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Optical identification of Zelenchuk Survey radio sources from 9^h to 12^h in right ascension and between 0° and 8° in declination. II. Some optical characteristics of identified radio sources

L.S. Ugol'kova

Sternberg Astronomical Institute of Moscow State University, Universitetskij Prospect 13, 119899, Moscow

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Abstract. Optical identification of Zelenchuk Survey radio sources from 9^h to 12^h in right ascension and between 0° and 8° in declination is reported in this paper. Some optical characteristics of identified radio sources are presented in the table.

Key words: radiocontinuum: sources — surveys — sources: optical identification

A sample of Zelenchuk Survey radio sources from the catalogue of Amirkhanian et al. (1989) from 9^h to 12^h in right ascension, and between 0° and 8° in declination, which are coincident in coordinates with the sources of the Texas Survey (Douglas, 1996) carried out at 365 MHz, is presented in the paper of the author (Ugol'kova, 1998). The catalogue (Ugol'kova, 1998) sources were observed at 3.9 GHz. The present paper reports on some optical characteristics of the identified radio sources. For identification a "glass copy" of the Palomar Atlas in two bands was used. The data were processed with the AMD-1 at the Sternberg Astronomical Institute. The basic data, however, were obtained via Internet by using the databases SIMBAD and NED. Fields of $4' \times 4'$ in size were recorded. Images were processed with the aid of both the ESO-MIDAS package and the small but more convenient packages FITSVEW, LPVEW, PCVISTA (improved version). These programmes can be used to construct isolines of equal density, to perform filtering of the image and deduce the coordinates of a desired site in the region under study. Thus, the coordinates of compact and faint optical objects separated from radio sources by less than $3''$ have been derived. For bright and extended objects the coordinate difference may be well larger. In such cases an optical object was believed to be identified reliably if the radio source was located either in halo of its bright part or in jets and ejections, or between components of a binary source. Coordinates of brightest region of the image were taken as those of the optical object, and the coordinate determination accuracy was equal to half of pixel PDS microdensitometer — this is of the order of $0\farcs5 - 1''$.

To determine the stellar magnitudes of optical objects, photometry data of the region SEXTAN from the paper (Sanage and Carlson, 1985), in which there are about 25 faint objects with known stellar magnitude values, were used as a standard. Absolute magnitudes determined by the author are of tentative character (the error in the determination of magnitudes is $\Delta m \leq 1^m$). For part of the objects these values were found using the catalogue USNO (Monet et al., 1996). The catalogue APS (Pennington, 1993; Cornuelle, 1994) was also applied, which embraces partly the region under investigation. A considerable number of the objects detected reliably by the author were lacking in these catalogues.

The results of the work are presented in Table whose data are arranged in the following manner. The first column is the name of the radio source. The second and the third columns are the refined coordinates of the radio source for the epoch 1950. The fourth and fifth columns represent the coordinates (epoch 1950) of the optical object to be identified optically. Columns 6–8 contain stellar magnitudes obtained from the measurements on O and E plates of the Palomar Atlas and the differences in these values. In the ninth column a classification of the objects by their morphology is presented. The last column indicates whether the second source is present (W) or absent. The designations of the given classification are as follows:

S — object whose image is round enough;
G — ellipsoidal shape object;
TM — small-size nebula is present;

TB — big-size nebula is present;
TJ — presence of ejection, arm, jets;
TJJ— presence of a bar in a binary source;
NF — irregular shape object;
DT — absorbing nebula is present;
* — suspected object.

Because of the diversified shapes of optical objects, this classification is very useful for systematization of data and for selection of techniques of further investigation into the nature of these objects. Beginning from 1999 the observations of objects of special interest, which are difficult to refer to a definite type or for which some additional characteristics need to be refined or to be determined, will be observed on Mt. Maidanak. In the given sample, that comprises 340 radio sources, 197 have been identified with a high probability, 56 are suspected of the existence of an optical source. These are chiefly optical objects whose stellar magnitudes are larger or equal to $21^m.5$. 52 of the reliably identified objects are double, having a complex structure, nearly all of them have a fainter component mimicing the shape of the bright part or having a clumpy complex shape. Concurrently with the optical observations, which made it possible to observe objects up to 24^m, comparison is made of the radio and optical images, which will soon help define reliably the type of the detected candidates for optical identification.

