Aust. J. Phys., 1996, **49**, 977–1061

A VLA* Survey of Rich Clusters of Galaxies†
III. The Weaker Sources: Maps and Identifications

O. B. Slee,[A] *A. L. Roy*[A,B] *and H. Andernach*[C]

[A] Australia Telescope National Facility, CSIRO,
PO Box 76, Epping, NSW 2121, Australia.
[B] School of Physics, University of Sydney, NSW 2006, Australia.
[C] INSA, ESA-IUE Observatory, Apdo. 50727, E-28080 Madrid, Spain.

Abstract

We present radio and optical parameters for 737 weak sources in 60 Abell cluster fields observed with the Very Large Array (VLA) using scaled arrays at 1·5 and 4·9 GHz. The measurements extend to a lower 1·5 GHz limit of 1·0 mJy and comprise a complete sample with 1·5 GHz flux density $2 \cdot 5 \leq S_{1 \cdot 5} < 20$ mJy. The combined sky area within the half-power circle on the maps is $3 \cdot 5 \times 10^{-3}$ sr, and the cluster fields are distributed over 24 h of right ascension and between declinations +35° and −30°. Contour maps of the extended sources at 1·5 GHz are presented and source parameters such as position, angular size and spectral index are tabulated. We also derive the emitted power and linear size for those sources with published redshifts. We try to identify the radio sources with optical images on the Palomar and SERC survey plates and give their accurate optical positions, morphologies and apparent magnitudes.

1. Introduction

From 1982 to 1985 Slee *et al.* (1989; hereafter SPS89, Paper I) used scaled arrays at the VLA to survey 60 fields near rich clusters of galaxies. The survey fields were centred on the steep-spectrum sources with spectral index $\alpha \leq -0 \cdot 90$ (defined by $S \propto \nu^{\alpha}$) discovered in earlier low-resolution surveys by Slee and Siegman (1983) and Slee *et al.* (1983). Fifty-two of the fields were surveyed with scaled arrays at 1·5 and 4·9 GHz (with the C- and D-arrays respectively), using identical phase and delay centres at the two frequencies. Five fields (A13, A85–2, A2354, A2399 and A2575) were mapped only with the C-array at 1·5 GHz. The remaining three fields (A1791, A2029 and A3528) were mapped with the scaled B- and C-arrays, resulting in a threefold improvement in angular resolution. The half-power-beam width (HPBW) in the C- and D-arrays was ~14 arcsec in right ascension but was up to a factor of two larger in declination at the southern declination limit of −30°.

The VLA observations, data reduction, whole-field maps and general source statistics were described in Paper I. The results (maps, polarisation and identifications) for the stronger sources are given in Slee *et al.* (1994; hereafter

* The VLA is operated by the National Radio Astronomy Observatory for Associated Universities Inc., by co-operative agreement with the National Science Foundation.
† Paper I, *Aust. J. Phys.*, 1989, **42**, 633; Paper II, *Aust. J. Phys.*, 1994, **47**, 145.

0004-9506/96/050977$30.00

SRS94, Paper II). This paper, the third of the series, provides similar radio and optical parameters for the weaker sources with 1·5-GHz flux densities $1 < S_{1\cdot 5} < 20$ mJy.

The only other major survey of Abell clusters with similar angular resolution is that described in the three publications of Zhao *et al.* (1989) and Owen *et al.* (1992, 1993), who made their observations only at 1·5 GHz. Their published maps and measurements were confined to the strongest sources near the cluster centres and only a few clusters are common to both surveys. Therefore, it is more appropriate to compare their results with those on the stronger sources in our Paper II; this will be done in a future publication.

The weak-source measurements are presented in Section 2, including contour maps of the more resolved sources. The optical identifications for these sources are discussed in Section 3 and a conclusion is given in Section 4.

Throughout this paper computations of emitted power and linear source dimensions make use of $H_0 = 75\ \mathrm{km\,s^{-1}\,Mpc^{-1}}$ and $q_0 = 0\cdot 5$.

2. Results

The observations and reductions have been adequately treated in SPS89 (Paper I). The data and maps presented here come from processing further the results in Paper I and are similar to the detailed source parameters given in Paper II. The results presented here include:

(i) elliptical Gaussian brightness distributions fitted to the sources;
(ii) contour mapping for well-resolved sources;
(iii) determination of spectral indices;
(iv) computation of power output and linear size for sources with redshifts.
(v) optical identifications.

In contrast to the stronger sources in Paper II, we have no polarisation data for this sample, nor do we have any high-resolution interferometer measurements of their core components. Table 1 provides a list of the cluster fields that we observed. The more useful optical and X-ray parameters of the clusters are listed, and the positions of the VLA field centres with respect to the cluster centres are given. The rms fluctuation level over a large, relatively clear area of each VLA map is shown in columns 7 and 8; a blank in either of these columns means that no map is available at that frequency. The column headings are explained in a footnote to the table. The values of L_x followed by 'R' in column 17 are ROSAT logarithmic luminosities (Ebeling 1993) that have been transformed to the EINSTEIN luminosity scale. This was done by finding the average difference between EINSTEIN and ROSAT logarithmic luminosities for the 11 clusters in Table 1 that were observed by both telescopes. The average difference ROSAT−EINSTEIN $= +0\cdot 45$ in $\mathrm{Log}L_x$ was then subtracted from the ROSAT logarithmic luminosities for those clusters with no EINSTEIN observations. This gives a more complete, self-consistent set of X-ray luminosities for subsequent analysis.

The optical angular radius of the cluster R_c is not the Abell radius that is usually quoted in cluster publications, but is the value obtained from galaxy counts on the PSS plate by Struble and Rood (1987). The Abell radius assumes that all clusters have a linear radius of 2 Mpc ($H_0 = 75\ \mathrm{km\,s^{-1}}$, $q_0 = 0\cdot 5$), but we prefer to preserve the differences between clusters by using their measured angular radii. For comparison with the Abell radius, the mean linear radius derived from R_c in Table 1 is $1 \cdot 79$ Mpc with a standard deviation of $0 \cdot 64$ Mpc.

(2a) Radio Parameters of the Sample

Table 2 contains the basic radio measurements of the detected sources, excluding the radio positions, which are given in Table 5. Sources in this paper include:

(i) all sources listed in Paper I with $S_{1 \cdot 5} < 20$ mJy. A few of them (e.g. Abell 13__6a/b/c) were also in Paper II because of a special interest in them;
(ii) a number of sources with $S_{1 \cdot 5} > 20$ mJy that had been accidentally omitted from Paper II;
(iii) a significant number of sources with $S_{1 \cdot 5} > 20$ mJy (usually located near the field edges), which had been deliberately omitted from Paper II.

We omitted a few of the weak sources listed in Paper I because subsequent analysis showed that they were probably spurious. To avoid later confusion, the additional sources are inserted in the Table at the correct right ascension but are given an extra lower case Roman numeral. For example, the source A13__13 in Table 2 of Paper I is now A13__13i, while an added source of slightly later RA, called A13__13ii, has been inserted in Table 2 of this paper. The column headings are explained in a footnote to the table.

On the basis of the statistical analysis of Paper I, only a few of the present sources are expected to be cluster members, i.e. for cluster membership, the integrated $1 \cdot 5$-GHz flux density should be ≥ 20 mJy and $R/R_c \leq 0 \cdot 28$ (see explanation of R_c in Section 1). Many sources are close to the cluster centres in angular spacing, but only those that can be optically identified with galaxies with published redshifts, agreeing with the cluster redshifts, can be accepted as cluster members. Accordingly, there are few computations of emitted power and linear size in Table 2.

The angular size parameters in columns 8, 9 & 10 of Table 2 were found by fitting a single Gaussian ellipse to the $1 \cdot 5$-GHz brightness distribution, making allowance in the deconvolution for the beam width and bandwidth smearing. A base level was subtracted during the fitting procedure. In most cases the fitted position (given in Table 5) is close to that of the centroid of the distribution, but in some well-resolved doubles this position is that of the peak of the dominant component. In these cases we have omitted the angular diameter but retained the position as a reference point for the optical identifications in Table 5. The deconvolution of the fitted ellipse for the beam shape and bandwidth smearing did not converge for many of the weaker sources. In these sources (indicated by blanks in the Gaussian-fitted parameters in Table 2), the fitting errors can be so large that the parameters of the derived ellipse may not be consistent with the beam shape and smearing magnitude. The integrated flux densities given in columns 5 & 6 in Table 2 were not obtained from the Gaussian fitting but from the AIPS task IMEAN, which sums the pixel amplitudes in a small box placed around the source image. This method ensures a more accurate result when the source shape departs markedly from an elliptical Gaussian.

The spectral index in column 7 of Table 2 was preferentially computed from our 1·5- and 4·9-GHz measurements of flux density with scaled arrays. If we did not have a 4·9-GHz flux density (because of the smaller primary beam), we combined our 1·5-GHz flux density with other measurements from the references in column 11.

The tabulations of 1·5-GHz spectral power density and linear size in columns 12 and 13, use the few published redshifts of the brighter galaxy identifications. Most of these redshift references are identified in the NASA/IPAC Extragalactic Database* (NED) or the compilation of Andernach *et al.* (1995), but a few more redshifts were obtained from an independent scan of the literature.

(2b) Components of Double Sources

The detailed parameters of the doubles included in Table 2 are set out in Table 3. The column headings are explained in a footnote to the table. Component 'a' of a double is that with the higher 1·5-GHz flux density. Our angular resolution (~14 arcsec FWHP) is too low to refine the morphological classification. As for the fitting of the single ellipses described in Section 2*a*, the Gaussian fits to the components often had errors large enough to prevent the convergence of the deconvolution for beam shape and bandwidth smearing.

Unlike the stronger sources in Paper II, far fewer of the sources identified with optical galaxies (see Table 5) are double sources; only 18 of the 174 galaxy identifications (10%) have definite double structure. For the star-like identifications, 9 out of a total of 61 (15%) are doubles. The larger fraction of doubles 35/62 (56%) remains unidentified. A plausible explanation of this difference is that the weaker sources in this sample are correspondingly more distant so that the angular scale of their lobe structure cannot now be resolved. Alternatively, these are intrinsically weak radio sources and may have correspondingly small linear dimensions (see the radio power—linear size relationship for the stronger sources shown in Paper I).

(2c) Components of Triple and Quadruple Sources

Table 4 gives the parameters of the 6 triple and quadruple sources; one of these (Abell 1631-a/b/c/d) has a total flux density $S_{1\cdot5} = 32\cdot7$ mJy and was accidentally omitted from Paper II. Only two of the six sources can be identified with galaxies (see Table 5). Neither galaxy has a published redshift, so we are unable to derive an emitted power or linear size.

(2d) Contour Maps

The contour maps in Fig. 1 (see p. 1030) have been assigned numbers, which also appear in Tables 2, 3 and 4 for the relevant sources. The maps have been corrected for primary beam attenuation but not for image distortion caused by bandwidth smearing in the outer regions of the radio fields. The map numbers

(*Continued page 1056*)

* The NASA/IPAC Extragalactic Database is operated by the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.

Table 1. Properties of the observed clusters

Cluster Field	RA h m	Dec ° '	Radio Offset '	R/Rc	Pos. Ang. °	Map rms-uJy/beam 1.5 GHz	4.9 GHz	Rich. Class	Dist. Class	m10 R mag.	BM Class	Rc† '	Mpc	Redshift z	z Ref.	Log Lx (erg/s) Einstein	Rosat
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
A 13	00 11.1	-19 47	2.5	0.15	-81.1	58		2	5	16.6	III	17	1.59	0.0945	6	43.97 R	44.42
A 76	00 37.2	06 30	31.8	0.93	16.3	105	42	0	3	15.0	II-III	34	1.53	0.0416	1		
A 85-1	00 39.1	-09 37	30.6	0.90	-157.3	97	44	1	4	15.7	I	34	2.00	0.0556	1		
A 85-2	"	"	2.1	0.06	-127.1	30		"	"	"	"	"	"	"	"	44.60	45.07
A 86	00 40.2	-22 04	11.4	0.46	-145.2	71	47	0	4	15.9	II-III	25	1.64	0.0627	1	42.92	
A 115	00 53.3	26 03	5.6	0.37	-21.3	288	43	3	6	17.3	III	15	2.51	0.1971	1	44.51	
A 133	01 00.3	-22 09	1.2	0.04	-64.1	78	33	1	5	15.9	I	27	1.61	0.0566	1	44.11	
A 154-1	01 08.3	17 24	27.0	0.48	65.5	100	45	1	3	15.6	II	56	3.73	0.0638	1		
A 154-2	"	"	18.6	0.33	43.9	198	64	"	"	"	"	"	"	"	"		
A 196	01 24.5	22 57	1.5	0.11	-37.1	159	41	1	6	17.5	III	14	1.97	0.156	2		
A 240	01 39.3	07 22	15.7	0.60	-64.3	68	38	0	3	15.6	II-III	26	1.68	0.0618	1		
A 278	01 54.4	31 59	1.2	0.04	149.2	130	33	0	3	15.6	III	27	2.42	0.0894	8	43.66	
A 357	02 26.7	13 01	8.0	0.30	-117.3	145	41	0	5	16.8		27	2.88	0.110	2		
A 362	02 29.1	-05 05	1.8	0.16	145.8	79	36	1	6	17.7	II-III	11	1.66	0.172	2		
A 407	02 58.6	35 38	2.0	0.06	85.3	141	42	0	2	14.7	II	34	1.69	0.0463	1	43.34	43.67
A 416	03 04.9	-16 54	3.7	0.37	56.6	93	60	0	6	17.7	I-II	10	1.51	0.172	2		
A 474 *	04 09.6	-16 49	58.7	6.52	-87.4	117	37	0	5	17.1	II:	9	1.08	0.128	2		
A 496	04 31.3	-13 21	0.4	0.09	141.0	166	42	1	3	15.3	I:	45	1.62	0.0327	1	44.16	44.55
A 514	04 45.7	-20 31	11.0	0.32	126.3	110	33	1	4	15.2	II-III	34	2.54	0.0728	7	43.65	
A 519	04 51.2	00 36	1.1	0.05	119.5	75	33	0	5	17.0		23	2.67	0.122	2		
A 531	04 58.8	-03 37	1.8	0.10	45.3	60	41	1	5	17.0	III	18	2.09	0.122	2		
A 658	08 21.0	15 50	6.8	0.49	150.4	78	30	1	5	17.0	III	14	1.62	0.122	2		
A 912	09 58.6	00 08	10.4	0.42	6.9	292	38	0	4	15.9		25	1.81	0.070	2		
A 1142	10 58.3	10 49	20.5	0.60	100.5	177	53	0	3	15.4	II-III:	34	1.31	0.0353	1		
A 1171	11 04.9	03 13	11.6	0.41	-146	86	36	0	4	16.2		28	2.13	0.0741	1		
A 1189	11 08.5	01 24	1.1	0.04	0.0	135	45	0	5	17.0		25	2.90	0.122	2		
A 1238	11 20.4	01 22	1.6	0.11	-38.7	102	37	1	4	16.0	III	15	1.14	0.074	2		
A 1273	11 26.8	-06 46	1.8	0.16	-105.5	195	54	1	6	17.6	III	11	1.61	0.164	2		
A 1620	12 47.2	-01 19	4.7	0.21	65.2	128	43	0	5	17.2	III	22	2.75	0.134	2		

A 1631	12 50.2	-15 10	5.9	0.21	7.1	54	29	0	3	15.4	I	28	1.40	0.0465	1	43.28	43.84
A 3528#	12 51.6	-28 45	13.4	0.36	156.1		53	1	4	16.3	II	37	2.00	0.0506	3		
A 1689	13 09.0	-01 06	2.0	0.18	-61.5	67	33	4	6	17.6	II-III:	11	1.74	0.1832	1	44.98	45.47
A 1772	13 39.4	-10 50	1.9	0.15	156.6	59	35	1	5	17.0	II-III	13	1.51	0.122	2		
A 1775	13 39.6	26 37	1.2	0.04	-47.6	55	35	2	4	15.7	I	28	2.07	0.0717	1	44.01	44.48
A 1791	13 46.0	-25 12	1.7	0.06	100.3	111	38	1	6	17.0	I	26	3.01	0.122	2		
A 1913	14 24.5	16 54	3.6	0.16	46.8	56	40	1	4	16.0	III	22	1.23	0.0528	1	43.39	
A 2009	14 58.0	21 34	1.3	0.12	53.8	29	29	1	5	17.2	I-II:	11	1.52	0.1530	1	44.63	45.09
A 2029	15 08.5	05 57	1.5	0.07	-152.8	190	32	2	4	16.0	I	22	1.73	0.0768	1	44.85	45.31
A 2052	15 14.3	07 11	1.6	0.07	9.0	764	260	0	3	15.0	I-II	22	0.84	0.0348	1	43.95	44.39
Zw1518.8◊	15 18.8	07 47	10.1	0.24	59.5	29	31	4	2	15.2	II	42	2.00	0.0440	5	44.02	
A 2082	15 28.2	03 37	12.4	0.48	51.8	79	39	0	5	17.0		26	3.01	0.122	2		
A 2091	15 31.9	10 24	2.9	0.32	9.8	38	58	1	6	17.5	III	9	1.27	0.156	2		
A 2094	15 34.0	-01 52	2.2	0.20	34.0	58	42	1	5	16.7	III	11	1.13	0.105	2		
A 2103	15 37.3	-02 00	12.6	0.48	-96.5	93	44	0	5	17.1		26	3.13	0.128	2		
A 2108	15 37.8	18 03	17.3	1.08	57.0	68	39	0	4	15.7	III	16	1.47	0.0919	1		
A 2151	16 03.0	17 53	35.6	1.27	42.9	92	37	2	1	13.8	III	28	1.12	0.0368	1		
A 2249	17 07.9	34 31	2.4	0.09	160.0	71	38	0	3	15.4	III	26	2.13	0.0809	1	44.21 R	44.66
A 2354	21 33.1	-15 08	2.1	0.19	-110.4	54		2	5	17.1	III	11	1.33	0.128	2		
A 2396	21 53.2	12 15	2.7	0.30	26.5	110	136	1	6	17.5		9	1.27	0.156	2		
A 2399	21 54.9	-08 02	31.3	1.20	-161.1	99		1	3	15.6	III	26	1.62	0.0594	7		
A 2443	22 23.7	17 05	1.5	0.13	-14.0	83	47	2	5	16.5	II	12	1.13	0.095	2	43.96 R	44.41
A 2456	22 32.4	-15 33	1.1	0.14	166.9	54	52	1	5	17.2	I	8	1.00	0.134	2		
A 2457	22 33.2	01 13	11.8	0.45	139.0	56	48	1	4	16.0	I-II:	26	1.97	0.074	2		
A 2575	23 17.1	-22 19	2.1	0.30	129.1	166		0	6	17.9	III	7	1.14	0.190	2		
A 2593	23 22.0	14 22	0.5	0.02	78.3	70	98	0	3	15.1	II	28	1.27	0.0421	1	43.63	44.02
A 2622	23 32.4	27 09	3.4	0.17	138.5	100	56	0	4	15.9	II-III:	20	1.45	0.070	2	43.56 R	44.01
A 2626	23 34.0	20 53	1.0	0.04	167.7	74	25	0	3	15.2	I-II	25	1.51	0.0573	1	43.76	44.30
A 2657	23 42.3	08 52	27.3	1.05	125.4	68	70	1	3	14.9	III	26	1.17	0.0414	1		
A 4038#	23 45.1	-28 25	0.5	0.01	-2.5	68	43	2	2	14.2	III	64	2.00	0.0283	4		
A 2670	23 51.6	-10 41	20.0	0.91	-128.1	78	60	3	4	15.7	I-II	22	1.71	0.0761	1		

* The RA is from Abell et al. (1989). The incorrect RA of Abell (1958) was used for the radio field centre - hence the large offset.

† Rc is the cluster radius from the Palomar Sky Survey (Struble & Rood, 1987) except that the Abell radius (approximately 1.72/z arcmin) is quoted for A 3528, Zw 1518.8 & A 4038.

Data from Abell et al. (1989)

◊ Data from Zwicky et al. (1961) & Slee & Quinn (1979)

R ROSAT measurement converted to the Einstein luminosity scale (see text Section 2).

Column headings :

Column 1.	The cluster of galaxies nearest the observed radio field.
Columns 2,3.	The centroid position (B1950) of the optical cluster, mainly from Abell (1958), but data for for three clusters come from Abell et al. (1989) & Zwicky et al. (1961).
Columns 4,5,6.	The angular distance & position angle (positive from north through east) of the centre of the radio field with respect to the optical centroid in columns 2 & 3.
Columns 7,8.	The rms levels over a large clear area of the maps at 1.5- and 4.9 GHz.
Columns 9,10.	The richness and distance class of the cluster, mainly from Abell (1958), but for three clusters we obtain the data from Abell et al. (1989) or Slee & Quinn (1979).
Column 11.	The magnitude of the tenth brightest galaxy in the cluster, mainly from Abell (1958), but in three cases cases from Abell et al. (1989) or Zwicky et al. (1961).
Column 12.	The Bautz-Morgan classification of the cluster, mainly from Abell et al. (1989), but for Zw1518.8 from Slee & Quinn (1979).
Column 13.	The angular radius of the cluster as quoted by Struble & Rood (1987).
Column 14.	The linear radius of the cluster
Columns 15,16.	The mean redshift of the cluster and a corresponding reference.
Column 17.	The EINSTEIN X-ray luminosity in the energy range 0.5-4.5 keV and out to a radius of 1Mpc from the cluster centre. The data (adjusted for Ho = 75 km/s/Mpc) are from Jones & Forman (1995).
Column 18.	The ROSAT X-ray luminosity from Ebeling (1993).

Redshift references :

1. Struble & Rood (1991)
2. From the m10 - z relationship in SRS94 (Paper II)
3. Melnick & Quintana (1981)
4. Abell et al. (1989)
5. Beers et al. (1991)
6. Slee & Reynolds (1984)
7. Reynolds (1986)
8. Postman et al. (1992)

Table 2. Radio source measurements

Cluster Field (1)	Source Number (2)	Map Number (3)	Ang. Dist. R/Rc (4)	1.5-GHz Flux Dens. mJy (5)	4.9-GHz Flux Dens. mJy (6)	Spect. Index (7)	Gaussian Axes Maj. " (8)	Min. " (9)	PA ° (10)	Other Radio References (11)	Log 1.5-GHz Power W/Hz (12)	Largest Lin. Size kpc (13)
A13	2i		1.29	7.0								
	2ii		1.44	22.2								
	3		1.08	1.9								
	4		0.59	3.4								
	5		0.54	1.6								
	6a/b/c	1	0.19	3.9		-2.1	53	20	99	6,9,11		
	8		0.36	1.4								
	9i		0.07	1.0								
	9ii		0.30	1.1								
	10		0.68	1.0								
	11		1.09	16.7								
	12		1.00	7.8			17	6	203			
	13i		1.11	18.5			14	5	118			
	13iia/b	2†	0.94	9.2								
	14		0.96	8.1								
A76	2	3†	0.78	2.9			21	10	67			
	3		0.80	3.4								
	4		0.67	4.8								
	6i		1.16	8.5			14	7	48			
	6ii		0.82		3.0							
	7		0.99	1.3								
	9		0.81	7.5			3	3	73			
	10		0.99		0.6							
	11		1.20	2.4								
	12		0.97	2.1	0.4	-1.5	18	9	77			
	14		1.11	2.2			14	7	40			
	15		1.13	8.1	4.2	-0.6						
	16	4†	1.31	3.9			20	7	5			
	18		1.18	3.3			12	5	68			
	19		0.84	123		+0.3				3,6,7,20		
A85	2i		1.33	8.9			14	6	49			
	2ii		1.09	3.1								
	4		1.24	9.7			16	7	133			
	5		0.51	6.4								
	6		0.75	2.9								
	8		0.98	3.6	1.6	-0.7	8	4	13			
	9a/b	5†	0.41	1.7			30	4	120			
	10		0.47	8.7			10	5	48			
	11		0.45	3.4								
	14		0.61	3.6		-3.0				8		
	15		1.10	3.2								
	16		0.77		1.7							
	17		0.74	7.3			13	6	4			
	18		0.88	17.1	4.0	-1.2	5	2	150			
	19		0.32	8.7		-0.6	4	1	119	8		
	20i		0.43	0.7								
	20ii		0.30	1.9								
	21i		0.13	0.5								
	21iia/b	6†	0.33	1.1								
	22a/b/c	7†	0.46	5.3			23	2	6			
	23i		1.06	4.4								
	23ii		0.19	0.5								
	24		0.25	0.6								
	25a/b/c	8	0.08	7.8		-2.4	97	16	143	6,8,9,10,11		
	26i		0.17	6.6			8	2	133		22.39	17
	26ii		0.60	1.8								
	27		0.21	1.4								
	28		0.55	11.0		-0.2	7	4	122	8		
	29		1.01	5.6		-1.3				8		

Table 2. ***(Continued)***

	30i		0.54	1.4								
	30ii		0.02	0.5								
	31		0.05	1.6			6	3	169			
	32i		0.21	2.2								
	32ii		0.29	1.1								
	33i		0.36	0.6								
	34i		0.07	6.7			8	4	127			
	34ii		0.47	1.3								
	37		0.16	2.5								
	38i		0.27	1.3							21.82	
	38iia/b	9†	1.30	23.4			24	7	137			
	39		0.49	3.2								
	40		0.19	2.5								
	41		0.56	5.5								
	42i		0.17	1.0								
	42iia/b/c	10†	0.17	3.5			83	17	85			
	43		0.27	1.6								
	44		0.57	4.1								
	47i		0.32	0.7								
	47ii		0.28	0.8								
	47iii		0.38	0.8								
	48i		0.44	1.1								
	48ii		0.43	3.3		-2.6				8		
	49		0.32	1.0								
	50		0.31	1.7								
	51ii		0.44	1.3								
	52		0.59	6.4								
	53i		0.39	1.1		-3.8	5	3	48	8		
	53ii		0.58	1.4								
	54i		0.44	1.1								
	55		0.54	4.1								
	56i		0.41	1.6								
	56ii		0.49	1.4								
	57		0.47	2.8								
A86	1		0.86	11.0								
	2		0.64	2.7								
	3		0.59	2.0								
	4i		0.48	1.3								
	4ii		0.24	2.6			9	6	138			
	6		0.59	2.0			19	4	3			
	7		0.16	3.2								
	8		0.78	16.5		-1.1				8		
	9		0.48	2.0								
	10		0.24	3.6		-1.8				8		
	11i		0.59	3.3								
	11ii		0.23	2.2			14	6	7			
	13i		0.32	1.7								
	13ii		0.22	3.5			16	5	179			
	14		0.88	13.6		-1.3				8		
A115	1ia/b	11	0.73		3.9		40	21	80			
	1ii		1.30	14.8								
	3a/b	12	0.71		4.9							
	4		0.15	5.4								
	6		0.37		1.4						22.99	
	7		0.41	12.1			11	4	109		23.89	77
	8		0.64	6.3								
	9a/b	13†	0.51	11.3			23	10	90			
A133	1		0.65	9.6								
	3		0.24	7.2		-1.2				8		
	4		0.25	1.5			5	4	114			
	5		0.15	2.2			3	1	114			
	6		0.17	3.8	1.8	-0.6	4	3	60	11	22.36	10
	9		0.81	5.8								
	11		0.79	6.7		-0.9				8		
	12		0.61	3.1		-2.6				8		
	13i		0.50	14.0		-1.0				8		
	13ii		0.59	5.8		-0.9				8		

Table 2. (*Continued*)

	14		0.35	8.8		-0.8				8		
	15	14†	0.48	3.0			34	16	143			
	16	14†	0.52	3.9			32	9	58			
	17		0.63	5.2								
A154	1		0.13	4.4			14	2	60			
	3		0.31	2.2								
	5i		0.23	4.1								
	5ii		0.25	4.1			16	4	53			
	6i		0.40	2.0								
	6ii		0.28	3.5								
	7ii		0.43	1.8								
	7iii	15†	0.57	4.6			18	6	145			
	7iv		0.39	1.2								
	8		0.44	2.8								
	9		0.52	5.4								
	10		0.42	5.0	2.0	-0.8						
	13		0.61	3.0								
A196	1ii		1.06	8.5								
	5i		0.74	3.2								
	5ii		0.96	6.7								
	6		0.48	3.3								
A240	1		1.07	14.4								
	3		0.88	4.5								
	4		0.90	3.0								
	5		0.82	4.2								
	7	16†	1.06	5.9			22	6	36		21.55	19
	10		0.60	6.9			9	3	162			
	11		0.80	3.2								
	12		0.50	1.9								
	13a/b	17	0.47	11.6	3.5	-1.0						
	14		0.43	14.7	3.7	-1.2	10	3	44			
	15a/b	18†	0.75	14.6			29	7	8			
	16	19†	0.13	13.8			20	16	129	4,5		
	18	20†	0.15	7.1			21	13	41	4,5		
A278	1		0.58	8.7								
	2	21†	0.36	22.8			29	18	7			
	3		0.23	4.4								
	7		0.05	13.6	2.6	-1.4	11	6	59			
	9	22†	0.72	20.5			22	13	29			
	11		0.37	8.7								
A357	1		0.70	4.4								
	2		0.69	3.1								
	3		0.58	6.9								
	4		0.60	4.9								
	6		0.30	5.9			18	3	57			
	7		0.27	9.2								
A362	1		1.03	4.3			11	6	81			
	3		1.01	2.4								
	4		0.46	1.0								
	5		1.01	2.0								
	7		0.01	2.8								
	9		0.64	5.3	0.8	-1.6						
	11		0.40	1.1								
	12		0.69	1.2			13	3	160			
	13i		0.58	1.4								
	13ii		1.70	120.0		-0.5	14	7	22	20		
	13iii		1.97	13.8			19	3	137			
	15		1.60	5.2			15	9	3			
	16a/b	23†	1.33	10.1								
A407	1	24†	0.50	13.4			31	3	58			
	2		0.47	18.3			17	4	115			
	5		0.34	11.8						16		

Table 2. ***(Continued)***

	7		0.20	2.3								
	8		0.27	9.9						1		
	10		0.25	5.9							22.36	
	12		0.07	3.3			12	4	121			
	13		0.40	4.6								
	14		0.37	3.8								
	17		0.18	1.6			15	6	10		21.76	30
	18	25†	0.46	12.8			46	22	71	14,16	22.22	58
	19a/b	26†	0.39	5.0			50	8	174			
	21		0.36	2.5								
	22		0.52	8.0								
	23		0.41	10.2			11	6	53			
	24/25		0.62	7.1						14,16	22.43	
A416	1		1.16	12.0								
	2		1.15	2.4								
	3		0.73	4.3								
	4		0.43	5.4								
	5		0.36	5.6								
	6		0.42	9.9								
	8		0.76	3.3			6	2	165			
	9		0.68	1.1								
	13		0.64	12.3	5.2	-0.7						
	16		1.11	3.1								
	18i		1.97	3.6								
	19		1.96	4.2								
	20		2.19	2.3								
A474	2		8.22	6.7								
	4		7.66	4.1								
	5		7.56	4.3								
	6	27†	7.52	3.0			20	1	57			
	7		7.29	2.3								
	8	28†	7.28	1.3			27	5	124			
	9		7.30	16.0								
	10		7.22	5.8								
	11		7.27	2.2								
	12		6.81	2.7								
	14		6.44	2.5								
	15		6.18	2.8								
	16		6.13	11.5			8	5	107			
	17		6.28	8.4								
	18a/b	29	5.96	4.2	2.5	-0.4						
	19a/b	30†	5.17	6.2								
A496	2		0.31	7.9								
	3		0.06		1.7							
	5		0.11		1.6						21.54	
	6		0.06	15.7	5.9	-0.8	5	2	59			
	7		0.15	4.2						19		
	8		0.35	7.0								
	12		0.25	5.2								
	13		0.31	5.0								
A514	1		0.11	9.6		-0.4				8		
	3		0.64	6.0		-1.3				8		
	7		0.31	3.8						1		
	9		0.43	6.7	4.3	-0.4						
	11		0.63	4.5								
	12		0.45	6.7								
	13		0.48	6.3								
	14		0.49	7.4	2.5	-0.9				1,8		
	16	31†	0.66	16.5		-2.0	20	10	73	8		
	17	31†	0.68	16.7		-2.0	11	9	25	8		
	18		0.73	8.7						15		
	20		0.88	10.0			14	1	69			
A519	2		0.78	9.4								
	4		0.61	9.7								
	5		0.60	9.1								

Table 2. *(Continued)*

	6		0.71	4.5			13	4	104
	7i		0.71	6.8					
	7ii	32†	0.85	13.5					
	7iiia/b	32†	0.83	9.2			38	6	5
	9		0.21	1.9			9	4	159
	10		0.34	8.9	1.8	-1.4	8	3	131
	11		0.44	2.5					
	12		0.56	2.3					
A531	2		0.66	14.2			10	7	84
	3		0.38	1.3					
	4		0.65	9.8			8	4	132
	5		0.18	3.8			8	3	166
	6		0.35	1.1					
	8		0.46	2.1					
	9		0.05	16.3	0.4	-3.1	14	11	37
	10		0.85	2.6					
	12		0.34	6.3					
	13	33	0.40	2.6			21	14	153
	14		0.38	3.6	1.9	-0.5	5	2	122
	15		0.26	6.7	1.9	-1.1			
	16		0.53	9.4					
	17		0.50	2.2			7	2	136
	19		0.43	6.3			10	5	143
	20		0.69	11.3					
A658	1		1.51	7.6					
	4		1.11	8.0			11	4	41
	5		0.87	13.6					
	7		0.69	7.3					
	8a/b	34†	0.20	3.9			46	34	66
	9		0.12	3.5					
	12		0.58	1.3					
	13		1.12	0.9					
	14	35†	1.81	6.8			84	28	156
	15		1.54	2.5					
	17		0.98	3.5					
	18		1.88	12.7					
	19/20		1.23	10.1			10	1	118
	21		1.56	4.7					
	22	36†	1.43	11.2			30	2	55
A912	2i	37†	0.77	12.9			26	16	137
	3		0.41		1.0				
	5i		0.46		1.2				
	5ii	38†	0.89	12.6					
	6		0.54		1.1				
	8a/b	39†	0.70	25.3					
	9	40†	0.92	14.3					
A1142	1		0.34	10.6					
	2		0.73	13.9					
	3/4		0.63	3.1	2.2	-0.3			
	5i		0.63	4.1					
	5ii		0.58	2.9					
	7		0.74	4.0					
	8		0.76	4.1					
	9		0.78	3.4					
	10		0.81	3.6					
	11		0.80	2.6			18	3	85
	13		0.95	5.9					
	14		0.91	7.0					
	15		0.94	5.3					
	16a/b	41†	1.01	8.1			21	5	101
A1171	1		0.59	3.1					
	3		0.55	2.7					
	5		0.55	1.5					
	7	42	0.48	1.5			20	17	112
	8a/b	43†	0.74	4.6			58	8	26

