290	-0.26	0.2	0.830E-11
14 24 44.3	24 01 25			0.029	1	2	1	1	-0.19	0.3	1990.65
EF B1424+2401 PKS1424+240 B2.4 1424+2401					PL	PL	PL	PL	-0.26	0.1	0.261E-13
CHJ QSO mvis=16.5					-	< 8	< 2	< 3			1991.37
14 37 49.1	24 39 12	10	-16	0.026	486	305	202	117	-0.77	0.2	0.440E-12
14 35 34.9	24 52 08			0.007	1	2	2	2	-0.73	0.3	1990.66
EF B1435+2451 4C24.32 B2.2 1435+24 HB2					PL	PL	PL	PL	-0.68	0.2	0.137E-13
ASI1435+24 QSO mvis=19.0 z=1.01					-	6	5	< 6			1991.37
14 41 32.6	22 16 33	10	-19	0.068	124	120	62	41	-0.05	0.4	0.120E-11
14 39 16.6	22 29 19			0.011	2	3	4	4	-1.17	0.6	1990.66
EF B1439+2229					PL	159*PL	94*PL	57*68	-0.52	0.5	0.462E-14
					-	< 9	<12	< 7			1991.37
14 42 08.2	28 13 03	-65	17	0.026	145	< 28	38^C	-	<-2.73	-	0.310E-12
14 39 57.8	28 25 47			0.007	2	-	-	-	-	-	1990.66
EF B1439+2826					PL	-	438*PL	-	-	-	-
					-	<10	-	-			1991.37
14 42 19.3	22 18 18	7	-15	0.360	52	53	55	-	0.03	0.6	0.650E-11
14 40 03.4	22 31 02			0.026	4	3	3	-	0.07	0.5	1990.66
EF B1440+2230					PL	PL	PL*210	-	-	-	0.440E-14
					-	<15	< 8	-			1991.42
14 44 28.7	31 13 03	-13	30	0.130	67	61	39	31	-0.16	0.4	0.160E-11
14 42 21.6	31 25 40			0.018	3	3	3	4	-0.79	0.5	1990.65
EF B1442+3126 ABCG1961					PL	PL	PL*86	PL	-0.29	0.4	0.298E-14
					-	<13	< 9	-			1991.37
14 49 32.0	27 46 32	-16	17	0.468	227	177	75	78	-0.41	0.4	0.780E-11
14 47 22.0	27 58 55			0.028	2	3	3	3	-1.52	0.5	1990.66
EF B1447+2759 B2.2 1447+27 PGC52928					PL	280*122	PL	136*PL	0.05	0.3	0.679E-14
GAL mvis=14.2					-	< 7	< 9	<19			1991.37
14 54 02.8	34 18 00	-21	28	0.044	83	49	24	< 20	-0.88	0.4	0.530E-12
14 52 00.5	34 30 09			0.010	3	3	3	-	-1.26	0.5	1990.66
EF B1451+3430					PL	PL	PL	PL	<-0.23	-	<0.195E-14
					-	< 3	-	-			1991.37
14 54 32.0	29 55 54	3	12	0.048	708	529	376	234	-0.48	0.2	0.630E-12
14 52 24.8	30 08 02			0.009	1	1	1	2	-0.60	0.2	1990.66
EF B1452+3008 B2.1 1452+30 BC OQ287 HB2					PL	PL	PL	PL	-0.59	0.2	0.259E-13
QSO mvis=18.5 z=0.58					-	< 3	< 2	< 4			1991.37
14 55 46.1	36 14 03	17	29	0.046	134	80	66	34	-0.86	0.4	0.500E-12
14 53 46.4	36 26 07			0.010	2	3	3	4	-0.34	0.5	1990.65
EF B1453+3626					PL	PL*103	86*125	42*66	-0.83	0.4	0.416E-14
					-	<20	< 9	<17			1991.37
14 59 58.4	33 37 03	26	-20	0.110	31	24	87	343	-0.43	0.7	0.130E-11
14 57 56.1	33 48 54			0.013	4	4	3	1	2.27	0.6	1990.66
EF B1457+3348					PL	PL	PL	PL	1.72	0.3	0.129E-13
					-	-	< 3	< 1			1991.42
15 09 49.9	55 56 13	-53	36	0.035	39	36	37	85	-0.13	0.4	0.450E-12
15 08 29.1	56 07 32			0.009	2	3	3	4	0.05	0.5	1990.66
EF B1508+5608					PL	PL	PL	41*95	1.04	0.4	0.428E-14
					-	-	<14	< 8			1990.90
15 10 18.0	42 21 50	21	6	0.023	233	175	125	81	-0.48	0.4	0.330E-12
15 08 29.3	42 33 08			0.006	2	3	3	3	-0.59	0.5	1990.65
EF B1508+4233 B3 1508+425					PL	PL	PL	PL	-0.54	0.3	0.872E-14
					-	<15	<10	< 5			1991.37
15 18 37.9	40 45 05	33	24	0.062	62	58	40	35	-0.11	0.4	0.860E-12
15 16 48.1	40 55 56			0.009	3	3	3	3	-0.66	0.5	1990.66
EF B1516+4056					PL	PL	PL	PL	-0.17	0.3	0.313E-14
					-	<18	< 5	< 6			1991.37
15 29 17.5	45 38 19	-48	-1	0.095	290	202	125	122	-0.60	0.4	0.170E-11
15 27 37.9	45 48 34			0.017	2	3	3	3	-0.85	0.5	1990.66
EF B1527+4548					PL	PL	PL	49*52	-0.03	0.3	0.104E-13
					-	< 9	<15	< 8			1991.37
15 31 02.2	43 56 31	25	3	0.059	-	51	35	16	-	-	0.980E-12
15 29 19.8	44 06 40			0.012	-	3	3	4	-0.66	0.5	1990.66
EF B1529+4406					-	PL	PL	PL	-0.98	0.4	0.219E-14
					-	<11	<14	< 7			1991.42
15 32 14.3	58 54 26	22	-18	0.023	-	38	40	41	-	-	0.340E-12
15 31 09.3	59 04 30			0.005	-	3	3	3	0.09	0.5	1990.60
EF B1531+5904 7ZW608					-	PL	70*PL	39*PL	0.03	0.3	0.316E-14
					-	<10	-	< 8			1990.90
15 34 04.0	48 23 49	20	-10	0.020	329	213	184	81	-0.72	0.3	0.280E-12
15 32 30.8	48 33 47			0.005	1	3	3	4	-0.26	0.5	1990.66
EF B1532+4833 GB1532+48.5					PL*210	PL	57*PL	PL	-1.03	0.4	0.109E-13
					-	< 6	< 5	<20			1991.37