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Table 1. Optical identification

RS	RA radio h m s	DEC radio o ′ ″	RA opt h m s	DEC opt o ′ ″	m O	m E	mO-mE	Model	Code
1	2	3	4	5	6	7	8	9	10
0901+070	9 1 27.691	+ 7 03 07.16	09 01 27.766	07 02 58.77	21.3	20.5	0.8	S TM NF	W
			09 01 27.8	07 03 04.9					
0902+023	9 2 10.368	+ 2 20 41.22	09 02 10.463	02 20 41.7	19.5	19.4	0.1	G TM	
0902+058	9 2 29.083	+ 5 49 16.99	09 02 29.247	05 49 15.5	17.4	17.2	0.2	S NF	
0903+089	9 3 30.729	+ 8 56 36.10	09 03 30.700	08 56 36.1				*	
0903+070	9 3 58.586	+ 7 02 34.10	09 03 58.596	07 02 37.5				*	
0904+039	9 4 04.166	+ 3 54 45.63	09 04 04.09	03 54 46.3	20.5	19.1	1.4	S	W
			09 04 03.003	03 54 55.5					
0904+048	9 4 42.508	+ 4 48 25.63	09 04 42.468	04 48 31.1	15.9	15.4	0.5	G TM	
0905+050	9 5 43.221	+ 5 03 08.15	09 05 43.416	05 03 07.7	20.3	17.5	2.8	*	
0906+015	9 6 35.116	+ 1 33 47.90	09 06 35.120	01 33 47.7	16.2	16.9	-0.7	S TJ NF	
0907+049	9 7 13.573	+ 4 56 35.81	09 07 13.663	04 56 36.2	20.5	17.6	2.9	S TM	W
0907+012	9 7 36.619	+ 1 13 54.64	09 07 36.80	01 14 02.0				*	
0907+004	9 7 48.798	+ 0 31 50.60	09 07 49.10	00 32 02.0				*	
0909+003	9 9 07.370	+ 0 23 21.72	09 09 07.89	00 23 16.2	18.4	18.1	0.3	S TJJ	W
0909+083	9 9 41.071	+ 8 23 33.75	09 09 41.04	08 23 38.3				D TB	
0911+047	9 11 09.900	+ 4 48 36.00	09 11 09.84	04 48 34.8				G TJ	
0911+053	9 11 23.821	+ 5 19 16.90	09 11 23.829	05 19 20.0				*	
0911+087	9 11 26.518	+ 8 41 42.00	09 11 25.90	08 41 41.7		21.2		T	
0912+017	9 12 35.853	+ 1 44 8.73	09 12 36.32	01 44 08.4	19.7	18.8	0.9	G TJ	
0912+026	9 12 43.363	+ 2 40 34.31	09 12 43.38	02 40 32.9		21.5		G T	
0913+003	9 13 17.572	+ 0 19 46.34	09 13 17.80	00 19 45.1		20.3		S	
0914+042	9 14 12.079	+ 4 18 47.60	09 14 11.98	04 18 45.6				*	
0914+012	9 14 10.865	+ 1 12 48.60	09 14 11.026	01 12 47.4	18.1	17.4	0.7	S TB	
0915+055	9 15 06.278	+ 5 35 44.14	09 15 06.365	05 35 44.0		20.5		S TM	W
0919+086	9 19 18.078	+ 8 41 30.33	09 19 18.156	08 41 37.4		20.0		TB	W
0920+056	9 20 21.505	+ 5 36 44.71	09 20 21.42	05 36 45.5		20.2		S TJ	W
0921+063	9 21 47.366	+ 6 20 42.48	09 21 47.257	06 20 41.5				S T	W
0922+005	9 22 33.773	+ 0 32 12.43	09 22 33.781	00 32 11.3	17.2	17.0	0.2	G	
0923+078	9 23 23.157	+ 7 51 37.80	09 23 23.515	07 51 38.6				D TJ	
0923+069	9 23 58.280	+ 6 59 44.26	09 23 58.35	06 59 41.0				*	
0925+041	9 25 10.754	+ 4 07 17.54	09 25 11.012	04 07 18.3				*	
0925+081	9 25 16.760	+ 8 06 28.05	09 25 16.629	08 06 25.2		20.3		S TB	W
0926+061	9 26 22.658	+ 6 06 22.99	09 26 22.779	06 06 27.5				*	
0927+033	9 27 08.502	+ 3 22 28.01	09 27 08.543	03 22 31.5				S TB	
0927+044	9 27 15.050	+ 4 24 21.46	09 27 14.934	04 24 25.0		18.5		T NF	
0927+020	9 27 38.547	+ 2 02 19.06	09 27 38.617	02 02 16.9				*	
0929+064	9 29 03.787	+ 6 21 54.00	09 29 03.475	06 22 02.8		18.8		G	
0929+080	9 29 21.021	+ 8 10 09.80	09 29 21.063	08 10 10.8		20.4		TB NF	
0929+010	9 29 37.198	+ 1 00 58.50	09 29 37.444	01 00 53.4				*	
0930+077	9 30 02.761	+ 7 46 19.46	09 30 03.01	07 46 19.9	21.1	19.4	1.7	S TM	
0930+022	9 30 59.718	+ 2 15 27.59	09 31 00.08	02 15 34.1		18.0		S	
0931+082	9 31 12.127	+ 8 06 04.40	09 31 12.272	08 06 04.9				*	
0931+033	9 31 54.671	+ 3 19 07.91	09 31 54,85	03 19 09.9	18.7	17.6	1.1	G TB	
0932+082	9 32 08.878	+ 8 10 05.90	09 32 08.80	08 10 04.8				TM	
0932+016	9 32 39.739	+ 1 45 38.40	09 32 39.914	01 45 39.1		21.3		S TBJ	W
0932+022	9 32 41.682	+ 2 17 25.96	09 32 41.400	02 17 26.3				D T NF	
0933+052	9 33 33.080	+ 5 17 03.84	09 33 32.955	05 16 50.8	14.0	12.1	1.9	S TM	
0934+024	9 34 00.751	+ 2 28 29.86	09 34 00.55	02 28 21.8				*	
0934+082	9 34 02.947	+ 8 02 52.70	09 34 02.947	08 02 47.8		21.8		S TBJ NF	
0934+023	9 34 40.713	+ 2 18 49.49	09 34 40.565	02 18 46.7				*	
0936+034	9 36 18.728	+ 3 28 04.02	09 36 18.905	03 28 07.3				S TB	