Table 2. ***(Continued)***

	9		0.42	1.2	0.3	-1.2					
	10i		0.61	1.2			12	6	120		
	10ii		0.40	1.8			15	10	96		
	12/13		0.29	0.7	0.8	+0.1					
	14		0.15	2.2							
	15		0.17	2.0							
	17		0.93	2.9							
	18		0.44	3.9							
	19		0.08	4.2							
	20		0.08	2.1							
	23		0.32	12.5							
	24		0.79	9.2							
A1189	2ii		0.40	3.6							
	2iii		0.28	2.1							
	3		0.11	5.4	2.6	-0.6					
	4		0.16	12.3	4.5	-0.9	8	5	156		
	7		0.18	2.4			10	4	76		
	8		0.33	2.8							
	9a/b	44	0.26	5.5							
	11		0.55	3.3							
	12i		0.29	16.6							
	12ii		0.58	3.8							
	13ii		0.68	4.6							
A1238	1		1.21	9.6							
	3	45†	0.82	2.0			30	20	131		
	4		0.52	2.2							
	5a/b	46†	0.84	2.6							
	6		1.39	7.7							
	7		0.44	12.9	5.9	-0.7					
	8a/b	47	0.36	1.8	1.4	-0.2					
	9		0.12	2.8							
	10		0.39	1.4							
	12	48†	0.62	6.0			29	14	125		
	13		0.19	1.8							
	14		0.74	2.9							
	16		0.53	6.2							
	17		0.27	2.5							
	18		1.16	1.4							
	19a/b/c	49†	0.45	3.4			26	10	110		
	20/21	50†	0.80	6.9							
	22		0.66	3.3							
	23		1.20	4.0							
	25		1.29	3.8							
	26		1.22	3.9							
	27		1.37	2.9							
A1273	1i		1.37	3.5							
	1ii		0.99	2.6			24	15	158		
	1iii		0.88	3.8							
	3i/4	51	0.37	9.7	3.4	-0.9	50	27	52		
	3ii	52	0.27	7.1			35	18	173		
	3iii		1.12	4.2			35	20	39		
	6		0.18	2.8	1.8	-0.4	14	5	64		
	7		0.65	4.2			18	8	174		
	8i		0.97	10.1							
	8ii		0.99	5.0			38	8	87		
A1620	2		0.26	16.7	5.5	-0.9	14	3	135		
	4		0.29	2.1	5.1	+0.8	5	3	135		
	6		0.58	2.7							
	7		0.57	7.4							
	8	53†	0.88	15.9			29	6	54		
A1631	1a/b/c/d	54†	0.73	32.7			105	16	138		
	2ii	55†	0.64	11.7			60	14	50		
	3a/b	56†	0.49	7.7			42	4	15		
	5		0.38	14.1		+1.0	6	1	55	8	
	7		0.17	22.4		-1.0				8	22.96

Table 2. (*Continued*)

	8		0.36	1.0								
	9		0.72	15.9		-0.9				8		
	10		0.47	9.0		-0.9				8		
	11		0.35	2.9								
	12		0.09	1.7								
	13		0.06	3.3		-2.4	12	8	37	8		
	15		0.72	2.6								
	20i		0.48	1.5								
	20ii		0.81	5.3		-1.6				8		
	21		0.55	11.9								
	22		0.90	12.4		-0.9				8	22.67	
	23a/b	57†	0.77	5.1		-1.5	22	11	47	8		
	24	58†	0.75	6.1			23	18	160			
A3528	3		0.43		10.1							
A1689	1ii		1.62	2.3								
	2iia/b	59†	2.26	120.0			57	6	78			
	3		1.20	1.9								
	4i		1.57	6.2								
	4ii		1.82	3.0								
	4iii		1.23	1.4								
	5/6		0.94	4.3							24.90	
	7		0.93	15.5								
	8		0.58	0.9								
	9		1.06	15.9								
	10		0.78	1.5								
	11		0.12	1.0			11	9	154		22.77	75
	12		0.13	1.8	0.7	-0.8					23.09	
	13		0.18	10.3	2.8	-1.1	6	4	44		23.74	40
	16		1.04	2.3								
	17		0.99	12.4								
	18a/b	60	0.25	11.6	6.5	-0.5						
	19a/b	61	0.35	12.3	5.9	-0.6					23.88	
	20		0.64	2.2								
	21		1.32	3.9								
	23i		1.04	8.0								
	23ii		0.96	2.9								
A1772	1		1.40	6.2								
	2		1.30	6.2								
	3		1.38	22.0								
	4		0.83	3.9								
	5		1.05	10.2								
	6		0.65	4.5								
	8		0.70	1.2								
	9a/b	62†	0.72	2.0			30	10	115			
	12a/b	63†	1.13	3.7			25	14	77			
A1775	1		0.71	3.5								
	2		0.60	1.9								
	5		0.38	1.7			12	7	30			
	6		0.31	4.1						13		
	8		0.46	10.2						13		
	9		0.66	3.3								
	11a/b	64†	0.58	5.3			26	12	155			
	12		0.63	6.2								
	14a/b	65†	0.64	10.3						13		
	15		0.32	6.7						13,15		
	16		0.35	1.2								
	17		0.26	5.3						13,15		
	18		0.27	2.3								
	19		0.45	5.3						13,15		
A1791	1		0.18		1.5							
A1913	1		0.65	16.6			11	3	113			
	2		0.61	20.5			12	1	81			
	3i		0.53	5.1								
	3ii		1.07	15.8								

Table 2. ***(Continued)***

	4		0.39	4.5							
	5		0.68	7.8			13	4	131		
	7		0.49	5.2			11	4	142		
	9		0.24	2.0							
	10		0.32	4.6							
	11		0.12	16.3	3.4	-1.3					
	12		0.10	0.9							
	13		0.27	1.1							
	17		0.78	5.2							22.93
	18		0.37	1.3	0.7	-0.5					
	19		0.87	8.5			13	4	13		
	20		0.41	12.5			9	3	139	5	
	21		0.74	4.1							
	23		0.70	4.9							
	24		0.93	4.1			14	11	60		
A2009	1		1.43	15.8			15	1	25		
	2		1.11	2.9							
	3		0.54	1.5							
	4		0.99	1.7							
	5		0.46	5.1	1.9	-0.8					
	6		0.71	6.9			10	6	26		
	7	66†	1.52	6.3			42	5	71		
	8		0.75	0.9							
	9		0.80	1.0							
	11		1.01	2.4							
	15		0.81	0.8							
	17		0.97	9.9						18	
	18		1.30	3.5							
	19		1.49	7.6			12	1	166		
	22		1.41	3.0			16	8	105		
	23ia/b	67†	1.93	12.2							
	23ii		1.90	3.5							
	24		2.02	10.2							
	26		1.56	5.4							
	27		2.05	10.2							
A2029	3		0.09		2.4						22.96
	4		0.15	3.0	5.2	+0.5					
	5		0.22		1.6						
A2052	No sources < 20 mJy										
Zw1518.8	2		0.59	3.6							
	5		0.11	3.1	0.6	-1.4					
	9		0.28	7.7	2.8	-0.9	5	2	96		
	10		0.26	1.6							
	13a/b	68†	0.35	3.9			20	5	144		
	14		0.45	2.6							
	15		0.51	2.1							
	16a/b	69†	0.72	4.1							
	17		0.48	2.2							
	18		0.77	6.8							
	20		0.45	2.2							
	22		0.65	1.6							
	23		0.65	2.0							
A2082	1		0.10	5.1							
	2		0.21	4.7							
	3a/b	70†	0.21	15.2							
	4		0.21	2.0							
	5		0.52	1.8			17	4	164		
	7		0.66	4.3							
	9i		0.55	3.6							
	9ii		0.51	2.4							
	11		0.55	5.3	2.1	-0.8	5	1	25		
	14		0.81	4.4			9	2	16		
	15		0.73	6.1							
	16		0.80	2.7							
	17		0.78	3.3							

Table 2. *(Continued)*

	19a/b	71†	0.90	21.2			28	11	70		
A2091	1ia/b	72†	2.46	78.9		-0.6	20	5	50	3	
	1iia/b	73†	1.58	9.2							
	2		0.77	2.8							
	3		1.87	6.6							
	4		1.85	4.4							
	5		0.59	14.9	5.4	-0.9					
	7a/b	74	0.35	16.9	5.7	-0.9	34	4	82		
	9		0.57	1.3	0.9	-0.3	11	6	48		
	10		1.56	3.1			16	1	116		
	11		0.78	2.2							
	12		0.79	3.3			6	2	95		
	13		1.79	5.2							
	15		1.23	2.3							
	16		1.49	8.8			9	2	58		
	17		1.75	6.1			14	3	100		
	18		1.78	4.9							
	19		1.81	12.6			14	4	93		
A2094	1		1.62	5.7							
	4		0.51	2.1							
	6		0.18	1.4							
	7		0.47	11.6	4.1	-0.9					
	8		1.18	3.0							
	10a/b	75	0.30	4.2	0.5	-1.8					
	11		0.66	19.5	5.8	-1.0	4	1	95	12	
	12a/b	76†	0.93	11.2							
	13		1.38	7.8							
	14		1.23	2.7							
	15		1.33	4.7							
	16		1.05	3.0							
	17		1.03	4.2							
	18		1.46	3.5							
	19		1.06	8.8							
A2103	1		0.95	8.2			7	4	35		
	2		0.74	17.8			10	4	5		
	3		0.78	5.9							
	4		0.65	2.3							
	5	77†	0.77	2.9			24	8	165		
	7		0.55	3.0	1.7	-0.5	4	3	46		
	8		0.40	2.8			8	5	68		
	9a/b	78†	0.53	19.8							
	10		0.23	8.8			19	10	88		
A2108	1		0.65	7.7							
	2		0.23	18.7							
	7		1.13	5.1	0.9	-1.5					
	10		1.42	3.2							
	15		1.84	14.6							
	17		1.99	7.2							
	20		2.07	8.3							
A2151	3		1.11	5.5							
	4		1.06	4.9							22.14
	6		1.34	4.2							
	7a/b	79†	1.14	19.0	4.1	-1.3	36	8	97		
	8		1.28	3.0							21.93
	9		1.70	6.5							
	10		1.15	19.4	6.1	-1.0					
	13		1.07	3.1							
	14		1.11	4.0							
	15		1.46	7.9	3.5	-0.7					
	17a/b	80†	1.25	16.0						2	
	18		1.99	7.4							22.29
A2249	1/2		0.52	3.7							
	3i		0.11	1.0							
	4a/b	81†	0.74	9.6			32	11	138		

Table 2. *(Continued)*

	5		0.15	18.9	4.5	-1.2	14	5	135	4	23.34	49
	7	82†	0.50	25.1			26	7	102			
	9		0.73	13.2			12	5	92			
A2354	1		1.74	6.8			19	4	37			
	2		1.39	2.6								
	3		0.72	1.4								
	5a/b	83	0.40	12.6			52	9	12			
	7		0.46	2.9								
	10a/b	84	0.50	5.3								
	11a/b	85	0.13	2.5			56	7	18			
	12		0.89	3.9								
	14		1.33	4.4								
	15		1.07	2.3			22	6	96			
A2396	1		0.96	4.7								
	2		0.82	7.4			7	4	164			
	4	86	0.38	3.5	2.9	-0.2	31	10	23			
	7		1.20	3.9								
	9		0.53	3.1			4	1	161			
	10		1.21	5.3								
	12		1.61	6.4								
	13		1.76	15.3								
A2399	1/3	87†	1.73	21.2								
	2		1.26	15.0			14	3	107			
	4		1.60	8.2			16	3	155			
	7		1.21	5.6								
	9		1.55	2.2			11	5	72			
	11		1.09	2.4			9	5	54			
A2443	1a/b	88†	1.30	6.7			37	18	51			
	2a/b	89†	1.15	8.2								
	4		1.75	11.3								
	5		1.38	4.8								
	6		1.06	1.8								
	8		0.21	1.3								
	10		0.70	1.9								
	13		1.19	2.9								
	14		0.97	1.8								
	15		1.58	9.6								
	16		1.20	1.3								
	17		0.68	1.1								
	18		1.37	4.5								
	19		0.74	1.2								
	20		1.58	3.5								
	21		1.17	3.2								
	22		0.98	9.0								
	23		0.98	2.1								
A2456	1		2.03	27.8			14	9	117			
	2		1.79	21.2			7	5	105			
	3		2.42	7.5			19	9	142			
	4		1.47	2.3			19	10	92			
	5		1.49	4.3								
	6a/b	90†	0.94	8.6			28	9	24			
	7		0.62	2.2			17	8	175			
	8		0.84	6.4			3	2	31			
	9		1.12	10.4								
	10		0.18	4.8	1.4	-1.0	4	3	105			
	11		1.66	3.5			12	8	120			
	12	91†	1.31	2.0			19	11	48			
	13ii		1.63	2.2			9	6	57			
	13iiia/b	92†	2.27	5.8								
	14i		2.34	3.2								
	17		1.19	15.7			11	8	0		22.14	12
	19		2.22	6.1								
	20	93†	2.32	5.4								
	21		2.41	4.5								

Table 2. ***(Continued)***

A2457	1ia/b	94†	0.14	11.8			44	7	99			
	1ii		0.01	2.3								
	2		0.24	2.6								
	4		0.45	2.1								
	5		0.79	3.5								
	9		0.52	2.1			13	3	176			
	10ii		0.71	1.6								
	11i		0.65	2.0								
A2575	1i		2.29	5.6								
	1iia/b	95†	1.78	10.7			52	11	117			
	2		2.53	8.9								
	3		2.18	9.7								
	5		0.54	12.5			6	2	145			
	8		2.36	12.0								
	9i		0.75	3.2			16	7	152			
	9ii		3.12	7.1								
	10		1.65	20.8								
	11		1.93	17.6			11	6	67			
	13		2.86	19.6								
	14		2.92	10.4								
A2593	1i		0.84	37.9								
	1ii		0.51	13.5			6	4	126			
	3		0.37	2.2								
	4i		0.08	2.3			5	2	41		21.88	10
	4ii		0.34	2.2								
	5		0.12	2.0								
	6		0.05	7.3	2.2	-1.0						
	7a/b	96†	0.47	18.1			33	7	48			
	8ii		0.27	1.4			11	1	167			
	9i		0.45	1.3								
	9ii		0.23	2.1								
	11i		0.66	7.8								
	11ii		0.35	2.0			17	11	118			
	12i		0.62	2.1								
	12ii		0.42	17.3			9	6	66			
	13		0.62	3.4								
A2622	2		0.66	7.9								
	3		0.65	6.5								
	4		0.59	4.9								
	5	97	0.12	4.3			19	15	104			
	6		0.17	4.2	1.7	-0.8	7	4	152			
	7		0.24	2.2			15	1	99		22.19	41
	8		0.07	10.5	1.8	-1.5						
	11a/b	98†	0.38	9.1			50	2	164			
	12		0.61	6.4								
	14a/b	99	0.23	9.1			77	14	8			
	15		0.61	12.5			17	7	111			
	16		0.47	4.1								
	17		1.11	11.9			10	5	7			
	18		0.87	9.0								
	19		0.62	4.0			17	12	172			
	20		0.63	9.8			16	10	94			
	21		0.75	30.9		-0.1	12	3	102	3		
A2626	1		0.79	3.8								
	2		0.67	1.5								
	3		0.55	3.5								
	4		0.40	1.0								
	8		0.20	16.6	9.3	-0.5	3	1	36	17		
	9		0.36	2.4			6	3	131			
	10		0.06	3.9	1.2	-1.0	9	6	178	17		
	13		0.31	1.5								
	14		0.19	1.1	2.1	+0.5					21.89	
	16		0.35	0.9								
	18		0.87	14.5								
A2657	1		1.10	6.3			11	3	129			

Table 2. *(Continued)*

	2a/b	100†	1.16	14.6								
	6		1.13	3.0								
	7		1.31	8.9								
A4038	2		0.29	5.4								
	3		0.32	17.0								
	5		0.19	2.0								
	6i		0.09	1.3								
	6ii		0.28	2.3								
	6iii		0.23	7.2								
	7		0.11		2.1		6	2	18		21.48	8
	10		0.06	2.4	0.9	-0.8	9	6	176	11		
	12		0.20	8.0								
	13a/b	101†	0.10	3.6			56	8	136			
	14		0.12	4.0								
	15		0.21	5.3								
	16a/b	102†	0.13	3.9			45	8	73			
	17i		0.18	13.5								
	17ii		0.32	4.8								
	19		0.32	12.5								
A2670	1i		2.00	54.0								
	1ii	103†	1.45	9.0			20	11	51			
	2		1.64	8.8			15	7	52			
	3		1.26	6.2			13	7	128			
	4		1.10	11.4								
	5		1.15	16.5	9.2	-0.5						
	6		0.82	3.9								
	8		0.77	1.3								
	9		1.27	3.4			12	5	162			
	10		1.47	5.4								
	12		1.11	1.0			14	8	140			
	13		0.96	10.0	4.3	-0.7						
	14		0.76	7.2								
	15		0.26	2.7								

† Bandwidth smearing ≥ 7arcsec

Column headings

Column
1,2 The cluster field and source number as listed by SPS89.
3 Contour map number within Figure 1.
4 Angular distance of the source centroid from the cluster centre, normalized to the optical radius (Rc) of the cluster.
5,6 The integrated flux densities at 1.5 GHz and 4.9 GHz.
7 The spectral index from our 1.5 and 4.9 GHz flux densities if the latter is available. Otherwise from our 1.5 GHz flux and flux densities listed in the references in column 11.
8,9,10 The major and minor axes to 50% brightness of the fitted, deconvolved Gaussian ellipse and the position angle (measured from north through east) of the major axis.
11 References to other radio measurements of the source.
12,13 The emitted 1.5 GHz radio power and linear size for sources with measured red shifts

Reference to Other Measurements

1. Andernach et al (1980)
2. Andernach et al. (1986)
3. Becker, White and Edwards (1991)
4. Zhao et al. (1989)
5. Owen, White and Burns (1992)
6. Slee and Siegman (1983)
7. White and Becker (1992)
8. Reynolds (1986)
9. Mills and Hoskins (1977)
10. Large et al. (1981)
11. Slee and Reynolds (1984)
12. Haslam et al. (1978)
13. Harris et al. (1980)
14. Feretti and Giovannini (1994)
15. Waldthausen et al. (1979)
16. Harris and Miley (1978)
17. Roland et al. (1985)
18. Riley (1975)
19. Andernach et al. (1988)
20. Griffith et al. (1995)

Table 3. Sources with double components

Cluster Field	Source Number	Map Number	Component Positions (B1950) a RA	a Dec	b RA	b Dec	Component Fluxes Sa	Sb	Flux Ratio Sa/Sb	Component Axes a	b	Ratio of Maj. Axes a/b	Comp. Sep.
			h m s	° ' "	h m s	° ' "	mJy	mJy		" " °	" " °		" °
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Abell 13	13iia/b	2†	00 12 10.25	-19 43 08.9	00 12 12.96	-19 43 08.6	5.0	4.8	1.0				38.3, 90
Abell 85	9a/b	5†	00 38 11.43	-09 39 50.3	00 38 10.44	-09 39 42.3	1.0	0.6	1.7				16.7, 119
	21iia/b	6†	00 38 48.56	-09 27 18.9	00 38 49.42	-09 27 37.3	0.7	0.3	2.3				22.4, 145
	38iia/b	9†	00 39 22.30	-10 21 10.3	00 39 21.44	-10 20 54.1	13.4	9.9	1.4				20.6, 142
Abell 115	1ia/b	11	00 52 50.43	26 11 54.3	00 52 48.66	26 11 49.0	3.9	1.4	2.8	26, 20, 172	12, 5, 137	2.2	24.4, 78
	3a/b	12	00 53 10.11	26 14 09.6	00 53 09.03	26 14 23.6	2.5	2.4	1.0				20.2, 134
	9a/b	13†	00 53 45.76	26 07 44.5	00 53 47.67	26 08 00.4	9.1	2.2	4.1	22, 10, 103			30.2, 58
Abell 240	13a/b	17	01 38 35.62	07 29 46.3	01 38 34.13	07 28 55.8	5.5	4.8	1.1	21, 9, 34	16, 9, 91	1.3	55.1, 24
	15a/b	18†	01 39 01.67	07 42 00.7	01 39 01.25	07 41 42.0	9.9	4.7	2.1	17, 3, 150			19.7, 19
Abell 362	16a/b	23†	02 30 04.31	-04 59 22.1	02 30 02.68	-04 59 11.6	3.5	3.2	1.1	15, 9, 124			26.5, 113
Abell 407	19a/b	26†	02 59 18.58	35 48 58.9	02 59 18.68	35 48 30.9	3.1	2.4	1.3				28.0, 178
Abell 474	18a/b	29	04 05 52.08	-16 46 14.4	04 05 54.16	-16 46 29.1	4.0	2.1	1.9		17, 5, 172		33.3, 116
	19a/b	30†	04 06 24.79	-16 56 27.1	04 06 23.06	-16 56 52.6	8.1	4.0	2.0	40, 11 175			35.6, 44
Abell 519	7iiia/b	32†	04 51 24.84	00 55 03.9	04 51 24.70	00 54 38.7	5.1	3.3	1.5				25.3, 5
Abell 658	8a/b	34†	08 20 47.82	15 52 58.1	08 20 49.56	15 52 54.8	2.9	1.4	2.0	57, 14, 12			25.3, 97.5
Abell 912	8a/b	39†	09 59 31.67	00 18 38.9	09 59 37.24	00 18 24.4	13.7	11.6	1.2		77, 35, 111		84.8, 100
Abell 1142	16a/b	41†	11 00 32.38	10 42 15.8	11 00 30.73	10 42 20.3	5.1	3.0	1.7				25, 101
Abell 1171	8a/b	43†	11 04 18.59	02 54 20.4	11 04 17.55	02 53 48.2	2.6	1.8	1.4	11, 2, 155	5, 3, 45	2.2	35.7, 26

Abell 1189	9a/b	44	11 08 50.95	01 27 53.9	11 08 48.73	01 27 47.8	2.5	2.3	1.1				33.8, 80
Abell 1238	5a/b	46†	11 19 57.84	01 12 10.4	11 19 56.57	01 12 30.6	2.1	1.6	1.3				27.8, 137
	8a/b	47	11 20 11.88	01 27 32.0	11 20 13.68	01 27 14.4	0.9	0.7	1.3				32.2, 123
	20/21	50†	11 20 50.05	01 13 52.9	11 20 53.44	01 13 48.0	2.2	2.1	1.0	21, 5, 137			51.1, 96
Abell 1273	3i/4	51	11 26 34.59	-06 47 57.7	11 26 37.07	-06 47 41.1	6.9	5.8	1.2	35, 17, 44			40.5, 66
Abell 1631	3a/b	56†	12 49 33.35	-15 20 00.4	12 49 32.95	-15 20 24.8	4.4	3.2	1.4	18, 3, 39			25.1, 13
	23a/b	57†	12 51 17.44	-14 55 26.4	12 51 16.47	-14 55 27.4	3.0	2.1	1.4				14.1, 86
Abell 1689	2iia/b	59†	13 07 54.65	-00 47 20.4	13 07 52.43	-00 47 29.0	64.0	48.0	1.3				34.4, 76
	18a/b	60	13 09 07.94	-01 07 48.4	13 09 09.00	-01 07 30.6	9.1	2.3	4.0				23.9, 42
	19a/b	61	13 09 09.02	-01 03 28.2	13 09 09.75	-01 03 49.9	6.7	5.1	1.3		19, 16, 69		24.3, 153
Abell 1772	9a/b	62†	13 40 03.29	-10 55 00.7	13 40 02.12	-10 54 51.4	1.0	0.8	1.3				19.6, 118
	12a/b	63†	13 40 26.44	-10 47 43.6	13 40 27.63	-10 47 40.9	2.0	1.8	1.1				17.7, 81
Abell 1775	11a/b	64†	13 39 31.79	26 53 19.2	13 39 32.15	26 53 44.6	3.3	2.0	1.7				25.9, 11
	14a/b	65†	13 39 44.67	.26 19 12.5	13 39 44.64	26 18 52.0	5.4	3.4	1.6				20.5, 1
Abell 2009	23ia/b	67†	14 59 07.66	21 19 19.9	14 59 08.05	21 19 43.5	4.8	3.1	1.5				24.2, 13
Zw 1518.8	13a/b	68†	15 19 42.06	07 45 09.9	15 19 41.42	07 45 21.8	2.5	1.4	1.8				15.2, 141
	16a/b	69†	15 19 52.09	08 09 05.5	15 19 52.96	08 09 21.6	1.7	0.6	2.8				20.6, 39
Abell 2082	3a/b	70†	15 28 19.61	03 42 18.8	15 28 17.49	03 41 50.0	9.8	2.3	4.3	22, 6, 54			42.9, 48
	19a/b	71†	15 29 42.65	03 41 37.0	15 29 41.07	03 41 30.9	14.0	4.1	3.4	15, 10, 32			24.4, 76
Abell 2091	1ia/b	72†	15 30 40.76	10 11 22.9	15 30 39.66	10 11 08.9	41.4	37.4	1.1				21.4, 49
	1iia/b	73†	15 31 15.71	10 35 32.4	15 31 17.11	10 35 38.1	3.7	3.6	1.0				21.4, 74
	7a/b	74	15 31 57.26	10 21 51.5	15 31 58.73	10 21 53.9	10.1	7.3	1.4	15, 3, 67			21.8, 84
Abell 2094	10a/b	75	15 34 10.50	-01 49 24.9	15 34 09.00	-01 49 10.7	4.1	1.6	2.6	7, 4, 37	11, 4, 26	0.6	26.6, 122
	12a/b	76†	15 34 18.43	-02 01 41.7	15 34 16.86	-02 02 17.0	5.7	5.6	1.0		23, 13, 46		42.5, 34
Abell 2103	9a/b	78†	15 37 16.80	-02 14 24.1	15 37 15.08	-02 14 01.0	13.6	3.4	4.0	28, 7, 72			34.6, 132

Table 3. ***(Continued)***

Abell 2151	7a/b	79†	16 04 14.95	18 19 21.4	16 04 13.22	18 19 24.9	10.4	7.7	1.4	10, 5, 62	14, 8, 113	0.7	24.9, 98
	17a/b	80†	16 05 16.68	18 05 03.2	16 05 18.43	18 04 58.9	7.4	5.6	1.3				25.3, 100
Abell 2249	4a/b	81†	17 07 58.49	34 12 40.4	17 07 57.56	34 12 58.5	4.9	2.2	2.2				21.5, 148
Abell 2354	5a/b	83	21 32 50.69	-15 06 48.6	21 32 50.91	-15 06 17.1	8.3	3.3	2.5	28, 5, 31			31.7, 6
	10a/b	84	21 33 11.83	-15 14 12.4	21 33 09.14	-15 13 53.3	3.0	1.5	2.0	20, 9, 166			43.4, 116
	11a/b	85	21 33 13.43	-15 08 42.5	21 33 12.71	-15 09 13.0	1.4	1.0	1.4				32.2, 19
Abell 2399	1/3	87†	21 53 09.07	-08 37 42.1	21 53 05.57	-08 37 18.1	11.5	8.5	1.4		24, 15, 91		57.2, 115
Abell 2443	1a/b	88†	22 22 37.05	17 10 05.3	23 22 38.66	17 10 16.5	3.0	1.3	2.3	19, 11, 1			25.6, 64
	2a/b	89†	22 22 48.23	16 59 44.8	22 22 47.98	16 59 12.8	4.1	3.4	1.2				32.2, 6
Abell 2456	6a/b	90†	22 32 05.00	-15 39 39.7	22 32 05.57	-15 39 23.5	4.7	4.0	1.2	14, 7, 12			18.2, 27
	13iiia/b	92†	22 32 33.28	-15 51 03.9	22 32 34.59	-15 50 51.1	4.5	1.3	3.5				22.8, 56
Abell 2457	1ia/b	94†	22 33 13.35	01 16 14.5	22 33 11.55	01 16 18.6	6.0	6.0	1.0	17, 5, 111	21, 11, 82	0.8	27.3, 99
Abell 2575	1iia/b	95†	23 16 23.25	-22 20 42.3	23 16 25.21	-22 20 56.1	6.1	5.0	1.2		17, 8, 29		30.5, 117
Abell 2593	7a/b	96†	23 22 00.54	14 35 24.1	23 22 01.75	14 35 40.1	10.7	6.2	1.7	9, 4, 147			23.7, 48
Abell 2622	11a/b	98†	23 32 33.55	27 16 43.2	23 32 33.32	27 17 04.7	4.5	0.8	5.6				21.7, 172
	14a/b	99	23 32 45.34	27 11 26.2	23 32 45.21	27 10 54.9	2.8	2.4	1.2	30, 3, 53	15, 7, 141	2.0	31.4, 3
Abell 2657	2a/b	100†	23 43 26.67	08 27 50.0	23 43 26.91	08 28 26.9	8.5	4.1	2.1	9, 4, 137			37.1, 6
Abell 4038	13a/b	101†	23 45 20.98	-28 16 32.7	23 45 22.74	-28 16 58.1	2.8	2.0	1.4	12, 4, 115			34.4, 138
	16a/b	102†	23 45 44.88	-28 30 13.5	23 45 42.69	-28 30 23.9	2.2	1.8	1.2	40, 10, 90			30.7, 70

† Bandwidth smearing ≥ 7 arcsec

Column headings

1 The cluster field
2 Source number
3 Contour map number within Figure 1.
4,5 The RA and declination of the centroid of component 'a'.
6,7 The RA and declination of the centroid of component 'b'.
8,9 The 1.5 GHz flux densities of the components.
10 The ratio of the flux densities of the components.
11,12 Deconvolved ellipse axes and position angles of the components (from north through east).
13 Ratio of the major axes of the components.
14 Angular separation of the components and its position angle (from north through east).

Table 4. Sources with triple and quadruple components

Cluster Field	Source Number	Map Number	Component Flux Density a	b	c	d	Gaussian-fit Ellipses * a	b	c	d	Component Separations# a-b	b-c	a-c	c-d	a-d
			mJy	mJy	mJy	mJy	" " °	" " °	" " °	" " °	" °	" °	" °	" °	" °
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Abell 13	6a/b/c	1	1.8	1.4	0.7		32, 11,20	9, 3, 8			37.9, 104	20.3, 130	21.6, 79		
Abell 85	22a/b/c	7†	3.0	1.6	0.7						18.6, 9	26.3, 3	44.9, 6		
	25a/b/c	8	3.8	1.9	1.8		80, 9, 152	25, 9, 21	28, 20, 121		50.6, 116	74.7, 78	46.7, 36		
	42iia/b/c	10†	2.0	1.0	0.5		33, 23, 76				48.0, 86	49.7, 23	51.1, 146		
Abell 1238	19a/b/c	49†	1.6	1.0	0.8		23, 12, 121				41.7, 74	37.1, 5	45.1, 125		
Abell 1631	1a/b/c/d	54†	15.5	13.2	4.3	4.0	65, 20, 121	119, 12, 52			108.5, 143	64.9, 150	44.8, 133	23.9, 162	66.6, 143

† Bandwidth smearing > 7arcsec

* Major and minor axes of deconvolved ellipse and position angle of major axis (from north through east)

Separation of components and it's position angle (from north through east).