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	ν = 1.476	ν = 2.695	ν = 4.750	ν = 10.55	α	Δα	Flux/Epoch
15 34 55.0 15 32 22.8 EF B1532+0141 PKS1532+0141 WAM EKM HB2 QSO mvis=18.11 var. z=1.435	01 30 40 01 40 37	-36	30	0.041 0.009	1276^C - - -	1213 1 PL < 2	1040 1 PL 2	960 1 PL 1	-0.08 -0.27 -0.10	- 0.2 0.1	0.100E-11 1990.72 0.806E-13 1991.07
15 36 46.5 15 34 14.4 EF B1534+0147 SJE BLL mvis=18.7 z=0.312	01 37 58 01 47 48	-1	10	0.419 0.029	143^C - - -	32 4 PL <14	42 2 107*PL <13	49 3 94*24 < 8	-2.29 0.48 0.19	- 0.6 0.3	0.110E-10 1990.72 0.343E-14 1991.07
15 39 33.5 15 37 59.7 EF B1538+4745 PG1538+477 HB2 QSO mvis=16.01 z=0.77	47 35 42 47 45 21	18	-8	0.064 0.016	103 3 PL -	48 3 PL < 8	33 4 - < 9	39 4 - < 3	-1.27 -0.66 0.21	0.4 0.6 0.5	0.940E-12 1990.66 0.291E-14 1991.42
15 42 34.7 15 41 05.9 EF B1541+4948	49 38 27 49 47 55	-21	15	0.022 0.006	95 3 PL*588 -	51 3 PL < 9	54 3 PL < 4	69 2 PL < 9	-1.03 0.10 0.31	0.4 0.5 0.3	0.300E-12 1990.66 0.469E-14 1991.42
15 43 33.5 15 41 04.6 EF B1541+0501 ZWG050.083 UGC9990 GAL mvis=15.1	04 52 27 05 01 53	6	0	0.037 0.009	332^C - - -	289 2 PL -	272 1 PL -	277 2 PL -	-0.21 -0.11 0.02	- 0.3 0.2	0.940E-12 1990.73 0.217E-13 1991.07
15 44 18.4 15 41 49.6 EF B1541+0507	04 58 17 05 07 40	22	11	0.090 0.013	- - - -	47 3 PL <13	38 3 PL <10	53 2 49*PL < 5	- -0.38 0.42	- 0.5 0.3	0.230E-11 1990.73 0.353E-14 1991.07
15 45 01.6 15 42 32.0 EF B1542+0416 PKS1542+042 4C04.53 ASI1542+04 HB2 QSO mvis=18.0 z=2.182	04 06 20 04 15 41	-36	75	0.037 0.009	766^C - - -	646 1 PL 3	540 2 PL 2	464 3 PL 4	-0.26 -0.32 -0.19	- 0.3 0.3	0.910E-12 1990.73 0.408E-13 1991.37
15 47 43.0 15 45 30.7 EF B1545+2101 3C323.1 4C21.45 PKS1545+210 NRAO483 SHB318 QSO mvis=16.69 var. z=0.264	20 52 22 21 01 32	21	2	0.445 0.082	2402 1 PL*133 -	1452 1 PL 5	843 1 PL 5	479 1 PL*68 6	-0.84 -0.96 -0.71	0.2 0.2 0.1	0.110E-11 1990.72 0.584E-13 1991.07
15 49 16.7 15 47 51.6 EF B1547+5047 STICK QSO mvis=18.5, z=2.169	50 38 00 50 47 03	23	8	0.062 0.011	672^C - - -	716 1 PL < 2	915 2 PL < 2	1205 2 PL 2	0.10 0.43 0.35	- 0.3 0.2	0.780E-12 1990.66 0.791E-13 1991.42
15 49 28.6 15 46 57.6 EF B1546+0245 PKS1546+027 SHB319 HB2 QSO mvis=16.83 z=0.413	02 37 00 02 46 04	18	-5	0.075 0.012	1144^C - - -	806 1 PL 5	824 1 PL 5	1024 1 PL 3	-0.53 0.04 0.27	- 0.2 0.1	0.230E-11 1990.74 0.709E-13 1991.07
15 50 00.0 15 47 33.3 EF B1547+0709 GB1547+50.8 QSO mvis=18.5	07 00 40 07 09 42	-44	0	0.051 0.010	- - - -	67 3 PL <10	47 3 PL < 9	55 3 PL < 5	- -0.63 0.20	- 0.5 0.3	0.110E-11 1990.66 0.412E-14 1991.07
15 50 43.6 15 48 21.3 EF B1548+1129 PKS1548+11C 4C11.50 HB2 SHB320/321 mvis=17.23/19. z=0.436/1.091	11 20 30 11 29 30	10	12	0.038 0.008	598^C - - -	569 2 PL < 1	421 1 PL < 1	261 1 PL < 1	-0.08 -0.53 -0.60	- 0.3 0.1	0.850E-12 1990.73 0.288E-13 1991.07
15 51 21.4 15 48 54.9 EF B1548+0722	07 13 56 07 22 53	-10	1	0.026 0.007	- - - -	90 2 PL < 7	50 3 PL*60 <14	30 3 30*PL < 6	- -1.04 -0.64	- 0.4 0.3	0.600E-12 1990.73 0.356E-14 1991.07
15 52 30.2 15 50 17.3 EF B1550+2014 3C326 4C+20.37 VV GAL mvis=15.5 z=0.098	20 07 28 20 16 21	-66	-97	0.044 0.011	1711 2 PL -	909 2 PL 7	627 1 144*140 12	478 3 157*179 8	-1.05 -0.66 -0.34	0.3 0.3 0.3	0.100E-11 1990.72 0.466E-13 1991.07
15 53 07.0 15 50 47.5 EF B1550+1409	14 01 07 14 09 58	-1	-13	0.044 0.009	303^C - - -	171 1 PL < 4	113 2 PL < 6	68 2 27*47 < 3	-0.87 -0.73 -0.64	- 0.3 0.2	0.970E-12 1990.73 0.779E-14 1991.07
15 54 24.2 15 52 11.5 EF B1552+2020 MS1552+2020 BLL mvis=17.70 z=0.222	20 11 22 20 20 08	5	9	0.305 0.022	67 3 PL -	58 3 PL < 7	129 3 174*134 < 7	44 3 PL*49 < 8	-0.24 1.41 -1.35	0.4 0.5 0.3	0.740E-11 1990.72 0.616E-14 1991.07
15 55 42.7 15 53 20.4 EF B1553+1119 PG1553+113 HB2 BLL mvis=15.0 var. z=0.36	11 11 25 11 20 06	12	-12	2.310 0.087	391^C - - -	497 2 PL < 2	525 1 PL 4	576 1 PL 4	0.37 0.10 0.12	- 0.3 0.1	0.520E-10 1990.73 0.426E-13 1991.07
15 56 03.5 15 53 55.9 EF B1553+2435 PKS1553+245 ZWG137.003 B2.2 1553+24 GAL mvis=15.4 z=0.0430	24 26 51 24 35 30	10	-4	0.034 0.012	196 2 PL -	147 2 152*PL < 5	94 2 PL < 7	86 2 PL < 3	-0.48 -0.79 -0.11	0.3 0.3 0.2	0.890E-12 1990.72 0.757E-14 1991.07