RS	RA radio h m s	DEC radio o ′ ″	RA opt h m s	DEC opt o ′ ″	m O	m E	mO-mE	Model	Code
1	2	3	4	5	6	7	8	9	10
0936+022	9 36 42.282	+ 2 13 52.55	09 36 42.423	02 13 47.7		18.3		G	
0936+059	9 36 52.301	+ 5 57 38.88	09 36 52.06	05 57 37.3				*	
0937+033	9 37 09.158	+ 3 18 03.44	09 37 09.378	03 18 06.6		20.0		S TB NF	W
0939+012	9 39 21.318	+ 1 16 29.50	09 39 21.664	01 16 27.5				S TB NF	
0939+066	9 39 24.711	+ 6 39 56.60	09 39 24.847	06 39 56.3				TM	
0940+023	9 40 51.630	+ 2 22 35.57	09 40 51.369	02 22 33.6		21.0		S TBJ	
0943+076	9 43 24.247	+ 7 37 28.47	09 43 24.358	07 37 28.2		18.8		S TB	
0943+025	9 43 34.173	+ 2 35 08.81	09 43 34.089	02 35 01.8				*	
0944+045	9 44 05.788	+ 4 32 54.03	09 44 06.09	04 32 57.9	19.1	17.2	1.9	G TB	W
			09 44 04.96	04 32 59.7		16.5			
0944+059	9 44 32.266	+ 5 56 19.59	09 44 32.514	05 56 19.5		21.0		T	W
0945+002	9 45 10.629	+ 0 18 33.50	09 45 10.90	00 18 30.3		16.5		S TB NF	
0946+076	9 46 18.109	+ 7 41 48.28	09 46 18.251	07 41 47.8	19.2	18.8	0.4	S T	
0946+070	9 46 37.334	+ 7 01 24.93	09 46 37.333	07 01 34.4	19.8	17.5	2.3	GS TB	W
				07 01 24.4					
0947+050	9 47 05.030	+ 5 08 48.00	09 47 05.240	05 08 48.4	14.8	13.5	1.3	SG TB	W
0947+075	9 47 10.999	+ 7 34 19.70	09 47 11.092	07 34 11.2				G TD NF	W
0948+054	9 48 23.155	+ 5 24 30.60	09 48 23.477	05 24 30.9	18.4	17.3	1.1	G TM	W
0948+060	9 48 26.719	+ 6 03 59.75	09 48 26.324	06 03 52.8				*	
0949+012	9 49 01.797	+ 1 07 21.10	09 49 01.929	01 07 21.4		21.0		*	
0949+002	9 49 25.016	+ 0 12 39.10	09 49 24.926	00 12 38.3	16.9	14.7	2.2	S TM NF	W
0950+063	9 50 14.019	+ 6 18 06.70	09 50 13.859	06 08 16.0		18.5		S TM	
0951+009	9 51 49.394	+ 0 58 02.20	09 51 49.458	00 58 01.9	18.7	17.5	1.2	S TJ NF	W
0952+025	9 52 12.301	+ 2 33 58.21	09 52 12.391	02 33 57.0		20.8		G	
0953+065	9 53 17.840	+ 6 30 59.10	09 53 17.87	06 31 03.0	18.7	18.6	0.1	S TJ NF	
0953+086	9 53 18.294	+ 8 37 53.10	09 53 18.36	08 37 50.1				*	
0954+006	9 54 23.679	+ 0 38 44.02	09 54 24.32	00 38 45.2		21.2		S T	
0954+034	9 54 51.318	+ 3 24 15.23	09 54 52.05	03 24 16.6				*	
0955+059	9 55 30.752	+ 5 55 48.56	09 55 29.7	05 55 25.2	11.9	10.7	1.2	S	
			09 55 30.746	05 55 49.07		21.8		S	
0955+042	9 55 39.410	+ 4 17 42.32	09 55 39.5	04 17 40.3				*	
0955+036	9 55 48.994	+ 3 38 35.22	09 55 49.285	03 38 36.3				*	
0956+015	9 56 46.862	+ 1 32 23.08	09 56 46.3	01 32 15.0	14.2	10.5	3.7	G TB	W
0957+003	9 57 43.528	+ 0 19 47.15	09 57 43.843	00 19 47.5	18.1	17.9	0.2	S	W
0958+004	9 58 38.455	+ 0 27 00.30	09 58 38.53	00 26 57.8				T NF	
0959+070	9 59 02.930	+ 7 03 33.93	09 59 02.858	07 03 33.6	20.4	17.4	3.0	S TMJ	
0959+073	9 59 50.086	+ 7 18 58.10	09 59 50.16	07 18 54.4		21.0		G TB NF	
1000+015	10 0 40.222	+ 1 35 53.37	10 00 40.35	01 35 53.9				*	
1001+028	10 1 07.902	+ 2 51 29.40	10 01 08.24	02 51 33.1	20.9	18.6	2.3	S	W
1005+077	10 5 22.045	+ 7 44 58.25	10 05 22.05	07 44 57.8	19.8	16.7	3.1	T	
1005+007	10 5 37.276	+ 0 44 42.31	10 05 37.37	00 44 41.3	16.3	14.1	2.2	G TB	
1005+084	10 5 55.767	+ 8 26 31.35	10 05 55.85	08 26 33.0		21.0		S TJ	
1006+019	10 6 09.647	+ 1 56 58.01	10 06 09.26	01 56 58.46		21.5		T	
1006+056	10 6 30.383	+ 5 36 15.19	10 06 30.45	05 36 16.34	19.8	19.0	0.8	S TB	W
1008+020	10 8 22.944	+ 2 05 14.32	10 08 22.87	02 05 14.58		21.5		S T	
1008+066	10 8 30.880	+ 6 39 27.70	10 08 29.50	06 39 30.0				*	
1010+070	10 10 39.010	+ 7 00 11.86	10 10 39.2	07 00 10.7	19.0	16.9	2.1	S TB	
1011+027	10 11 31.546	+ 2 43 14.82	10 11 31.99	02 43 16.9				*	
1011+043	10 11 59.278	+ 4 23 46.82	10 11 59.33	04 23 46.99	18.8	18.1	0.7	S TM	
1012+051	10 12 39.150	+ 5 08 00.76	10 12 39.3	05 08 00.16		21.5		T	
1012+022	10 12 40.993	+ 2 13 48.10	10 12 40.87	02 13 48.6	18.4	16.8	1.6	S TJ	
1013+054	10 13 26.610	+ 5 27 58.36	10 13 26.7	05 27 59.26	20.3	19.4	0.7	TM NF	
1014+018	10 14 01.449	+ 1 52 12.57	10 14 01.47	01 52 10.2				*	