Table 5. Optical Identifications

Field & Source No.	Radio Centroid Position RA h m s	Dec. ° ' "	Optical Position RA h m s	Dec. ° ' "	Angular Distance "	Position Angle °	Apparent Mag. PSSE R	SRC B_J	Morph. Class	Heliocent. Redshift z	z Reference	Catalogue Name
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Abell 13												
2i	00 09 41.73	- 19 54 59.8	BF									
2ii	00 09 43.95	-19 31 50.5	BF									
3	00 10 02.81	-19 37 37.2	BF									
4	00 10 31.71	-19 52 06.5	BF									
5	00 10 51.14	-19 39 03.5	**00 10 51.21**	**-19 39 01.0**	**3**	**22**		**20.8**	**E**			
			00 10 50.23	-19 38 52.1	17	-48		21.5	G			
6a/b/c	00 10 54.51	-19 46 47.7	00 10 55.35	-19 46 47.7	12	90		19.7	E			
			00 10 53.21	-19 46 46.2	18	-85		17.7	E			
			00 10 56.27	-19 46 50.3	25	96		18.8	E			
8	00 11 04.67	-19 53 13.4	BF									
9i	00 11 11.87	-19 46 23.6	**00 11 11.90**	**-19 46 21.4**	**2**	**11**		**20.8**	**E**			
9ii	00 11 15.03	-19 51 41.2	**00 11 14.54**	**-19 51 44.2**	**8**	**-114**		**19.0**	**St**			
			00 11 14.94	**-19 51 42.4**	**2**	**-122**		**2x19.3**	**2xSt**			
10	00 11 31.18	-19 57 18.5	BF									
11	00 11 50.49	-19 32 00.3	**00 11 50.49**	**-19 32 06.3**	**6**	**180**		**20.6**	**St**			
12	00 11 58.53	-19 59 15.6	BF									
13i	00 12 09.05	-19 59 22.0	**00 12 08.14**	**-19 59 33.4**	**17**	**-132**		**21.5**	**St**			
13iia/b	00 12 11.66	-19 43 08.9	BF									
14	00 12 15.17	-19 43 55.5	**00 12 15.06**	**-19 43 53.6**	**2**	**-39**		**18.8**	**St**			
			00 12 16.46	-19 43 48.6	19	69		20.8	G			
Abell 76												
2	00 36 59.05	06 56 19.0	**00 36 58.99**	**06 56 13.9**	**5**	**-170**	**19.5**		**G**			
			00 36 58.80	06 56 06.4	13	-163	19.5		G			
			00 36 59.69	06 56 06.0	16	144	19.5		St			
3	00 37 12.65	06 57 14.2	BF									
4	00 37 12.89	06 52 54.9	BF									
6i	00 37 21.02	07 09 24.5	BF									
6ii	00 37 23.21	06 57 47.5	**00 37 23.63**	**06 57 54.1**	**9**	**43**	**19.5**		**G**			

			00 37 24.65	06 57 46.1	21	94	19.5		G	
			00 37 23.68	**06 57 41.7**	**9**	**130**	**17.3**		**E**	
7	00 37 24.24	07 03 22.5	**00 37 24.39**	**07 03 19.5**	**4**	**143**	**18.5**		**G**	
9	00 37 32.43	06 57 06.2	00 37 33.23	06 57 09.1	12	76	17.5		E	
10	00 37 40.48	07 02 47.0	**00 37 40.42**	**07 02 52.1**	**5**	**-10**	**19.5**		**St**	
			00 37 40.44	07 02 32.3	15	-177	18.8		St	
11	00 37 40.69	07 10 00.8	00 37 39.50	07 09 58.3	18	-98	17.2		St	
			00 37 41.30	07 09 49.3	15	142	18.0		E	
12	00 37 47.47	07 01 47.2	BF							
14	00 37 59.25	07 05 48.1	**00 37 59.26**	**07 05 47.7**	**0**		**18.2**		**E**	
15	00 38 05.76	07 05 46.1	BF							
16	00 38 16.79	07 11 26.3	BF							
18	00 38 23.45	07 06 01.7	**00 38 23.65**	**07 06 03.4**	**3**	**60**	**19.3**		**G**	
19	00 38 57.38	06 41 33.0	BF							
Abell 85										
2i	00 37 50.49	-10 18 19.9	00 37 49.56	-10 18 31.3	18	-130		17.4	St	
2ii	00 37 51.54	-10 09 29.7	**00 37 50.95**	**-10 09 25.2**	**10**	**-63**		**21.9**	**G**	
4	00 37 56.25	-10 15 39.5	BF							
5	00 37 58.25	-09 41 02.3	00 37 58.99	-09 40 51.8	15	46	17.5	19.7	E	
6	00 37 58.89	-09 56 40.1	BF							
8	00 38 11.79	-10 07 36.9	BF							
9a/b	00 38 11.02	-09 39 46.8	00 38 10.01	-09 40 01.2	21	-134		14.3	St	
			00 38 11.50	-09 39 38.0	11	39		15.5	St	GSC 05269-00501
10	00 38 12.51	-09 46 07.0	BF							
11	00 38 15.66	-09 29 07.9	**00 38 15.39**	**-09 29 04.0**	**6**	**-46**	**19.5**	**22.3**	**G**	
14	00 38 22.65	-09 20 02.4	BF							
15	00 38 23.24	-10 12 54.7	BF							
16	00 38 23.80	-10 01 17.3	BF							
17	00 38 27.66	-10 00 28.5	**00 38 27.47**	**-10 00 25.7**	**4**	**-45**	**>19.5**	**21.4**	**G**	
18	00 38 28.58	-10 05 49.4	BF							
19	00 38 34.92	-09 45 11.6	BF							
20i	00 38 41.87	-09 50 30.5	**00 38 41.68**	**-09 50 34.3**	**5**	**-144**		**21.8**	**G**	
			00 38 43.00	-09 50 40.4	19	121		21.3	E	
20ii	00 38 42.45	-09 29 35.4	**00 38 42.45**	**-09 29 36.4**	**1**	**180**	**>19.5**	**21.9**	**G**	
21i	00 38 48.22	-09 35 52.1	BF							
21iia/b	00 38 48.69	-09 27 21.4	BF							
22a/b/c	00 38 49.70	-09 52 30.6	BF							
23i	00 38 52.29	-10 13 09.7	BF							

Table 5. **(*Continued*)**

23ii	00 38 55.33	-09 42 55.0	**00 38 54.95**	**-09 42 48.1**	**9**	**-39**		**18.6**	**St**			
24	00 38 56.77	-09 29 29.0	BF									
25a/b/c	00 38 57.03	-09 38 44.4	00 38 59.08	-09 38 59.5	34	116	18.6	20.8	G	> 0.06	25	
			00 39 00.81	-09 38 58.4	58	104	18.1	20.8	G			
			00 39 00.69	-09 39 13.7	62	118	18.1	20.6	G			
26i	00 38 58.48	-09 32 15.4	**00 38 58.38**	**-09 32 12.9**	**3**	**-31**	**15.2**		**cD**	**0.0448**	**2,5**	
26ii	00 38 58.62	-09 57 10.1	BF									
27	00 39 01.11	-09 44 26.8	BF									
28	00 39 04.80	-09 55 48.4	**00 39 05.38**	**-09 55 50.5**	**9**	**104**	**19.5**	**22.7**	**G**			
29	00 39 02.21	-10 11 43.2	**00 39 02.24**	**-10 11 36.7**	**7**	**4**	**18.2**	**21.2**	**G**			
			00 39 03.30	-10 11 30.2	21	51	19.5	21.8	G			
30i	00 39 01.81	-09 56 13.1	**00 39 02.07**	**-09 56 08.2**	**6**	**38**	**16.8**	**16.9**	**St**			
			00 39 02.54	-09 55 58.1	18	36	18.6	21.1	E			
30ii	00 39 03.12	-09 36 50.2	BF									
31	00 39 07.08	-09 39 17.0	BF									
32i	00 39 09.86	-09 30 39.5	00 39 09.94	-09 30 52.1	13	175	>19.5	23.0	G			
			00 39 09.46	-09 30 25.6	15	-23	18.0	18.5	E			
			00 39 11.17	-09 30 51.6	23	122	>19.5	22.6	G			
32ii	00 39 12.21	-09 27 16.9	00 39 12.21	-09 27 04.0	13	0		21.8	G			
33i	00 39 14.12	-09 49 08.9	BF									
34i	00 39 16.25	-09 37 11.0	00 39 17.29	-09 37 08.1	16	79	>19.5	22.4	G			
34ii	00 39 17.15	-09 52 38.6	00 39 16.67	-09 52 55.5	18	-157		22.6	G			
			00 39 17.12	**-09 52 42.5**	**4**	**-174**		**21.9**	**E**			
37	00 39 21.34	-09 41 31.5	BF									
38i	00 39 21.29	-09 45 54.8	**00 39 21.47**	**-09 45 57.4**	**4**	**134**	**16.5**	**17.1**	**E**	**0.0525**	**2**	
			00 39 21.49	**-09 45 47.2**	**8**	**21**	**>19.5**	**20.6**	**E**			
			00 39 21.65	-09 46 12.6	19	163	16.0		S0	0.0509	2,5	MCG -02-02-087
			00 39 22.33	-09 46 06.7	19	128	18.0	19.0	St			
38iia/b	00 39 21.89	-10 21 02.9	BF									
39	00 39 23.65	-09 21 40.8	00 39 22.72	-09 21 26.9	20	-45		21.3	G			
40	00 39 26.39	-09 33 22.8	00 39 25.65	-09 33 22.2	11	-87	17.3	19.2	E			
			00 39 26.51	**-09 33 20.8**	**3**	**42**	**>19.5**	**21.9**	**S0**			
			00 39 26.77	-09 33 39.7	18	162	18.0	19.6	E	0.0612	9	
41	00 39 27.00	-09 55 44.0	00 39 28.10	-09 55 36.2	18	64	16.0		S0			
42i	00 39 27.41	-09 40 17.6	BF									
42iia/b/c	00 39 29.30	-09 35 25.3	00 39 28.22	-09 35 04.2	26	-37		22.2	G			
			00 39 29.55	**-09 35 29.6**	**6**	**139**		**20.6**	**E**			
			00 39 29.58	**-09 35 25.1**	**4**	**87**		**20.2**	**E**			
43	00 39 32.14	-09 31 14.3	**00 39 32.62**	**-09 31 20.6**	**9**	**132**		**21.2**	**G**			

			00 39 32.69	-09 30 58.1	18	27		22.7	G
44	00 39 34.17	-09 55 42.3	BF						
47i	00 39 38.79	-09 44 02.1	00 39 38.43	-09 44 11.9	11	-151		16.8	St
			00 39 39.90	-09 43 59.2	17	80		19.1	E
47ii	00 39 39.35	-09 33 00.8	BF						
47iii	00 39 40.87	-09 27 08.5	BF						
48i	00 39 41.12	-09 24 41.2	BF						
48ii	00 39 42.28	-09 49 09.4	00 39 41.43	-09 49 20.7	17	-132	17.5	18.6	E
49	00 39 44.24	-09 42 54.7	00 39 43.46	-09 42 48.0	13	-60	17.6	17.3	E
50	00 39 44.74	-09 42 09.8	00 39 44.17	-09 42 22.4	15	-146	19.5	20.8	E
			00 39 45.90	-09 41 57.2	21	54	>19.5	22.8	G
51ii	00 39 48.08	-09 26 02.4	00 39 46.97	-09 25 51.8	20	-57		18.4	St
52	00 39 49.57	-09 20 48.5	**00 39 49.28**	**-09 20 56.6**	**9**	**-152**	**18.8**	**19.3**	**St**
53i	00 39 53.25	-09 43 28.6	00 39 52.80	-09 43 42.6	16	-155		20.5	St
53ii	00 39 55.40	-09 52 36.8	BF						
54i	00 39 56.87	-09 28 46.6	00 39 56.28	-09 28 59.5	16	-146		19.3	St
55	00 39 59.40	-09 50 29.2	BF						
56i	00 40 01.90	-09 38 36.4	BF						
56ii	00 40 04.03	-09 28 12.9	BF						
57	00 40 09.05	-09 41 37.2	BF						
Abell 86									
1	00 38 32.53	-22 09 55.0	00 38 33.28	-22 10 09.9	18	145		20.3	St
2	00 38 53.40	-22 03 14.7	00 38 54.01	-22 03 29.2	17	150		20.6	St
3	00 39 24.64	-22 16 20.2	BF						
4i	00 39 34.00	-22 12 10.1	**00 39 33.47**	**-22 12 14.4**	**8**	**-120**		**21.5**	**G**
4ii	00 39 40.02	-22 07 51.0	00 39 39.17	-22 07 45.5	13	-65		20.6	St
			00 39 41.47	-22 07 43.8	21	70		20.8	G
6	00 39 44.27	-22 18 40.6	**00 39 43.94**	**-22 18 45.6**	**7**	**-138**		**21.0**	**G**
			00 39 44.11	**-22 18 36.0**	**5**	**-26**		**20.4**	**G**
7	00 39 45.41	-22 03 31.9	**00 39 45.35**	**-22 03 33.1**	**1**	**-145**		**19.5**	**St**
8	00 39 46.82	-22 23 30.4	00 39 45.97	-22 23 28.2	12	-79		20.5	St
9	00 39 56.22	-22 16 24.6	**00 39 56.30**	**-22 16 26.9**	**3**	**154**		**18.8**	**E**
10	00 39 58.05	-21 58 53.1	BF						
11i	00 40 01.49	-22 19 10.6	BF						
11ii	00 40 08.52	-22 09 46.9	**00 40 08.39**	**-22 09 53.5**	**7**	**-165**		**18.2**	**E**
			00 40 10.14	-22 09 43.6	23	82		20.5	G
13i	00 40 23.07	-22 11 35.6	BF						
13ii	00 40 36.20	-22 04 22.5	00 40 34.94	-22 04 22.4	18	-90		18.9	E

Table 5. (*Continued*)

			00 40 35.56	**-22 04 23.2**	**9**	**-94**		**20.9**	**St**		
14	00 40 57.91	-22 22 03.3	00 40 57.00	-22 22 16.3	18	-136		19.7	St		
Abell 115											
1ia/b	00 52 49.96	26 11 53.0	**00 52 49.16**	**26 11 41.9**	**15**	**-136**	**19.6**		**St**		
1ii	00 52 58.88	26 22 26.9	BF								
3a/b	00 53 09.90	26 14 12.8	BF								
4	00 53 17.52	26 01 41.5	BF								
6	00 53 27.07	26 08 57.6	**00 53 27.09**	**26 08 57.1**	**1**	**152**	**17.3**		**E**	**0.1910**	**22**
7	00 53 41.05	26 06 49.0	00 53 40.99	26 07 05.2	16	-3	19.5		G	0.1915	17
			00 53 40.85	**26 06 45.6**	**4**	**-142**	**17.5**		**E**	**0.1909**	**22**
8	00 53 41.57	26 11 38.1	00 53 41.85	26 11 19.0	19	169	18.0		St		
9a/b	00 53 45.86	26 07 45.0	BF								
Abell 133											
1	00 59 04.56	-22 10 42.4	00 59 04.23	-22 10 30.4	13	-21		19.3	St		
3	00 59 54.00	-22 00 04.7	**00 59 53.83**	**-22 00 09.0**	**5**	**-151**		**20.5**	**E**		
			00 59 53.89	-21 59 48.6	16	-5		21.5	G		
4	00 59 57.76	-22 09 51.2	BF								
5	01 00 02.22	-22 07 13.3	BF								
6	01 00 11.23	-22 09 12.5	**01 00 11.17**	**-22 09 11.5**	**1**	**-40**		**17.4**	**E**	**0.0563**	**9**
			01 00 12.83	-22 09 04.7	24	71		17.4	E	0.0591	9
9	01 00 18.87	-22 26 00.0	BF								
11	01 00 23.89	-22 25 32.6	**01 00 23.80**	**-22 25 36.3**	**4**	**-161**		**18.6**	**St**		
			01 00 24.45	-22 25 23.1	12	39		21.8	G		
12	01 00 42.27	-22 19 17.2	**01 00 42.07**	**-22 19 13.1**	**5**	**-34**		**21.5**	**G**		
13i	01 00 43.96	-22 15 48.5	BF								
13ii	01 00 53.66	-22 22 41.0	BF								
14	01 00 55.93	-22 04 28.1	BF								
15	01 01 07.61	-22 15 12.0	01 01 06.47	-22 15 10.3	16	-84		21.1	E		
			01 01 07.09	**-22 15 18.9**	**10**	**-134**		**22.0**	**G**		
16	01 01 10.69	-22 15 44.5	01 01 11.11	-22 15 31.6	14	24		20.1	E		
			01 01 11.52	-22 15 56.4	17	136		23.0	G		
17	01 01 30.44	-22 10 58.8	01 01 30.08	-22 10 39.2	20	-14		19.7	St		
Abell 154											
1	01 08 30.52	17 31 22.8	BF								
3	01 09 00.62	17 38 47.8	**01 09 00.30**	**17 38 47.5**	**5**	**-94**	**16.2**		**E**		
5i	01 09 03.61	17 30 33.8	BF								

5ii	01 09 08.41	17 30 46.9	BF									
6i	01 09 26.94	17 39 15.2	BF									
6ii	01 09 27.42	17 25 37.0	**01 09 27.13**	**17 25 31.8**	**7**	**-141**	**19.8**		**St**			
7ii	01 09 40.52	17 37 54.4	BF									
7iii	01 09 41.89	17 48 56.5	BF									
7iv	01 09 42.34	17 31 57.9	01 09 41.66	17 32 07.2	14	-46	17.7		E			
			01 09 42.15	**17 31 59.2**	**3**	**-64**	**19.8**		**St**			
8	01 09 55.25	17 34 09.2	BF									
9	01 09 55.77	17 43 07.6	BF									
10	01 09 55.55	17 31 09.2	**01 09 55.50**	**17 31 06.9**	**2**	**-163**	**19.3**		**St**			
13	01 10 40.41	17 24 54.6	BF									
Abell 196												
1ii	01 23 42.91	22 46 55.0	BF									
5i	01 24 51.55	22 47 58.5	BF									
5ii	01 24 55.45	23 09 10.3	BF									
6	01 24 58.51	22 58 39.0	BF									
Abell 240												
1	01 37 38.11	07 09 59.6	BF									
3	01 37 49.12	07 15 56.8	BF									
4	01 37 51.09	07 32 28.8	BF									
5	01 37 57.68	07 31 09.1	BF									
7	01 38 05.43	07 43 42.8	**01 38 05.59**	**07 43 47.9**	**6**	**25**	**13.5**		**E**	**0.0178**	**34**	**NGC 652 IRAS 01380+0743**
10	01 38 22.69	07 30 28.3	BF									
11	01 38 24.20	07 38 49.8	BF									
12	01 38 25.88	07 20 17.4	BF									
13a/b	01 38 35.63	07 29 46.6	01 38 34.68	07 29 17.8	32	-154	>19.5	21.5	St			
			01 38 34.80	**07 29 04.8**	**44**	**-164**	**19.2**	**21.2**	**G**			
14	01 38 40.09	07 29 29.4	BF									
15a/b	01 39 01.52	07 41 53.6	**01 39 01.74**	**07 42 14.8**	**21**	**9**	**17.5**		**E**			
			01 39 00.86	**07 42 13.7**	**22**	**-26**	**17.5**		**E**			
16	01 39 19.63	07 26 17.0	**01 39 18.89**	**07 26 19.6**	**11**	**-77**	**17.9**		**St**			
18	01 39 25.25	07 26 13.4	**01 39 25.88**	**07 26 29.6**	**19**	**30**	**19.5**		**G**			
Abell 278												
1	01 53 49.03	32 12 57.8	BF									
2	01 53 57.78	31 50 48.8	**01 53 57.81**	**31 51 01.9**	**13**	**2**	**18.0**		**E**			

Table 5. (*Continued*)

3	01 53 58.89	32 02 37.1	01 53 59.70	32 02 52.5	19	34	17.7		E
7	01 54 27.56	31 58 16.0	**01 54 27.49**	**31 58 15.7**	**1**	**-109**	**16.2**		**E**
9	01 54 51.04	31 40 45.4	**01 54 50.40**	**31 40 49.7**	**9**	**-62**	**17.5**		**St**
			01 54 49.78	31 40 42.0	16	-102	18.3		G
11	01 55 06.90	32 02 11.9	01 55 07.96	32 02 13.6	14	83	19.5		G
			01 55 07.29	32 02 02.3	11	153	16.1		St
Abell 357									
1	02 25 31.51	12 56 17.2	BF						
2	02 25 42.78	13 12 16.2	02 25 43.04	13 12 32.7	17	13	19.3		St
3	02 25 44.76	13 06 39.0	BF						
4	02 26 01.54	13 13 52.6	BF						
6	02 26 40.63	13 09 33.8	**02 26 40.81**	**13 09 36.0**	**3**	**50**	**19.3**		**G**
7	02 26 45.23	13 08 47.2	BF						
Abell 362									
1	02 28 22.60	-05 04 37.1	**02 28 22.58**	**-05 04 34.6**	**3**	**-7**	**18.4**	**21.5**	**G**
			02 28 23.30	-05 04 46.0	14	130	18.5	21.5	G
3	02 28 44.06	-04 56 00.8	02 28 42.95	-04 56 10.5	19	-120	16.4	17.1	St
4	02 28 55.53	-05 01 30.0	**02 28 55.23**	**-05 01 26.6**	**6**	**-53**	**16.6**	**17.2**	**St**
5	02 28 56.80	-04 54 36.8	BF						
7	02 29 09.06	-05 05 20.7	**02 29 08.89**	**-05 05 21.6**	**3**	**-110**	**17.8**	**20.7**	**E**
			02 29 10.19	-05 05 20.7	17	90	17.5	20.4	E
9	02 29 12.46	-05 12 35.7	**02 29 12.27**	**-05 12 38.4**	**4**	**-134**		**22.0**	**G**
11	02 29 18.16	-05 01 36.0	02 29 17.14	-05 01 33.5	15	-81	17.5	19.3	G
12	02 29 23.29	-05 12 20.0	BF						
13i	02 29 24.92	-05 10 37.8	02 29 24.21	-05 10 37.6	11	-89	17.8	21.1	E
			02 29 24.80	-05 10 48.9	11	-171	16.2	16.7	St
13ii	02 29 28.84	-04 47 12.3	BF						
13iii	02 29 31.83	-05 25 42.7	**02 29 31.61**	**-05 25 52.4**	**10**	**-161**		**20.2**	**St**
15	02 30 02.90	-05 17 25.1	BF						
16a/b	02 30 03.55	-04 59 18.2	**02 30 04.18**	**-04 59 17.9**	**9**	**88**	**17.8**	**21.0**	**E**
			02 30 05.12	-04 59 21.5	24	98	>19.5	22.7	G
Abell 407									
1	02 57 15.56	35 35 17.5	**02 57 16.24**	**35 35 19.9**	**9**	**74**	**16.5**		**St**
			02 57 17.18	35 35 13.5	20	101	18.5		St
			02 57 16.17	35 35 02.9	16	153	19.3		G
2	02 57 19.90	35 42 06.3	BF						

5	02 57 40.70	35 37 56.5	BF									
7	02 58 08.39	35 35 30.5	BF									
8	02 58 10.49	35 31 30.5	02 58 09.30	35 31 36.5	16	-68	18.5		E			
10	02 58 24.54	35 46 52.0	**02 58 24.65**	**35 46 55.9**	**4**	**19**	**15.2**		**D**	**0.0454**	**24**	
12	02 58 34.78	35 36 34.4	BF									
13	02 58 38.74	35 25 16.6	BF									
14	02 58 38.86	35 26 26.2	**02 58 39.44**	**35 26 21.2**	**9**	**125**	**17.6**		**St**			
			02 58 37.35	35 26 15.0	22	-121	19.2		G			
17	02 58 53.33	35 33 48.9	02 58 49.83	35 33 57.9	44	-78	16.5		E			
			02 58 53.73	**35 33 48.3**	**5**	**97**	**15.0**		**DB**	**0.0438**	**24,26**	**UGC 2493**
18	02 58 55.33	35 53 58.4	**02 58 55.56**	**35 54 05.0**	**7**	**23**	**14.0**		**S0**	**0.0263**	**26,34**	**UGC 2494**
												IRAS 02589+3554
19a/b	02 59 18.59	35 48 47.9	02 59 18.78	35 49 03.3	16	9	17.0		St			
			02 59 17.38	35 48 57.1	17	-58	19.4		G			
			02 59 18.13	**35 48 43.7**	**7**	**-127**	**19.6**		**G**			
21	02 59 29.69	35 33 16.0	02 59 28.72	35 33 12.9	12	-105	17.5		St			
22	02 59 30.13	35 25 00.6	02 59 28.79	35 25 00.0	16	-92	18.8		G			
			02 59 31.10	35 24 45.5	19	142	18.5		St			
23	02 59 42.67	35 41 36.6	**02 59 42.03**	**35 41 36.1**	**8**	**-94**	**18.8**		**St**			
24/25	03 00 17.02	35 34 40.2	**03 00 17.45**	**35 34 39.7**	**5**	**95**	**14.0**		**D**	**0.0449**	**24**	
Abell 416												
1	03 04 05.45	-16 53 29.9	**03 04 05.00**	**-16 53 37.8**	**10**	**-141**	**19.2**	**20.1**	**St**			
2	03 04 12.64	-16 48 13.1	BF									
3	03 04 25.11	-16 52 51.6	BF									
4	03 04 36.73	-16 54 05.1	BF									
5	03 04 38.62	-16 55 05.1	BF									
6	03 04 51.18	-16 59 59.0	03 04 49.86	-16 59 56.2	19	-82	16.2	16.6	St			
			03 04 51.17	**-17 00 02.2**	**3**	**-177**	**17.6**	**19.9**	**E**			
			03 04 51.70	-17 00 17.6	20	158	18.0	20.6	G			
8	03 05 07.61	-16 48 53.0	BF									
9	03 05 09.66	-16 50 02.4	**03 05 09.60**	**-16 49 59.4**	**3**	**-16**	**19.2**	**21.6**	**G**			
			03 05 10.10	**-16 49 54.4**	**10**	**38**	**19.5**	**20.8**	**G**			
13	03 05 17.09	-16 52 33.3	BF									
16	03 05 40.67	-16 55 17.6	BF									
18i	03 05 47.81	-17 08 57.9	BF									
19	03 06 00.06	-17 05 20.4	BF									
20	03 06 24.15	-16 50 05.2	BF									

Table 5. *(Continued)*

Abell 474											
2	04 04 32.62	-16 35 05.5	BF								
4	04 04 53.73	-16 59 37.5	BF								
5	04 04 56.05	-17 00 34.2	**04 04 56.63**	**-17 00 29.0**	**10**	**58**		**22.0**	**G**		
			04 04 56.92	-17 00 40.3	14	116		22.1	St		
6	04 04 56.26	-16 39 17.4	**04 04 55.83**	**-16 39 26.8**	**11**	**-147**	**19.5**	**22.3**	**G**		
7	04 05 02.49	-16 53 54.5	BF								
8	04 05 02.56	-16 45 28.1	BF								
9	04 05 04.86	-16 39 00.1	BF								
10	04 05 10.37	-17 02 06.4	04 05 11.61	-17 01 56.7	20	61	>19.5	21.5	G		
11	04 05 10.71	-17 04 35.6	04 05 10.01	-17 04 45.3	14	-134	19.3	19.8	G		
12	04 05 20.98	-16 54 38.3	BF								
14	04 05 33.84	-16 48 31.6	04 05 32.92	-16 48 17.3	19	-43	19.0	21.0	St		
			04 05 34.50	-16 48 49.7	20	152	17.5	19.1	E		
15	04 05 45.93	-16 57 06.9	04 05 47.09	-16 57 11.9	17	107		22.4	G		
16	04 05 47.52	-16 41 18.7	BF								
17	04 05 47.96	-17 03 38.1	BF								
18a/b	04 05 52.09	-16 46 14.4	**04 05 53.36**	**-16 46 23.8**	**21**	**117**	**18.3**	**20.5**	**G**		
19a/b	04 06 23.91	-16 56 39.0	**04 06 23.74**	**-16 56 37.5**	**3**	**-58**	**17.1**	**17.6**	**St**		
Abell 496											
2	04 30 36.30	-13 11 58.3	04 30 37.15	-13 12 12.2	19	138	16.0	16.1	St		
3	04 31 13.12	-13 19 08.3	BF								
5	04 31 23.91	-13 26 33.5	**04 31 23.59**	**-13 26 36.0**	**5**	**-118**		**16.8**	**E**	**0.0341**	**2,3,7,13,14**
6	04 31 29.33	-13 22 20.3	BF								
7	04 31 29.47	-13 15 45.3	BF								
8	04 31 36.94	-13 06 51.8	BF								
12	04 32 04.06	-13 23 06.4	BF								
13	04 32 05.59	-13 29 20.6	**04 32 05.30**	**-13 29 28.4**	**9**	**-152**		**22.7**	**G**		
			04 32 05.37	-13 29 33.4	13	-166		21.7	G		
Abell 514											
1	04 45 14.70	-20 32 00.2	BF								
3	04 45 48.74	-20 52 49.9	04 45 49.43	-20 52 41.2	13	48		21.2	G		
7	04 46 09.64	-20 36 30.1	04 46 08.60	-20 36 35.7	16	-111		20.8	St		
9	04 46 21.39	-20 40 00.5	BF								
11	04 46 27.10	-20 48 02.6	**04 46 26.68**	**-20 47 59.8**	**7**	**-65**		**20.0**	**St**		
			04 46 27.76	-20 47 54.7	12	50		20.8	St		
12	04 46 32.91	-20 27 52.6	04 46 32.06	-20 27 44.3	15	-55		20.5	St		

13	04 46 34.40	-20 25 14.6	BF						
14	04 46 34.43	-20 38 18.8	04 46 35.81	-20 38 14.7	20	78		20.3	G
16	04 46 52.07	-20 43 05.1	04 46 52.58	-20 43 17.4	14	150		20.6	St
17	04 46 56.47	-20 42 51.3	04 46 55.54	-20 42 57.1	14	-114		18.5	St
18	04 47 10.34	-20 23 56.1	BF						
20	04 47 41.28	-20 42 10.7	04 47 41.82	-20 42 20.4	12	142		20.3	E
Abell 519									
2	04 50 22.38	00 22 43.0	**04 50 21.84**	**+00 22 43.8**	**8**	**-84**	**17.5**	**20.1**	**St**
			04 50 22.42	**+00 22 48.0**	**5**	**7**	**18.9**	**22.0**	**G**
4	04 50 36.12	00 25 10.9	04 50 35.56	+00 24 55.9	17	-151	18.2	24.2	St
			04 50 36.01	**+00 25 02.1**	**9**	**-169**	**17.8**	**21.4**	**E**
			04 50 37.16	+00 25 04.0	17	114	15.5	11.1	St
5	04 50 37.16	00 48 01.1	BF						
6	04 50 45.46	00 21 10.2	BF						
7i	04 51 04.16	00 53 10.4	BF						
7ii	04 51 22.54	00 55 29.1	BF						
7iiia/b	04 51 24.81	00 54 53.1	BF						
9	04 51 29.08	00 35 15.5	04 51 28.29	+00 35 02.9	17	-137	15.8	12.7	St
			04 51 29.07	**+00 35 14.4**	**1**	**-172**	**17.2**	**19.2**	**E**
10	04 51 29.78	00 30 16.2	BF						
11	04 51 38.64	00 44 18.6	BF						
12	04 52 02.84	00 36 29.9	**04 52 02.97**	**+00 36 29.2**	**2**	**110**	**17.3**	**20.2**	**E**
Abell 531									
2	04 58 06.54	-03 42 12.6	04 58 06.66	-03 42 33.4	21	175		19.1	St
3	04 58 27.19	-03 33 24.0	04 58 26.56	-03 33 35.2	15	-140	19.2	19.5	St
			04 58 27.52	**-03 33 29.3**	**7**	**137**	**17.5**	**17.5**	**St**
			04 58 28.32	-03 33 38.8	22	131	18.2	18.7	E
4	04 58 34.03	-03 26 26.6	**04 58 33.91**	**-03 26 22.8**	**4**	**-25**		**21.4**	**E**
5	04 58 38.55	-03 35 33.2	**04 58 38.31**	**-03 35 26.2**	**8**	**-27**	**19.0**	**19.8**	**St**
			04 58 38.41	**-03 35 31.0**	**3**	**-44**	**19.3**	**20.3**	**St**
			04 58 39.86	-03 35 41.4	21	113	>19.5	22.7	G
6	04 58 40.66	-03 43 18.5	BF						
8	04 58 48.46	-03 29 09.2	BF						
9	04 58 49.67	-03 38 10.5	04 58 49.10	-03 37 55.2	18	-29	19.6	21.5	G
10	04 58 50.10	-03 22 07.8	04 58 48.88	-03 22 04.4	19	-79	18.3	18.1	St
			04 58 48.90	-03 22 16.8	20	-117	16.7	16.0	St
			04 58 50.62	**-03 22 03.2**	**9**	**59**	**19.0**	**20.0**	**G**

Table 5. (*Continued*)

12	04 58 52.04	-03 43 27.6	BF						
13	04 59 00.18	-03 30 46.2	BF						
14	04 59 07.18	-03 32 05.5	**04 59 07.30**	**-03 32 04.9**	**2**	**72**	**17.5**	**19.4**	**E**
			04 59 07.79	-03 31 57.6	12	49	16.6	16.3	St
			04 59 07.88	-03 32 06.2	11	94	19.3	20.2	E
			04 59 08.46	-03 32 08.1	19	98	19.2	21.6	G
15	04 59 08.13	-03 36 44.3	BF						
16	04 59 11.22	-03 29 39.9	**04 59 11.23**	**-03 29 37.9**	**2**	**4**	**20.5**	**21.3**	**G**
			04 59 11.59	-03 29 21.8	19	17	>19.5	20.0	St
			04 59 11.80	-03 29 49.1	13	137	18.0	18.8	St
17	04 59 12.17	-03 44 22.5	**04 59 11.55**	**-03 44 26.7**	**10**	**-114**	**>19.5**	**23.1**	**G**
			04 59 12.12	**-03 44 24.4**	**2**	**-159**	**>19.5**	**22.3**	**G**
			04 59 12.58	-03 44 32.3	12	148	18.3	18.3	St
19	04 59 19.85	-03 36 02.6	**04 59 20.09**	**-03 36 04.9**	**4**	**123**	**18.5**	**18.9**	**St**
20	04 59 29.81	-03 44 26.5	**04 59 29.81**	**-03 44 16.0**	**10**	**0**	**18.0**	**19.2**	**S0**
Abell 658									
1	08 20 08.23	15 32 31.7	**08 20 08.44**	**15 32 38.4**	**7**	**24**	**17.2**		**St**
4	08 20 36.04	15 35 36.3	08 20 34.84	15 35 44.9	19	-64	18.5		St
			08 20 34.67	15 35 22.0	24	-126	18.0		E
			08 20 35.70	15 35 18.2	19	-165	19.2		G
5	08 20 39.04	16 02 47.9	08 20 38.91	16 03 06.3	18	-6	18.8		G
			08 20 40.35	16 02 58.6	22	60	19.5		St
7	08 20 46.33	15 41 21.0	08 20 47.12	15 41 29.2	14	54	19.5		St
			08 20 46.22	**15 41 20.5**	**2**	**-107**	**17.8**		**E**
8a/b	08 20 48.68	15 52 56.4	08 20 49.19	15 53 15.5	20	21	19.7		St
			08 20 48.67	**15 52 56.7**	**0**		**19.5**		**G**
			08 20 47.60	15 52 47.4	18	-120	17.7		E
9	08 20 50.83	15 51 48.1	08 20 51.52	15 52 05.8	20	29	19.0		G
12	08 21 24.58	15 56 09.3	BF						
13	08 21 33.71	15 37 13.8	08 21 32.82	15 37 08.1	14	-114	19.2		G
14	08 21 46.93	15 27 27.0	08 21 46.56	15 27 17.9	11	-150	16.6		St
15	08 21 47.99	15 32 18.1	**08 21 48.09**	**15 32 15.9**	**3**	**147**	**18.8**		**G**
			08 21 48.03	**15 32 08.4**	**10**	**177**	**19.3**		**St**
			08 21 49.02	15 32 05.4	20	130	16.2		St
17	08 21 56.43	15 49 30.7	**08 21 56.67**	**15 49 30.8**	**3**	**88**	**17.4**		**E**
18	08 21 57.40	15 27 50.4	BF						
19/20	08 22 10.18	15 47 55.1	08 22 09.51	15 47 42.7	16	-142	16.2		St
21	08 22 14.12	15 37 47.5	08 22 13.10	15 37 57.8	18	-55	18.7		G

			08 22 13.82	15 37 36.2	12	-159	16.3		St
22	08 22 13.57	15 40 36.7	**08 22 13.89**	**15 40 35.6**	**5**	**103**	**19.2**		**G**
Abell 912									
2i	09 57 55.93	00 24 23.8	BF						
3	09 58 32.91	00 18 58.1	**09 58 32.88**	**00 18 59.0**	**1**	**-27**	**17.6**	**22.3**	**G**
5i	09 58 40.06	00 20 00.0	BF						
5ii	09 58 46.15	00 30 11.4	**09 58 45.77**	**00 30 07.8**	**7**	**-122**		**21.1**	**St**
6	09 58 52.14	00 21 15.9	**09 58 51.95**	**+00 21 17.0**	**3**	**-69**	**17.2**	**19.7**	**E**
8a/b	09 59 31.74	00 18 38.9	BF						
9	09 59 37.33	00 25 01.3	BF						
Abell 1142									
1	10 58 51.60	10 41 58.6	BF						
2	10 59 20.44	10 30 29.5	BF						
3/4	10 59 34.73	10 40 16.6	BF						
5i	10 59 35.11	10 41 01.3	BF						
5ii	10 59 36.83	10 44 40.8	**10 59 37.09**	**10 44 32.2**	**9**	**156**	**21.6**		**G**
7	10 59 57.44	10 47 57.6	10 59 57.33	10 48 11.0	13	-7	18.5		G
8	10 59 59.88	10 51 10.9	BF						
9	11 00 02.89	10 48 48.1	11 00 04.25	10 48 53.3	21	75	18.2		G
10	11 00 05.73	10 43 49.6	BF						
11	11 00 05.91	10 46 55.9	BF						
13	11 00 12.58	10 35 15.1	11 00 12.20	10 35 26.0	12	-27	15.7		St
14	11 00 14.04	10 59 51.5	11 00 14.24	11 00 10.9	20	9	15.5		St
15	11 00 22.23	10 42 45.7	BF						
16a/b	11 00 32.10	10 42 16.1	11 00 31.60	10 42 26.9	13	-34	18.8		St
			11 00 31.11	**10 42 17.1**	**15**	**-86**	**19.4**		**G**
Abell 1171									
1	11 03 48.04	03 11 39.1	BF						
3	11 04 01.06	03 05 29.5	BF						
5	11 04 06.23	03 03 24.0	11 04 05.53	03 03 11.7	16	-140	17.6		E
7	11 04 16.21	03 03 40.0	BF						
8a/b	11 04 18.20	02 54 08.1	**11 04 17.62**	**02 53 46.9**	**23**	**-158**	**19.3**		**St**
9	11 04 21.35	03 04 48.0	**11 04 20.82**	**03 04 43.4**	**9**	**-120**	**19.7**		**St**
10i	11 04 21.63	02 58 14.6	BF						
10ii	11 04 27.42	03 03 39.4	BF						
12/13	11 04 35.81	03 06 39.7	BF						