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
15 57 46.1	21 32 47	-17	-3	0.025	369^C	67	28	< 20	-2.61	-	0.620E-12
15 55 35.1	21 41 20			0.006	-	3	4	-	-1.54	0.6	1990.72
EF B1555+2141					-	PL	PL	-	<-0.42	-	<0.223E-14
					-	< 4	-	-			1991.07
15 58 36.4	20 09 19	15	0	0.034	-	61	51	29	-	-	0.830E-12
15 56 23.9	20 17 49			0.011	-	3	3	3	-0.32	0.5	1990.73
EF B1556+2017 ZWG108.029					-	PL	PL*68	PL	-0.71	0.3	0.332E-14
GAL mvis=15.7					-	< 9	< 7	< 9			1991.07
16 01 37.9	53 56 15	-74	18	0.260	82	47	34	-	-0.92	0.4	0.300E-11
16 00 24.1	54 04 32			0.030	3	3	3	-	-0.57	0.5	1990.65
EF B1600+5404 MCG+09-26-047					426*PL	PL*137	57*75	-	-	-	0.235E-14
GAL mvis=16.0 z=0.0697					-	<15	<20	-			1991.42
16 01 50.4	17 54 17	-29	-7	0.023	189^C	104	81	25	-0.91	-	0.490E-12
15 59 35.5	18 02 35			0.006	-	2	3	2	-0.44	0.4	1990.73
EF B1559+1802					-	144*PL	129*78	PL*24	-1.47	0.3	0.443E-14
					-	<10	<12	< 8			1991.07
16 02 15.7	30 50 58	33	-1	0.141	57	51	38	29	-0.18	0.4	0.260E-11
16 00 16.8	30 59 14			0.027	3	3	3	3	-0.52	0.5	1990.72
EF B1600+3059					PL	PL	PL	PL	-0.34	0.3	0.279E-14
					-	<11	<11	<13			1991.07
16 02 37.8	26 45 59	60	-5	0.024	-	71	124	544	-	-	0.540E-12
16 00 33.5	26 54 13			0.006	-	3	3	3	0.98	0.5	1990.72
EF B1600+2654					-	PL	60*PL	60*PL	1.85	0.3	0.201E-13
					-	<11	< 5	< 1			1991.42
16 03 16.6	09 00 56	14	-34	0.071	180^C	130	89	49	-0.50	-	0.160E-11
16 00 52.2	09 09 09			0.011	-	2	2	3	-0.67	0.3	1990.74
EF B1600+0908					-	PL	PL	PL	-0.75	0.3	0.592E-14
					-	<10	< 3	< 3			1993.54
16 03 37.5	15 54 03	-9	0	0.253	182	146	252	335	-0.37	0.4	0.570E-11
16 01 20.5	16 02 14			0.021	3	3	2	2	0.96	0.4	1990.74
EF B1601+1602 PGC56898					222*426	134*PL	82*PL	24*PL	0.36	0.2	0.213E-13
GAL mvis=15.5					-	< 9	< 1	< 2			1991.37
16 04 57.4	23 55 51	-8	8	0.284	610	368	206	106	-0.84	0.2	0.730E-11
16 02 49.7	24 03 57			0.021	1	1	1	2	-1.02	0.2	1990.73
EF B1602+2404 B2.4 1602+24 PKS1602+24					PL	PL	PL	PL	-0.83	0.2	0.139E-13
NGC6051 4C24.04 E-GAL mvis=14.9 z=0.032					-	< 1	< 1	8			1991.07
16 05 08.1	17 43 43	16	13	0.058	760	538	338	194	-0.57	0.2	0.130E-11
16 02 53.2	17 51 48			0.010	1	2	1	2	-0.82	0.3	1990.74
EF B1602+1752 PKS1602+178 4C17.66					PL	PL	PL	PL*30	-0.70	0.2	0.232E-13
NGC6047 ABCG2151 E-GAL mvis=15.4 z=0.032					-	9	-	<18			1991.07
16 05 45.1	54 39 18	-41	5	0.048	186	131	77	43	-0.58	0.5	0.600E-12
16 04 34.2	54 47 19			0.010	4	2	2	3	-0.94	0.3	1990.66
EF B1604+5447					PL	PL	PL	PL*27	-0.73	0.3	0.529E-14
					-	< 7	<17	< 4			1991.42
16 06 23.6	18 15 24	-98	0	0.043	571	392	279	278	-0.62	0.3	0.990E-12
16 04 09.3	18 23 24			0.009	2	2	2	3	-0.60	0.3	1990.74
EF B1604+1823 NGC6061 PKS1604+183					408*270	132*114	PL	PL	0.00	0.3	0.229E-13
UGC10199 ZWG108.145 GAL mvis=15.0 z=0.038					-	<10	< 1	< 5			1991.37
16 06 24.2	54 05 59	13	-4	0.027	176	137	92	56	-0.42	0.4	0.340E-11
16 05 11.8	54 13 57			0.007	3	2	3	2	-0.70	0.4	1990.66
EF B1605+5413					PL	PL	PL	PL	-0.62	0.3	0.635E-14
					-	<12	< 6	< 3			1991.42
16 06 51.8	27 16 35	92	24	0.126	214^C	202	187	244	-0.09	-	0.290E-11
16 04 48.5	27 24 33			0.018	-	2	2	3	-0.14	0.3	1990.72
EF B1604+2724					-	PL	PL	PL	0.33	0.3	0.166E-13
					-	< 1	< 5	3			1991.07
16 08 11.1	29 22 03	39	-47	0.017	-	56	39	15	-	-	0.350E-12
16 06 10.6	29 29 56			0.005	-	1	1	1	-0.64	0.2	1990.72
EF B1606+2929					-	PL*312	82*131	PL	-1.20	0.1	0.232E-14
					-	<12	<15	<10			1991.07
16 08 46.1	10 28 54	18	10	0.037	1697^C	1411	1311	1315	-0.28	-	0.870E-12
16 06 23.4	10 36 46			0.008	-	1	1	1	-0.13	0.2	1990.74
EF B1606+1036 PKS1606+10 4C10.45 SHB323					-	PL	PL	PL	0.00	0.1	0.104E-12
STICK QSO mvis=18.5, z=1.226					-	3	3	2			1991.07
16 09 11.5	17 56 11	-3	9	0.041	872^C	347	253	155	-1.41	-	0.920E-12
16 06 57.0	18 04 01			0.011	-	2	3	2	-0.56	0.4	1990.74
EF B1606+1804 PKS1606+18C 4C18.47 HB2					-	PL	PL	PL	-0.61	0.3	0.173E-13
WW1606+180 QSO mvis=18.0 z=0.346					-	10	11	8			1991.07
16 13 39.5	34 12 45	19	0	0.044	3273	3103	2931	3176	-0.09	0.2	0.600E-12
16 11 46.4	34 20 17			0.007	1	1	1	1	-0.10	0.2	1990.72
EF B1611+3420 B2.3 1611+34 SHB325 HB2					PL	PL	PL	PL	0.10	0.1	0.240E-12
QSO mvis=17.76 var. z=1.401					-	4	5	5			1991.07