RS	RA radio h m s	DEC radio o ′ ″	RA opt h m s	DEC opt o ′ ″	m O	m E	mO-mE	Model	Code
1	2	3	4	5	6	7	8	9	10
1014+045	10 14 13.266	+ 4 34 29.26	10 14 13.03	04 34 26.9	18.8	18.7	1.1	S TB	
1014+085	10 14 25.778	+ 8 32 39.70	10 14 26.0	08 32 43.9	17.4	16.8	1.9	*	
1014+015	10 14 36.682	+ 1 31 59.33	10 14 37.12	01 32 02.7				*	
1015+057	10 15 51.361	+ 5 45 33.30	10 15 51.37	05 45 32.3	20.7	20.1	0.1	TM	
1016+058	10 16 56.895	+ 5 49 38.86	10 16 57.17	05 49 38.7					
1017+040	10 17 58.352	+ 4 05 58.00	10 17 58.37	04 05 57.4	19.3	16.8	2.5	S TM	W
1019+083	10 19 13.207	+ 8 23 39.08	10 19 12.64	08 23 41.2	18.2	16.1	2.1	S TB	W
1019+007	10 19 44.167	+ 0 46 00.28	10 19 44.32	00 45 59.1	18.9	16.9	1.9	S TB	
1019+015	10 19 57.585	+ 1 30 00.60	10 19 57.54	01 29 59.8				*	
1020+054	10 20 50.967	+ 5 25 10.12	10 20 50.94	05 25 10.2				*	
1022+066	10 22 22.949	+ 6 40 08.46	10 22 23.0	06 40 07.3	21.9	19.6	1.3	S TBJ NF	
1022+056	10 22 56.459	+ 5 34 24.30	10 22 56.16	05 34 28.7	19.4	18.0	1.4	S TM	W
1023+071	10 23 25.923	+ 7 06 26.25	10 23 26.17	07 06 25.0				*	
1023+078	10 23 27.685	+ 7 50 48.88	10 23 27.55	07 50 51.9				T*	
1023+042	10 23 40.720	+ 4 17 03.73	10 23 40.78	04 17 07.7		18.5		G TMJ	
1023+019	10 23 50.874	+ 1 54 21.30	10 23 50.78	01 54 20.6				*	
1023+067	10 23 55.121	+ 6 42 50.82	10 23 55.20	06 42 49.5	18.8	18.1	0.7	S TM	
1024+012	10 24 16.331	+ 1 17 18.66	10 24 16.79	01 17 16.2		¿21		T	
1025+040	10 25 46.294	+ 4 00 24.94	10 25 46.33	04 00 18.7	18.1	16.4	1.5	G TM	
1025+031	10 25 48.971	+ 3 09 43.58	10 25 48.86	03 09 43.8				S TB NF	
1026+017	10 26 44.250	+ 1 47 17.55	10 26 44.03	01 47 13.4	20.7	18.2	2.5	G TB	
1027+008	10 27 35.783	+ 0 53 03.25	10 27 35.85	00 53 02.8	20.9	19.3	1.6	S TJ	
1028+049	10 28 43.096	+ 4 58 35.10	10 28 43.18	04 58 33.8	17.6	16.8	0.7	TM	
1030+074	10 30 57.290	+ 7 26 51.70	10 30 57.21	07 26 53.6	20.9	19.6	1.3	S TB	
			10 31 40.60	00 21 29.0	21.1	18.5	2.6	G T	
1033+003	10 33 32.537	+ 0 21 40.90	10 33 31.91	00 21 40.2	15.7	13.1	2.6	S TB	