Table 5. *(Continued)*

14	11 04 37.97	03 14 36.2	BF							
15	11 04 38.70	03 10 34.0	BF							
17	11 04 51.46	02 47 19.3	BF							
18	11 04 57.75	03 00 58.1	**11 04 57.99**	**03 00 56.5**	**4**	**114**	**16.2**		**S0**	**MCG 01-29-001** **IRAS 11049+0300**
			11 04 57.53	**03 00 53.1**	**6**	**-147**	**16.3**		E	
19	11 04 59.52	03 14 59.2	11 05 00.82	03 14 49.5	22	116	17.7		G	
20	11 05 01.68	03 12 07.4	BF							
23	11 05 28.53	03 15 41.2	BF							
24	11 05 38.22	02 54 04.9	11 05 37.04	02 54 13.0	19	-65	18.0		E	
			11 05 37.95	**02 54 05.7**	**4**	**-79**	**16.6**		**St**	
			11 05 38.41	**02 53 57.3**	**8**	**159**	**19.6**		**St**	
Abell 1189										
2ii	11 07 54.07	01 19 51.6	BF							
2iii	11 08 14.65	01 29 56.9	BF							
3	11 08 21.70	01 26 09.1	**11 08 21.70**	**+01 26 07.2**	**2**	**180**		**11.9**	**St**	**GSC 00263-00366**
4	11 08 23.03	01 27 36.4	BF							
7	11 08 46.50	01 23 31.9	BF							
8	11 08 48.25	01 17 27.0	**11 08 48.06**	**+01 17 21.1**	**7**	**-154**		**19.2**	**E**	
9a/b	11 08 49.74	01 27 50.7	BF							
11	11 08 54.13	01 36 05.9	BF							
12i	11 08 56.74	01 25 48.8	BF							
12ii	11 08 59.15	01 36 33.6	11 08 57.95	+01 36 38.9	19	-74		22.3	G	
13ii	11 09 36.53	01 20 29.5	BF							
Abell 1238										
1	11 19 31.85	01 10 32.9	11 19 32.80	+01 10 35.5	14	80		21.6	St	
3	11 19 52.32	01 31 55.7	11 19 51.46	+01 32 09.1	19	-44	19.5	22.2	St	
			11 19 52.22	**+01 31 59.2**	**4**	**-23**	**17.7**	**19.4**	**St**	
			11 19 52.83	+01 31 36.7	20	158	>19.5	21.4	St	
4	11 19 53.97	01 20 10.5	11 19 52.86	+01 20 12.5	17	-83	>19.5	21.6	G	
			11 19 53.21	+01 20 27.0	20	-35	19.3	20.8	St	
5a/b	11 19 57.44	01 12 17.4	**11 19 57.55**	**+01 12 09.7**	**8**	**168**		**22.5**	**G**	
6	11 19 57.07	01 42 00.9	**11 19 57.00**	**+01 41 57.8**	**3**	**-161**	**>19.5**	**22.6**	**G**	
7	11 19 57.38	01 22 08.2	**11 19 57.45**	**+01 22 04.2**	**4**	**165**	**17.3**	**19.4**	**St**	
8a/b	11 20 12.51	01 27 25.6	**11 20 11.54**	**+01 27 33.2**	**16**	**-62**	**17.1**	**19.5**	**E**	
9	11 20 15.73	01 23 18.9	**11 20 15.42**	**+01 23 11.9**	**8**	**-146**	**16.3**	**18.0**	**E**	
			11 20 16.07	+01 23 05.5	14	159	19.2	20.0	G	

10	11 20 17.76	01 28 18.4	**11 20 17.76**	**+01 28 24.2**	**6**	**0**	**16.3**	**18.2**	**E**
12	11 20 23.12	01 13 44.3	BF						
13	11 20 26.01	01 25 25.4	BF						
14	11 20 26.79	01 12 14.7	BF						
16	11 20 31.96	01 15 27.6	BF						
17	11 20 36.59	01 21 14.9	11 20 36.99	+01 21 03.6	13	152	17.5	19.3	E
18	11 20 38.67	01 27 02.8	BF						
19a/b/c	11 20 46.57	01 25 36.3	BF						
20	11 20 50.05	01 13 52.9	11 20 49.08	+01 14 14.6	26	-34	17.3	18.7	E
			11 20 49.94	**+01 13 56.5**	**4**	**-25**	**2x19.0**	**19.7**	**G**
			11 20 50.77	+01 13 48.9	12	110	17.9	20.0	E
21	11 20 53.44	01 13 48.0	11 20 52.83	+01 14 08.1	22	-24	>19.5	22.3	G
22	11 20 57.61	01 26 46.1	BF						
23	11 20 59.83	01 37 31.2	**11 20 59.29**	**+01 37 29.5**	**8**	**-102**	**19.5**	**21.9**	**G**
25	11 21 06.13	01 37 53.7	BF						
26	11 21 32.71	01 25 29.2	**11 21 32.55**	**+01 25 23.3**	**6**	**-158**	**17.6**	**19.2**	**E**
27	11 21 33.11	01 13 29.8	**11 21 33.19**	**+01 13 32.1**	**3**	**28**	**19.0**	**21.7**	**G**
Abell 1273									
1i	11 25 56.29	-06 53 59.6	11 25 55.82	-06 53 44.8	16	-25		22.7	G
			11 25 55.98	-06 54 13.9	15	-162		21.9	G
1ii	11 26 12.24	-06 39 38.6	11 26 11.40	-06 39 20.2	22	-34		18.0	St
1iii	11 26 15.07	-06 51 15.6	11 26 14.36	-06 51 22.7	13	-124		20.5	G
			11 26 14.77	-06 51 32.5	17	-165		20.3	G
			11 26 15.17	-06 50 56.1	20	4		21.5	St
3i/4	11 26 34.62	-06 48 03.8	11 26 35.54	-06 47 32.0	35	23	14.2	16.2	St
3ii	11 26 35.87	-06 45 43.7	**11 26 35.86**	**-06 45 57.5**	**14**	**-179**	**18.2**	**20.5**	**G**
3iii	11 26 36.51	-06 34 01.0	BF						
6	11 26 44.58	-06 45 00.5	11 26 44.46	-06 45 11.5	11	-171	>19.5	22.6	G
			11 26 44.88	-06 45 13.7	14	161	>19.5	20.0	St
7	11 27 00.35	-06 52 25.7	BF						
8i	11 27 24.07	-06 39 38.3	BF						
8ii	11 27 31.93	-06 45 49.5	**11 27 31.41**	**-06 45 51.6**	**8**	**-105**		**19.8**	**St**
			11 27 32.70	-06 45 36.8	17	42		22.5	G
Abell 1620									
2	12 47 18.17	-01 13 43.4	**12 47 17.85**	**-01 13 35.5**	**9**	**-31**	**>19.5**	**20.3**	**E**
			12 47 18.54	**-01 13 46.5**	**6**	**119**	**19.2**	**20.2**	**E**
4	12 47 36.89	-01 20 07.2	BF						

Table 5. (Continued)

6	12 47 57.22	-01 13 12.7	12 47 56.32	-01 13 01.2	18	-50		20.8	St			
			12 47 57.39	**-01 13 08.1**	**5**	**29**		**22.0**	**G**			
7	12 47 59.77	-01 15 30.2	12 47 58.77	-01 15 19.0	19	-53		19.8	E			
			12 47 59.59	-01 15 19.4	11	-14		22.1	G			
			12 48 00.43	-01 15 41.5	15	139		21.4	G			
8	12 48 25.36	-01 12 42.2	**12 48 25.21**	**-01 12 43.4**	**3**	**-118**		**18.9**	**E**			
			12 48 25.23	-01 13 01.3	19	-174		19.5	St			
			12 48 25.42	-01 12 28.7	14	4		18.9	St			
Abell 1631												
1a/b/c/d	12 49 18.79	-14 54 10.7	**12 49 16.95**	**-14 54 10.2**	**27**	**-89**		**21.7**	**G**			
			12 49 17.46	**-14 54 24.0**	**23**	**-125**		**20.9**	**G**			
2ii	12 49 22.99	-14 56 23.3	**12 49 22.57**	**-14 56 32.2**	**11**	**-146**		**21.7**	**G**			
			12 49 24.26	**-14 56 01.5**	**28**	**40**		**18.2**	**St**			
3a/b	12 49 33.12	-15 20 12.7	BF									
5	12 49 39.35	-15 02 45.6	12 49 38.28	-15 02 50.9	16	-109	>19.5	21.8	G			
7	12 49 54.39	-15 12 29.4	**12 49 54.08**	**-15 12 35.1**	**7**	**-142**		**21.7**	**G**			
			12 49 54.38	**-15 12 20.9**	**9**	**-1**		**21.7**	**St**			
8	12 49 56.12	-15 00 32.2	12 49 55.95	-15 00 52.1	20	-173		21.1	E			
			12 49 57.35	-15 00 30.0	18	83		21.8	St			
9	12 50 00.04	-14 50 02.3	BF									
10	12 50 02.12	-14 57 09.6	**12 50 02.52**	**-14 57 10.3**	**6**	**97**	**18.0**	**18.9**	**E**			
11	12 50 05.40	-15 00 17.6	BF									
12	12 50 05.26	-15 07 53.0	BF									
13	12 50 06.90	-15 11 26.1	BF									
15	12 50 12.20	-14 49 57.7	BF									
20i	12 51 05.26	-15 12 54.5	**12 51 05.62**	**-15 12 48.2**	**8**	**40**	**17.6**	**18.4**	**E**			
20ii	12 51 11.61	-14 52 36.0	BF									
21	12 51 13.29	-15 13 34.7	12 51 12.34	-15 13 42.9	16	-121		20.5	E			
22	12 51 15.79	-14 50 08.9	**12 51 15.32**	**-14 50 13.4**	**8**	**-123**	**15.6**	**15.7**	**E**	**0.0450**	**8**	**NPM1G -14.0482**
23a/b	12 51 17.04	-14 55 27.9	BF									
24	12 51 22.81	-14 58 17.6	12 51 21.89	-14 58 19.5	13	-98	17.5	18.6	St			
Abell 3528												
3	12 52 23.55	-28 55 04.2	12 52 22.14	-28 55 05.1	19	-93		19.2	E			
Abell 1689												
1ii	13 07 50.65	-01 10 08.3	**13 07 50.82**	**-01 10 14.8**	**7**	**159**		**21.4**	**G**			
			13 07 51.34	-01 10 02.0	12	59		18.3	St			
2iia/b	13 07 53.80	-00 47 23.4	BF									

3	13 08 05.53	-01 08 44.9	**13 08 05.30**	**-01 08 47.6**	**4**	**-128**	**>19.5**	**22.3**	**G**			
			13 08 06.20	-01 08 27.4	20	30	16.6	17.0	St			
4i	13 08 11.27	-00 53 17.8	**13 08 11.38**	**-00 53 15.6**	**3**	**37**	**19.2**	**21.3**	**G**			
4ii	13 08 14.31	-00 49 36.1	BF									
4iii	13 08 14.45	-01 13 14.3	BF									
5/6	13 08 21.48	-01 11 26.3	**13 08 21.35**	**-01 11 28.4**	**3**	**-137**	**18.0**	**18.0**	**Q**	**1.0038**	**19**	**LBQS 1308-0111**
7	13 08 40.64	-01 15 48.2	13 08 42.05	-01 15 42.7	22	75	19.0	20.3	E			
8	13 08 40.67	-01 01 44.6	**13 08 40.93**	**-01 01 41.9**	**5**	**55**	**19.0**	**20.4**	**G**			
			13 08 41.37	-01 01 59.2	18	144	>19.5	21.7	G			
			13 08 41.61	-01 01 50.0	15	111	19.2	21.6	St			
9	13 08 41.90	-01 17 30.4	**13 08 42.07**	**-01 17 22.4**	**8**	**18**		**22.2**	**G**			
10	13 08 51.51	-01 15 00.8	13 08 51.31	-01 15 20.2	20	-171	17.1	18.5	E	0.0815	6	A1689-110
			13 08 51.68	-01 14 47.1	14	11	16.5	16.3	St			
			13 08 51.80	-01 15 13.1	13	161	16.8	16.7	St			
			13 08 52.69	-01 15 01.2	18	91	>19.5	22.3	G			
11	13 08 53.06	-01 06 05.9	13 08 52.25	-01 06 06.8	12	-94	19.4	20.7	G			
			13 08 52.82	**-01 06 14.2**	**9**	**-157**	**19.4**	**20.8**	**G**	**0.1840**	**6**	**A1689-236**
			13 08 52.85	-01 06 23.8	18	-170	18.5	20.3	E			
			13 08 53.56	**-01 06 02.1**	**8**	**63**	**>19.5**	**21.5**	**G**			
12	13 08 54.79	-01 05 21.2	**13 08 54.72**	**-01 05 22.3**	**2**	**-136**	**18.0**	**20.4**	**E**	**0.1947**	**6**	**A1689-227**
			13 08 55.02	-01 05 11.1	11	19	>19.5	21.5	G			
			13 08 55.46	-01 05 06.3	18	34	19.4	21.3	G			
			13 08 55.74	-01 05 23.3	14	98	19.5	21.3	G			
			13 08 56.02	-01 05 14.8	20	71	>19.5	21.3	G			
13	13 08 55.79	-01 04 33.5	13 08 55.07	-01 04 47.4	18	-142	>19.5	20.8	G			
			13 08 55.20	**-01 04 33.4**	**9**	**-89**	**17.1**	**18.6**	**E**	**0.1815**	**6,12**	**A1689-2**
			13 08 55.71	-01 04 47.1	14	-175	17.5	19.0	E	0.1987	6	A1689-3
			13 08 55.90	**-01 04 35.3**	**2**	**137**	**17.3**	**18.8**	**E**	**0.1759**	**4,6,12**	
			13 08 56.20	-01 04 49.7	17	159	18.0	19.5	E	0.1987	6	
			13 08 56.49	-01 04 36.1	11	104	19.5	20.5	G	0.1739	6	
			13 08 56.91	-01 04 27.8	18	71	16.3	17.9	St			
16	13 09 02.68	-01 18 09.4	**13 09 02.53**	**-01 18 09.3**	**2**	**-87**		**20.8**	**St**			
			13 09 02.62	-01 18 28.8	19	-177		21.3	G			
			13 09 03.71	-01 18 23.4	21	132		22.3	St			
17	13 09 03.26	-01 17 22.9	BF									
18a/b	13 09 07.96	-01 07 48.1	13 09 08.25	-01 07 31.2	17	14	16.4	18.0	St			
			13 09 09.48	-01 07 20.2	36	39	15.0	16.0	St			
19a/b	13 09 09.15	-01 03 32.3	**13 09 09.14**	**-01 03 25.7**	**7**	**-1**	**17.5**	**19.5**	**E**	**0.1823**	**6**	**A1689-269**
20	13 09 15.50	-01 12 07.5	13 09 16.47	-01 11 57.5	18	55		22.6	G			

Table 5. *(Continued)*

21	13 09 26.61	-01 19 23.6	BF								
23i	13 09 30.83	-00 58 20.2	BF								
23ii	13 09 40.65	-01 03 16.4	13 09 40.25	-01 03 06.3	12	-31		22.7	G		
Abell 1772											
1	13 38 17.76	-10 43 07.5	**13 38 17.93**	**-10 43 16.2**	**9**	**164**	**18.7**	**21.9**	**G**		
			13 38 18.24	-10 43 27.4	21	160	>19.5	23.0	G		
			13 38 17.00	-10 42 49.1	21	-31	19.0	19.9	G		
2	13 38 20.41	-10 57 13.7	BF								
3	13 38 41.47	-11 05 48.6	BF								
4	13 38 44.59	-10 47 13.8	**13 38 44.48**	**-10 47 14.4**	**2**	**-110**		**21.8**	**E**		
5	13 38 52.68	-10 39 44.4	**13 38 52.21**	**-10 39 41.3**	**8**	**-66**	**18.2**	**20.5**	**E**		
			13 38 53.52	-10 39 35.5	15	54	>19.5	21.9	St		
6	13 39 05.95	-10 58 00.2	BF								
8	13 39 55.70	-10 57 15.9	BF								
9a/b	13 40 02.79	-10 54 56.7	BF								
12a/b	13 40 27.07	-10 47 42.2	BF								
Abell 1775											
1	13 38 20.38	26 26 59.4	13 38 20.86	26 26 42.6	18	159	17.2		E		
2	13 38 27.92	26 30 31.2	**13 38 27.53**	**26 30 30.0**	**5**	**-103**	**17.4**		**E**		
5	13 38 54.63	26 32 09.7	13 38 53.32	26 32 14.8	18	-74	16.8		St		
6	13 39 07.55	26 42 36.6	BF								
8	13 39 29.39	26 24 11.0	13 39 28.34	26 23 56.3	20	-136	16.2		St		
			13 39 30.08	26 23 48.3	25	158	17.1		E		
9	13 39 30.52	26 55 29.5	BF								
11a/b	13 39 31.67	26 53 22.7	13 39 30.70	26 53 36.2	19	-44	18.6		Q?	36	133930.8+2653
			13 39 33.46	26 53 12.7	26	113	18.0		G		
12	13 39 31.68	26 19 25.0	BF								
14a/b	13 39 44.66	26 19 04.5	BF								
15	13 39 49.08	26 45 45.4	**13 39 49.09**	**26 45 47.4**	**2**	**4**	**17.8**		**G**		
			13 39 48.50	26 45 37.5	11	-135	19.2		St		
16	13 40 01.83	26 28 58.5	13 40 01.07	26 29 15.9	20	-30	17.3		St		
			13 40 01.44	26 28 42.6	17	-162	18.3		E		
17	13 40 08.66	26 39 18.4	13 40 10.07	26 39 24.5	20	72	19.3		G		
			13 40 07.52	26 39 19.1	15	-87	16.2		St		
18	13 40 09.36	26 34 37.5	**13 40 08.93**	**26 34 35.9**	**6**	**-106**	**17.8**		**St**		
			13 40 07.96	26 34 23.8	23	-126	19.2		St		

19	13 40 17.38	26 46 06.1	BF									
Abell 1791												
1	13 45 48.03	-25 10 54.2	**13 45 47.76**	**-25 11 04.0**	**10**	**-159**		**20.0**	**St**			
			13 45 48.02	**-25 10 54.7**	**1**	**-165**		**17.4**	**E**			
Abell 1913												
1	14 23 36.55	17 01 27.5	**14 23 36.77**	**17 01 30.2**	**4**	**49**	**19.5**		**St**			
2	14 23 40.86	16 46 59.3	BF									
3i	14 23 43.06	16 58 30.2	**14 23 43.27**	**16 58 34.3**	**5**	**36**	**19.5**		**St**			
			14 23 42.76	**16 58 29.9**	**4**	**-94**	**18.0**		**G**			
			14 23 43.47	**16 58 22.3**	**10**	**143**	**19.6**		**St**			
3ii	14 23 43.36	17 14 48.1	14 23 42.72	17 14 31.4	19	-151	19.8					
4	14 23 53.01	16 54 35.3	BF									
5	14 24 01.45	17 07 51.0	**14 24 01.25**	**17 07 52.8**	**3**	**-58**	**17.4**		**E**			
			14 24 00.47	17 07 46.6	15	-107	17.8		St			
7	14 24 11.43	17 04 13.8	**14 24 11.40**	**17 04 14.8**	**1**	**-23**	**16.2**		**E**			
			14 24 12.74	17 04 13.1	19	92	19.2		G			
9	14 24 15.58	16 58 25.1	14 24 16.62	16 58 40.5	21	44	19.8		G			
			14 24 15.77	**16 58 30.6**	**6**	**26**	**17.2**		**D**			
10	14 24 16.16	16 47 45.8	BF									
11	14 24 20.41	16 52 26.0	BF									
12	14 24 23.79	16 56 04.6	14 24 22.94	16 56 13.0	15	-55	19.5		St			
			14 24 24.17	**16 56 10.6**	**8**	**42**	**18.7**		**St**			
			14 24 24.99	16 56 04.8	17	89	18.0		G			
13	14 24 30.31	16 48 14.6	BF									
17	14 24 56.95	17 10 23.9	**14 24 56.93**	**17 10 25.6**	**2**	**-10**	**16.6**		**E**	**0.0949**	**35**	**IRAS 14249+1710**
18	14 24 57.37	16 59 03.5	BF									
19	14 24 59.46	17 12 18.1	BF									
20	14 25 01.92	16 49 19.2	BF									
21	14 25 27.20	17 03 13.1	**14 25 27.42**	**17 03 13.8**	**3**	**77**	**19.5**		**G**			
			14 25 27.29	17 02 58.9	14	174	19.6		St			
23	14 25 34.76	16 54 32.2	BF									
24	14 25 38.82	17 06 42.6	14 25 37.95	17 06 37.1	14	-114	18.8		St			
Abell 2009												
1	14 57 20.77	21 21 07.2	14 57 21.50	21 21 14.1	12	56	17.2		St			
			14 57 20.03	**21 21 06.2**	**10**	**-96**	**19.3**		**G**			
			14 57 20.67	**21 21 04.1**	**3**	**-156**	**17.1**		**E**			

Table 5. *(Continued)*

2	14 57 24.79	21 24 58.2	14 57 25.58	21 25 12.5	18	38	18.9	G			
3	14 57 36.45	21 36 41.7	14 57 35.79	21 36 52.9	14	-39	17.6	E			
			14 57 36.63	**21 36 50.8**	**9**	**15**	**16.5**	**St**			
4	14 57 36.57	21 24 42.0	BF								
5	14 57 39.01	21 32 38.4	BF								
6	14 57 44.60	21 41 26.5	BF								
7	14 57 48.00	21 51 06.8	14 57 48.01	21 50 50.0	17	180	18.1	G			
8	14 57 49.35	21 42 16.9	**14 57 49.47**	**21 42 19.2**	**3**	**36**	**18.3**	**G**			
9	14 57 49.51	21 42 55.2	BF								
11	14 58 00.84	21 45 34.8	BF								
15	14 58 07.20	21 43 12.9	BF								
17	14 58 19.43	21 44 13.2	BF								
18	14 58 40.88	21 23 10.5	14 58 39.99	21 22 56.4	19	-139	17.2	St			
19	14 58 52.86	21 45 31.9	14 58 53.23	21 45 21.4	12	154	18.8	St			
22	14 59 07.55	21 36 27.1	14 59 07.46	21 36 49.6	23	-3	18.6	G			
23ia/b	14 59 07.66	21 19 20.8	14 59 08.42	21 19 36.8	19	34	19.2	G			
			14 59 07.38	**21 19 21.8**	**4**	**-76**	**17.2**	**St**			
23ii	14 59 09.87	21 47 12.7	14 59 09.38	21 47 20.9	11	-40	16.2	St			
24	14 59 11.09	21 18 53.6	**14 59 11.39**	**21 18 59.0**	**7**	**38**	**18.4**	**G**			
			14 59 11.71	21 18 45.1	12	134	19.5	G			
26	14 59 15.09	21 36 08.2	**14 59 15.16**	**21 36 08.7**	**1**	**63**	**18.0**	**E**			
27	14 59 23.01	21 46 44.2	14 59 22.21	21 46 53.9	15	-49	19.7	G			IRAS 14594+2146
Abell 2029											
3	15 08 29.71	05 55 09.5	15 08 29.47	05 55 26.4	17	-12	18.2	St			
			15 08 29.32	**05 55 09.9**	**6**	**-86**	**18.0**	**G**	**0.1420**	**18**	
			15 08 28.66	05 55 07.6	16	-97	19.5	G	0.0821	18	
4	15 08 31.71	06 00 35.9	**15 08 31.80**	**06 00 38.1**	**3**	**31**	**19.2**	**G**			
			15 08 32.05	06 00 26.0	11	153	18.3	G			
5	15 08 37.61	05 52 41.0	**15 08 37.65**	**05 52 40.4**	**1**	**135**	**16.6**	**St**			
			15 08 36.63	05 52 34.7	16	-113	18.6	G			
Abell 2052	No sources with 1.5 GHz flux < 20 mJy										
Zw 1518.8											
2	15 18 21.45	08 08 15.1	BF								
5	15 19 01.41	07 49 18.8	BF								
9	15 19 15.72	07 55 03.0	BF								
10	15 19 16.27	07 40 01.4	BF								

13a/b	15 19 41.87	07 45 13.4	BF						
14	15 19 46.74	07 56 02.1	BF						
15	15 19 51.54	07 58 21.9	**15 19 52.18**	**07 58 25.3**	**10**	**70**	**17.3**	**St**	
16a/b	15 19 52.16	08 09 06.8	BF						
17	15 19 54.93	07 54 18.1	BF						
18	15 19 56.17	08 11 00.1	15 19 55.37	08 11 15.0	19	-39	18.4	St	
			15 19 56.87	08 11 08.7	13	50	18.4	St	
20	15 19 57.04	07 48 47.3	**15 19 57.25**	**07 48 45.9**	**3**	**114**	**15.7**	**E**	
22	15 20 03.55	08 03 13.4	**15 20 03.33**	**08 03 12.2**	**3**	**-110**	**15.6**	**E**	**IRAS 15200+0803**
23	15 20 27.55	07 48 44.5	BF						
Abell 2082									
1	15 28 08.78	·03 39 52.9	15 28 09.15	03 40 06.0	14	23	15.9	E	
			15 28 08.47	**03 39 49.8**	**6**	**-124**	**15.5**	**E**	
2	15 28 17.42	03 32 01.2	BF						
3a/b	15 28 19.61	03 42 18.8	**15 28 20.03**	**03 42 24.8**	**9**	**46**	**18.3**	**G**	
			15 28 19.35	**03 42 16.3**	**5**	**-123**	**16.0**	**E**	
			15 28 19.17	**03 42 13.6**	**8**	**-128**	**17.2**	**St**	
			15 28 19.96	03 42 01.0	19	164	17.8	G	
4	15 28 30.36	03 35 06.6	BF						
5	15 28 36.46	03 49 01.8	BF						
7	15 28 49.23	03 51 32.8	15 28 48.81	03 51 20.2	14	-153	19.5	G	
9i	15 28 56.68	03 28 00.8	BF						
9ii	15 28 57.22	03 31 12.7	BF						
11	15 28 58.36	03 44 59.6	**15 28 58.42**	**03 45 00.1**	**1**	**61**	**16.0**	**D**	
14	15 29 19.25	03 49 09.6	15 29 18.41	03 49 18.8	16	-54	19.2	St	
			15 29 19.63	03 48 53.0	18	161	18.6	G	
15	15 29 25.15	03 39 26.4	BF						
16	15 29 29.46	03 43 29.2	BF						
17	15 29 30.77	03 39 55.6	15 29 30.64	03 40 15.2	20	-6	18.5	St	
			15 29 30.60	03 39 34.2	22	-173	17.7	St	
19a/b	15 29 42.41	03 41 36.0	15 29 43.34	03 41 41.5	15	68	16.4	St	
Abell 2091									
1ia/b	15 30 40.28	10 11 17.0	**15 30 41.06**	**10 11 18.8**	**12**	**81**	**17.0**	**St**	
1iia/b	15 31 16.39	10 35 35.2	BF						
2	15 31 24.91	10 24 34.6	BF						
3	15 31 27.33	10 09 17.4	15 31 27.69	10 09 35.4	19	16	18.2	E	
			15 31 27.91	10 09 03.7	16	148	18.8	G	

Table 5. *(Continued)*

4	15 31 41.85	10 08 27.2	BF							
5	15 31 43.53	10 29 27.0	15 31 44.24	10 29 08.0	22	151	19.2		G	
			15 31 44.68	10 29 17.4	19	120	19.0		St	
7a/b	15 31 57.84	10 21 52.6	**15 31 57.94**	**10 21 53.1**	**2**	**71**	**16.9**		**E**	
			15 31 56.95	10 21 42.9	16	-126	18.9		G	
9	15 32 01.90	10 29 20.2	BF							
10	15 32 08.28	10 11 20.2	15 32 07.99	10 11 32.5	13	-19	18.2		G	
11	15 32 12.62	10 19 48.3	BF							
12	15 32 18.09	10 27 57.8	**15 32 18.14**	**10 27 58.0**	**1**	**75**	**15.1**		**DB**	**Zw078.015**
			15 32 18.26	**10 28 06.5**	**9**	**16**	**17.8**		**G**	**IRAS 15322+1027**
			15 32 18.42	10 28 18.4	21	13	16.2		St	
			15 32 18.72	10 27 34.2	25	158	18.8		G	
13	15 32 24.91	10 10 52.8	BF							
15	15 32 37.30	10 24 03.7	BF							
16	15 32 38.43	10 31 46.5	**15 32 38.64**	**10 31 46.6**	**3**	**88**	**19.4**		**G**	
17	15 32 53.31	10 29 15.7	15 32 54.18	10 29 02.2	19	136	18.0		G	
18	15 32 55.16	10 28 31.6	BF							
19	15 32 56.87	10 28 01.1	BF							
Abell 2094										
1	15 33 00.66	-01 42 36.4	15 33 00.35	-01 42 48.5	13	-159	16.7	18.1	St	
4	15 33 41.39	-01 50 13.2	BF							
6	15 34 03.02	-01 50 03.6	**15 34 03.52**	**-01 50 02.0**	**8**	**78**	**16.2**	**18.4**	**St**	
7	15 34 06.20	-01 46 54.1	15 34 07.26	-01 47 03.3	18	120	19.5	21.6	G	
			15 34 06.36	**-01 46 54.1**	**2**	**90**	**19.0**	**23.0**	**G**	
8	15 34 07.46	-01 38 59.3	BF							
10a/b	15 34 10.49	-01 49 24.9	BF							
11	15 34 13.03	-01 45 10.5	15 34 14.50	-01 45 10.9	22	91	>19.5	22.6	G	
12a/b	15 34 17.83	-02 01 55.2	15 34 16.02	-02 02 27.1	42	-140	17.5	20.4	E	
			15 34 16.45	-02 02 02.7	22	-110	>19.5	22.7	G	
			15 34 16.73	-02 02 41.2	49	-160	20.5	21.8	G	
			15 34 18.02	-02 01 24.8	31	5	18.2	20.1	E	
13	15 34 24.51	-02 06 34.5	15 34 25.27	-02 06 21.7	17	42		15.4	St	
14	15 34 29.49	-01 40 07.4	**15 34 29.60**	**-01 40 10.2**	**3**	**149**	**15.5**	**16.3**	**S0**	**IRAS F15345-0140**
			15 34 29.15	**-01 40 15.3**	**9**	**-147**	**17.0**		**St**	
15	15 34 36.42	-01 39 47.8	**15 34 36.45**	**-01 39 47.5**	**1**	**56**	**17.6**	**21.0**	**E**	
16	15 34 38.32	-01 59 47.2	BF							
17	15 34 40.42	-01 58 47.6	**15 34 40.88**	**-01 58 44.2**	**8**	**64**	**16.1**	**16.5**	**St**	

18	15 34 49.48	-02 03 36.5	BF									
19	15 34 49.83	-01 53 19.7	BF									
Abell 2103												
1	15 35 49.34	-01 51 57.6	BF									
2	15 36 15.24	-02 10 28.7	15 36 14.89	-02 10 21.4	9	-36	16.8	19.2	St			
			15 36 15.89	-02 10 26.0	10	75	14.5	13.0	St			GSC 05021-00396
3	15 36 15.67	-02 12 24.8	BF									
4	15 36 16.86	-02 05 46.2	15 36 16.16	-02 05 49.5	11	-107	17.0	18.0	St			
5	15 36 18.92	-02 13 05.9	15 36 19.76	-02 13 20.6	19	139	>19.5	22.3	G			
7	15 36 28.00	-02 05 21.2	15 36 27.05	-02 05 32.9	18	-129	19.2	22.9	G			
			15 36 28.04	**-02 05 21.3**	**1**	**99**	**16.4**	**18.8**	**E**			
			15 36 28.10	**-02 05 28.0**	**7**	**168**	**17.5**	**20.5**	**E**			
8	15 36 42.28	-02 03 52.7	15 36 41.16	-02 04 01.6	19	-118	19.5	22.2	G			
			15 36 41.36	-02 03 51.3	14	-84	19.5	21.3	St			
			15 36 41.54	-02 03 35.7	20	-33	19.0	21.0	St			
9a/b	15 37 16.67	-02 14 23.0	**15 37 17.18**	**-02 14 29.5**	**10**	**130**	**17.8**	**20.6**	**St**			
10	15 37 17.04	-02 06 35.9	BF									
Abell 2108												
1	15 37 29.53	18 12 37.1	15 37 28.32	18 12 38.0	17	-87	17.0		St			
2	15 37 57.43	18 06 14.1	15 37 58.73	18 06 13.3	19	92	19.4		St			
7	15 38 53.49	18 11 58.8	BF									
10	15 39 10.56	18 14 14.7	15 39 11.58	18 14 09.4	15	110	17.8		St			
15	15 39 46.12	18 11 31.4	**15 39 46.02**	**18 11 37.2**	**6**	**-8**	**17.2**		**St**			
			15 39 46.31	**18 11 30.3**	**3**	**112**	**19.4**		**St**			
17	15 39 59.83	18 07 00.4	15 40 01.02	18 06 59.4	17	93	17.3		St			
20	15 40 05.70	18 06 43.2	**15 40 06.23**	**18 06 39.0**	**9**	**119**	**19.0**		**G**			
Abell 2151												
3	16 03 53.07	18 21 18.1	BF									
4	16 04 00.47	18 18 58.9	**16 04 00.38**	**18 18 59.6**	**1**	**-61**	**15.0**		**S0**	**0.0389**	**8,15,34**	**IC 1189 IRAS 16040+1818**
6	16 04 04.71	18 27 23.5	**16 04 05.09**	**18 27 29.1**	**8**	**44**	**18.2**		**G**			
7a/b	16 04 14.36	18 19 22.4	BF									
8	16 04 14.59	18 24 03.6	**16 04 14.75**	**18 24 07.9**	**5**	**28**	**14.9**		**S**	**0.0388**	**8**	**IC 1191 IRAS 16042+1824**
			16 04 15.45	**18 24 04.5**	**12**	**86**	**16.0**		**S0**	**0.0400**	**8**	
9	16 04 18.93	18 36 43.8	16 04 19.06	18 36 31.3	13	172	17.6		St			