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	Δα	Flux/Epoch
16 16 43.2	55 45 49	-7	-37	0.049	78	49	39	44	-0.77	0.4	0.650E-12
16 15 38.0	55 53 07			0.012	3	3	3	4	-0.40	0.5	1990.66
EF B1615+5552					PL	PL	PL	PL	0.15	0.4	0.331E-14
					-	-	<12	< 3			1991.42
16 16 55.3	36 21 33	5	-1	0.006	567	309	326	315	-1.01	0.2	0.680E-13
16 15 05.9	36 28 52			0.003	1	2	2	3	0.09	0.3	1990.72
EF B1615+3628					PL*373	PL	PL*54	37*50	-0.04	0.3	0.251E-13
					-	<11	< 2	< 3			1991.37
16 17 04.7	55 16 09	111	-36	1.272	-	69	66	35	-	-	0.170E-10
16 15 57.9	55 23 26			0.056	-	3	3	4	-0.08	0.5	1990.66
EF B1616+5522					-	PL	PL	PL	-0.79	0.4	0.410E-14
					-	<13	< 7	< 4			1991.42
16 17 40.1	35 01 00	-24	6	0.149	2259	1025	659	250	-1.31	0.2	0.210E-11
16 15 48.6	35 08 16			0.018	1	1	1	2	-0.78	0.2	1990.72
EF B1615+3508 NGC6109 4C35.40					198*324	PL*136	102*135	73*70	-1.21	0.2	0.396E-13
MCG+06-36-016 GAL mvis=13.0 z=0.029					-	7	9	9			1991.07
16 18 46.0	21 59 27	25	14	0.025	-	58	34	28	-	-	0.660E-12
16 16 36.7	22 06 39			0.006	-	3	4	3	-0.94	0.6	1990.74
EF B1616+2206					-	111*PL	PL	PL	-0.24	0.4	0.267E-14
					-	< 7	-	<14			1991.42
16 19 01.5	30 31 18	17	-25	0.048	62	75	52	34	0.32	0.4	0.960E-12
16 17 03.4	30 38 29			0.010	3	2	4	3	-0.65	0.6	1990.73
EF B1617+3038					PL	130*PL	PL	PL	-0.53	0.4	0.366E-14
					-	< 7	<17	< 7			1991.42
16 21 10.6	37 46 02	10	-15	0.155	648	408	243	123	-0.77	0.2	0.180E-11
16 19 23.9	37 53 04			0.016	1	1	1	2	-0.91	0.2	1990.72
EF B1619+3752 4C37.46 B3 1619+378 BOZ					PL	PL	PL	PL	-0.85	0.2	0.162E-13
GAL mvis=19.0					-	< 3	< 6	10			1991.07
16 22 28.9	35 55 22	99	-20	0.028	-	15	23^C	-	-	-	0.350E-12
16 20 39.3	36 02 19			0.006	-	4	-	-	-	-	1990.73
EF B1620+3601					-	PL	PL	-	-	-	-
					-	< 3	-	-			1991.42
16 22 29.5	40 06 34	13	-8	0.093	67	74	58	65	0.17	0.4	0.970E-12
16 20 47.1	40 13 30			0.023	3	2	3	2	-0.43	0.4	1990.72
EF B1620+4013					PL	PL*178	PL	PL	0.14	0.3	0.492E-14
					-	<14	<10	6			1991.07
16 22 58.8	37 55 12	64	35	0.046	408	278	168	90	-0.64	0.2	0.520E-12
16 21 12.6	38 02 07			0.011	1	2	2	2	-0.89	0.3	1990.72
EF B1621+3802 NGC6137 B3 1621+380					PL	PL	PL	PL	-0.78	0.2	0.113E-13
ZWG196.052 GAL mvis=14.10					-	< 3	< 3	< 3			1991.07
16 23 07.6	39 09 33	2	12	0.050	218	237	253	196	0.14	0.3	0.530E-12
16 21 23.5	39 16 27			0.009	2	2	2	2	0.12	0.3	1990.72
EF B1621+3916 B3 1621+392 WWD					PL*260	PL	PL	PL	-0.32	0.2	0.178E-13
HB2 QSO mvis=17.5 z=1.97					-	< 1	< 1	< 1			1991.07
16 24 43.7	37 26 42	-18	-13	0.034	-	44	38	33	-	-	0.380E-12
16 22 56.8	37 33 30			0.006	-	3	3	3	-0.26	0.5	1990.73
EF B1622+3733 5C.0350 B3 1622+375					-	PL	PL	PL	-0.18	0.3	0.287E-14
					-	< 7	<15	<15			1991.07
16 25 29.8	27 05 48	16	-4	0.104	584	342	225	118	-0.89	0.4	0.230E-11
16 23 27.4	27 12 33			0.017	3	2	2	2	-0.74	0.3	1990.74
EF B1623+2712 B2.2 1623+27A MS1623.4+2712					PL	PL	PL	PL	-0.81	0.2	0.148E-13
GAL mvis=18.41 z=0.525					-	< 2	< 4	3			1991.07
16 26 24.9	35 13 38	-15	-16	0.129	-	29	23	25	-	-	0.180E-11
16 24 34.5	35 20 19			0.014	-	4	3	4	-0.41	0.6	1990.74
EF B1624+3520					-	PL	92*PL	PL	0.10	0.4	0.192E-14
					-	<16	-	< 7			1991.07
16 26 34.7	58 09 20	31	0	0.056	533	404	279	194	-0.46	0.2	0.700E-12
16 25 39.9	58 15 59			0.011	1	1	1	2	-0.65	0.2	1990.66
EF B1625+5815					PL	PL	PL	PL	-0.46	0.2	0.201E-13
					-	-	< 2	< 6			1991.37
16 27 10.4	31 44 06	13	0	0.039	147^C	165	144	101	0.18	-	0.620E-12
16 25 14.7	31 50 44			0.008	-	2	1	1	-0.24	0.3	1990.74
EF B1625+3150					-	PL*94	PL	37*PL	-0.44	0.1	0.100E-13
					-	<13	<20	< 4			1991.37
16 28 37.6	39 32 55	10	9	4.747	3262	1338	530	173	-1.48	0.2	0.170E-09
16 26 54.8	39 39 27			0.085	1	1	2	1	-1.63	0.3	1990.73
EF B1626+3939 NGC6166 3C338 B3 1626+396					PL	PL	PL	PL	-1.40	0.2	0.343E-13
4C39.45 HOLM751A GAL mvis=13.9 z=0.032					-	2	5	6			1991.42
16 29 01.1	40 08 00	-14	27	0.836	59	20	19	25	-1.80	0.7	0.300E-10
16 27 19.4	40 14 30			0.036	4	4	4	4	-0.09	0.7	1990.73
EF B1627+4014					PL	PL	PL	PL	0.34	0.5	0.169E-14
					-	-	<18	< 5			1991.42

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	ν = 1.476	ν = 2.695	ν = 4.750	ν = 10.55	α	Δα	Flux/Epoch
16 29 02.6	63 11 32	-80	79	0.058	78	49	42	< 24	-0.77	0.4	0.110E-11
16 28 31.1	63 18 00			0.013	3	3	4	-	-0.27	0.6	1990.60
EF B1628+6319					PL	117*PL	315*PL	-	<-0.70	-	<0.272E-14
					-	-	-	-			1990.90
16 32 19.3	32 01 29	37	-91	0.046	-	35	29	-	-	-	0.720E-12
16 30 24.4	32 07 46			0.013	-	3	4	-	-0.33	0.6	1990.74
EF B1630+3206					-	PL	PL	-	-	-	0.210E-14
					-	< 8	-	-			1991.07
16 33 02.3	39 24 31	-9	10	0.040	-	62	47	37	-	-	0.410E-12
16 31 19.6	39 30 45			0.008	-	3	3	4	-0.49	0.5	1990.74
EF B1631+3930 B3 1631+395 ABCG2199 HB2					-	60*PL	PL	PL*50	-0.30	0.4	0.348E-14
QSO mvis=16.7 z=1.023					-	<10	< 7	< 5			1991.07
16 33 22.4	47 19 09	11	-19	0.250	-	110	56	74	-	-	0.330E-11
16 31 56.1	47 25 21			0.035	-	2	2	4	-1.19	0.3	1990.72
EF B1631+4725 IRAS F16319+4725					-	134*PL	PL	PL*50	0.35	0.4	0.541E-14
					-	<11	<12	< 4			1991.07
16 36 23.7	47 15 16	-65	13	0.036	-	22	16	-	-	-	0.520E-12
16 34 57.6	47 21 16			0.013	-	4	4	-	-0.56	0.7	1990.72
EF B1634+4722					-	PL	PL	-	-	-	0.111E-14
					-	<20	-	-			1991.07
16 40 19.2	46 42 25	27	10	0.683	288^C	157	84	44	-0.93	-	0.980E-11
16 38 52.2	46 48 09			0.042	-	2	2	2	-1.10	0.3	1990.72
EF B1638+4648 1ZW163 ABCG2219					-	PL	PL	PL	-0.81	0.2	0.577E-14
					-	< 2	< 5	< 3			1991.07
16 42 58.1	39 48 27	8	2	0.412	8153	7285	5894	5181	-0.19	0.2	0.450E-11
16 41 17.0	39 54 00			0.041	1	1	1	1	-0.37	0.2	1990.74
EF B1641+3954 3C345 B2.3 1641+39 4C39.48					PL	PL	PL	PL	-0.16	0.1	0.452E-12
NRAO513 SHB338 QSO mvis=15.96 var. z=0.595					-	6	7	4			1990.90
16 44 16.9	45 46 54	32	-12	0.260	186	144	126	87	-0.43	0.2	0.380E-11
16 42 48.2	45 52 22			0.037	1	2	2	2	-0.24	0.3	1990.73
EF B1642+4552					PL	PL	PL	PL	-0.46	0.2	0.871E-14
					-	< 3	< 6	< 2			1991.07
16 47 35.1	49 49 57	1	2	0.114	214^C	201	215	265	-0.10	-	0.180E-11
16 46 16.7	49 55 11			0.015	-	2	2	1	0.12	0.3	1990.72
EF B1646+4955					-	PL	PL	PL	0.26	0.2	0.183E-13
					-	6	< 3	3			1991.07
16 50 05.8	41 40 33	7	2	0.099	239^C	215	164	117	-0.16	-	0.140E-11
16 48 28.9	41 45 37			0.017	-	2	2	2	-0.48	0.3	1990.75
EF B1648+4145 B3 1648+417					-	PL	PL	PL	-0.42	0.2	0.117E-13
					-	< 6	< 9	< 7			1991.37
16 51 05.4	50 31 45	17	91	0.030	114	>117	58^C	-	> 0.04	-	0.490E-12
16 49 49.2	50 36 44			0.005	2	-	-	-	-	-	1990.72
EF B1649+5038					PL	-	PL	-	-	-	-
					-	-	-	-			1991.37
16 53 52.2	39 45 27	69	-11	0.056	1525	1513	1387	1185	-0.01	0.2	0.830E-12
16 52 09.9	39 50 15			0.011	1	1	1	1	-0.15	0.2	1990.76
EF B1652+3950 Mrk501 4C39.49 B2.3 1652+39A					PL	PL	PL	PL	-0.20	0.1	0.103E-12
UGC10599 GAL mvis=14.0 var. z=0.033					-	4	2	< 2			1991.42
16 54 47.9	40 02 33	-41	14	0.105	-	69	67	21	-	-	0.150E-11
16 53 08.1	40 07 17			0.017	-	2	3	3	-0.05	0.4	1990.76
EF B1653+4007					-	PL	138*90	PL	-1.45	0.3	0.353E-14
					-	<11	<10	<15			1991.42
16 55 59.6	54 30 03	21	17	0.062	222	197	150	159	-0.20	0.3	0.120E-11
16 54 56.0	54 34 41			0.012	2	2	2	2	-0.48	0.3	1990.72
EF B1654+5434					PL	PL	PL	PL	0.07	0.2	0.125E-13
					-	< 3	13	5			1991.07
17 00 16.0	45 58 43	22	1	0.073	537^C	388	287	158	-0.50	-	0.110E-11
16 58 49.1	46 03 04			0.014	-	1	1	2	-0.53	0.2	1990.75
EF B1658+4603 WK366 B3 1658+460B					-	PL	70*PL	PL	-0.75	0.2	0.188E-13
					-	< 2	< 3	< 6			1990.90
17 12 59.7	57 25 44	-14	-37	0.035	67	44	20	-	-0.70	0.4	0.630E-12
17 12 08.5	57 29 09			0.009	3	3	3	-	-1.39	0.5	1990.73
EF B1712+5728					PL	161*PL	PL*60	-	-	-	0.125E-14
					-	<17	-	-			1991.07
17 15 20.2	57 24 40	16	35	0.693	118^C	60	38	42	-1.03	-	0.120E-10
17 14 29.1	57 27 55			0.058	-	3	3	3	-0.81	0.5	1990.72
EF B1714+5728 NGC6338 MCG+10-24-0117					-	106*PL	PL	55*PL	0.13	0.3	0.330E-14
S0-GAL mvis=14.2 z=0.028					-	< 7	<10	< 3			1991.07
17 17 18.1	42 26 54	15	4	0.340	-	142	100	96	-	-	0.550E-11
17 15 44.5	42 30 02			0.043	-	2	1	1	-0.62	0.3	1990.77
EF B1715+4230					-	PL	PL	PL*20	-0.05	0.1	0.809E-14
					-	-	< 5	< 5			1991.79

