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A supplementary list of southern nearby dwarf galaxy candidates⋆

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Abstract. To improve the census of the Local Volume galaxies, we carried out a systematic search for nearby dwarf galaxies in a declination range of $D < -18°$ based on the ESO/SERC film copies. As a result, we present a list of 81 nearby dwarf galaxy candidates of low surface brightness which have angular diameters $\gtrsim 0'.5$. Half of the objects have been found for the first time. This sample may be considered as supplementary to our list of 95 southern nearby dwarf galaxy candidates (A&AS, 1998, 127, 409) which have been detected in the same declination range around the known Local Volume galaxies.

Key words: dwarf galaxies

1. Introduction

The current census of galaxies in the Local Volume (= LV) with radial velocities in the Local Group rest frame $V_0 < 500$ km s^{-1} is very incomplete. Many new objects have been added in the past years even in the Local Group (Armandroff et al. 1998; Armandroff et al. 1999; Karachentsev & Karachentseva 1999; Whiting et al. 1999). The incompleteness is most severe for very low luminosity and low surface brightness dwarf galaxies, the most numerous type of galaxy in the Universe. Over the last two decades the initial list of 179 LV galaxies (with $V_0 < 500$ km s^{-1}) compiled by Kraan-Korteweg & Tammann (1979) has almost doubled.

To increase the completeness of the LV sample, we undertook a systematic search for nearby dwarf galaxies (Karachentseva & Karachentsev 1998), based on POSS-II and ESO/SERC films. In wide vicinity of the 215 known LV galaxies distributed over the whole sky (Karachentsev 1994) we found 260 nearby dwarf galaxy candidates with angular diameters $a \gtrsim 0'.5$. The HI survey of these objects carried out by Huchtmeier et al. (2000) showed that the majority of them are members of the Local Supercluster with a median radial velocity ~ 1200 km s^{-1}. Actually the spatial distribution of these objects is quite similar to the distibution of DDO dwarf galaxies found by van den Bergh (1959) on POSS-I plates. The sky region inspected in our first survey covers only $\sim 20\%$ of the entire- sky area. To reach the whole-sky coverage we extended our survey to the region of the Local Void (Karachentseva et al. 1999) and to the equatorial SERC EJ zone (Karachentsev et al. 2000).

The present paper contains results of supplementary overall searches for new nearby dwarf galaxy candidates in the southern sky ($D < -18°$) based on the ESO/SERC J and R films. Using the same criterion as before we found 81 objects with angular diameters $a \gtrsim 0'.5$. This number is comparable to the 95 objects from the first list (Karachentseva & Karachentsev 1998) situated in the same declination range $D < -18°$.

2. List of dwarf galaxy candidates in the ESO/SERC zone

The results of our search for dwarf galaxy candidates are presented in Table 1. The table columns contain: (1) running number; (2) 1950.0 epoch (upper line) and 2000.0 epoch (lower line) equatorial coordinates; (3) major and minor diameters measured visually with an accuracy about 15% on blue (upper line) and red (lower line) films, respectively; (4) morphological type in the usual designations; (5) rough estimate of the mean surface brightness: H – high $\sim(22-23)$ mag/□″), L – low ($\sim$24 mag/□″), VL – very low ($\sim$25 mag/□″), EL – extremely low ($\sim$26 mag/□″); (6) total apparent blue magnitude from the NASA Extragalactic Database (= NED) and galactic extinction from Schlegel et al. (1998) in the upper and lower lines, respectively; in many cases where B_t values are absent in NED we estimated total blue magnitudes visually with an error of $\sim$0.5 mag based on the galaxy dimension and surface

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⋆ Figure 1 is only available in electronic form at http://www.edpsciences.org

brightness; (7) galaxy name in other catalogues and lists as given in NED; (8) comments concerning galaxy membership, morphology and radial heliocentric velocity.

Figure 1 displays $5' \times 5'$ images of 81 dwarf galaxy candidates taken from the Digitized Sky Survey. The objects of extremely low surface brightness are practically invisible on the DSS.

3. Discussion

As the data of Table 1 show, the majority of the objects are faint galaxies of low and very low surface brightness with a median total apparent magnitude of ~ 17.2 mag and a median blue angular diameter of $\sim 1'.0$ determined at a limiting level of $\sim (26.5-27.0)$ mag/$\square''$. Some objects of the lowest surface brightness may be in reality Galactic cirrus or planetary nebula. Out of 81 objects the brightest 29 galaxies are listed in the Catalogue of Lauberts & Valentijn (1989). In Table 1 their B_t magnitudes are given to an accuracy of hundredth. Apart from these 4 galaxies are presented in the Catalogue of Arp & Madore (1987) and 5 are included in the PGC catalogue compiled by Paturel et al. (1989). About half of the objects found by us are absent in the published catalogues and lists.

Note that the galaxies from Table 1 are situated in the sky area covered by the "blind" HI line survey made with the Parkes multibeam radio telescope (Kilborn et al. 1999). In particular, 9 galaxies (see notes in Col. 8) are located in region of the nearby Centaurus group and are possible members. Because 4/5 of the listed objects are classified as irregular or probable irregular galaxies, one may expect a high detection rate for them in the 21 cm line.