Table 5. *(Continued)*

			16 04 19.90	18 36 43.6	14	91	16.4		St			
10	16 04 27.35	18 17 39.4	16 04 26.60	18 17 47.6	13	-52	19.4		G			
13	16 04 42.60	18 10 01.6	BF									
14	16 04 51.89	18 08 16.9	**16 04 51.78**	**18 08 19.8**	**3**	**-28**	**18.6**		**E**			
			16 04 52.88	18 08 05.1	18	130	16.6		St			
			16 04 51.57	18 08 28.6	13	-21	19.5		St			
15	16 04 57.23	18 22 42.4	BF									
17a/b	16 05 17.32	18 05 01.9	16 05 16.28	18 04 38.6	28	-148	17.3		E			
			16 05 19.34	18 05 17.0	33	62	18.8		G			
			16 05 17.60	**18 04 56.6**	**7**	**143**	**19.3**		**G**			
18	16 05 24.43	18 36 39.1	**16 05 24.41**	**18 36 43.9**	**5**	**-3**	**15.5**		**E**	**0.0374**	**8,27**	**IRAS 16053+1836**
Abell 2249												
1/2	17 07 23.87	34 20 10.1	BF									
3i	17 07 42.59	34 29 16.9	**17 07 42.93**	**34 29 20.4**	**5**	**50**	**13.8**		**E**			**Zw198.012**
			17 07 41.44	34 29 12.3	15	-108	20.0		St			
4a/b	17 07 58.34	34 12 43.4	BF									
5	17 08 10.55	34 34 21.2	**17 08 10.92**	**34 34 21.3**	**5**	**89**	**16.3**		**St**			
			17 08 10.20	**34 34 28.5**	**8**	**-31**	**15.8**		**E**	**0.0802**	**23**	
			17 08 09.64	34 34 33.9	17	-42	18.2		St			
7	17 08 52.69	34 25 50.1	**17 08 53.21**	**34 25 49.5**	**6**	**95**	**15.5**		**E**			
9	17 09 22.76	34 25 46.8	BF									
Abell 2354												
1	21 31 58.06	-15 18 54.0	BF									
2	21 32 24.06	-15 20 22.3	21 32 24.76	-15 20 39.6	20	150	18.6	19.0	G			
3	21 32 33.77	-15 09 50.1	**21 32 33.34**	**-15 09 48.6**	**6**	**-76**	**17.5**	**19.5**	**E**			
			21 32 34.00	**-15 09 40.8**	**10**	**20**	**18.0**	**20.3**	**G**			
5a/b	21 32 50.76	-15 06 40.6	21 32 49.86	-15 06 22.3	22	-35	18.2	20.6	E			
			21 32 50.03	-15 06 35.1	12	-63	17.8	20.2	E			
			21 32 50.42	-15 06 09.8	31	-9	16.1	17.8	St			
			21 32 50.79	**-15 06 17.1**	**24**	**1**	**17.6**	**19.5**	**E**			
			21 32 50.56	**-15 06 46.2**	**6**	**-152**	**17.3**	**19.3**	**E**			
7	21 33 00.23	-15 13 43.2	BF									
10a/b	21 33 11.82	-15 14 12.4	**21 33 12.52**	**-15 14 26.7**	**18**	**145**	**17.3**	**17.7**	**St**			
11a/b	21 33 13.08	-15 08 56.4	21 33 13.67	-15 08 28.2	29	17	19.5	20.6	St			
			21 33 13.84	-15 08 53.5	11	75	14.5	12.5	St			
12	21 33 17.62	-14 59 10.9	**21 33 18.13**	**-14 59 12.0**	**7**	**98**	**16.0**	**15.2**	**St**			**GSC 05799-00563**
14	21 33 43.68	-15 20 43.1	BF									

15	21 33 53.33	-15 10 38.4	21 33 54.59	-15 10 40.6	18	97		19.0	DB
Abell 2396									
1	21 52 46.26	12 20 40.5	BF						
2	21 52 49.84	12 19 51.5	21 52 48.86	12 19 52.2	14	-87	16.4		St
4	21 53 06.60	12 18 30.7	21 53 07.66	12 18 33.8	16	79	18.8		G
			21 53 06.03	**12 18 32.9**	**9**	**-75**	**17.8**		**St**
			21 53 05.16	12 18 11.7	28	-132	19.0		G
7	21 53 17.05	12 05 18.2	BF						
9	21 53 26.53	12 12 05.6	BF						
10	21 53 56.76	12 12 24.5	BF						
12	21 54 12.04	12 19 30.4	**21 54 12.73**	**12 19 29.9**	**10**	**93**	**19.2**		**G**
			21 54 11.66	**12 19 22.8**	**9**	**-144**	**19.5**		**G**
13	21 54 18.82	12 17 44.9	BF						
Abell 2399									
1/3	21 53 07.32	-08 37 30.1	21 53 05.11	-08 37 13.3	37	-63	16.3	16.4	St
			21 53 07.48	**-08 37 28.2**	**3**	**51**	**>19.5**	**22.2**	**St**
			21 53 09.27	-08 37 35.7	29	101	16.3	16.0	St
2	21 53 06.28	-08 19 38.7	21 53 05.51	-08 19 33.6	13	-66		19.7	St
			21 53 07.48	-08 19 38.8	18	90		22.5	G
4	21 53 14.30	-08 34 44.1	BF						
7	21 54 05.00	-08 30 38.0	BF						
9	21 54 17.79	-08 40 45.4	BF						
11	21 55 09.00	-08 30 05.4	**21 55 08.80**	**-08 30 02.8**	**4**	**-49**		**21.7**	**G**
Abell 2443									
1a/b	22 22 37.53	17 10 08.1	BF						
2a/b	22 22 48.24	16 59 44.9	**22 22 47.66**	**16 59 19.1**	**27**	**-162**	**17.0**		**St**
4	22 22 52.47	16 47 48.5	BF						
5	22 23 10.11	16 50 37.3	**22 23 10.58**	**16 50 34.1**	**7**	**115**	**17.2**		**St**
6	22 23 10.33	17 16 28.8	22 23 10.29	17 16 10.8	18	-178	18.1		E
8	22 23 37.00	17 03 34.8	**22 23 37.19**	**17 03 36.2**	**3**	**63**	**18.0**		**G**
10	22 23 37.97	16 57 17.9	22 23 38.52	16 57 29.6	14	34	18.0		G
13	22 23 45.02	17 20 29.7	**22 23 45.06**	**17 20 33.8**	**4**	**8**	**17.8**		**G**
14	22 23 56.32	16 54 26.5	BF						
15	22 23 59.11	17 24 47.9	22 23 59.45	17 25 09.7	22	13	16.3		St
			22 23 58.81	17 24 59.2	12	-21	15.6		St
			22 23 59.69	**17 24 44.2**	**9**	**114**	**16.1**		**St**

Table 5. *(Continued)*

16	22 24 01.44	17 19 46.8	BF									
17	22 24 06.48	17 11 52.5	22 24 06.97	17 11 43.0	12	144	16.8		St			
			22 24 06.00	17 11 42.7	12	-145	15.5		St			GSC 01699-01065
			22 24 06.65	**17 11 51.5**	**3**	**112**	**18.2**		**G**			
18	22 24 09.45	17 21 21.5	BF									
19	22 24 11.53	17 00 03.7	22 24 10.53	17 00 12.7	17	-58	19.7		St			
			22 24 11.88	16 59 49.8	15	160	19.6		St			
20	22 24 11.80	16 47 45.3	BF									
21	22 24 16.78	17 17 28.7	BF									
22	22 24 21.10	16 58 23.0	BF									
23	22 24 31.41	17 03 25.4	22 24 30.48	17 03 24.7	13	-93	17.5		St			
			22 24 31.82	17 03 06.1	20	163	16.5		St			
Abell 2456												
1	22 31 20.30	-15 29 18.3	**22 31 19.63**	**-15 29 22.0**	**10**	**-111**	**17.7**	**20.8**	**E**			
2	22 31 28.93	-15 29 02.3	**22 31 28.55**	**-15 29 01.3**	**6**	**-80**	**>19.5**	**20.9**	**St**			
3	22 31 32.43	-15 19 24.3	**22 31 32.02**	**-15 19 21.2**	**7**	**-62**	**18.8**	**22.3**	**G**			
4	22 31 38.64	-15 29 56.2	22 31 39.82	-15 30 01.8	18	108	17.3	19.5	St			
5	22 31 55.54	-15 24 08.9	22 31 54.84	-15 24 25.5	19	-149	18.0	19.7	St			
6a/b	22 32 05.27	-15 39 31.8	BF									
7	22 32 10.98	-15 37 28.7	**22 32 10.67**	**-15 37 19.3**	**10**	**-25**	**18.0**	**21.7**	**G**			
8	22 32 18.14	-15 27 15.5	22 32 16.91	-15 27 07.0	20	-64	17.5	19.0	St			
			22 32 18.57	-15 27 03.0	14	26	19.6	21.2	G			
9	22 32 18.54	-15 42 18.5	BF									
10	22 32 19.21	-15 34 33.6	22 32 18.05	-15 34 41.9	19	-116	>19.6	21.1	G			
			22 32 19.91	**-15 34 33.5**	**10**	**89**	**16.1**	**16.5**	**St**			
11	22 32 20.68	-15 46 37.8	BF									
12	22 32 21.71	-15 43 55.6	BF									
13ii	22 32 32.83	-15 20 08.2	22 32 33.05	-15 20 20.2	12	165		18.4	St			
13iiia/b	22 32 33.41	-15 51 02.7	22 32 34.54	-15 50 52.0	19	57		15.0	St			GSC 06386-01177
14i	22 32 37.13	-15 51 28.5	BF									
17	22 32 54.92	-15 28 12.3	**22 32 54.95**	**-15 28 12.6**	**1**	**125**	**13.6**	**14.7**	**D**	**0.0217**	**20,27**	**IRAS 22329-1528**
19	22 33 17.73	-15 45 08.4	BF									
20	22 33 19.35	-15 20 05.5	**22 33 18.94**	**-15 20 10.9**	**8**	**-132**		**20.1**	**E**			
21	22 33 27.83	-15 21 25.4	**22 33 27.54**	**-15 21 33.4**	**9**	**-152**		**16.5**	**St**			
Abell 2457												
1ia/b	22 33 12.60	01 16 16.6	22 33 10.94	01 16 26.9	27	-68		14.7	St			
			22 33 11.87	01 16 00.4	20	-146		19.8	St			

			22 33 12.86	01 15 55.3	22	170		21.5	G			
1ii	22 33 12.66	01 12 45.5	22 33 11.94	01 12 34.3	16	-136		21.8	G			
2	22 33 33.39	01 17 57.2	22 33 32.25	01 18 06.1	19	-62	17.1	17.3	St			
			22 33 33.27	01 17 41.9	15	-173	>19.5	19.0	G			
			22 33 33.67	**01 17 59.8**	**5**	**58**	**16.2**	**17.3**	**S0**			
4	22 33 52.12	01 05 03.2	22 33 50.91	01 05 03.2	18	-90	16.7	15.9	St			
5	22 34 00.08	00 55 34.2	BF									
9	22 34 07.71	01 07 44.1	BF									
10ii	22 34 15.91	01 03 59.3	BF									
11i	22 34 19.28	01 14 00.4	**22 34 19.27**	**01 14 00.8**	**0**			**21.8**	**E**			
Abell 2575												
1i	23 16 19.85	-22 06 59.9	BF									
1iia/b	23 16 24.08	-22 20 48.6	BF									
2	23 16 28.69	-22 08 37.1	23 16 28.12	-22 08 18.4	20	-23		21.5	G			
			23 16 28.40	**-22 08 31.5**	**7**	**-36**		**17.7**	**E**			
			23 16 30.03	-22 08 42.3	19	106		20.0	St			
3	23 16 54.19	-22 07 52.2	BF									
5	23 17 03.17	-22 19 23.1	**23 17 03.15**	**-22 19 22.7**	**0**			**20.5**	**E**			
			23 17 04.73	-22 19 17.8	22	76		21.5	G			
			23 17 01.93	-22 19 36.6	22	-128		20.8	G			
8	23 17 32.71	-22 36 58.7	BF									
9i	23 17 35.51	-22 23 32.0	BF									
9ii	23 17 43.69	-22 39 03.9	23 17 42.80	-22 39 16.0	17	-135		23.0	G			
			23 17 43.43	-22 39 16.7	13	-164		21.9	G			
			23 17 45.07	-22 38 56.8	20	70		20.7	E			
10	23 18 01.92	-22 24 04.9	23 18 01.25	-22 23 51.8	16	-35		21.5	G			
11	23 18 04.23	-22 15 19.8	23 18 04.78	-22 15 34.9	17	153		21.5	G			
13	23 18 28.30	-22 12 31.6	**23 18 28.60**	**-22 12 35.3**	**6**	**132**		**20.0**	**E**			
14	23 18 31.25	-22 13 31.5	23 18 32.23	-22 13 44.2	19	133		20.1	St			
Abell 2593												
1i	23 21 00.60	14 03 32.1	23 21 00.62	14 03 10.5	22	179	17.6		St			
1ii	23 21 03.96	14 17 02.9	23 21 02.82	14 16 54.0	19	-118	19.7		St			
			23 21 04.59	14 16 46.0	19	152	20.0		G			
3	23 21 40.08	14 12 41.0	23 21 41.21	14 12 40.1	16	93	19.7		G			
			23 21 40.52	14 12 31.4	12	146	17.5		St			
4i	23 21 49.09	14 22 20.4	**23 21 49.39**	**14 22 21.4**	**4**	**77**	**13.5**		**D**	**0.0419**	**16,21,28**	**NGC 7649**
			23 21 48.92	14 22 34.0	14	-10	18.0		G			

Table 5. (*Continued*)

			23 21 49.39	14 22 02.7	18	166	16.1	St			
4ii	23 21 49.51	14 12 48.3	BF								
5	23 21 52.60	14 19 07.4	BF								
6	23 21 56.09	14 23 24.8	BF								
7a/b	23 22 00.87	14 35 28.5	BF								
8ii	23 22 03.55	14 29 31.1	23 22 03.46	14 29 13.5	18	-176	19.4	St			
9i	23 22 08.10	14 34 19.8	BF								
9ii	23 22 08.16	14 28 12.5	23 22 07.74	14 28 25.9	15	-24	16.2	St			
			23 22 07.26	14 28 01.6	17	-130	15.0	St			
11i	23 22 25.52	14 39 23.2	BF								
11ii	23 22 29.84	14 15 25.2	23 22 29.27	14 15 34.0	12	-43	17.6	E			
			23 22 28.63	14 15 32.0	19	-69	16.3	St			
			23 22 30.48	14 15 13.4	15	142	17.6	E			
12i	23 22 43.80	14 35 38.9	23 22 43.73	14 35 51.6	13	-5	17.5	St			
			23 22 43.20	14 35 22.4	19	-152	18.3	St			
12ii	23 22 45.93	14 20 11.6	BF								
13	23 22 49.66	14 09 33.5	BF								
Abell 2622											
2	23 31 28.24	27 05 47.0	**23 31 27.79**	**27 05 46.3**	**6**	**-97**	**17.8**	**E**			
3	23 31 28.55	27 06 47.9	**23 31 28.94**	**27 06 48.9**	**5**	**79**	**18.6**	**E**			
4	23 31 39.42	27 15 25.1	BF								
5	23 32 21.32	27 07 17.1	BF								
6	23 32 21.91	27 06 14.7	**23 32 22.59**	**27 06 19.8**	**10**	**61**	**17.5**	**St**			
			23 32 22.09	**27 06 06.9**	**8**	**163**	**18.5**	**G**			
7	23 32 24.04	27 04 34.0	**23 32 23.92**	**27 04 32.7**	**2**	**-129**	**15.7**	**S0**	**0.0614**	**29**	**Zw331.214**
			23 32 23.54	**27 04 26.6**	**10**	**-138**	**16.6**	**St**			
8	23 32 31.46	27 09 23.4	BF								
11a/b	23 32 33.44	27 16 49.5	BF								
12	23 32 33.93	26 57 19.5	**23 32 33.19**	**26 57 19.5**	**10**	**-90**	**16.0**	**St**			**GSC 02253-00307**
14a/b	23 32 45.29	27 11 12.6	23 32 46.57	27 10 58.2	22	130	19.4	G			
			23 32 44.99	**27 10 56.4**	**17**	**-166**	**18.3**	**G**			
			23 32 44.10	27 10 56.2	23	-136	19.5	G			
15	23 32 47.22	27 20 47.0	23 32 46.41	27 20 57.4	15	-46	17.4	St			
			23 32 48.03	27 20 53.4	13	59	18.3	E			
16	23 32 54.65	27 16 26.6	23 32 53.42	27 16 22.9	17	-103	18.0	St			
17	23 32 59.22	26 48 29.8	23 33 00.21	26 48 27.6	13	99	15.9	St			
18	23 33 16.64	26 56 13.0	BF								
19	23 33 19.48	27 07 44.9	BF								

20	23 33 21.26	27 06 48.2	BF									
21	23 33 30.13	27 04 46.5	23 33 30.70	27 04 56.0	12	39	19.5		St			
Abell 2626												
1	23 32 41.17	20 46 26.0	BF									
2	23 32 51.00	20 51 38.7	BF									
3	23 33 22.83	21 04 15.8	23 33 22.08	21 04 12.1	11	-109	19.5		G			
4	23 33 23.38	20 48 12.6	BF									
8	23 33 45.27	20 49 38.1	**23 33 45.26**	**20 49 45.3**	**7**	**-1**	**17.5**		**St**			
			23 33 46.32	20 49 45.5	16	63	16.6		E			
9	23 33 47.77	21 02 07.0	BF									
10	23 33 54.70	20 52 33.7	23 33 54.03	20 52 25.2	13	-132	14.5		S0	0.0550	30	IC 5337
13	23 34 06.08	20 46 11.2	BF									
14	23 34 08.63	20 49 31.0	**23 34 08.68**	**20 49 29.7**	**1**	**152**	**14.0**		**E**	**0.0589**	**31**	**Zw455.028**
			23 34 07.96	20 49 13.2	20	-152	19.0		G			
16	23 34 33.45	20 55 04.3	23 34 33.02	20 55 15.3	12	-29	18.8		G			
			23 34 33.64	**20 55 00.4**	**5**	**146**	**16.2**		**St**			
18	23 34 48.82	20 35 49.2	BF									
Abell 2657												
1	23 43 25.62	08 29 29.3	**23 43 26.31**	**08 29 30.2**	**10**	**85**	**17.5**		**E**			
2a/b	23 43 26.68	08 27 50.0	BF									
6	23 44 08.63	08 41 35.6	BF									
7	23 44 16.62	08 35 16.3	**23 44 16.42**	**08 35 15.7**	**3**	**-101**	**16.3**		**St**			
			23 44 16.29	**08 35 11.2**	**7**	**-136**	**18.0**		**E**			
Abell 4038												
2	23 44 12.51	-28 32 00.5	**23 44 12.26**	**-28 32 07.6**	**8**	**-155**		**17.5**	**St**			
3	23 44 22.84	-28 07 58.9	BF									
5	23 44 35.72	-28 17 03.8	BF									
6i	23 44 40.58	-28 26 22.5	23 44 39.42	-28 26 27.0	16	-106		19.1	St			
			23 44 40.43	-28 26 06.2	16	-7		19.7	St			
6ii	23 44 40.69	-28 08 10.8	**23 44 40.91**	**-28 08 04.3**	**7**	**24**		**21.1**	**St**			
			23 44 41.34	-28 08 20.5	13	139		21.0	St			
6iii	23 44 40.74	-28 34 04.8	23 44 40.41	-28 33 47.1	18	-14		20.5	G			
			23 44 40.57	**-28 34 13.2**	**9**	**-165**		**19.1**	**E**			
			23 44 40.66	**-28 34 07.6**	**3**	**-159**		**20.0**	**E**			
			23 44 41.07	-28 34 22.1	18	166		20.8	G			
			23 44 41.30	**-28 34 00.6**	**8**	**60**		**20.8**	**G**			

Table 5. (Continued)

			23 44 41.84	-28 33 56.6	17	60		21.5	G			
7	23 44 52.42	-28 24 52.1	**23 44 52.42**	**-28 24 52.1**	**0**			**14.5**	**cD**	**0.0276**	**1,7,10,11,32**	**IC 5354**
			23 44 52.62	-28 25 07.4	15	170		18.0	E			
10	23 45 07.34	-28 24 13.1	**23 45 07.27**	**-28 24 04.8**	**8**	**-6**		**20.8**	**G**			
			23 45 06.25	-28 24 13.6	14	-92		15.6	E	0.0278	10,11	
12	23 45 20.00	-28 10 22.7	BF									
13a/b	23 45 21.59	-28 16 41.4	**23 45 21.77**	**-28 16 42.2**	**3**	**109**		**21.2**	**G**			
			23 45 23.83	-28 16 48.4	30	103		18.6	St			
14	23 45 35.96	-28 15 53.3	BF									
15	23 45 37.48	-28 09 48.1	23 45 36.42	-28 09 48.2	14	-90		21.2	G			
			23 45 37.88	-28 09 32.4	17	19		20.8	G			
16a/b	23 45 43.27	-28 30 20.5	**23 45 42.77**	**-28 30 29.7**	**11**	**-144**		**19.1**	**E**			
			23 45 44.68	-28 30 36.3	24	130		14.8	E	0.0275	1,7,11	
17i	23 45 54.94	-28 13 35.7	BF									
17ii	23 46 01.96	-28 41 13.6	BF									
19	23 46 20.12	-28 39 25.4	BF									
Abell 2670												
1i	23 49 17.41	-11 09 01.6	23 49 16.85	-11 09 12.1	13	-142		20.3	E			
			23 49 17.50	-11 09 22.0	20	176		19.2	E			
1ii	23 49 28.78	-10 51 10.4	**23 49 28.83**	**-10 51 23.7**	**13**	**177**	**19.3**	**21.1**	**G**			
2	23 49 36.49	-11 03 33.0	BF									
3	23 49 43.39	-10 48 05.9	**23 49 43.49**	**-10 48 15.0**	**9**	**171**	**19.0**		**E**			
4	23 50 02.61	-10 50 55.8	BF									
5	23 50 07.85	-10 55 18.8	BF									
6	23 50 21.92	-10 45 18.8	BF									
8	23 50 27.20	-10 45 10.7	BF									
9	23 50 31.35	-11 04 47.8	**23 50 31.93**	**-11 04 48.7**	**9**	**96**	**17.8**	**19.4**	**E**			
10	23 50 33.23	-11 10 21.6	BF									
12	23 50 34.59	-11 00 55.8	**23 50 34.50**	**-11 00 58.4**	**3**	**-153**	**16.8**	**17.9**	**E**			
			23 50 34.90	-11 01 07.5	13	159	18.8	19.4	E			
13	23 50 40.03	-10 57 46.6	**23 50 39.93**	**-10 57 48.4**	**2**	**-141**	**17.1**	**17.5**	**St**			
14	23 51 08.96	-10 56 26.2	BF									
15	23 51 37.05	-10 46 48.1	23 51 36.14	-10 46 32.8	20	-41		17.7	E	0.0748	33	

Column Headings

Column

1 The cluster field and source number as listed by SPS89. See Section 2a for explanation of Roman numerals.
2,3 The B1950 right ascension and declination of the source centroid at 1.5 GHz.
4,5 The B1950 right ascensions and declinations of nearby optical objects.
7,8 The angular separation and position angle (positive from north through east) of the optical object relative to the 1.5 GHz position.
9,10 Our estimates of apparent magnitude from the Palomar red plate and SERC J-plate respectively.
11 Our estimate of the morphological class of the optical object. Refer to Section 3 for the meanings of abbreviations.
12 The average redshift obtained from the references in column 13.
13 References for redshifts.
14 Other catalogue names.

References for redshift

1. Green, Godwin and Peach (1988)
2. Malumuth et al. (1992)
3. Proust et al. (1987)
4. Schneider, Gunn and Hoessel (1983)
5. Beers et al. (1991)
6. Teague, Carter and Gray (1990)
7. Lucey and Carter (1988)
8. Dressler and Shectman (1988)
9. Merrifield and Kent (1991)
10. Maccacaro et al. (1977)
11. Chincarini et al. (1978)
12. Valentijn and Casertano (1988)
13. Quintana and Ramirez (1990)
14. Quintana et al. (1985)
15. Tarenghi et al. (1979)
16. Bothun and Schombert (1990)
17. Beers et al. (1983)
18. Bower et al. (1988)
19. Hewett et al. (1991)
20. Coziol et al. (1993)
21. Colless et al. (1993)
22. Zabludoff, Huchra and Geller (1990)
23. Owen, Ledlow andKeel (1995)
24. Hamwey (1988)
25. Reynolds (1986)
26. Wegner et al. (1993)
27. Strauss et al. (1992)
28. Postman and Lauer (1995)
29. Scodeggio et al. (1995)
30. Giovanelli and Haynes (1993)
31. Tago (1995)
32. Lauberts and Valentijn (1989)
33. Sharples et al. (1988)
34. de Vaucouleurs et al. (1991)
35. Huchra et al. (1995)
36. Crampton et al. (1988)

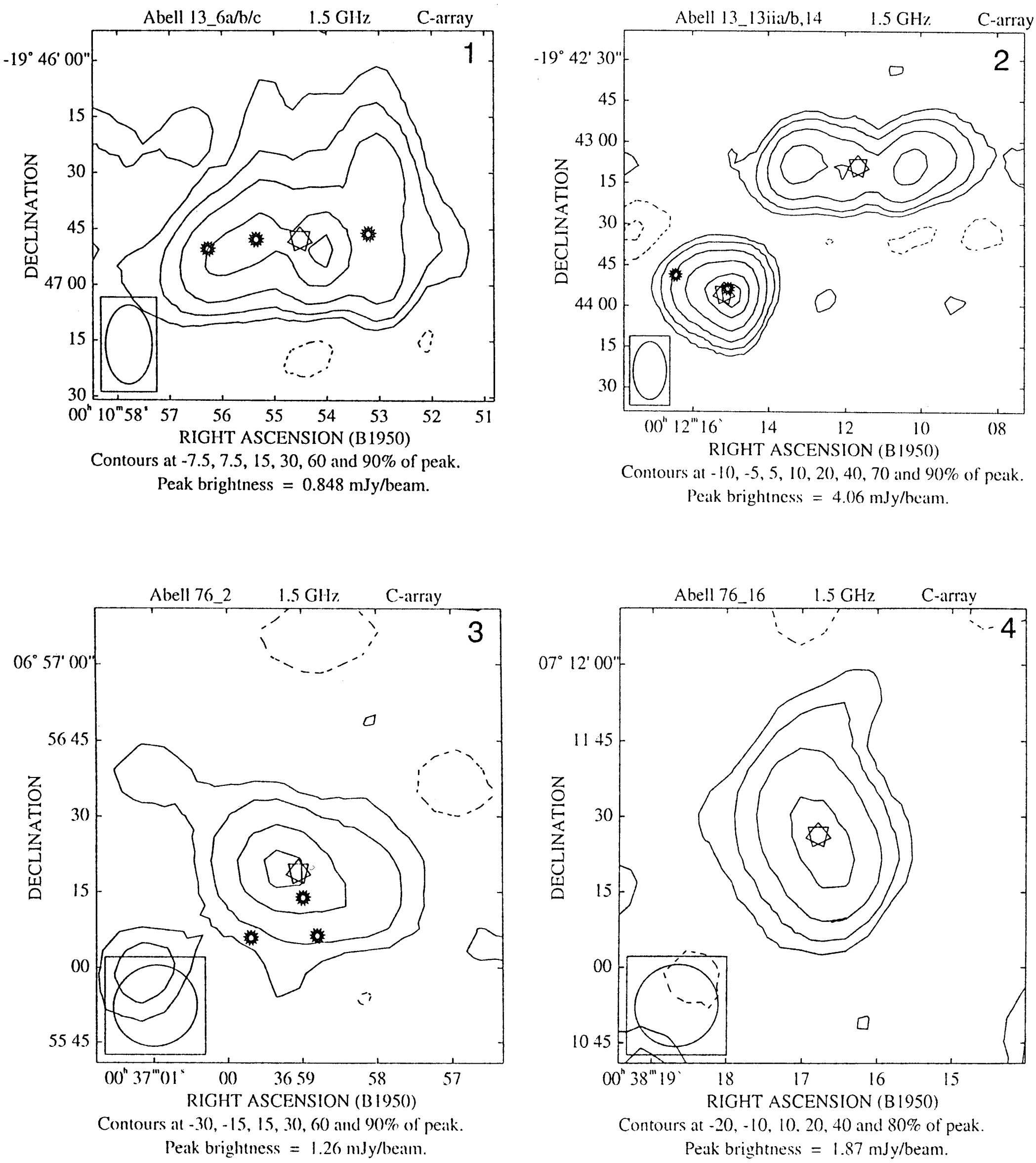
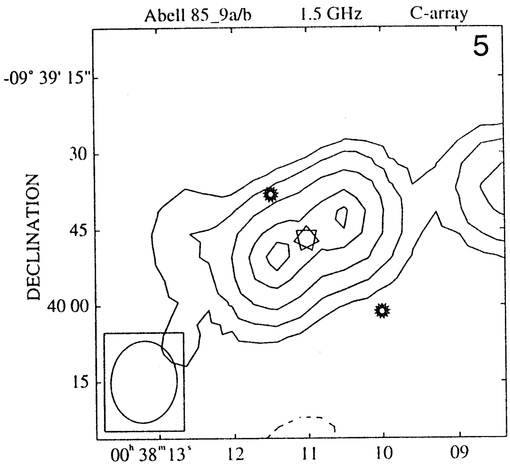
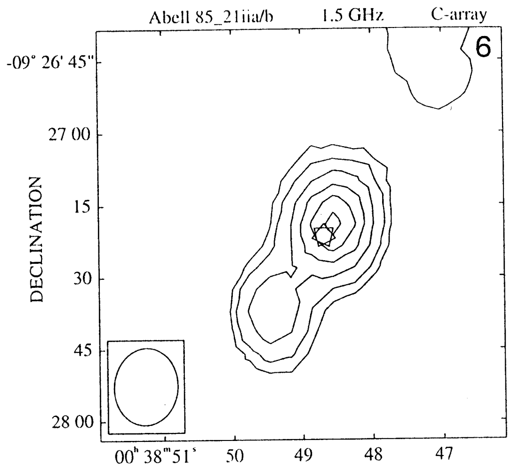


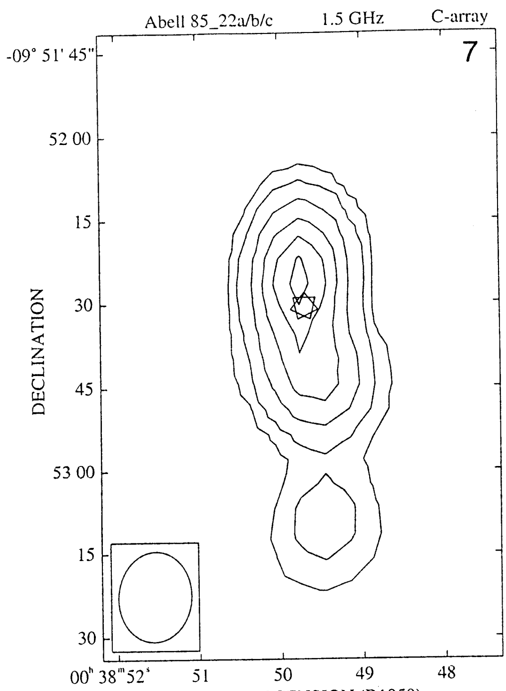
Fig. 1. Contour maps of the more extended sources in the sample. The number in the upper right corner cross-references the map to its derived parameters in Tables 2, 3 and 4. The source number (see Tables 2, 3 and 4), observing frequency and VLA configuration appear at the top of the map. The synthesised beam (FWHP) is shown in the box at the lower left corner. The rms noise level applicable to each map may be obtained from columns 7 and 8 in Table 1. Radio positions (Table 5) are shown with open 7-pointed stars and optical positions of potential identifications (Table 5) with smaller, partly filled 13-pointed stars.



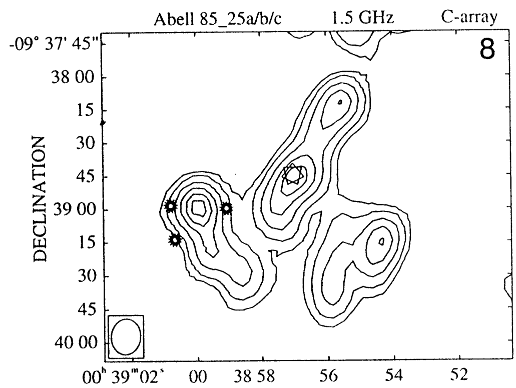
Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 0.680 mJy/beam.



Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 0.743 mJy/beam.

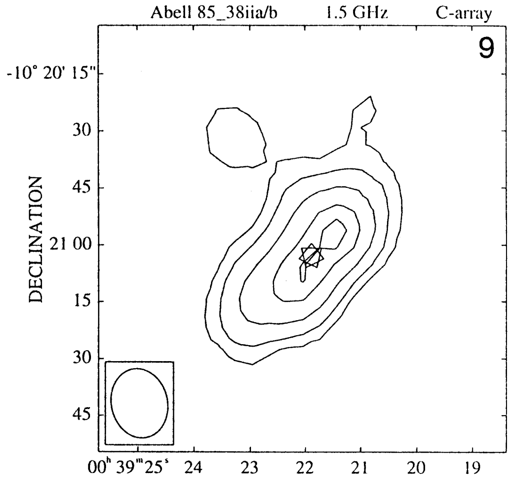


Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 2.47 mJy/beam.

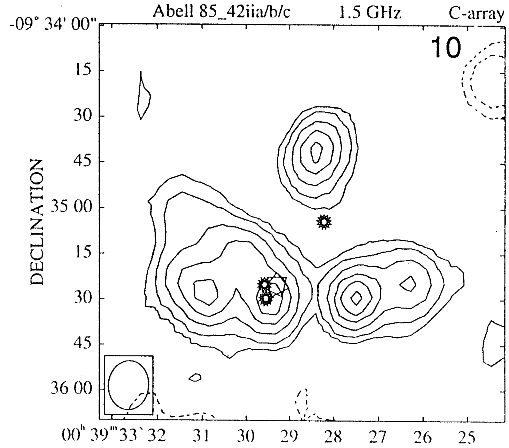


Contours at -15, -7.5, 7.5, 15, 30, 50, 70 and 90% of peak
Peak brightness = 0.899 mJy/beam.

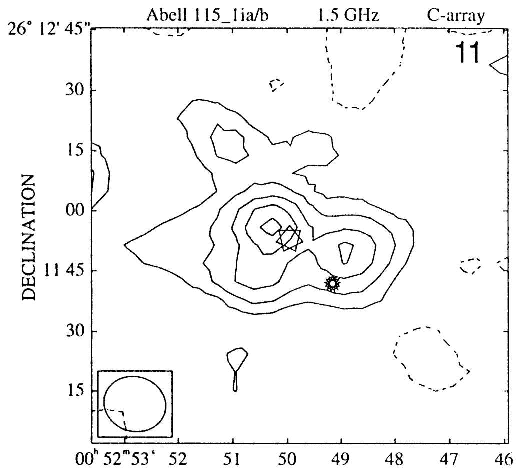
Fig. 1. (*Continued*)



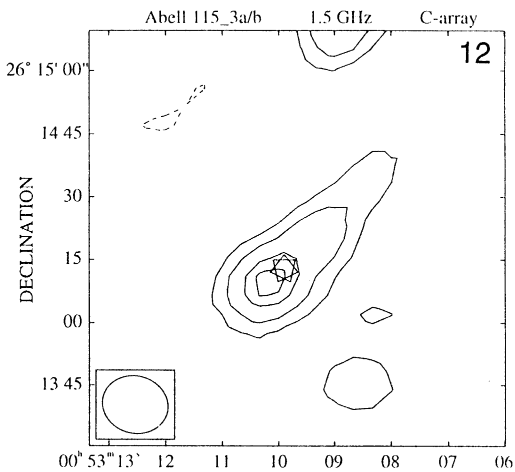
Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 9.16 mJy/beam.