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	ν = 1.476	ν = 2.695	ν = 4.750	ν = 10.55	α	Δα	Flux/Epoch
17 19 14.3	48 58 39	8	8	0.073	-	110	96	229	-	-	0.120E-11
17 17 56.2	49 01 39			0.012	-	1	1	1	-0.24	0.2	1990.77
EF B1717+4901 MCG+08-31-041 ZWG252.041					-	PL	PL	PL	1.09	0.1	0.115E-13
HB1 B0-GAL mvis=14.81 z=0.0242					-	-	<10	< 2			1991.79
17 19 37.6	48 04 08	18	2	0.170	-	106	109	175	-	-	0.300E-11
17 18 17.2	48 07 06			0.019	-	1	1	1	0.05	0.2	1990.77
EF B1718+4807 PG1718+481 HB2					-	PL	PL	PL	0.59	0.1	0.105E-13
QSO mvis=15.33 z=1.084					-	-	< 5	< 2			1991.79
17 21 09.6	35 42 10	3	1	0.078	841^C	676	526	357	-0.33	-	0.180E-11
17 19 23.2	35 45 02			0.011	-	1	1	1	-0.44	0.2	1990.79
EF B1719+3545 B2.3 1719+35 K HB2					-	PL	PL	PL	-0.49	0.1	0.368E-13
QSO mvis=19.9 z=0.263					-	-	< 3	2			1991.79
17 28 17.6	50 13 06	9	0	2.400	205^C	190	150	152	-0.12	-	0.460E-10
17 27 03.4	50 15 26			0.045	-	1	1	1	-0.42	0.2	1990.78
EF B1727+5015 2ZW077 HB2					-	PL	PL	PL	0.02	0.1	0.122E-13
BLL mvis=16.4 var. z=0.0554					-	<10	<10	2			1991.79
17 28 20.5	51 49 02	18	-47	0.025	158^C	108	68	42	-0.58	-	0.450E-12
17 27 11.0	51 51 22			0.007	-	1	1	1	-0.82	0.2	1990.78
EF B1727+5150 OT546 ASI1727+50					-	PL	PL	PL	-0.60	0.1	0.477E-14
BLL mvis=16.5 z=0.055					-	<10	<15	<10			1991.79
17 32 53.8	65 33 07	22	24	0.043	749	433	281	200	-0.91	0.2	0.100E-11
17 32 46.1	65 35 05			0.004	1	1	1	1	-0.76	0.2	1990.60
EF B1732+6535 4C65.21 ASI1732+65 HB2					PL	PL	PL	PL	-0.43	0.1	0.206E-13
QSO mvis=17.6 z=0.856					-	6	4	2			1991.07
17 42 27.7	59 45 18	37	-11	0.040	-	102	90	97	-	-	0.100E-11
17 41 48.3	59 46 36			0.010	-	1	1	1	-0.22	0.2	1990.77
EF B1741+5946					-	PL	PL	PL	0.09	0.1	0.741E-14
					-	-	< 5	< 2			1991.79
17 43 27.1	63 41 54	-13	70	0.060	302	140	67	29	-1.28	0.2	0.120E-11
17 43 08.3	63 43 06			0.012	1	2	3	3	-1.30	0.4	1990.74
EF B1743+6344 ABCG2280					234*186	124*PL	86*65	PL	-1.05	0.3	0.446E-14
					-	< 3	< 2	< 9			1991.07
17 46 10.4	62 26 20	35	41	0.054	739	587	515	526	-0.38	0.2	0.110E-11
17 45 44.5	62 27 21			0.014	1	1	1	1	-0.23	0.2	1990.76
EF B1745+6228 4C62.29 KAP HB2 STK					PL	PL	PL	PL	0.03	0.1	0.415E-13
QSO mvis=18.7 z=3.886					-	6	4	3			1991.07
17 53 44.5	65 42 07	0	32	0.027	367	255	195	113	-0.60	0.2	0.640E-12
17 53 38.7	65 42 34			0.009	1	1	2	2	-0.47	0.3	1990.80
EF B1753+6543					PL	PL	PL*70	47*24	-0.68	0.2	0.129E-13
					-	-	< 4	< 5			1991.07
17 58 29.2	66 38 12	45	-14	0.015	822	906	1004	966	0.16	0.2	0.360E-12
17 58 30.2	66 38 18			0.005	1	1	1	2	0.18	0.2	1990.89
EF B1758+6638 LRWRM370 NGC6543					PL	PL	57*PL	30*24	-0.05	0.2	0.767E-13
IRAS F17585+668 7ZW759 PN mvis=15					-	< 2	< 1	1			1990.79
18 08 52.4	66 34 17	34	10	0.038	31	43	20	22	0.54	0.6	0.980E-12
18 08 52.7	66 33 38			0.003	4	3	4	4	-1.35	0.6	1990.60
EF B1808+6633 LRWRM425					PL	329*PL	57*PL	30*PL	0.12	0.5	0.182E-14
					-	<18	14	20			1990.79
18 15 24.1	68 06 41	20	-3	0.064	346	264	187	153	-0.45	0.2	0.170E-11
18 15 36.2	68 05 33			0.012	2	1	1	1	-0.61	0.2	1990.70
EF B1815+6805 LRWRM456					PL	PL	PL	PL	-0.25	0.1	0.142E-13
					-	< 3	< 3	< 2			1991.07
18 22 06.1	68 17 11	-16	97	0.038	134	150	131	130	0.19	0.3	0.100E-11
18 22 19.3	68 15 34			0.003	2	2	2	2	-0.24	0.3	NEP
EF B1822+6817					PL	PL	PL	PL	-0.01	0.2	0.104E-13
					-	< 3	< 2	< 2			1991.07
18 32 37.6	68 48 14	1	0	0.089	155	99	73	52	-0.74	0.3	0.260E-11
18 32 54.2	68 45 51			0.023	2	2	2	3	-0.54	0.3	1990.66
EF B1832+6845					PL	PL	PL	PL	-0.43	0.3	0.524E-14
					-	< 8	< 3	< 3			1991.42
18 42 34.2	68 09 16	13	5	0.050	980	852	751	980	-0.23	0.2	0.150E-11
18 42 44.1	68 06 10			0.011	2	1	1	1	-0.22	0.2	1990.64
EF B1842+6806 CPB HB2					PL	PL	PL	PL	0.33	0.1	0.671E-13
QSO mvis=17.9 z=0.475					-	4	2	2			1991.37
18 53 56.9	68 22 58	73	-39	0.220	72	51	24	< 10	-0.57	0.6	0.650E-11
18 54 06.9	68 19 03			0.025	4	3	3	-	-1.33	0.5	1990.64
EF B1854+6818					PL	PL	PL	-	<-1.10	-	<0.159E-14
					-	< 1	<11	<14			1991.42
19 22 13.1	69 10 57	15	14	0.075	771	485	308	185	-0.77	0.2	0.250E-11
19 22 23.5	69 05 04			0.019	1	2	2	3	-0.80	0.3	1990.65
EF B1922+6905 4C69.26 CPB					PL*279	PL	PL	43*35	-0.64	0.3	0.214E-13
GAL mvis=16.5					-	< 9	< 7	< 5			1991.37