1034+027	10 34 14.295	+ 2 45 17.94	10 34 15.11	02 45 14.9	18.9	16.2	2.7	S *	
1035+046	10 35 03.708	+ 4 39 37.02	10 35 03.77	04 39 36.5	20.7	17.8	2.9	S TB	W
1035+026	10 35 08.773	+ 2 39 32.45	10 35 09.0	02 39 32.0	20.2	19.5	0.7	G TB NF	
1036+054	10 36 10.954	+ 5 28 06.52	10 36 10.94	05 28 05.8	20.5	18.3	2.2	S TJ	
1036+058	10 36 51.690	+ 5 51 51.70	10 36 52.20	05 51 51.1	18.4	17.5	0.9	G TMJ	
1037+054	10 37 02.568	+ 5 26 08.10	10 37 03.07	05 26 10.0	17.0	15.1	1.9	G TB	W
1037+067	10 37 39.250	+ 6 43 26.16	10 37 39.39	06 43 33.2				S TM	
1038+010	10 38 38.414	+ 1 01 31.44	10 38 38.39	01 01 30.6	20.6	19.2	1.4	G T NF	
1038+064	10 38 40.915	+ 6 25 57.83	10 38 40.97	06 25 57.9	16.6	15.9	0.7	S TBJ	W
1038+024	10 38 47.829	+ 2 24 41.67	10 38 47.8	02 24 41.8	21.5	21.3	0.2	T	
1039+029	10 39 04.103	+ 2 58 13.23	10 39 04.17	02 58 11.1	20.0	18.9	1.1	*	
1040+062	10 40 14.976	+ 6 14 06.91	10 40 15.03	06 14 07.9				*	
1040+080	10 40 20.891	+ 8 04 34.01	10 40 20.82	08 04 32.59	18.2	17.6	0.6	G TB	W
1040+000	10 40 39.131	+ 0 01 55.00	10 40 39.05	00 01 55.1		20.5		S TM NF	
1041+015	10 41 01.712	+ 1 32 09.56	10 41 01.55	01 32 13.7	18.4	17.7	1.9	G T	W
1042+071	10 42 19.461	+ 7 11 25.51	10 42 19.53	07 11 23.5	18.1	18.8	0.3	S	
1043+046	10 43 12.386	+ 4 36 17.60	10 43 13.12	04 36 19.4	17.5	14.3	3.2	G TB	
1043+051	10 43 16.040	+ 5 11 39.49	10 43 16.18	05 11 40.1				*	
1045+011	10 45 33.286	+ 1 11 34.99	10 45 33.55	01 11 34.2	15.9	15.8	0.1	G TMJ	
1046+012	10 46 21.737	+ 1 16 07.55	10 46 21.46	01 16 06.1				*	
1046+053	10 46 56.496	+ 5 21 25.09	10 46 56.7	05 21 24.2	18.8	18.6	0.2	S TB NF	
1047+004	10 47 25.154	+ 0 29 02.74	10 47 24.75	00 29 02.1		18.0		G TM NF	
1048+002	10 48 06.525	+ 0 12 02.03	10 48 05.7	00 11 59.3	15.3	15.1	0.2	S	
1049+058	10 49 36.233	+ 5 49 32.82	10 49 36.08	05 49 29.0	19.3	17.9	2.2	G	W
1049+040	10 49 50.219	+ 4 03 34.86	10 49 50.4	04 03 37.4				S TM	
1049+083	10 49 55.203	+ 8 22 07.30	10 49 55.22	08 22 05.8	18.9	18.4	0.5	S TB NF	
1049+018	10 49 58.808	+ 1 51 56.33	10 49 58.87	01 51 55.5	18.6	18.7	-0.1	S TB	