Contours at -15, -7.5, 7.5, 15, 30, 50, 70 and 90% of peak
Peak brightness = 0.536 mJy/beam.

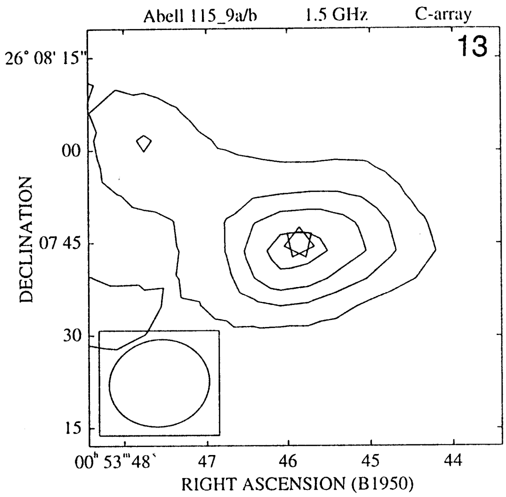


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.41 mJy/beam.

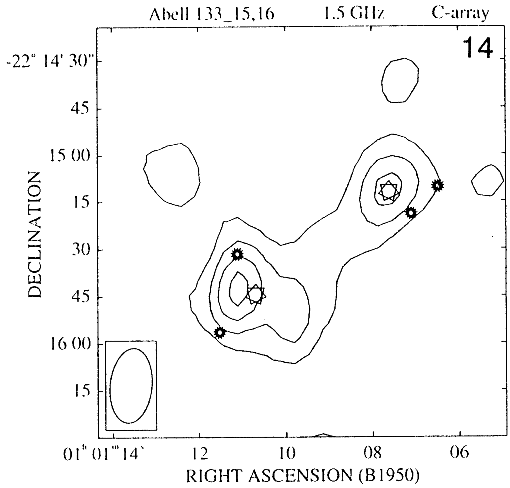


Contours at -20, 20, 40, 70 and 90% of peak.
Peak brightness = 2.19 mJy/beam.

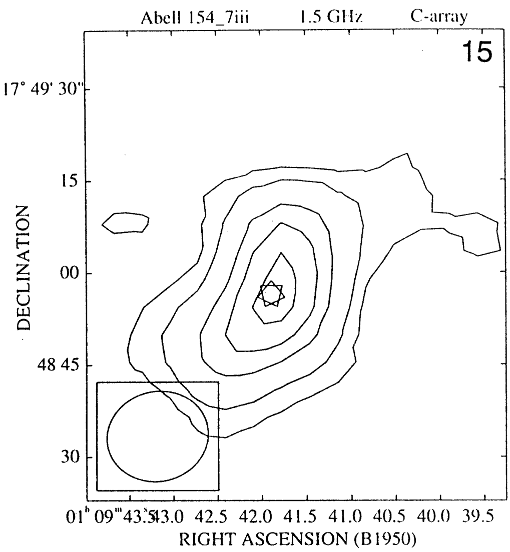
Fig. 1. (*Continued*)



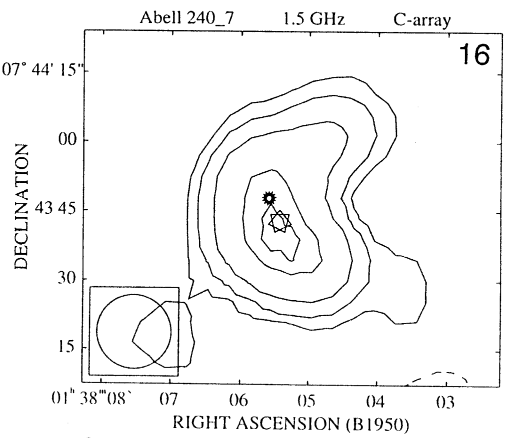
Contours at -25, 25, 50, 70 and 90% of peak.
Peak brightness = 4.47 mJy/beam.



Contours at -30, 30, 50, 70 and 90% of peak.
Peak brightness = 1.65 mJy/beam.

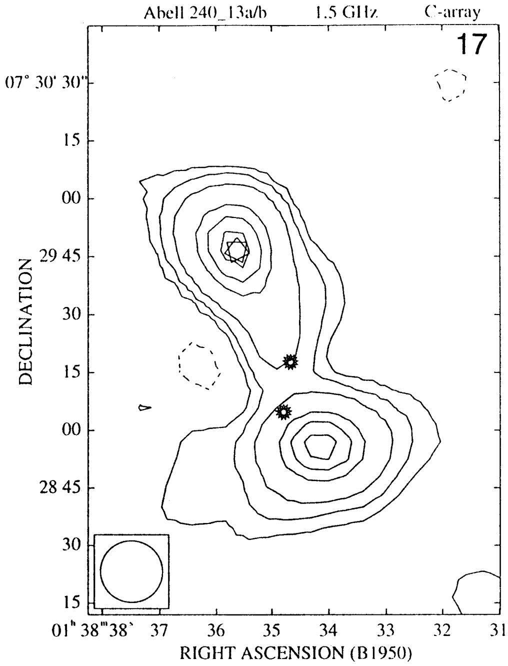


Contours at -12.5, 12.5, 25, 50, 70 and 90% of peak.
Peak brightness = 2.21 mJy/beam.

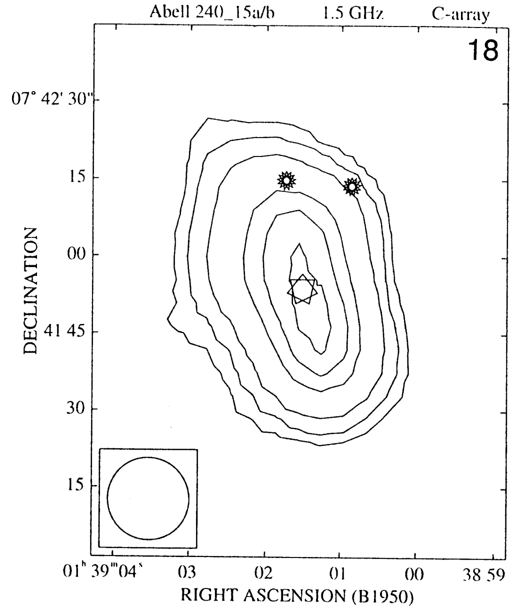


Contours at -7.5, 7.5, 15, 30, 70 and 90% of peak.
Peak brightness = 2.31 mJy/beam.

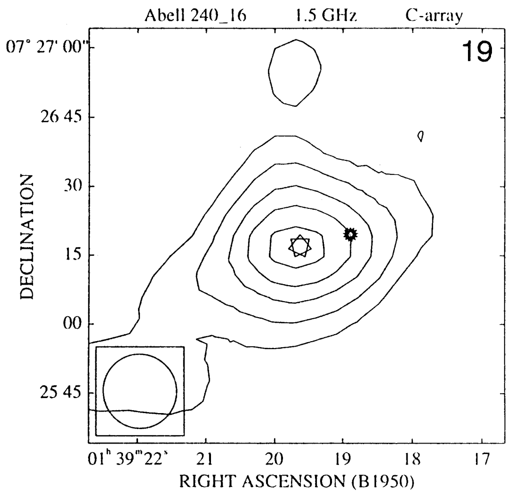
Fig. 1. (***Continued***)



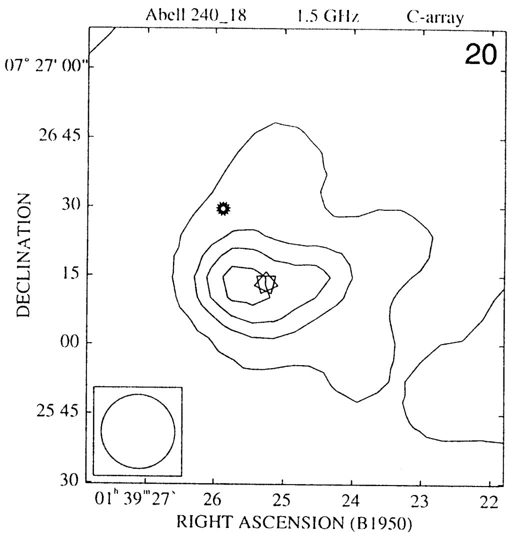
Contours at -5, 5, 10, 20, 50, 70 and 90% of peak.



Contours at -5, 5, 10, 20, 50, 70 and 90% of peak.
Peak brightness = 5.03 mJy/beam.

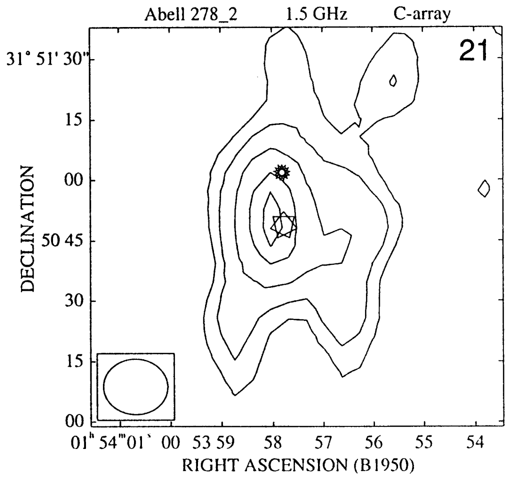


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.32 mJy/beam.

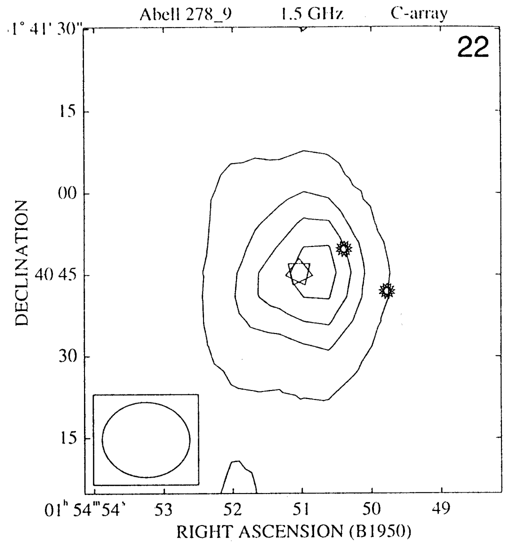


Contours at -20, 20, 50, 70 and 90% of peak.
Peak brightness = 1.88 mJy/beam.

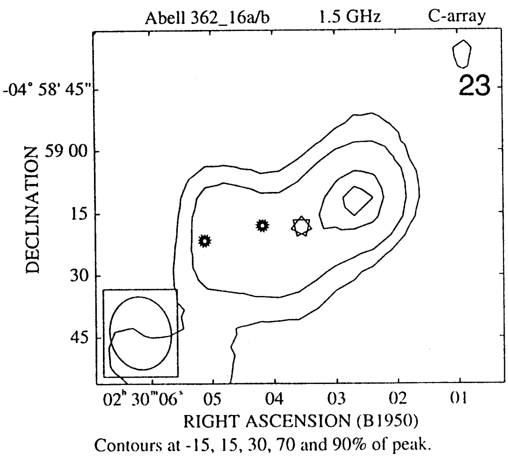
Fig. 1. (*Continued*)



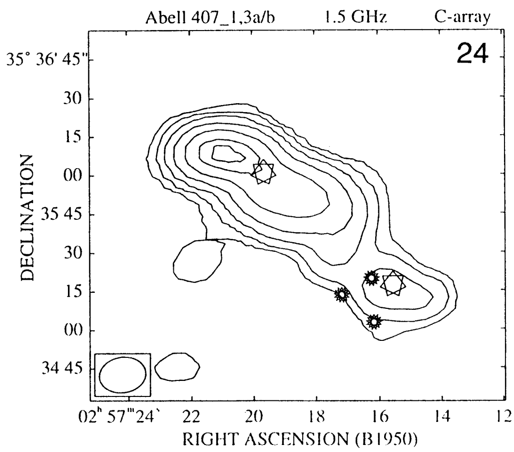
Contours at -20, -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 5.60 mJy/beam.



Contours at -20, 20, 50, 70 and 90% of peak.
Peak brightness = 6.60 mJy/beam.

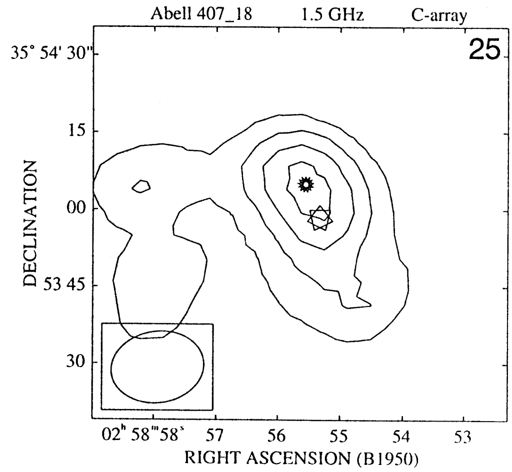


Contours at -15, 15, 30, 70 and 90% of peak.
Peak brightness = 2.48 mJy/beam.

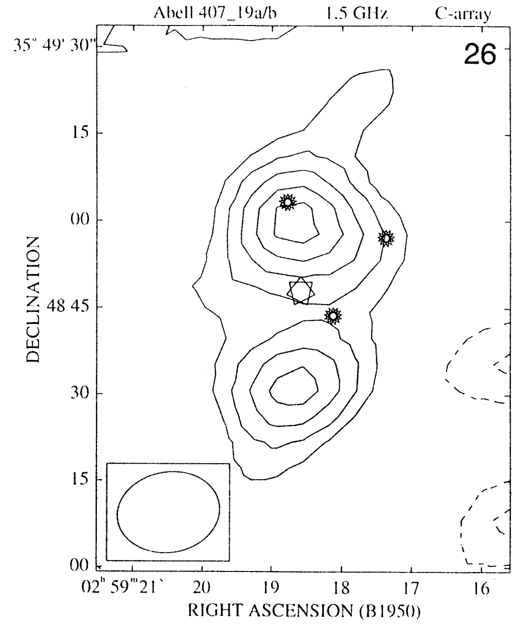


Contours at -5, -2.5, 2.5, 5, 10, 20, 40, 70 and 90% of peal
Peak brightness = 31.9 mJy/beam.

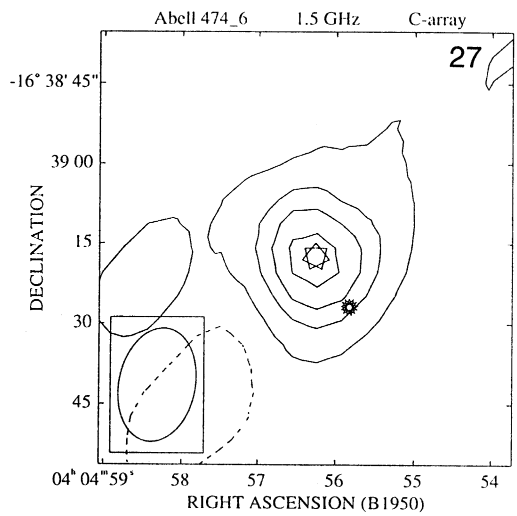
Fig. 1. (***Continued***)



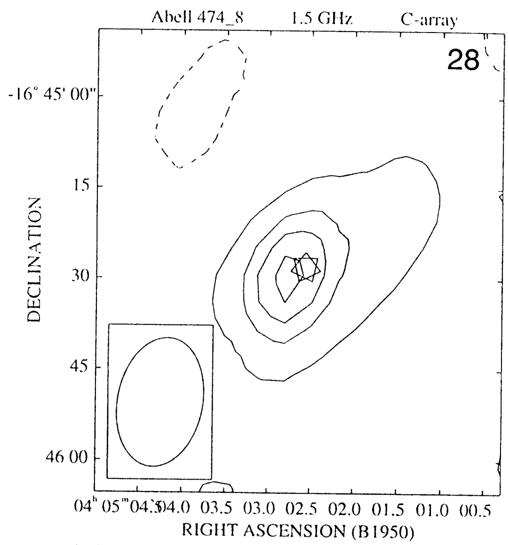
Contours at -30, 30, 50, 70 and 90% of peak.
Peak brightness = 2.88 mJy/beam.



Contours at -30, -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 2.18 mJy/beam.

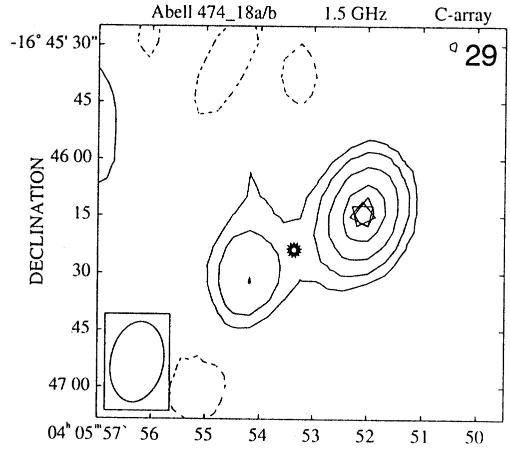


Contours at -20, 20, 50, 70 and 90% of peak.
Peak brightness = 1.95 mJy/beam.

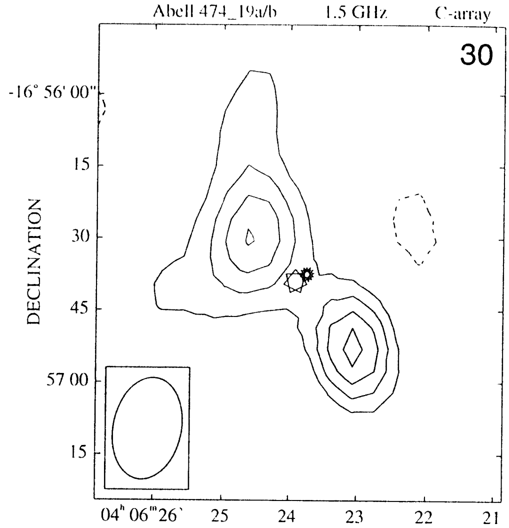


Contours at -20, 20, 50, 70 and 90% of peak.
Peak brightness = 1.35 mJy/beam.

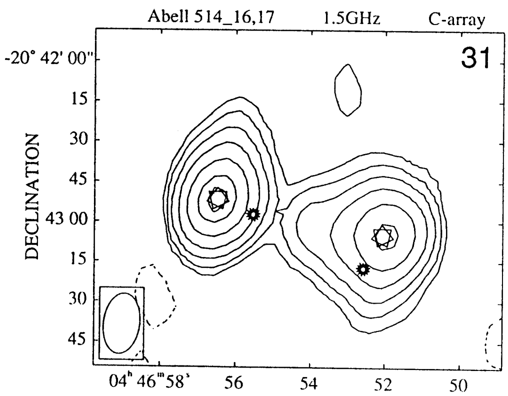
Fig. 1. (***Continued***)



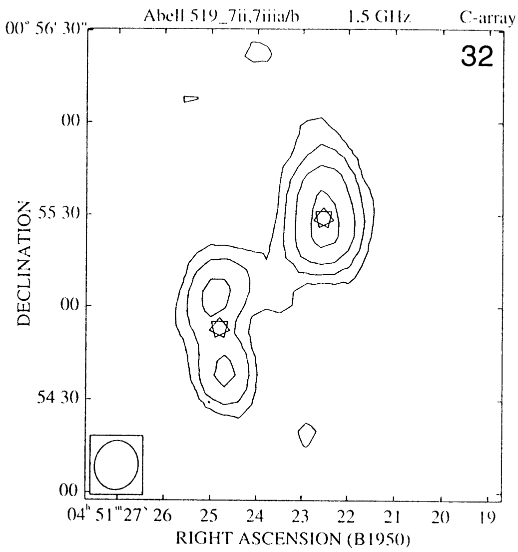
Contours at -20, -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.49 mJy/beam.



Contours at -30, 30, 50, 70 and 90% of peak.
Peak brightness = 2.94 mJy/beam.



Contours at -5, -2.5, 2.5, 5, 10, 20, 40, 70 and 90% of pea
Peak brightness = 10.4 mJy/beam.



Contours at -10, 10, 20, 40 and 80% of peak.
Peak brightness = 6.49 mJy/beam.

Fig. 1. (***Continued***)

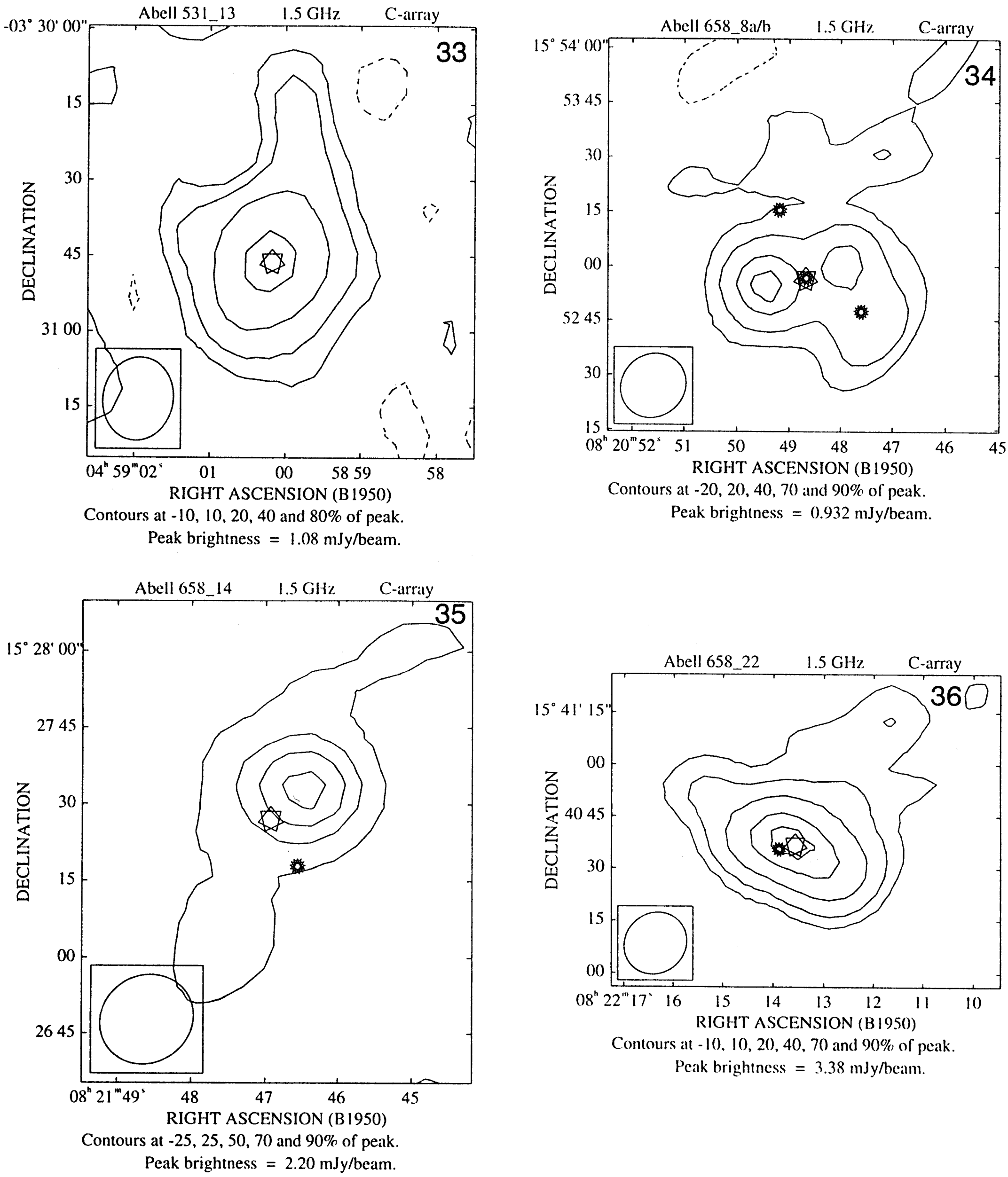
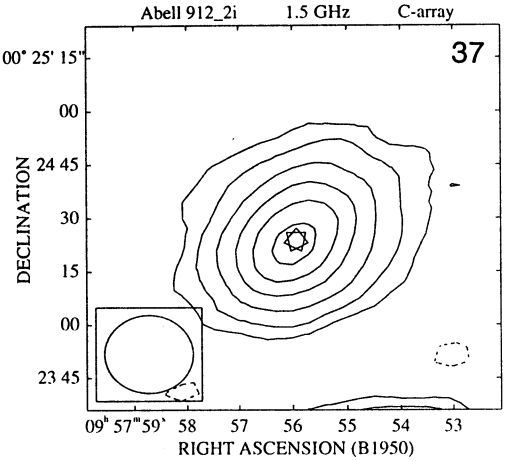
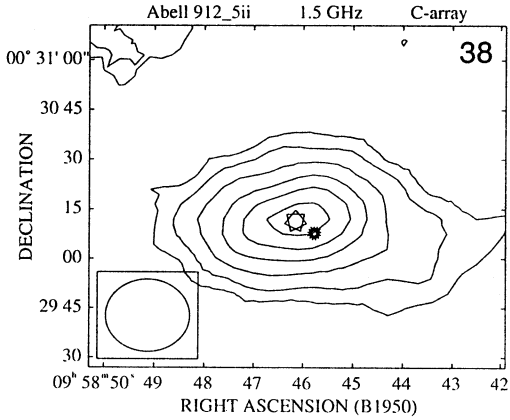


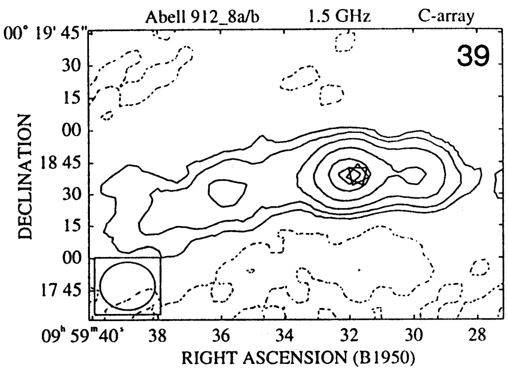
Fig. 1. (*Continued*)



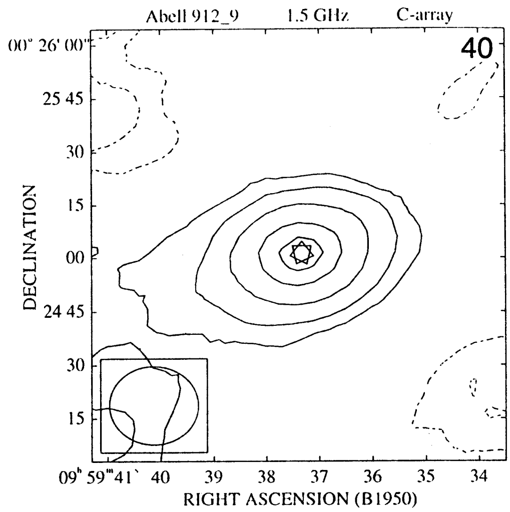
Contours at -15, -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 6.57 mJy/beam.



Contours at -15, -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 6.39 mJy/beam.

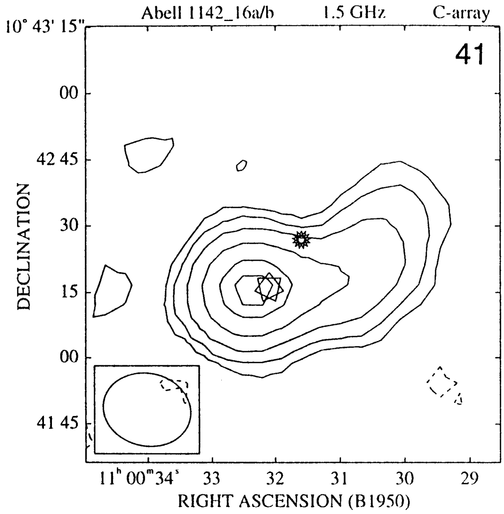


Contours at -10, -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 8.34 mJy/beam.

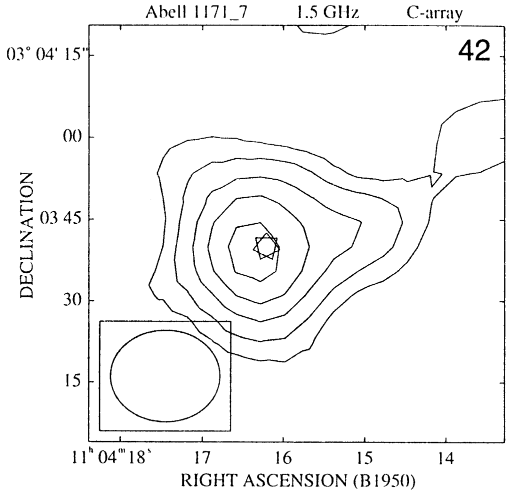


Contours at -20, -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 8.20 mJy/beam.

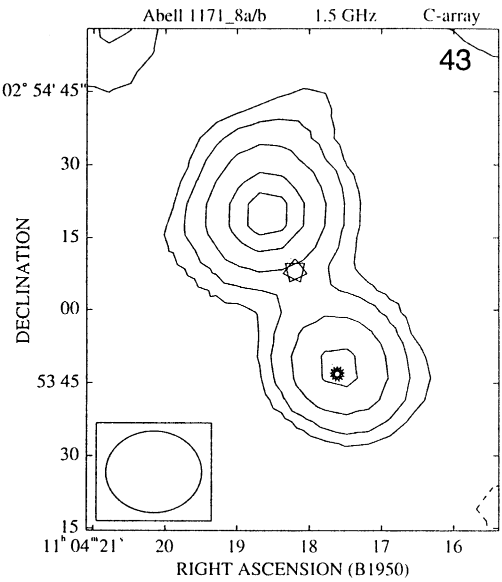
Fig. 1. (***Continued***)



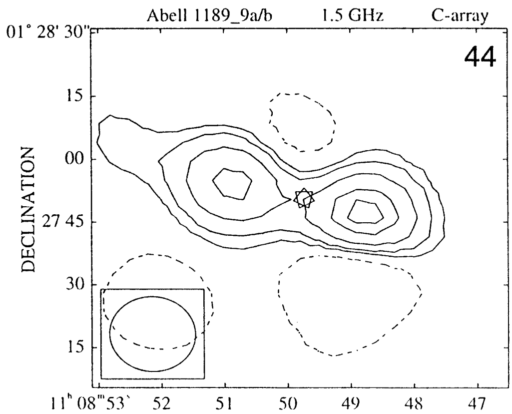
Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 4.73 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 0.778 mJy/beam.



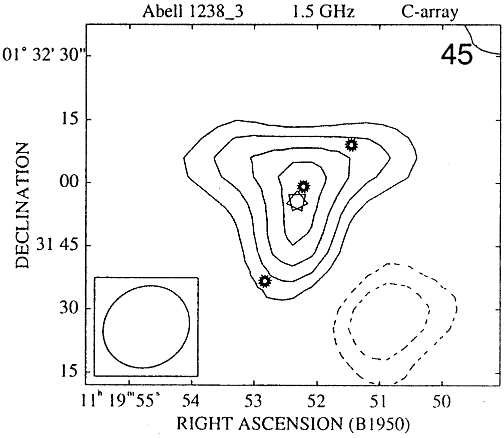
Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 1.89 mJy/beam.



Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 2.60 mJy/beam.

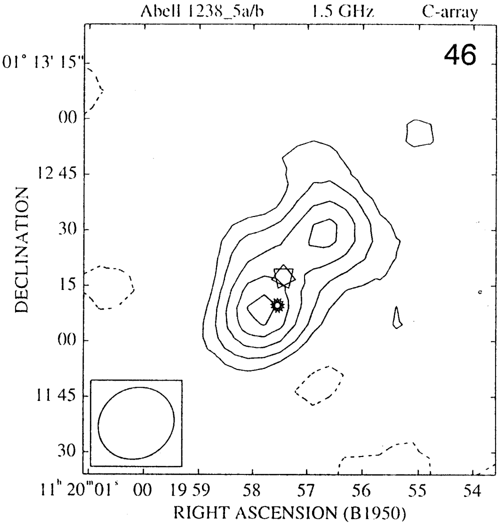
Fig. 1. (***Continued***)

Abell 1238_3 1.5 GHz C-array



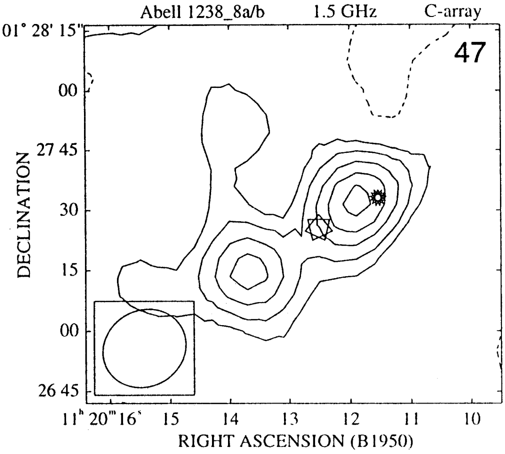
Contours at -50, -30, 30, 50, 70 and 90% of peak.
Peak brightness = 1.17 mJy/beam.

Abell 1238_5a/b 1.5 GHz C-array



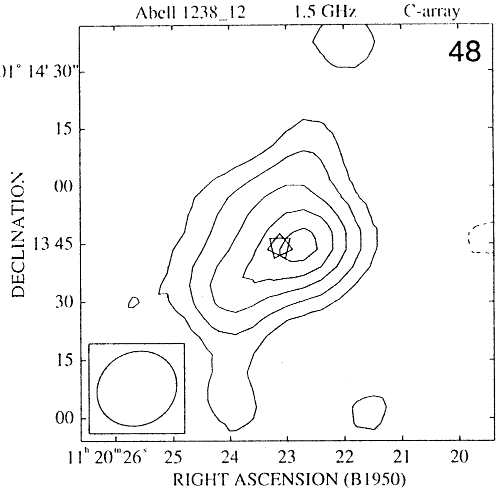
Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.62 mJy/beam.

Abell 1238_8a/b 1.5 GHz C-array



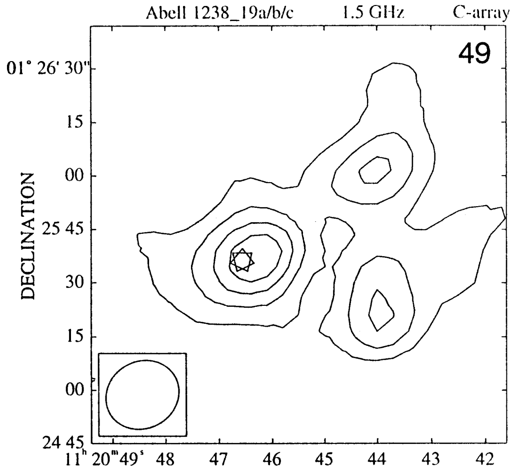
Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 0.898 mJy/beam.

Abell 1238_12 1.5 GHz C-array

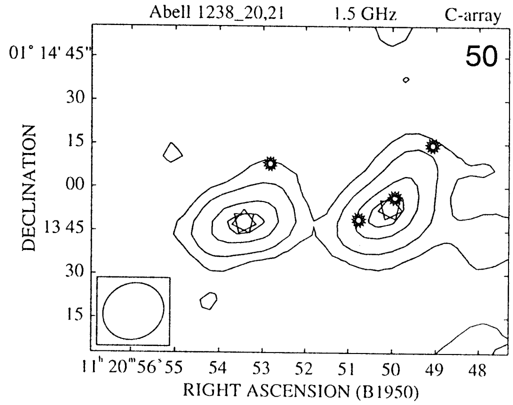


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.83 mJy/beam.