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
19 55 45.8	73 54 01	29	22	0.076	302	173	103	196	-0.93	0.4	0.900E-12
19 56 33.6	73 45 54			0.020	3	2	2	2	-0.91	0.3	1990.73
EF B1956+7346					PL*482	PL	PL	PL	0.81	0.2	0.114E-13
					-	< 1	< 5	< 3			1991.07
20 03 02.1	68 29 08	39	17	0.064	67	71	38	35	0.10	0.4	0.250E-11
20 02 53.5	68 20 35			0.014	3	3	3	3	-1.10	0.5	1990.64
EF B2003+6820					PL	PL*249	PL	PL	-0.10	0.3	0.316E-14
					-	< 6	< 5	< 4			1991.42
20 12 06.2	46 28 59	8	-7	0.270	508^C	826	944	975	0.74	-	0.270E-10
20 10 31.5	46 19 55			0.020	-	1	1	1	0.24	0.2	1990.99
EF B2010+4619					-	PL	PL	PL	0.04	0.1	0.740E-13
					-	-	2	4			1991.79
20 16 14.0	52 23 09	0	2	0.013	-	66	54	45	-	-	0.870E-12
20 14 52.1	52 13 50			0.005	-	1	1	2	-0.35	0.2	1991.02
EF B2014+5213					-	PL	PL	PL	-0.23	0.2	0.405E-14
					-	<20	<20	<10			1991.79
20 17 08.1	74 40 53	31	-4	0.044	496	455	412	419	-0.14	0.2	0.180E-11
20 17 54.6	74 31 27			0.011	1	1	1	1	-0.18	0.2	1990.72
EF B2017+7431 4C74.25 STI					PL	PL	PL	PL	0.02	0.1	0.330E-13
QSO mvis=18.3, z=2.2					-	< 2	3	2			1991.07
20 42 34.6	75 07 49	30	-79	0.710	1816	>590	-	-	>-1.87	-	0.290E-10
20 43 10.4	74 56 55			0.045	2	-	-	-	-	-	1990.72
EF B2043+7455 STI					PL	PL*255	-	-	-	-	-
Empty field					-	15	-	-			1993.11
20 44 17.2	69 44 02	-36	12	0.022	567	270	145	73	-1.23	0.3	0.100E-11
20 43 59.3	69 33 04			0.008	2	2	2	3	-1.10	0.3	1990.66
EF B2043+6933 4C69.29					PL*258	PL	PL	66*50	-0.86	0.3	0.983E-14
					-	< 3	< 2	< 3			1991.42
20 45 54.1	37 17 20	8	32	0.043	-	75	66	30	-	-	0.430E-11
20 43 58.5	37 06 19			0.011	-	1	1	1	-0.23	0.2	1991.00
EF B2043+3706					-	PL	PL	PL	-0.99	0.1	0.395E-14
					-	-	<15	<10			1991.79
21 14 07.7	21 32 43	2	-9	0.040	-	61	52	27	-	-	0.130E-11
21 11 51.5	21 20 15			0.008	-	2	1	2	-0.28	0.3	1991.00
EF B2111+2120					-	PL	96*108	PL*28	-0.82	0.2	0.327E-14
					-	<10	<20	<10			1991.79
21 15 42.4	36 46 15	-57	-49	0.052	-	30	16	-	-	-	0.350E-11
21 13 41.6	36 33 42			0.015	-	-	4	-	-1.11	0.5	1991.02
EF B2113+3632					-	PL	PL	-	-	-	0.103E-14
					-	-	-	-			1991.79
21 16 14.7	33 39 16	-3	-4	0.054	186^C	105	95	79	-0.87	-	0.240E-11
21 14 10.2	33 26 42			0.015	-	1	1	1	-0.18	0.2	1991.01
EF B2114+3326 B2.1 2114+33					-	PL	PL	PL	-0.23	0.1	0.701E-14
					-	<10	<10	< 5			1991.79
21 22 26.4	23 11 09	15	47	0.330	-	74	30	10	-	-	0.100E-10
21 20 10.9	22 58 17			0.035	-	2	3	4	-1.59	0.4	1991.00
EF B2120+2259					-	170*150	PL	PL	-1.38	0.4	0.194E-14
					-	<10	<20	<20			1991.77
21 25 13.2	32 50 18	48	72	0.041	246^C	181	106	-	-0.47	-	0.190E-11
21 23 06.5	32 37 18			0.014	-	1	1	-	-0.94	0.2	1991.02
EF B2123+3238					-	PL*205	65*129	-	-	-	0.692E-14
					-	< 5	<10	-			1991.79
21 42 46.2	23 28 16	-84	-8	0.051	-	82	55	33	-	-	0.160E-11
21 40 28.9	23 14 31			0.013	-	2	1	2	-0.70	0.3	1991.02
EF B2140+2314 B2.4 2140+23					-	PL	PL	PL	-0.64	0.2	0.378E-14
					-	-	<10	< 7			1991.77
22 03 43.6	64 37 35	97	65	0.250	103	61	29	> 13	-0.87	0.4	0.200E-10
22 02 18.4	64 23 00			0.029	3	3	4	-	-1.31	0.6	1990.65
EF B2202+6424					PL	PL	PL	PL	>-1.01	-	>0.195E-14
					-	<13	<17	<11			1991.42
22 24 35.3	43 43 27	1	28	0.040	194^C	74	54	23	-1.47	-	0.190E-11
22 22 27.6	43 28 12			0.008	-	3	1	2	-0.56	0.4	1990.59
EF B2222+4328					-	PL	PL	PL	-1.07	0.2	0.328E-14
					-	-	< 5	<10			1991.77
22 29 21.0	44 44 14	14	-20	0.022	867^C	527	327	170	-0.76	-	0.150E-11
22 27 13.0	44 28 51			0.007	-	1	1	1	-0.84	0.2	1990.59
EF B2227+4428 3C448 B3 2227+444					-	PL	PL	PL	-0.82	0.1	0.218E-13
					-	-	< 3	< 3			1991.79
22 32 22.6	62 49 35	7	3	0.063	1236	614	462	331	-1.16	0.4	0.870E-11
22 30 37.6	62 34 06			0.013	3	2	1	1	-0.50	0.3	1990.65
EF B2230+6234					PL	PL	PL	PL	-0.42	0.1	0.331E-13
					-	< 2	< 1	3			1991.42