RS	RA radio h m s	DEC radio o ′ ″	RA opt h m s	DEC opt o ′ ″	m O	m E	mO-mE	Model	Code
1	2	3	4	5	6	7	8	9	10
1050+046	10 50 02.661	+ 4 40 03.40	10 50 02.74	04 40 02.8		20.5		G TJ	
1050+056	10 50 03.406	+ 5 40 52.98	10 50 03.61	05 40 53.0	19.5	19.3	1.2	S TB NF	
1050+024	10 50 15.474	+ 2 25 23.96	10 50 15.61	02 25 25.5				T NF	
1051+038	10 51 10.057	+ 3 48 14.01	10 51 10.16	03 48 15.9	19.3	16.6	2.7	G TB	
1051+027	10 51 45.526	+ 2 43 02.85	10 51 45.42	02 42 59.5				*	
1051+035	10 51 51.096	+ 3 30 46.06	10 51 51.13	03 30 44.1	19.6	17.8	1.9	G TB	W
1052+027	10 52 42.747	+ 2 21 45.00	10 52 42.97	02 21 41.7	15.8	15.6	0.2	G	
1052+016	10 52 50.251	+ 1 39 47.07	10 52 50.40	01 39 46.3		20.0		G TB	W
1052+052	10 52 55.414	+ 5 17 37.66	10 52 55.72	05 17 38.8	19.2	19.2	0.0	S T NF	
1053+057	10 53 36.345	+ 5 47 13.66	10 53 36.3	05 47 14.1	19.2	18.9	0.3	S T	
1053+032	10 53 59.259	+ 3 15 52.10	10 53 59.06	03 15 53.8				S TM	W
1054+073	10 54 02.717	+ 7 18 17.50	10 54 02.6	07 18 15.6				*	
1054+004	10 54 41.856	+ 0 28 05.66	10 54 42.13	00 28 02.4				*	
1054+036	10 54 51.706	+ 3 40 51.55	10 54 51.69	03 40 49.4	19.1	18.8	0.3	T NF	
1055+018	10 55 55.287	+ 1 50 02.31	10 55 55.43	01 50 02.8	17.9	17.2	0.7	S T	W
1057+050	10 57 36.200	+ 5 00 07.93	10 57 36.26	05 00 08.6	18.5	18.2	0.3	S T	
1057+082	10 57 46.343	+ 8 13 26.00	10 57 46.41	08 13 24.6	19.5	18.8	0.7	S T NF	
1059+004	10 59 14.086	+ 0 26 45.43	10 59 14.11	00 26 47.3				T NF	
1059+031	10 59 32.173	+ 3 06 51.06	10 59 32.26	03 06 52.1				*	
1100+052	11 0 11.117	+ 5 15 25.83	11 00 11.27	05 15 26.0	19.7	18.2	0.9	S T	W
1103+023	11 3 4.031	+ 2 19 11.22	11 03 04.77	02 19 08.8	15.7	14.8	0.9	G TB	
1103+091	11 3 8.093	+ 9 17 22.56	11 03 08.03	09 17 23.8				*	
1103+015	11 3 51.560	+ 1 32 53.65	11 03 51.53	01 32 54.0		19.8		G TMJ	
1104+009	11 4 38.862	+ 0 57 13.58	11 04 38.84	00 57 27.4	19.8	18.2	1.6	G	
			11 04 35.75	00 57 14.0				TM	
1104+058	11 4 40.557	+ 5 49 24.67	11 04 40.51	05 49 21.5	18.7	18.6	0.1	S	