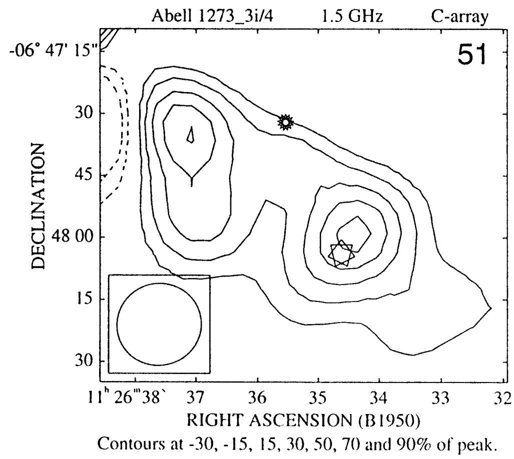
Fig. 1. (***Continued***)



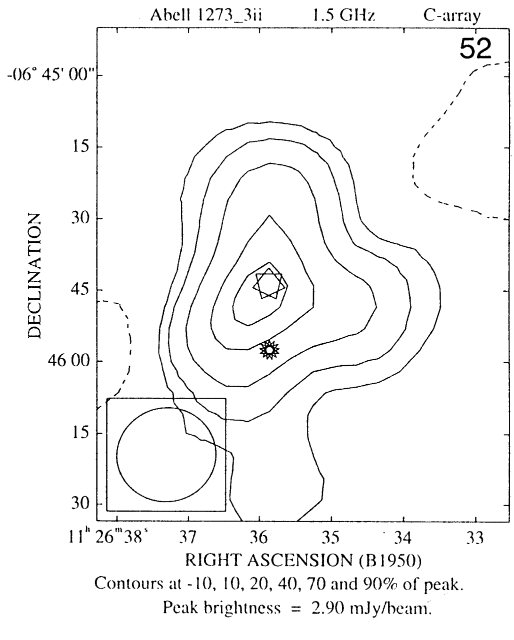
Contours at -20, 20, 40, 60 and 80% of peak.
Peak brightness = 0.977 mJy/beam.



Contours at -20, 20, 40, 70 and 90% of peak.
Peak brightness = 1.40 mJy/beam.

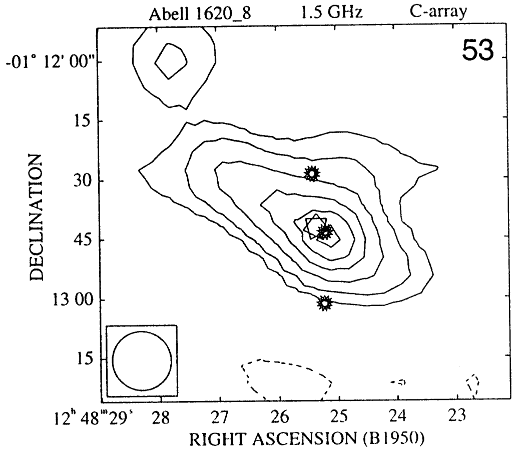


Contours at -30, -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.03 mJy/beam.

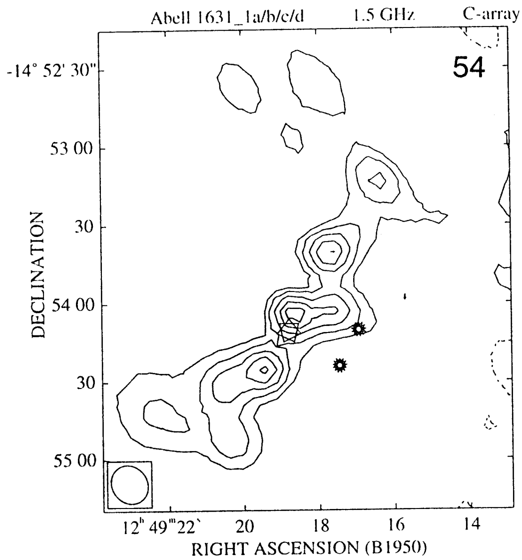


Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 2.90 mJy/beam.

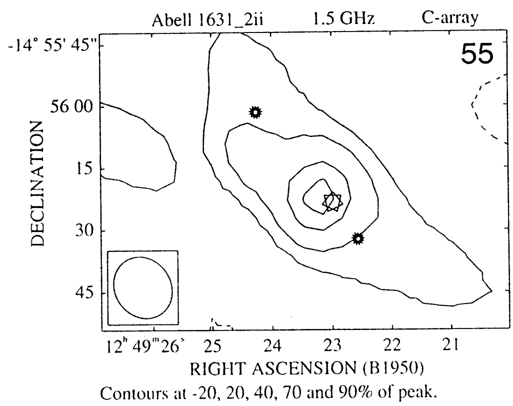
Fig. 1. (***Continued***)



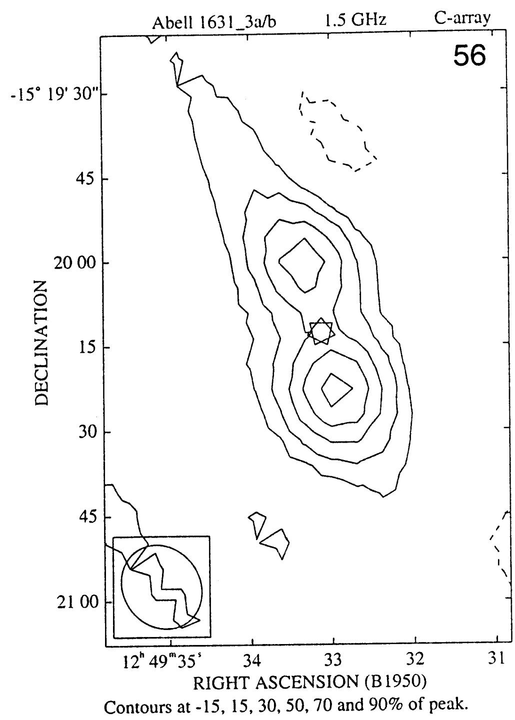
Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 5.78 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.33 mJy/beam.

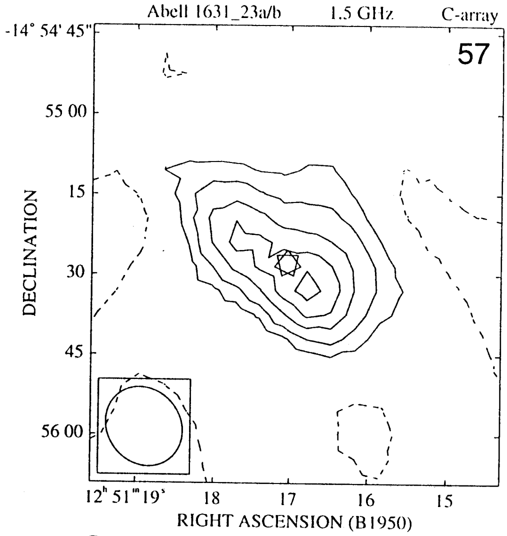


Contours at -20, 20, 40, 70 and 90% of peak.
Peak brightness = 2.10 mJy/beam.

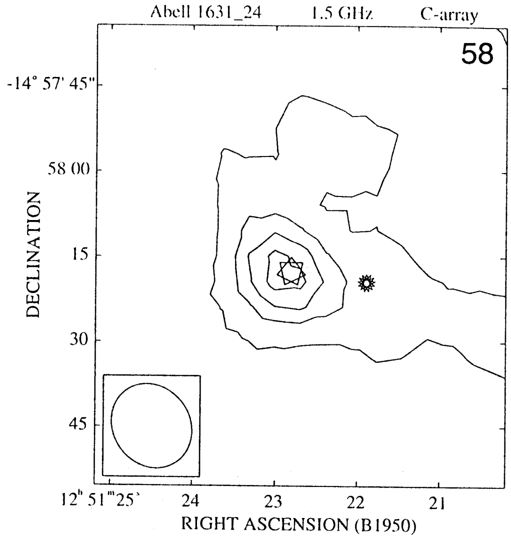


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 2.73 mJy/beam.

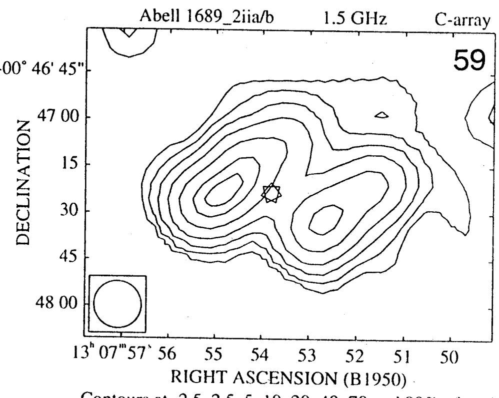
Fig. 1. (*Continued*)



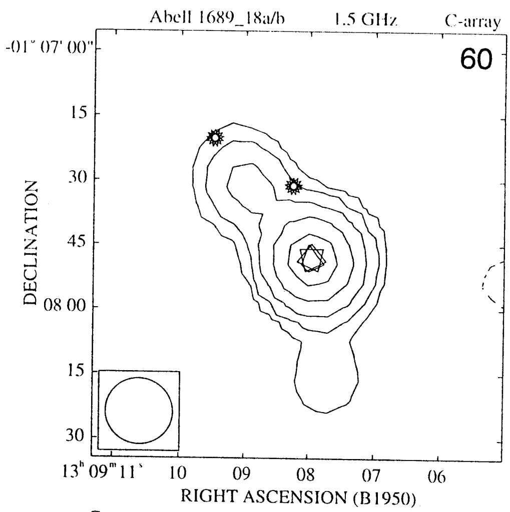
Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.73 mJy/beam.



Contours at -25, 25, 50, 70 and 90% of peak.
Peak brightness = 1.68 mJy/beam.

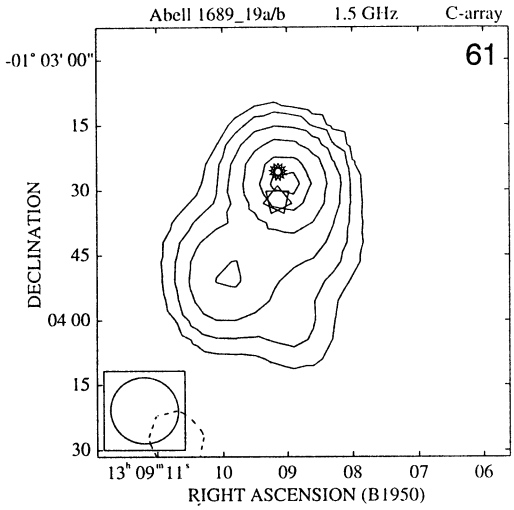


Contours at -2.5, 2.5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 25.2 mJy/beam.

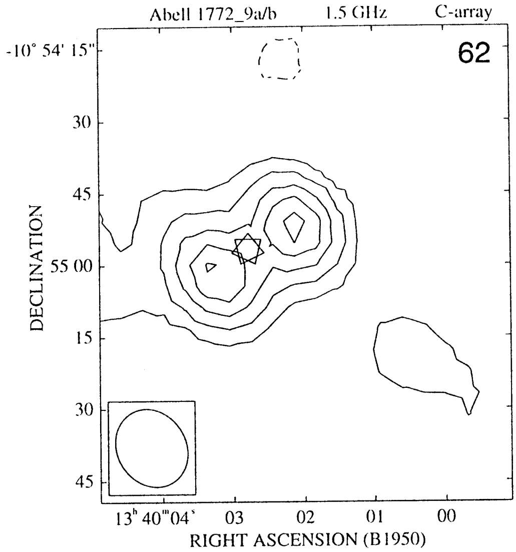


Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 7.81 mJy/beam.

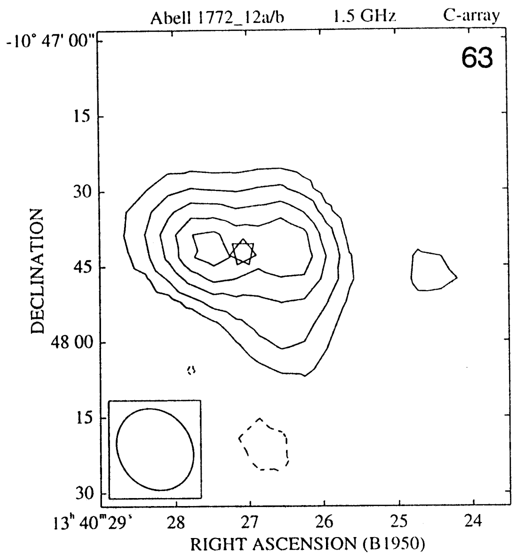
Fig. 1. (*Continued*)



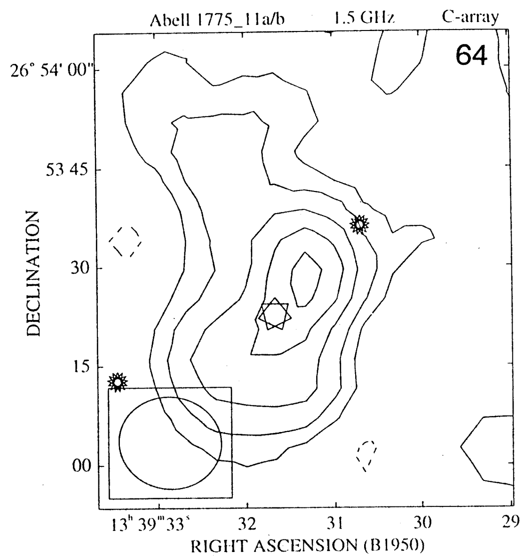
Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 5.59 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 0.762 mJy/beam.

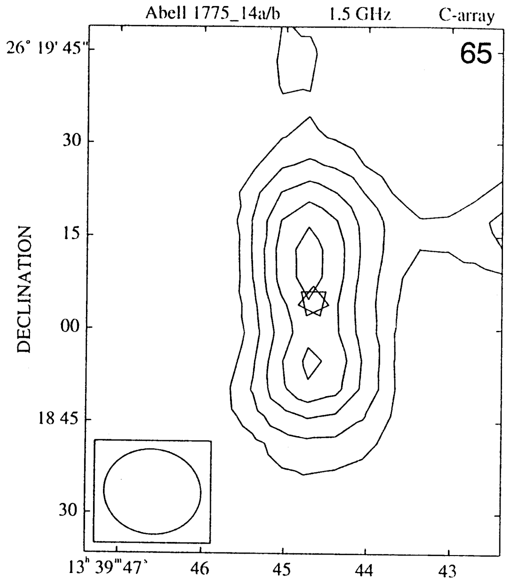


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.39 mJy/beam.

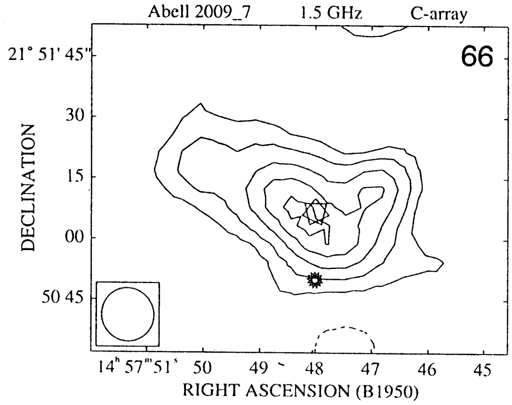


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.42 mJy/beam.

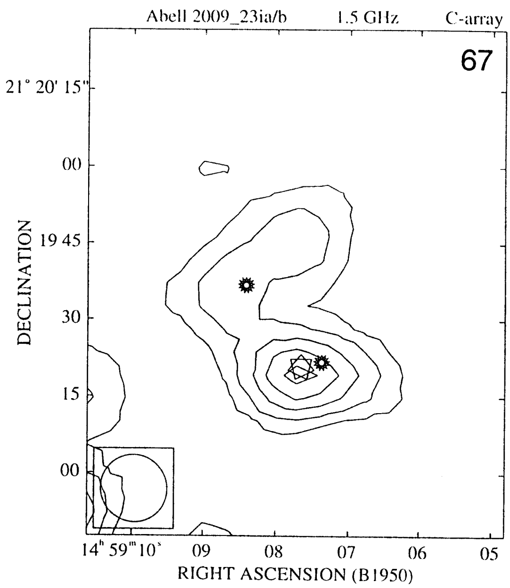
Fig. 1. (*Continued*)



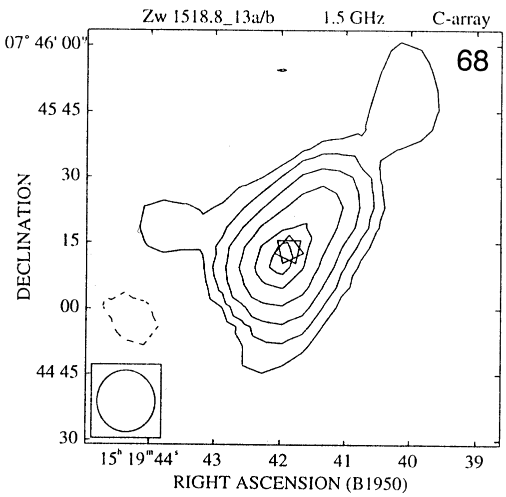
Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.44 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.39 mJy/beam.

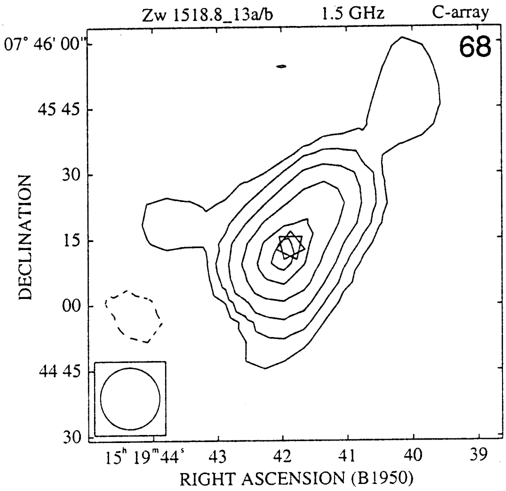


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.27 mJy/beam.

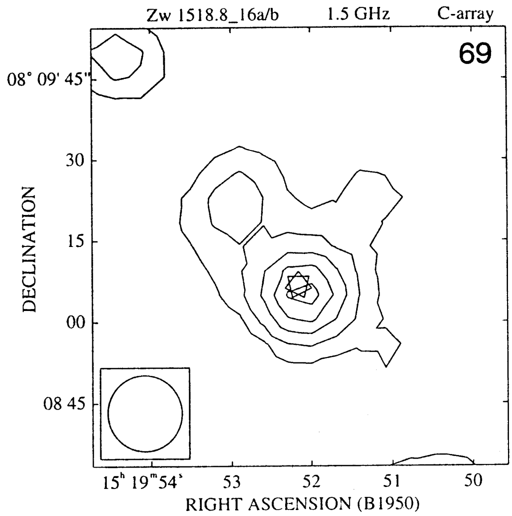


Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 2.08 mJy/beam.

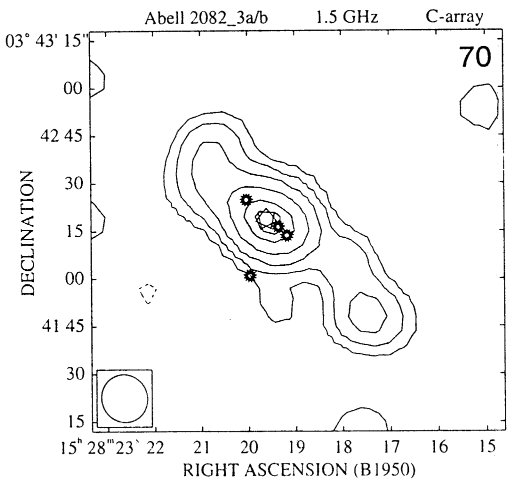
Fig. 1. (*Continued*)



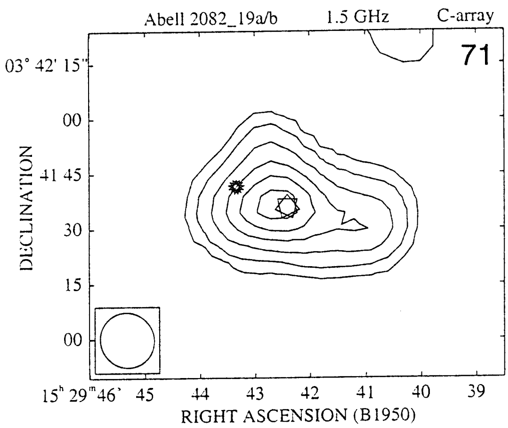
Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 2.08 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.44 mJy/beam.

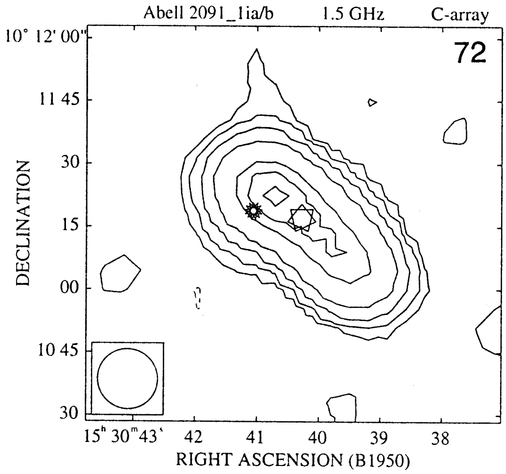


Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 5.05 mJy/beam.

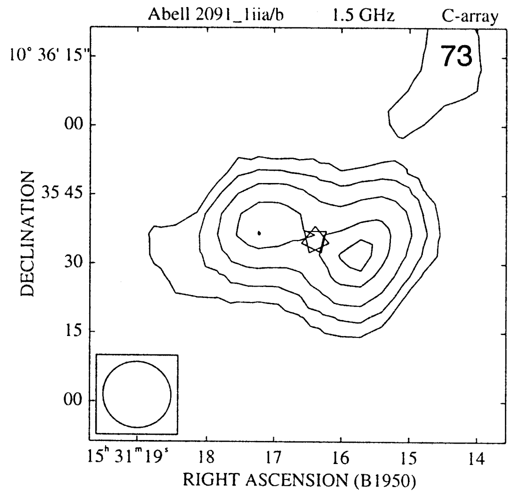


Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 6.11 mJy/beam.

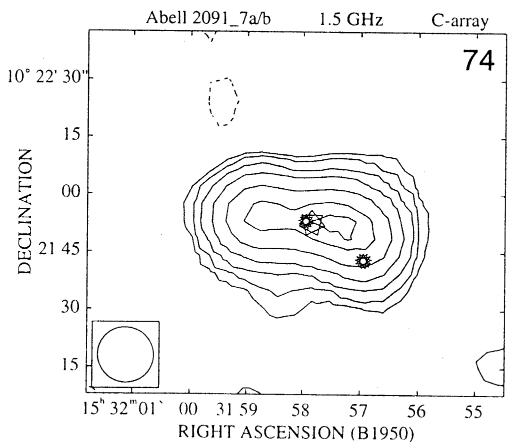
Fig. 1. (***Continued***)



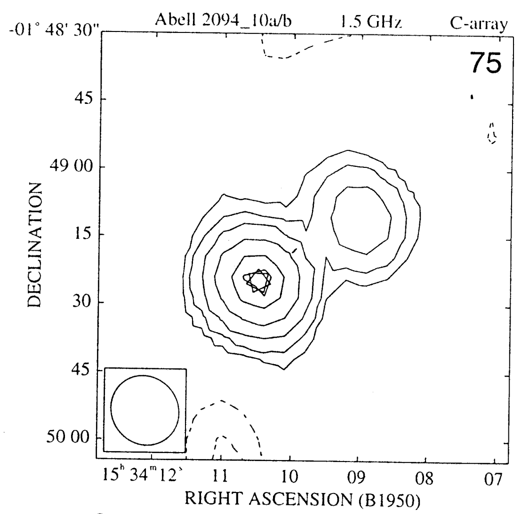
Contours at -2.5, 2.5, 5, 10, 20, 50, 70 and 90% of peak.
Peak brightness = 31.0 mJy/beam.



Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 2.44 mJy/beam.

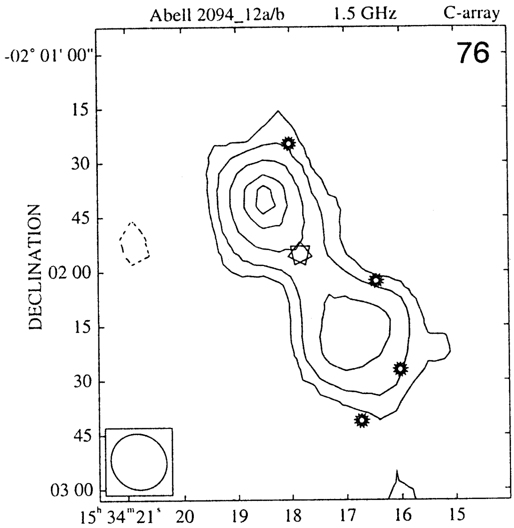


Contours at -2.5, 2.5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 6.21 mJy/beam.

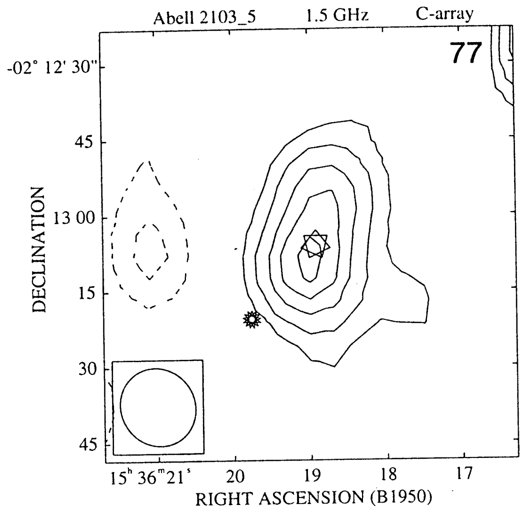


Contours at -10, -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.50 mJy/beam.

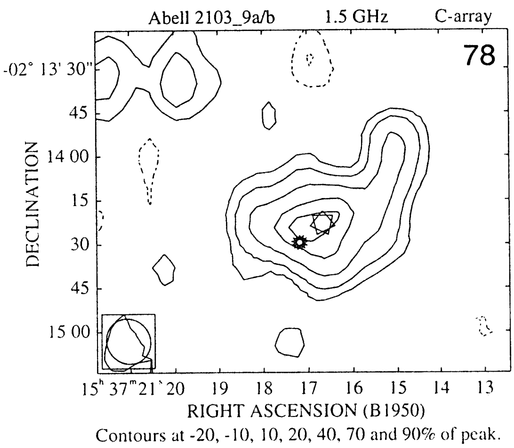
Fig. 1. (***Continued***)



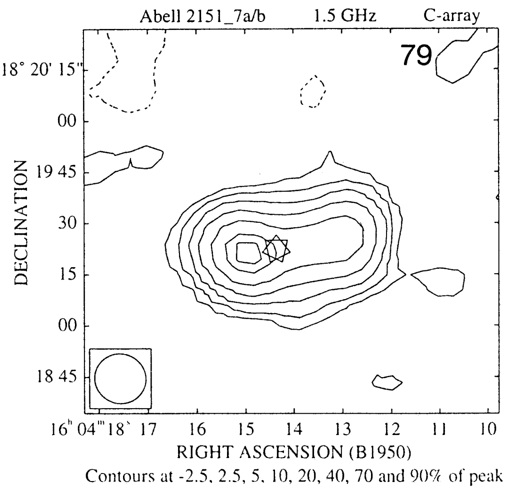
Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.22 mJy/beam.



Contours at -30, -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.98 mJy/beam.

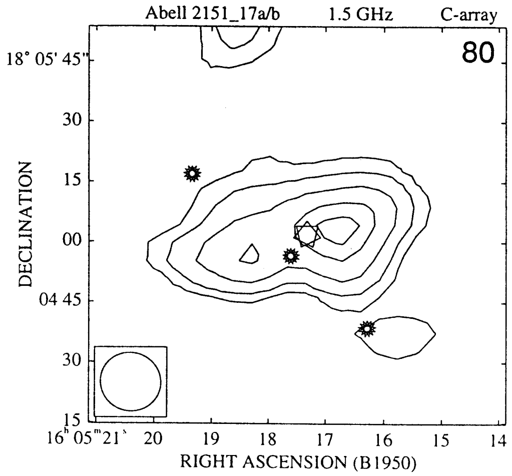


Contours at -20, -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.69 mJy/beam.

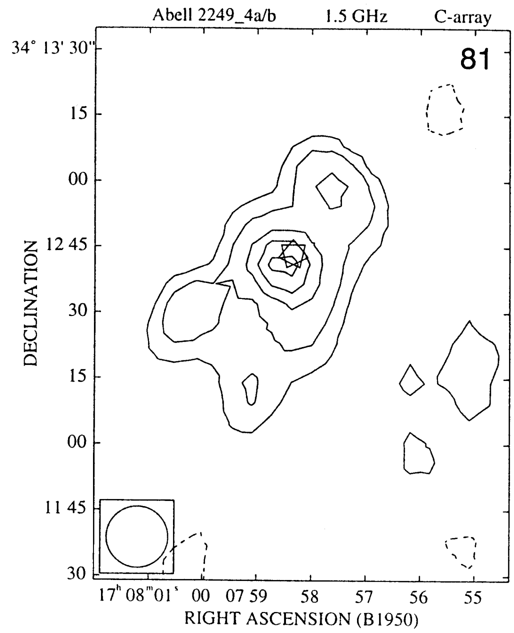


Contours at -2.5, 2.5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 7.34 mJy/beam.

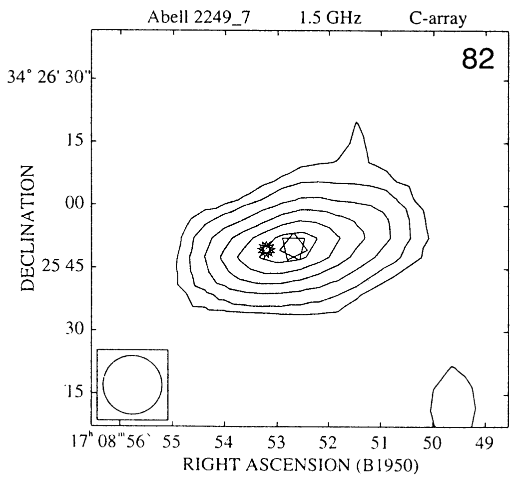
Fig. 1. (*Continued*)



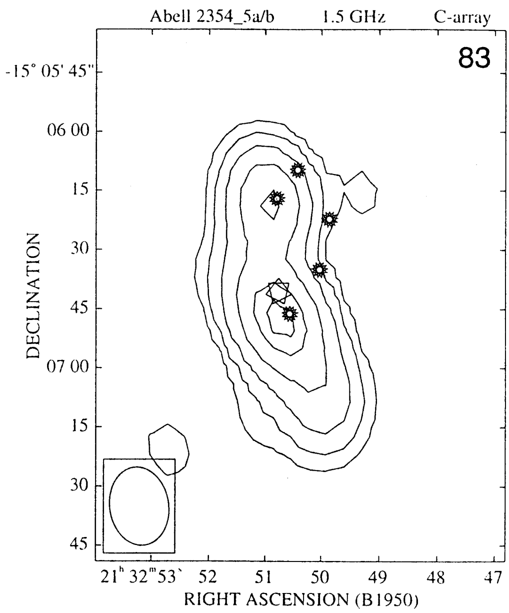
Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 4.06 mJy/beam.



Contours at -12.5, 12.5, 25, 50, 70 and 90% of peak.
Peak brightness = 3.18 mJy/beam.

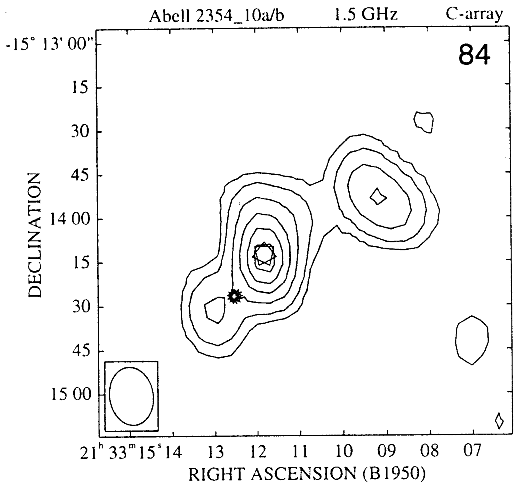


Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 7.02 mJy/beam.

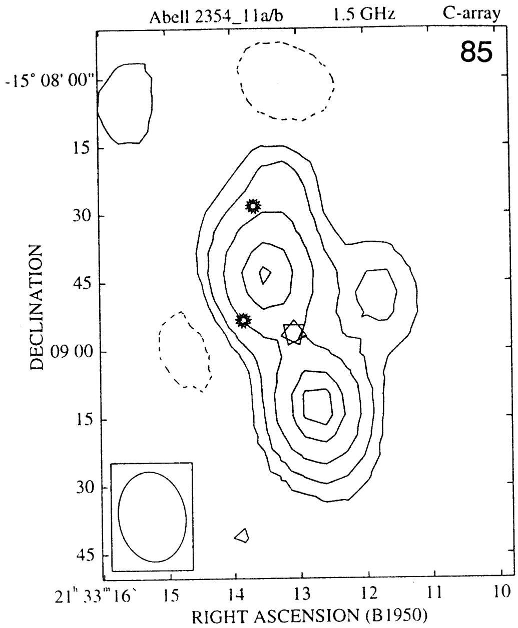


Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 4.59 mJy/beam.

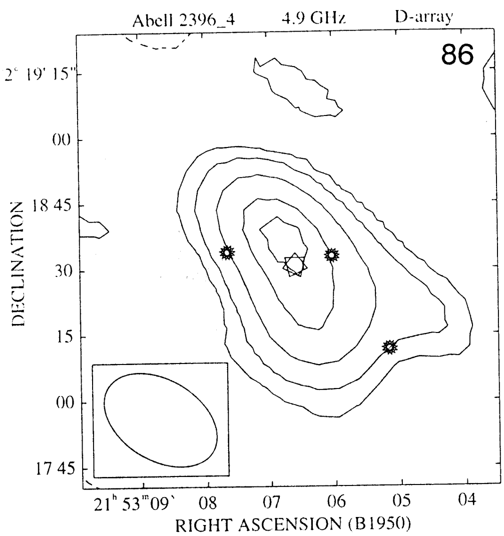
Fig. 1. (***Continued***)



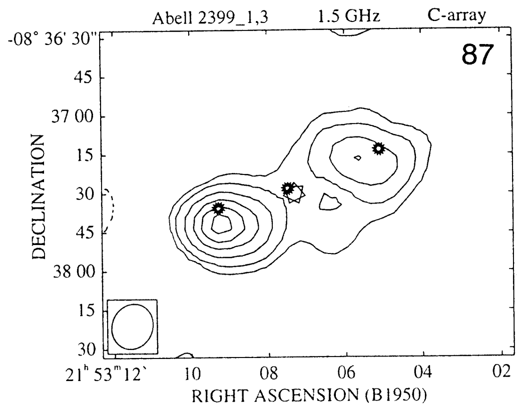
Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.77 mJy/beam.



Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 0.946 mJy/beam.

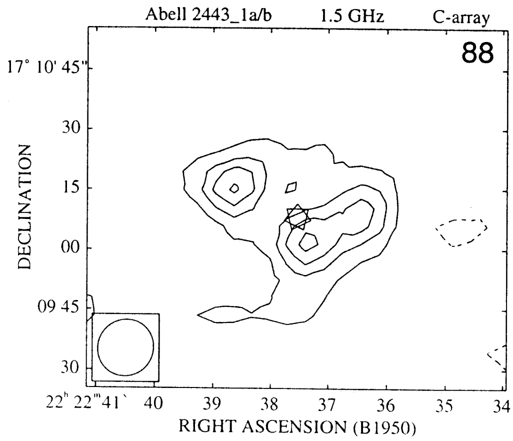


Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 1.49 mJy/beam.

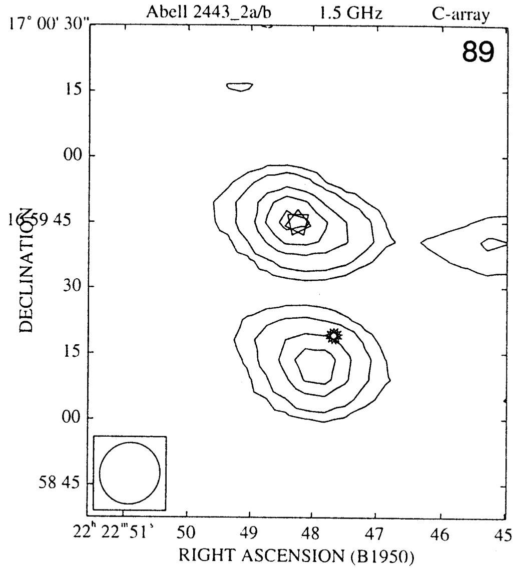


Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 6.46 mJy/beam.

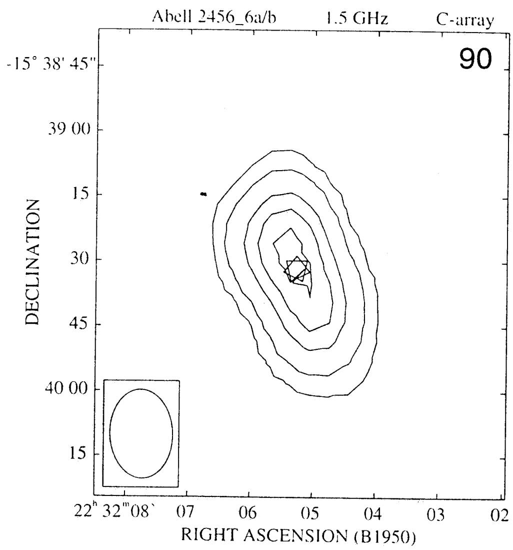
Fig. 1. (***Continued***)



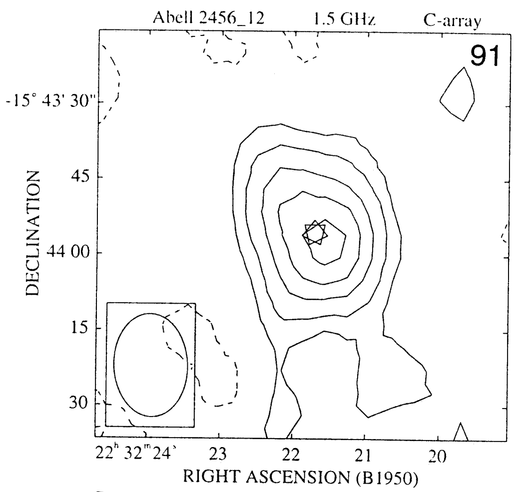
Contours at -25, 25, 50, 70 and 90% of peak.
Peak brightness = 1.30 mJy/beam.



Contours at -12.5, 12.5, 25, 50, 70 and 90% of peak.
Peak brightness = 2.54 mJy/beam.

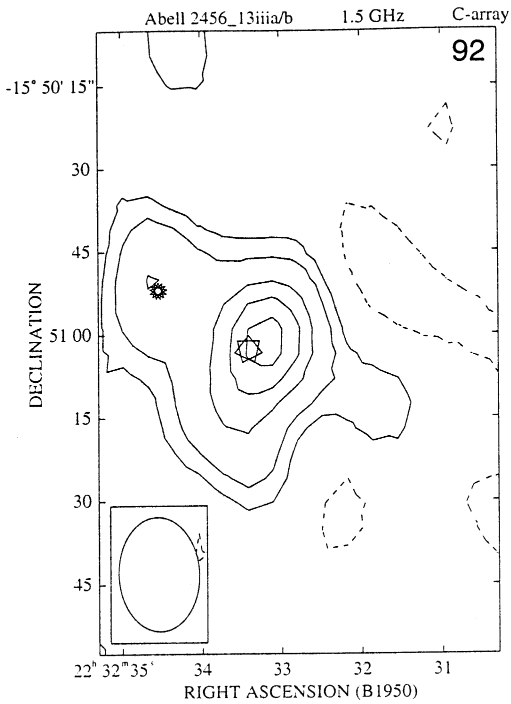


Contours at -12.5, 12.5, 25, 50, 70 and 90% of peak.
Peak brightness = 4.05 mJy/beam.

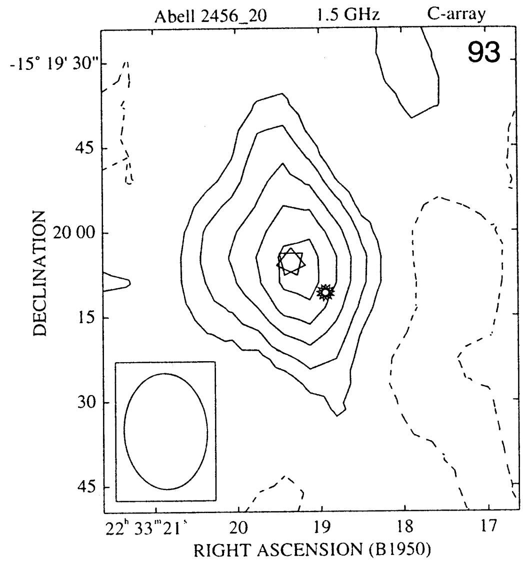


Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.37 mJy/beam.

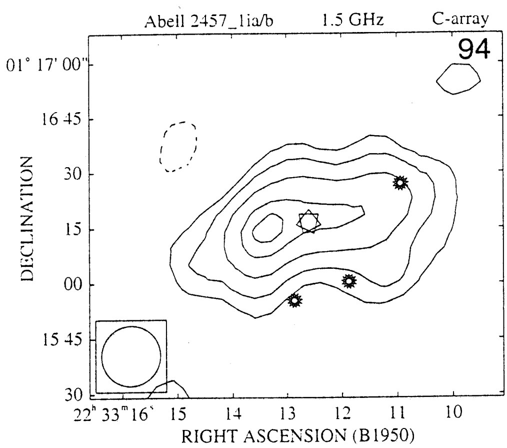
Fig. 1. (*Continued*)



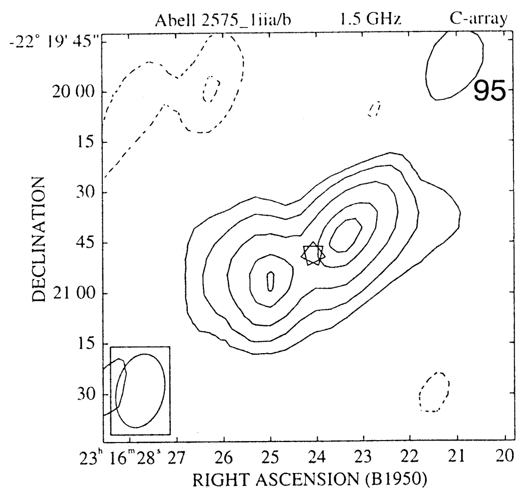
Contours at -12.5, 12.5, 25, 50, 70 and 90% of peak.
Peak brightness = 2.73 mJy/beam.



Contours at -15, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 2.62 mJy/beam.

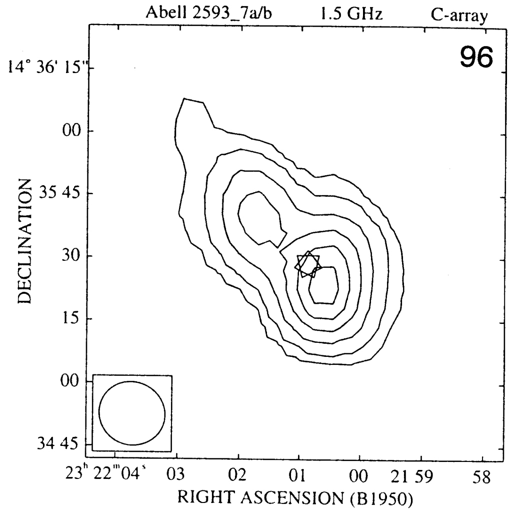


Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.42 mJy/beam.

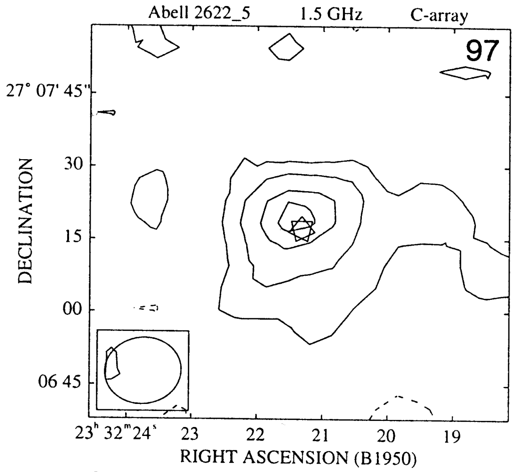


Contours at -20, -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 3.28 mJy/beam.

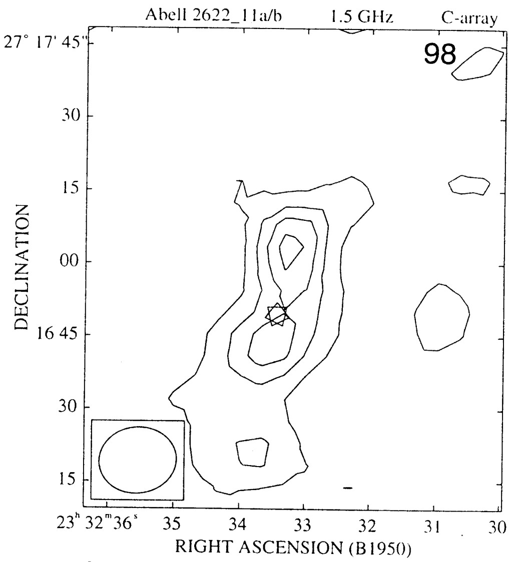
Fig. 1. (***Continued***)



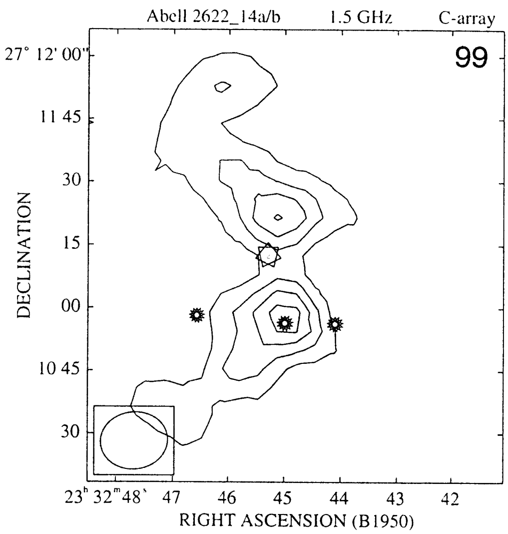
Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 6.42 mJy/beam.



Contours at -20, 20, 40, 70 and 90% of peak.
Peak brightness = 1.21 mJy/beam.

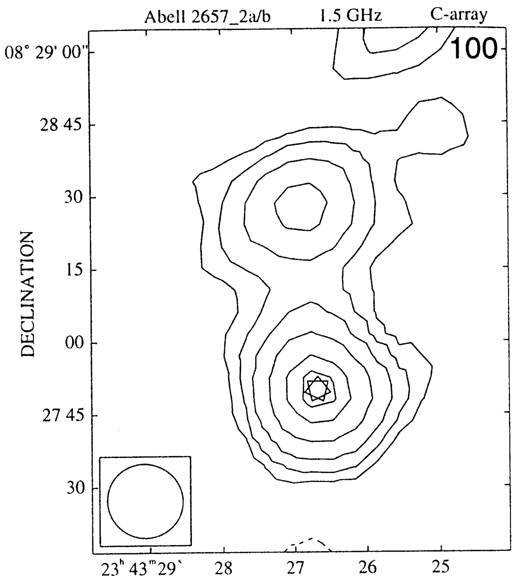


Contours at -25, 25, 50, 70 and 90% of peak.
Peak brightness = 1.68 mJy/beam.

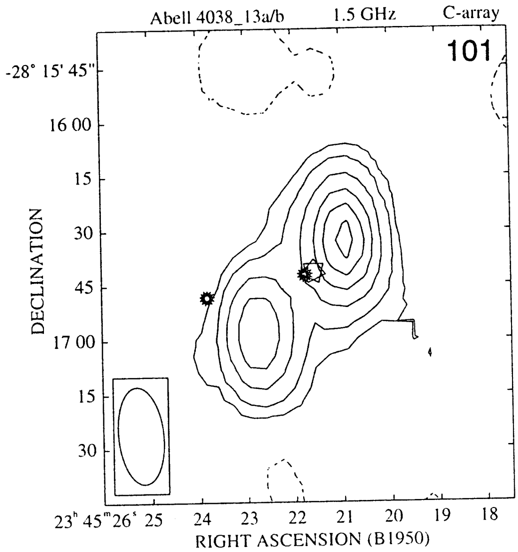


Contours at -25, 25, 50, 70 and 90% of peak.
Peak brightness = 1.57 mJy/beam.

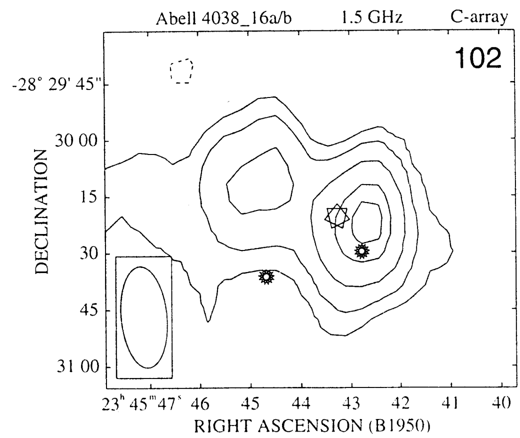
Fig. 1. (*Continued*)



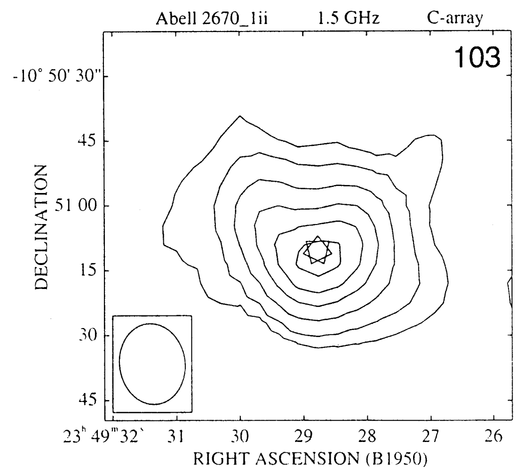
Contours at -5, 5, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 5.64 mJy/beam.



Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 1.88 mJy/beam.



Contours at -10, 10, 20, 40, 70 and 90% of peak.
Peak brightness = 1.27 mJy/beam.



Contours at -7.5, 7.5, 15, 30, 50, 70 and 90% of peak.
Peak brightness = 3.17 mJy/beam.

Fig. 1. (***Continued***)

accompanied by daggers in Tables 2 and 3 are those for which the source centroid position was $\geq 7 \cdot 0$ arcmin from the delay and phase centre, so that the smearing was ≥ 7 arcsec in the radial direction. The resulting image distortion depends upon the true angular dimensions of the source and on the position angle of the major axis of the restoring beam with respect to the radial direction from the map centre. Naturally, sources with angular dimensions appreciably greater than the smeared beam will not be particularly distorted. The parameters of the fitted Gaussians in Tables 2 and 3 have been corrected for the smearing.

Unlike Paper II, very few of these sources could be mapped at 4·9 GHz so that Fig. 1 contains only 1·5-GHz maps. The radio positions (mainly centroids) are depicted in Fig. 1 as large, open, 7-pointed stars on the maps, while the smaller, filled, 13-pointed stars show the positions of optical objects within the radio contours. The radio and optical positions are listed in Table 5, together with the morphologies of the optical objects.

(*2e*) *Errors in the Parameters of Table 2*

Errors in the flux density, spectral index and the Gaussian-fitted parameters result from a number of causes, the effects of which we estimate here. Flux density measurements are affected by:

(i) A systematic multiplicative error in the flux density of our primary flux calibrator (3C 48). Baars *et al.* (1977) gave this as <3–4%. We adopt an error of 3%.

(ii) Flux bootstrapping from the primary to the secondary calibrators contributes a random multiplicative error of ~4%.

(iii) Pointing errors of 10 arcsec rms can generate a random multiplicative error of up to ~1% for sources out near the half-power points in the primary beam.

(iv) Deconvolution in the mapping process can contribute a random multiplicative error of ~3%.

(v) Error from map noise and side lobes was estimated using the AIPS task IMEAN with a number of enclosing boxes with various areas and centre-offsets from the source. The values of rms map noise (Table 1) should be increased by the reciprocal of the primary beam attenuation.

The resulting 1σ random additive error was ~2 times the map rms (given in Table 1). In deriving errors in parameters such as spectral index and emitted radio power from the flux densities in this paper, one adds in quadrature the errors from (i) to (iv) to obtain a total multiplicative error of 6%, to which one adds in quadrature the random additive error in (v). As an example, a source with $S_{1\cdot 5} = 9 \cdot 0$ mJy, $S_{4\cdot 9} = 3 \cdot 0$ mJy from maps with rms $= 78\ \mu$Jy beam^{-1} has a spectral index $\alpha = -0 \cdot 93 \pm 0 \cdot 12$. The errors in the Gaussian-fitted parameters were found from a statistical analysis of fit-errors from 83 sources drawn from 1·5 GHz maps having a wide range of map rms. First, simple power-law regressions were made between fit-error and the several parameters that could possibly influence the error. We found that errors in the major and minor axes depended mainly on flux density/rms and ellipse area. The error in the position angle of the major axis depended on flux density/rms and axial ratio. Secondly, multiple regressions were then made to obtain the following best-fit, power-law equations:

$$\Delta\,\mathrm{Maj.} = 0{\cdot}36(S/N)^{-0{\cdot}52}(\mathrm{Maj.}^{*}\mathrm{Min.})^{+0{\cdot}56}\,, \qquad (1)$$

$$\Delta\,\mathrm{Min.} = 5{\cdot}08(S/N)^{-0{\cdot}56}(\mathrm{Maj.}^{*}\mathrm{Min.})^{+0{\cdot}12}\,, \qquad (2)$$

$$\Delta\,\mathrm{PA} = 117{\cdot}2(S/N)^{-0{\cdot}61}(\mathrm{AR})^{-1{\cdot}07}\,, \qquad (3)$$

where Δ Maj. is the error (arcsec) in the major axis (Maj.); Δ Min, the error (arcsec) in the minor axis (Min.); Δ PA, the error (degrees) in the position angle; AR the axial ratio of the fitted ellipse (Maj./Min.); and S/N, the flux density/rms.

As an example, we compute the 1σ errors in the Gaussian-fitted parameters for a source with $S = 5{\cdot}0$ mJy from a map with rms = 78 μJy beam^{-1} and with Maj.*Min. = 20*10 arcsec^2. Substituting in equations (1) to (3) we find

$$\Delta\,\mathrm{Maj.} = 0{\cdot}80 \text{ arcsec}, \quad \Delta\,\mathrm{Min.} = 0{\cdot}93 \text{ arcsec}, \quad \Delta\mathrm{PA} = 4{\cdot}4^{\circ}\,.$$

3. Optical Identifications

We examined the Palomar and SERC sky survey plates for optical counterparts to the sources in Table 2. The optical fields surrounding ~95% of the sources had been checked on the plates in connection with the preparation of Papers I and II, and Polaroid copies had been made if any optical object appeared within ~20 arcsec of the radio position. The remaining 5% of the sources were checked for optical counterparts on the COSMOS (Drinkwater *et al.* 1995) or APM (Irwin *et al.* 1994) digital versions of the surveys. We used both the catalogues and digital images on CD-ROM.

A detailed account of our optical position measurements and magnitude estimates is given in Paper II. An important difference in our treatment of these results is that the coordinates of optical objects within 20 arcsec of the radio position were obtained from the digitised surveys. We believe that these yield about the same accuracy (~1 arcsec) in either coordinate as we obtained with the Bolton machine for the identifications in Paper II. One advantage of the digitised SERC survey lay in our ability to make use of the SERC plates for radio sources with declinations as far north as +2° (copies of the SERC Equatorial Survey were not available in Sydney). In 95% of the sources we were able to check from Polaroid prints that the digital parameters gave a true description of the optical morphology and whether the digital position was affected by image blends; for those fields in the SERC Equatorial Survey, we checked the images on CD-ROM. If blending did occur, we estimated positions by offsetting from well-positioned sources on the Polaroids, whose scale of $3{\cdot}4$ arcsec mm^{-1} was accurately known. The morphologies of faint objects are difficult to assess, both from the Polaroids and the digital surveys. It is very difficult to distinguish between galaxies and stars when the images are near the plate limit and so our classifications in such cases are subjective and should be treated with appropriate caution.

Table 5 presents the radio source positions and the parameters of all optical objects detected on the sky survey plates within ~20 arcsec of the radio position. The column headings are explained at the foot of the table.

The magnitudes of the objects listed in Table 5 were estimated in the same way as used in Paper II, supplemented by the digital estimates from COSMOS and APM. Our primary magnitude estimates are based on visual estimates from the Polaroids, using a 'fly-spanker' constructed for Paper II. In the southern section of our radio survey, we sometimes had Polaroids from both the SERC and Palomar I plates, enabling us to make independent brightness estimates of the same object. We estimate that the 'fly-spanker' estimates are accurate to about 0·5 mag, based on our tests outlined in Paper II. In summary, we think that the radio and optical positions in Table 5 are accurate to about 1 arcsec and the magnitude estimates to about 0·5 mag.

For each radio source Table 5 lists between zero (Blank Field) and seven optical candidates. We tried in Paper II to outline detailed identification criteria, but in Paper III we accepted any optical object within 10 arcsec of an unresolved radio source (i.e. <10 arcsec in major axis) as a possible identification. In the case of some of the more extended sources such as those shown in Fig. 1, we accepted optical objects further from the radio position as possible identifications. These likely identifications are printed in bold type. From past experience, galaxies rather than star-like images are much more likely to be associated with radio sources, but the low flux-density limit of the present survey means that it is possible to detect more true stellar emission than was likely in the stronger sources of Paper II. In addition, the lower flux-density limit of the present list may enable us to detect the so-called radio-quiet QSOs, so that coincidences with star-like images may be more frequent; one could only distinguish between stars and QSOs from their optical spectra.

Morphologies for 95% of the optical objects in Table 5 were estimated from the polaroid copies, the remaining 5 per cent being digital estimates from COSMOS or APM. We used the following criteria for the Polaroid estimates:

(i) galaxies which were visibly extended, being surrounded by a diffuse structureless halo with an axial ratio less than ~2, were classified as elliptical (E);

(ii) galaxies satisfying the above definition but which were several times larger than all neighbouring galaxies were classified as 'cD' if near the cluster centre, or 'D' if well away from the cluster centre;

(iii) images showing two barely resolved ellipticals were classed as 'DB'.

(iv) a galaxy which satisfied the definition of an elliptical, except that the axial ratio was greater than ~2, was classified as 'S0';

(v) a galaxy with considerable structure in the halo was classified as a spiral (Sp).

(vi) an image that was diffuse but too faint to assign to the above galaxy classes was called 'G';

(vii) an image with a sharp circular boundary and sometimes showing diffraction spikes was classified as stellar (St). Some of these could, of course, be very compact ellipticals or QSOs. It should be noted that very faint images are difficult to assign to the G or St categories and often the choice is rather arbitrary.

4. Conclusion

We have listed the parameters of 737 sources detected in 60 VLA fields, which were located near 58 Abell clusters; 715 of the sources have flux densities <20 mJy at 1·5 GHz.

The measurements in this paper (Paper III) and in Paper II constitute a large database from which we can assemble a complete flux limited sample of radio sources in or near rich clusters of galaxies. In a forthcoming paper, we will use such a sample to explore the complex relationships between the radio, optical and X-ray measurements.

Acknowledgments

We thank Dr G. S. Tsarevsky for his help with the literature search. The referee's thorough and competent reading of the manuscript has resulted in significant improvements to the paper.

Note added in proof

Electronic versions of the data tables presented in Papers II and III are available through the EINSTEIN On-line Service (EOLS) at the Center for Astrophysics (telnet einline.harvard.edu, login as einline), as well as from the NASA Astronomical Data Center (ADC) and the Centre de Donnees Astronomique Strasbourg (CDS).

References

Abell, G. O. (1958). *Astrophys. J. Suppl. Ser.* **3**, 211.

Abell, G. O., Corwin, H. G., and Olowin, R. P. (1989). *Astrophys. J. Suppl. Ser.* **70**, 1.

Andernach, H., Waldthausen, H., and Wielebinski, R. (1980). *Astron. Astrophys. Suppl. Ser.* **41**, 339.

Andernach, H., Sievers, A., Kus, A., and Schnaubelt, J. (1986). *Astron. Astrophys. Suppl. Ser.* **65**, 561.

Andernach, H., Han Tie, Sievers, A., Reuter, H.-P., Junkes, N., and Wielebinski, R. (1988). *Astron. Astrophys. Suppl. Ser.* **73**, 265.

Andernach, H., Tago, E., and Stengler-Larrea, E. (1995). *Astrophys. Lett. Comm.* **31**, 27.

Baars, J. W. M., Genzel, R., Pauliny-Toth, I. I. K., and Witzel, A. (1977). *Astron. Astrophys.* **51**, 99.

Becker, R. H., White, R. L., and Edwards, A. L. (1991). *Astrophys. J. Suppl. Ser.* **75**, 1.

Beers, T. C., Huchra, J. P., and Geller, M. J. (1983). *Astrophys. J.* **264**, 356.

Beers, T. C., Forman, W., Huchra, J. P., Jones, C., and Gebhardt, K. (1991). *Astron. J.* **102**, 1581.

Bothun, G. D., and Schombert, J. M. (1990). *Astrophys. J.* **360**, 436.

Bower, R. G., Ellis, R. S., and Efstathiou, G. (1988). *Mon. Not. R. Astron. Soc.* **234**, 725.

Chincarini, G., Tarenghi, M., and Bettis, C. (1978). *Astrophys. J.* **221**, 34.

Colless, M., Burstein, D., Wegner, G., Saglia, R. P., McMahan, R., Davies, R. L., Bertschinger, E., and Baggley, G. (1993). *Mon. Not. R. Astron. Soc.* **262**, 475.

Coziol, R., Demers, S., Peña, M., Torres-Peimbert, S., Fontaine, G., Wesemael, F., and Lamontagne, R. (1993). *Astron. J.* **105**, 35.

Crampton, D., Cowley, A. P., Schmidtke, P. C., Janson, T., and Durrell, P. (1988). *Astron. J.* **96**, 816.

de Vaucouleurs, G., de Vaucouleurs, A., Corwin, H., Buta, R., Paturel, G., and Fouqué, P. (1991). 'Third Reference Catalog of Bright Galaxies'.

Dressler, A., and Shectman, S. A. (1988). *Astron. J.* **95**, 284.

Drinkwater, M. J., Barnes, D. G., and Ellison, S. L. (1995). *Publ. Astron. Soc. Aust.* **12**, 248.

Ebeling, H. (1993). Ph.D. Thesis, MPE Garching.

Feretti, L., and Giovannini, G. (1994). *Astron. Astrophys.* **281**, 375.
Giovanelli, R., and Haynes, M. (1993). *Astron. J.* **105**, 1271.
Green, M. R., Godwin, J. G., and Peach, J. V. (1988). *Mon. Not. R. Astron. Soc.* **234**, 1051.
Griffith, M. R., Wright, A. E., Burke, B. F., and Ekers, R. D. (1995). *Astrophys. J. Suppl. Ser.* **97**, 347.
Hamwey, R. M. (1988). Ph.D. Thesis, Dartmouth College.
Harris, D. E., and Miley, G. K. (1978). *Astron. Astrophys. Suppl. Ser.* **34**, 117.
Harris, D. E., Kapahi, V. K., and Ekers, R. D. (1980). *Astron. Astrophys. Suppl. Ser.* **39**, 215.
Haslam, C. G. T., Kronberg, P. P., Waldthausen, H., Wielebinski, R., and Schallwich, D. (1978). *Astron. Astrophys. Suppl. Ser.* **31**, 99.
Hewitt, P. C., Foltz, C. B., Chaffee, F. H., Francis, P. J., Weymann, R. J., Morris, S. L., Anderson, S. F., and MacAlpine, G. M. (1991). *Astron. J.* **101**, 1121.
Huchra, J. P., Geller, M. J., Clemens, C. M., Tokarz, S. P., and Michel, A. (1995). 'The Center for Astrophysics Redshift Catalogue', April 1995 version.
Irwin, M., Maddox, S., and McMahon, R. (1994). *Spectrum, Newsletter of the Royal Observatories*, No. 2, p. 14.
Jones, C., and Forman, W. (1995). *Astron. J.*, submitted.
Large, M. I., Mills, B. Y., Little, A. G., Crawford, D. F., and Sutton, J. M. (1981). *Mon. Not. R. Astron. Soc.* **194**, 693.
Lauberts, A., and Valentijn, E. (1989). 'The Surface Photometry Catalogue of ESO-Uppsala Galaxies'.
Lucey, J. R., and Carter, D. (1988). *Mon. Not. R. Astron. Soc.* **235**, 1177.
Maccacaro, T., Cooke, B. A., Ward, M. J., Penston, M. V., and Haynes, R. F. (1977). *Mon. Not. R. Astron. Soc.* **180**, 465.
Malumuth, E. M., Kriss, G. A., Van Dyke Dixon, W., Ferguson, H. C., and Richie, C. (1992). *Astron. J.* **104**, 495.
Melnick, J., and Quintana, H. (1981). *Astron. Astrophys. Suppl. Ser.* **44**, 87.
Merrifield, M. R., and Kent, S. M. (1991). *Astron. J.* **101**, 783.
Mills, B. Y., and Hoskins, D. G. (1977). *Aust. J. Phys.* **30**, 509.
Owen, F. N., White, R. A., and Burns, J. O. (1992). *Astrophys. J. Suppl. Ser.* **80**, 501.
Owen, F. N., White, R. A., and Ge, J.-P. (1993). *Astrophys. J. Suppl. Ser.* **87**, 135.
Owen, F. N., Ledlow, M. J., and Keel, W. C. (1995). *Astron. J.* **109**, 14.
Postman, M., and Lauer, T. (1995). *Astrophys. J.* **440**, 28.
Postman, M., Huchra, J. P., and Geller, M. J. (1992). *Astrophys. J.* **384**, 404.
Proust, D., Talavera, A., Salvador-Sole, E., Mazure, A., and Capelato, H. V. (1987). *Astron. Astrophys. Suppl. Ser.* **67**, 57.
Quintana, H., and Ramírez, A. (1990). *Astron. J.* **100**, 1424.
Quintana, H., Melnick, J., Infante, L., and Thomas, B. (1985). *Astron. J.* **90**, 410.
Reynolds, J. E. (1986). Ph.D. Thesis, University of Sydney.
Riley, J. M. (1975). *Mon. Not. R. Astron. Soc.* **170**, 53.
Roland, J., Hanisch, R. J., Véron, P., and Fomalont, E. (1985). *Astron. Astrophys.* **148**, 323.
Rudnick, L., and Owen, F. N. (1977). *Astron. J.* **82**, 1.
Schneider, D. P., Gunn, J. E., and Hoessel, J. G. (1983). *Astrophys. J.* **264**, 337.
Scodeggio, M., Solanes, J. M., Giovanelli, R., and Haynes, M. P. (1995). *Astrophys. J.* **444**, 41.
Sharples, R. M., Ellis, R. S., and Gray, P. M. (1988). *Mon. Not. R. Astron. Soc.* **231**, 479.
Slee, O. B., and Quinn, P. J. (1979). *Proc. Astron. Soc. Aust.* **3**, 332.
Slee, O. B., and Siegman, B. C. (1983). *Proc. Astron. Soc. Aust.* **5**, 114.
Slee, O. B., and Reynolds, J. E. (1984). *Proc. Astron. Soc. Aust.* **5**, 516.
Slee, O. B., Wilson, I. R. G., and Siegman, B. C. (1983). *Aust. J. Phys.* **36**, 101.
Slee, O. B., Perley, R., and Siegman, B. C. (1989). *Aust. J. Phys.* **42**, 633 (SPS89, Paper I).
Slee, O. B., Roy, A. L., and Savage, A. (1994). *Aust. J. Phys.* **47**, 145 (SRS94, Paper II).
Strauss, M. A., Huchra, J. P., Davis, M., Yahil, A., Fisher, K. B., and Tonry, J. (1992). *Astrophys. J. Suppl. Ser.* **83**, 29.
Struble, M. F., and Rood, H. J. (1987). *Astrophys. J. Suppl. Ser.* **63**, 555.
Struble, M. F., and Rood, H. J. (1991). *Astrophys. J. Suppl. Ser.* **77**, 363.
Tago, E. (1995). private communication.

Tarenghi, M., Tifft, W. G., Chincarini, G., Rood, H. J., and Thompson, L. A. (1979). *Astrophys. J.* **234**, 793.
Teague, P. F., Carter, D., and Gray, P. M. (1990). *Astrophys. J. Suppl. Ser.* **72**, 715.
Valentijn, E. A., and Casertano, S. (1988). *Astron. Astrophys.* **206**, 27.
Waldthausen, H., Haslam, C. G. T., Wielebinski, R., and Kronberg, P. P. (1979). *Astron. Astrophys. Suppl. Ser.* **36**, 237.
Wegner, G., Haynes, M. P., and Giovanelli, R. (1993). *Astron. J.* **105**, 1251.
Zabludoff, A. I., Huchra, J. P., and Geller, M. J. (1990). *Astrophys. J. Suppl. Ser.* **74**, 1.
Zhao, J.-H., Burns, J. O., and Owen, F. N. (1989). *Astron. J.* **98**, 64.
Zwicky, F., Herzog, E., and Wild, P. (1961). 'Catalogue of Galaxies and Clusters of Galaxies', Vol. 1 (California Institute of Technology).

Manuscript received 30 October 1995, accepted 12 February 1996