Table 2. continued

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
22 42 34.7	39 55 06	4	13	0.029	-	89	57	28	-	-	0.130E-11
22 40 19.7	39 39 22			0.011	-	2	2	2	-0.79	0.3	1990.59
EF B2240+3939 B2.3 2240+39 B3 2240+396					-	PL	PL	PL	-0.89	0.2	0.370E-14
					-	-	<10	<15			1991.77
22 50 05.0	38 24 46	13	-65	0.180	-	100	85	82	-	-	0.820E-11
22 47 47.4	38 08 52			0.018	-	2	1	1	-0.29	0.3	1990.59
EF B2247+3807					-	PL	PL	PL	-0.05	0.1	0.671E-14
					-	<20	<10	6			1991.77
22 56 44.1	35 41 18	1	0	0.034	428^C	254	138	80	-0.80	-	0.100E-11
22 54 23.7	35 25 15			0.010	-	1	1	2	-1.08	0.2	1990.59
EF B2254+3525 4C35.56 B2.3 2254+35 OLS					-	PL	PL	58*60	-0.68	0.2	0.975E-14
GAL mvis=15.8 z=0.1178					-	<13	< 3	-			1991.79
22 59 49.4	31 25 14	7	-64	0.027	-	33	33^C	-	-	-	0.840E-12
22 57 26.5	31 09 07			0.007	-	2	-	-	-	-	1990.59
EF B2257+3108					-	PL	PL	-	-	-	-
					-	<20	-	-			1991.77
23 06 29.2	31 35 05	37	-31	0.070	-	54	28^C	-	-	-	0.220E-11
23 04 05.2	31 18 51			0.017	-	1	-	-	-	-	1990.59
EF B2304+3118					-	PL*412	PL	-	-	-	-
					-	-	-	-			1991.77

Col.	Row	Comment	Col.	Row	Comment
1	1	Right Ascension of X-ray position (Epoch AD 2000)	1	2	Right Ascension of X-ray position (Epoch AD 1950)
2	2	Declination of X-ray position (Epoch AD 2000)	2	2	Declination of X-ray position (Epoch AD 1950)
3	1	($R.A._{radio}$ - $R.A._{X-ray}$) * cos(DEC) in arcsec	4	1	DEC_{radio} - DEC_{X-ray} in arcsec
5	1	X-ray counts sec^{-1} (0.1 keV $\leq$ E $\leq$ 2.4 keV)	5	2	statistical error of X-ray counts sec^{-1}
6-9	1	integrated flux density in mJy	6-9	2	error code (1(6-9%), 2(9-14%), 3(14-23%), 4(>23%))
6-9	3	source extension in arcsec (PL = point-like, unresolved)	6-9	4	degree of polarisation in %
10	1	radio spectral index $\alpha_{(1476-2695MHz)}$ ($S_\nu \propto \nu^{+\alpha}$)	10	2	radio spectral index $\alpha_{(2695-4750MHz)}$
10	3	radio spectral index $\alpha_{(4750-10550MHz)}$	11	1-3	errors of the radio spectral indices
12	1	X-ray energy integrated flux density (erg cm^{-2} s^{-1})	12	2	Epoch of X-ray observation
12	3	radio frequency integrated flux density (erg cm^{-2} s^{-1})	12	4	Epoch of simultaneous radio observations at $\geq$ 2695 MHz

Table 2. References

Sign	Reference
ABCG	Abell, G.O.: 1958, ApJS 3, 211
ASI	Barbieri, C., Capaccioli, M., Cristiani, S., Nordon, G., Omizzolo, A.: 1982, Mem.S.A.It. 53, 511
B2.1	Colla, G., Fanti, C., Fanti, R., Ficarra,A., Formiggini, L., Gandolfi, E., Grueff, G. et al.: 1970,AAS 1, 281
B2.2	Colla, G., Fanti, C., Fanti, R., Ficarra,A., Formiggini, L., Gandolfi, E., Lari et al.: 1972, AAS 7, 1
B2.3	Colla, G., Fanti, C., Fanti, R., Ficarra,A., Formiggini, L., Gandolfi, E., Gioia, I. et al: 1973, AAS 11, 291
B2.4	Fanti, C., Fanti, R., Ficarra, A., Padrielli, L.: 1974, AAS 18, 147
B3	Ficarra, A., Grueff, G., Tonassetti, G.: 1985, AAS 59, 255
BC	Barbieri, C., Capacciolo, M.: 1974, Publ.Oss.Astr.Padova
BOZ	Bozyan, E.P.: 1979, AJ 84, 910
BUR	Burbidge, E.M.: 1967, ApJ 149, L51
BYS	Bystedt, J.E.V.: 1975, AA 39, 155
3C	Edge, D.O., Shakeshaft, J.R., McAdam, W.B., Baldwin, J.E. Archer, S.: 1959, Memoirs R.A.S. 68, 37
4C	Pilkington, J.D.H., Scott, P.F.: 1965, Memoirs R.A.S. 69, 183
	Gower, J.F.R., Scott, P.F., Wills, D.: 1967, Memoirs R.A.S. 71, 49
5C	Kenderline, S., Ryle, M., Pooley, G.G.: 1966, MNRAS 134, 189
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	Pooley, G.G.: 1969, MNRAS 144, 101
	Willson, M.A.G.: 1970, MNRAS 151, 1
	Pearson, T.J.: 1975, MNRAS 171, 475
CHJ	Condon, J.J., Hicks, P.D., Jauncey, D.L.: 1977, AJ 82, 692
CPB	Cohen, A.M., Porcas, R.W., Browne, I.W.A., Daintree, E.J., Walsh, D.: 1977, Memoirs R.A.S. 84, 1
CTA	Harris, D.E., Roberts, J.A.: 1972, PASP 72, 237
DON	Donivon, F.F., Pollock, J.T., Smith, A.G., Leacock, R.J., Scott, R.I., Edwards, P.L., Gearhart, M.R.: 1978, PASP 90, 24
EKM	Edwards, T., Kronberg, P.P., Menard, G.: 1975, AJ 80, 1005
GB	Maslowski, J.: 1972, Acta Astron. 22, 227
HB1	Hewitt, K., Burbidge, G.: 1991, ApJS 75, 297
HB2	Hewitt, K., Burbidge, G.: 1993, ApJS 87, 451
HOLM	Holmberg, E.: 1937, Lund Annals 6