1105+015	11 5 48.038	+ 1 32 13.88	11 05 48.04	01 32 13.4		19.4		S TB	W
1106+023	11 6 11.966	+ 2 18 59.43	11 06 11.99	02 18 59.6	17.1	15.6	1.5	S TB NF	W
1107+059	11 7 9.870	+ 5 59 49.80	11 07 09.99	05 59 48.7				*	
1107+072	11 7 15.585	+ 7 15 12.31	11 07 15.27	07 15 12.7				*	
1107+045	11 7 35.577	+ 4 34 00.46	11 07 35.67	04 33 58.5				*	
1107+087	11 7 45.521	+ 8 45 3.39	11 07 45.56	08 45 01.3		20.2		G TB	W
1107+036	11 7 48.689	+ 3 37 49.41	11 07 49.32	03 37 54.6	19.0	18.1	0.9	S TB	W
			11 07 48.64	03 37 51.2				*	
1107+001	11 7 50.101	+ 0 9 56.57	11 07 50.32	00 09 55.9		20.0		S TM	
1108+014	11 8 30.701	+ 1 24 39.80	11 08 30.9	01 24 37.3				S TBJ NF	
1108+034	11 8 48.070	+ 3 25 27.66	11 08 47.96	03 25 26.1		21.3		S TM	
1112+081	11 12 37.909	+ 8 11 9.26	11 12 37.76	08 11 10.0				*	
1113+060	11 13 42.648	+ 6 0 15.52	11 13 42.56	06 00 15.5	19.4	17.6	1.9	*	
1113+044	11 13 50.600	+ 4 28 47.89	11 13 50.15	04 28 52.6		21.0		G NF	
1116+021	11 16 05.564	+ 2 34 43.90	11 16 05.81	02 34 44.4	19.2	17.2	2.0	G TB NF	
1117+044	11 17 08.000	+ 4 26 42.00	11 17 08.19	04 26 43.3	20.6	17.6	3.0	S T	W
1118+073	11 18 3.291	+ 7 21 11.97	11 18 03.30	07 21 12.4				*	
1119+010	11 19 27.265	+ 1 3 4.74	11 19 27.50	01 03 06.0		21.3		S T	
1120+057	11 20 34.300	+ 5 46 47.76	11 20 34.49	05 46 51.9				*	
1122+052	11 22 3.828	+ 5 12 57.37	11 22 03.80	05 12 57.0		19.5		G T	
1122+028	11 22 6.340	+ 2 51 50.03	11 22 06.5	02 51 48.7	19.6	18.5	1.1	S TMJ	
1123+012	11 23 20.449	+ 1 16 6.78	11 23 20.61	01 16 05.9	20.7	19.5	1.2	S TB NF	
1124+023	11 24 3.453	+ 2 22 27.23	11 24 03.54	02 22 27.1	19.9	18.1	1.8	G TBJ J	W
1124+067	11 24 18.292	+ 6 42 26.59	11 24 18.19	06 42 27.7	18.8	18.6	0.2	S TJ	
1124+027	11 24 28.035	+ 2 47 39.69	11 24 28.25	02 47 37.6	18.4	18.2	0.2	S TJ	
1124+035	11 24 28.883	+ 3 32 07.94	11 24 28.78	03 32 06.7				*	
1125+003	11 25 19.591	+ 0 21 49.72	11 25 19.8	00 21 48.1	19.1	18.0	1.1	G T	W