Table 2. References

Sign	Reference
IRAS F	Moshiv, M., Kopan, G., Conrow, T., Maccallou, H., Hacking, P., Greorch, D., et al.: 1990, IRAS Faint Source Catalogue
K	Kühr, H.: 1980, PHD-Thesis Bonn
KAP	Kapahl, V.K.: 1979, AA 74, L11
LON	Longair, M.S., Gunn, J.E.: 1975, MNRAS 170, 121
LRWRM	Loiseau, N., Reich, W., Wielebinski, R., Reich, P., Münch, W: 1988, AAS 75, 67
MCG	Vorotsov-Velyaminov, B.A., Arhipova, V.P.: 1962-1974, Morphological catalogue of Galaxies, Moscow, State University
MER	Merkelijn, J.K.: 1968, Aust. J. Phys. 21, 903
MG	Lawrence, C.R., Bennett, C.L., Garcia-Barreto, J.A., Greenfield, P.E., Burke, B.F.: 1983, ApJS 51, 67
	Bennett, C.L., Lawrence, C.R., Burke, B.F, Hewitt, J.N., Mahoney, J.: 1986, ApJS 61, 1
	Lawrence, C.R., Bennett, C.L., Hewwitt, J.N., Langston, G.I., Klotz, S.E., Burke, B.F., Turner, K.L.: 1986, ApJS 61, 105
MRK	Markarian, B.E.: 1967, AfZ 3, 55
	Markarian, B.E.: 1969a, AfZ 5, 443
	Markarian, B.E.: 1969b, AfZ 5, 581
	Markarian, B.E.: 1971, AfZ 7, 229
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MS	Stocke, J.T., Morris, S.L., Gioia, I.M., Maccucoro, T., Schild, R., Wolter, A.et al.: 1991, ApJS 76, 813
MW	Willson, M.A.G.: 1972, MNRAS 156, 7
NGC	Sulentic, J.W., Tift, W.G: 1973, The revised new General Catalogues, The University of Arizona Press
NRAO	Pauliny-Toth, I.I.K., Wade, C.M., Heeschen, D.S.: 1966, ApJS 13, 65
OB-OT	Scheer, D.J., Kraus, J.D.: 1967, AJ 72, 536
	Dixon, R.S., Kraus, J.D.: 1969, AJ 73, 381
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	Rinsland, C.P., Dixon, R.S., Gearhart, M.R., Kraus, J.D.: 1974, AJ 79, 1129
	Rinsland, C.P., Dixon, R.S., Kraus, J.D.: 1975, AJ 80, 759
OLS	Olsen, E.T.: 1970, AJ 75, 764
PG	Green, R.F., Schmidt, M., Liebert, J.: 1986. ApJS 61, 305
PGC	Patuel, G., Fouque, P., Bottinelli, L., Gouguenheim, L.: 1989, AAS 80, 299
PHL	Haro, G., Luyten, W.J.:1962, Bol.Obs.Ton. y Tacubaya Vol.3, No. 22, 37
PKS	Bolton, J.G., Gardener, F.F., Mackey, M.B.: 1964, Aust.J.Phys. 17, 340
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	Savage, A., Bolton, J.G., Wright, A.E.: 1977, Aust.J.Phys. Astrophys.Suppl. 44, 1
	Bolton, J.G., Savage, A., Wright, A.E.: 1979, Aust.J.Phys. Astrophys.Suppl. 46, 1
PUB	Porcas, R.W., Urry, C.M., Browne, I.W.A., Daintree, E.J., Walsh, D.: 1980, MNRAS 191, 607
SAR	Sargent, W.L.W.: 1977, ApJ 212, L105
SBW	Shimmins, A.L., Bolton, J.G., Wall, J.V.: 1975, Austr.J.Phys. Astrophys. N34, 63
SHB	Smith-Haenni, A.L.: 1977, AAS 27, 205
SJE	Smith, P.S., Jannuzi, B.T., Elston, R.: 1991, ApJS 77, 67
STK	Stickel, M., Kühr, H.: 1993, AAS 101, 521
STI	Stickel, M.: 1993, priv. comminucation
STICK	Stickel, et al.: 1993, AAS submitted
UGC	Nilson, P.: 1973, Uppsala General catalogue of galaxies, Nova Acta Regiae Soc. Scient. Ser.V, 1, Uppsala
WAM	Wampler, E.J., Burke, W.L., Gaskell, C.M., Baldwin, J.A.: 1983, ESO reprint N233
WK	Windram, M.D., Kenderline, S. 1969, MNRAS 146, 265
VV	Veron-Cetty, M.P., Veron, P.: 1983, AAS 53, 219
WW	Wills, D., Wills, B.J.: 1976, ApJS 31, 143
WWD	Wills, D., Wills, B.J., Douglas, J.N.: 1985, in preparation
WYN	Wyndham, J.D.: 1966, ApJ 144, 459
ZWG	Zwicky, F., Herzog, E.: 1961-1968, Catalogue of galaxies and clusters of galaxies, Vol.I-IV
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1-7ZW	Zwicky, F.: 1961-1968, Seven privately circulated lists

Table 3. Data for ROSAT selected radio sources with a position difference < 2'

RA(2000/1950)	D(2000/1950)	ΔRA	ΔD	Counts	$\nu = 1.476$	$\nu = 2.695$	$\nu = 4.750$	$\nu = 10.55$	α	$\Delta\alpha$	Flux/Epoch
00 18 08.0	49 01 00	-84	105	0.024	52	< 17	17^C	-	<-1.86	-	0.100E-11
00 15 28.7	48 44 20			0.009	4	-	-	-	-	-	1990.66
EF B0015+4846					PL	-	PL	-	-	-	-
					-	-	-	-			1991.42
00 24 29.5	05 42 52	-158	-78	0.141	59	40	21	-	-0.65	0.6	0.310E-11
00 21 55.2	05 26 15			0.027	4	3	4	-	-1.14	0.6	1990.60
EF B0021+0524					PL	PL*200	PL	-	-	-	0.134E-14
					-	<10	< 7	-			1990.79
02 57 54.4	41 51 29	54	186	0.054	94	86	75	47	-0.15	0.3	0.200E-11
02 54 39.2	41 39 29			0.011	1	3	3	3	-0.24	0.5	1990.74
EF B0254+4142					PL	PL	PL*70	50*47	-0.59	0.3	0.501E-14
					-	<17	<14	< 7			1990.79
03 03 08.3	39 02 13	-89	154	0.044	400	36	19^C	-	-4.00	0.5	0.160E-11
02 59 56.2	38 50 29			0.009	1	4	-	-	-	-	1990.74
EF B0259+3853					361*397	PL	PL	-	-	-	-
					-	16	-	-			1990.79
03 38 44.5	01 37 00	97	196	0.064	25	< 9	23^C	-	<-1.70	-	0.190E-11
03 36 09.4	01 27 16			0.013	3	-	-	-	-	-	1990.73
EF B0336+0130					PL	-	PL	-	-	-	-
					-	-	-	-			1990.79
13 15 24.7	28 42 44	-148	-113	0.038	141	88	139	125	-0.78	0.5	0.410E-12
13 13 02.7	28 58 33			0.008	2	4	4	4	0.81	0.7	1990.60
EF B1312+2856					PL*347	PL	PL	PL	-0.13	0.5	0.994E-14
					-	<11	< 3	< 2			1990.79
15 56 45.6	12 28 45	84	103	0.028	-	139	126	115	-	-	0.630E-12
15 54 24.6	12 37 22			0.007	-	2	2	2	-0.17	0.3	1990.73
EF B1554+1239					-	PL	PL	PL	-0.11	0.2	0.965E-14
					-	< 4	< 4	< 2			1991.07
16 05 31.9	16 24 10	-73	116	0.059	-	42	30^C	-	-	-	0.130E-11
16 03 15.5	16 32 14			0.010	-	-	-	-	-	-	1990.74
EF B1603+1634					-	500*PL	298*PL	-	-	-	-
					-	< 9	-	-			1991.37
16 07 35.2	32 40 08	-28	-119	0.400	-	> 49	17^C	-	-	-	0.740E-11
16 05 39.3	32 48 03			0.041	-	-	-	-	-	-	1990.72
EF B1605+3246					-	290*PL	PL	-	-	-	-
					-	<10	-	-			1991.42
16 14 50.3	25 34 06	-75	132	0.008	-	53	35	21	-	-	0.200E-12
16 12 45.3	25 41 33			0.003	-	3	4	3	-0.73	0.6	1990.74
EF B1612+2543					-	PL	PL	PL	-0.64	0.4	0.241E-14
					-	<12	-	< 7			1991.42
16 22 57.5	31 06 14	51	135	0.104	47	53	60	51	0.20	0.7	0.180E-11
16 21 00.6	31 13 09			0.012	4	4	3	3	0.22	0.6	1990.74
EF B1621+3115					PL	256*PL	167*PL	PL*37	-0.20	0.3	0.434E-14
					-	< 3	< 9	< 5			1991.42
16 44 42.8	37 29 33	98	92	0.043	252^C	106	67^C	-	-1.32	-	0.510E-12
16 42 57.6	37 34 59			0.008	-	3	-	-	-	-	1990.74
EF B1643+3736					-	PL	PL	-	-	-	-
					-	< 6	-	-			1990.90
22 09 37.9	47 09 34	7	-167	0.043	602^C	375	203	95	-0.72	-	0.290E-11
22 07 37.7	46 54 47			0.011	-	1	1	1	-1.08	0.2	1990.59
EF B2207+4652					-	PL	PL	42*PL	-0.95	0.1	0.134E-13
					-	< 5	< 5	< 5			1991.79