RS	RA radio h m s	DEC radio o ′ ″	RA opt h m s	DEC opt o ′ ″	m O	m E	mO-mE	Model	Code
1	2	3	4	5	6	7	8	9	10
1125+008	11 25 51.453	+ 0 50 45.24	11 25 51.88	00 50 53.4				*	
1127+012	11 27 47.288	+ 1 14 51.10	11 27 47.59	01 14 54.4	16.9	15.7	1.9	G TB	
1128+077	11 28 10.662	+ 7 42 53.59	11 28 10.78	07 42 53.4				*	
1129+052	11 29 21.875	+ 5 12 22.00	11 29 21.93	05 12 09.8		18.5		S TM	
			11 29 21.73	05 12 21.8				TD	
1130+008	11 30 11.803	+ 0 51 01.40	11 30 11.81	00 51 00.8	17.4	17.2	0.2	S TB NF	
1130+005	11 30 29.273	+ 0 32 23.30	11 30 29.3	00 32 22.3	18.4	18.6	-0.2	G TM	W
1130+009	11 30 42.827	+ 0 56 21.30	11 30 42.83	00 56 23.9				*	
1131+012	11 31 23.519	+ 1 15 22.50	11 31 23.76	01 15 21.5				TM	
1131+042	11 31 58.664	+ 4 14 15.48	11 31 59.60	04 14 09.2	17.0	16.5	0.5	G TB NF	
1132+071	11 32 50.339	+ 7 11 17.96	11 32 50.31	07 11 15.6	18.6	16.4	3.2	G TB	W
1134+015	11 34 55.665	+ 1 32 49.96	11 34 55.73	01 32 49.5	18.5	17.3	1.2	S T NF	
1136+014	11 36 31.236	+ 1 26 59.33	11 36 31.41	01 27 00.4				TM	
1137+052	11 37 31.393	+ 5 16 29.40	11 37 30.61	05 16 34.8	18.2	16.8	1.4	G T NF	W
1137+011	11 37 42.176	+ 1 10 29.47	11 37 42.13	01 10 29.7	18.4	18.1	0.3	G T NF	
1138+015	11 38 34.336	+ 1 30 55.19	11 38 34.22	01 30 56.4				G TB NF	W
1138+060	11 38 36.355	+ 6 00 20.79	11 38 35.98	06 00 30.6	19.0	18.0	1.0	G TB NF	W
			11 38 36.86	06 00 11.5		21.3		S T	
1139+051	11 39 45.770	+ 5 11 36.30	11 39 45.94	05 11 38.0				*	
1139+028	11 39 32.354	+ 2 52 11.40	11 39 32.39	02 52 10.7		17.0		S TB NF	
1140+021	11 40 24.782	+ 2 10 59.65	11 40 24.80	02 11 00.7	18.0	17.0	1.0	S TB	
1141+060	11 41 20.331	+ 6 05 45.95	11 41 20.37	06 05 46.7	18.0	16.7	1.3	G TB	W
1142+070	11 42 02.569	+ 7 05 06.35	11 42 02.50	07 05 07.9				T*	
1142+052	11 42 47.122	+ 5 12 06.03	11 42 47.2	05 12 05.1	19.0	18.9	0.1	*	
1143+006	11 43 08.921	+ 0 39 47.50	11 43 09.20	00 39 50.5	17.7	17.1	0.6	S T NF	
1144+021	11 44 30.721	+ 2 07 22.79	11 44 30.85	02 07 22.2				*	
1144+089	11 44 30.982	+ 8 55 40.65	11 44 30.91	08 55 39.7				G TBJ	
1147+015	11 47 51.517	+ 1 32 41.95	11 47 51.58	01 32 40.1		18.7		G TB NF	W
1148+044	11 48 16.770	+ 4 25 10.88	11 48 16.84	04 25 10.3		19.7		S TBJ	
1148+069	11 48 39.833	+ 6 57 39.56	11 48 39.91	06 57 39.2	15.8	11.2	4.6	G TB	W
1150+085	11 50 10.647	+ 8 33 19.97	11 50 11.57	08 33 26.3				*	
1150+057	11 50 59.007	+ 5 43 26.68	11 50 59.38	05 43 28.7		20.2		G TMJ	
			11 50 58.90	05 43 25.7		21.3		*	
1152+046	11 52 19.500	+ 4 40 54.61	11 52 19.65	04 40 53.7	18.8	18.9	0.0	S TM	
1153+024	11 53 49.106	+ 2 24 48.72	11 53 48.6	02 24 39.8				*	
1153+036	11 53 54.799	+ 3 36 08.96	11 53 54.51	03 36 06.6				*	
1154+047	11 54 07.513	+ 4 46 45.43	11 54 07.73	04 46 43.4	19.5	18.7	0.8	G TJ	
1156+072	11 56 27.971	+ 7 12 59.21	11 56 27.94	07 13 01.2	19.1	18.4	0.7	S TBJ	
1157+014	11 57 11.087	+ 1 28 47.95	11 57 11.1	01 28 47.4	17.2	17.1	0.1	G	
1157+012	11 57 24.798	+ 1 15 00.26	11 57 24.9	01 15 00.2				*	
1158+043	11 58 11.487	+ 4 23 17.15	11 58 11.43	04 23 16.8	16.8	15.1	1.7	S TJ	
1158+007	11 58 49.343	+ 0 45 09.91	11 58 49.5	00 45 09.8	18.4	18.4	0.0	G TM	W