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References

Arp H.C., Madore B.F., 1987, A Catalogue of southern peculiar galaxies and associations. Cambridge University Press, I, II (AM)
Armandroff T.E., Davies J.E., Jacoby G.H., 1998, AJ 116, 2287
Armandroff T.E., Jacoby G.H., Davies J.E., 1999, AJ 118, 1220
Huchtmeier W.K., Karachentsev I.D., Karachentseva V.E., Ehle M., 2000, A&AS 141, 469
Karachentsev I.D., 1994, Astron. Astrophys. Trans. 6, 1
Karachentsev I.D., Karachentseva V.E., 1999, A&A 341, 355
Karachentsev I.D., Karachentseva V.E., Suchkov A.A., Grebel E.K., 2000, A&A (submitted)
Karachentseva V.E., Karachentsev I.D., 1998, A&AS 127, 409
Karachentseva V.E., Karachentsev I.D., Richter G.M., 1999, A&AS 135, 221
Kilborn V., Webster R., Staveley-Smith L., 1999, PASA 16, 8 (HIPASS)
Kraan-Korteweg R.C., Tammann G.A., 1979, Astron. Nachr. 300, 181
Lauberts A., Valentijn E.A., 1989, The Surface Photometry Catalogue of the ESO-Uppsala Galaxies. ESO, Garching
Paturel G., Fouqué P., Bottinelli L., Gouguenheim L., 1989, Catalogue of Principal Galaxies, Lyon (PGC)
Schlegel D.J., Finkbeiner D.P., Davies M., 1998, ApJ 500, 525
van den Bergh S., 1959, The Catalogue of dwarf galaxies, Publ. D.D.O., Vol. II, No. 5, 147 (DDO)
Whiting A.B., Hau G.K., Irwin M., 1999, AJ 118, 2767

Table 1. List of 81 southern dwarf galaxy candidates

#	RA (1950) Dec RA (2000) Dec		$(a \times b)_b$ $(a \times b)_r$		Type	SB	B_t A_b	NED identif.	Notes
(1)	(2)		(3)		(4)	(5)	(6)	(7)	(8)
1	$02^h12^m45^s.1$	$-32°26'31''$	0.80	0.70	Ir	LV	18.0:		
	02 14 55.6	−32 12 35	0.5:	0.4:			0.09		
2	02 23 38.7	−19 55 07	1.30	0.60	Ir	L	16.23	E545-15	knots
	02 25 58.2	−19 41 38	1.20	0.50			0.14		
3	02 24 23.1	−73 44 16	2.50	1.00	Sph?	VL	16.0:	P09140	peculiar
	02 24 42.8	−73 30 46	1.50	0.90			0.22		
4	03 12 06.1	−66 27 22	2.0:	1.0:	Ir	EL	17.8:		comp. of
	03 12 46.2	−66 16 12	—	—			0.14		N1313
5	03 12 12.4	−38 10 42	1.20	0.70	Sph	L	17.18	E300-20	
	03 14 07.1	−37 59 35	0.90	0.60			0.07		
6	03 13 47.5	−66 34 32	3.2:	1.4:	Ir	EL	17.0:		comp. of
	03 14 26.2	−66 23 28	—	—			0.24		N1313
7	03 15 28.0	−25 05 30	1.20	0.60	Ir	L	17.2		
	03 17 38.2	−24 54 34	1.10	0.60			0.05		
8	03 19 37.2	−42 10 40	1.10	0.90	Ir	L	16.37	E301-07	
	03 21 24.6	−41 59 57	0.90	0.80			0.05		
9	03 33 36.1	−51 37 11	1.3:	1.0:	Ir	VL	16.24	E200-45	knots
	03 35 02.2	−51 27 16	1.0:	0.6:			0.06		
10	03 37 33.1	−31 57 12	1.20	0.70	Ir	L	16.9	AM0337-315	
	03 39 33.0	−31 47 32	1.00	0.60			0.04		
11	03 40 08.9	−22 54 54	1.90	1.40	S	VL	14.92		projected
	03 42 19.5	−22 45 24	1.90	1.20			0.08		on E482-36
12	03 41 49.2	−25 04 48	1.0:	0.7:	Ir	L	17.49	E482-39	blue
	03 43 57.2	−24 55 23	0.7:	0.7:			0.06		
13	03 47 12.8	−48 34 18	1.10	0.80	Ir	L	16.39	E201-02	resolved?
	03 48 43.2	−48 25 12	1.20	0.80			0.04		
14	05 26 23.6	−63 36 16	0.70	0.55	Ir	EL	17.8		near N1947
	05 26 44.2	−63 33 50	0.60	0.50			0.22		
15	05 26 45.5	−63 16 41	1.70	0.80	Ir?	VL	16.81	E085-88	near N1947
	05 27 08.0	−63 14 17	1.60	0.70			0.24		
16	05 30 10.8	−17 43 54	0.70	0.40	Ir	L	17.8		
	05 32 23.3	−17 41 49	0.45	0.30			0.32		
17	05 32 13.0	−61 57 49	0.95	0.65	Ir	VL	17.4		
	05 32 42.2	−61 55 49	0.80	0.65			0.26		
18	06 03 55.2	−33 04 33	3.5:	2.5:	Ir?	L	13.58	E364-29	refl.neb?
	06 05 45.4	−33 04 54	2.5:	1.2:			0.19		$Vh = 790$, NED
19	06 15 06.3	−57 42 27	1.40	1.00	Ir	L	15.85	E121-20	
	06 15 54.5	−57 43 35	1.00	0.70			0.17		
20	07 01 21.5	−44 59 30	1.10	0.50	Ir	L	16.19	E256-13	
	07 02 50.8	−45 03 58	1.10	0.50			0.41		
21	07 14 52.7	−40 00 21	1.30	0.40	Ir	L	16.32	E310-07	
	07 16 33.3	−40 05 46	0.70	0.30			1.17		
22	07 31 04.6	−35 22 50	1.20	0.80	Ir	VL	16.7	E368-04	knots
	07 32 54.6	−35 29 22	0.90	0.60			1.94		
23	07 42 13.9	−45 01 45	0.90	0.90	Sph?	EL	17.5		refl.neb.?
	07 43 47.3	−45 09 00	0.80	0.80			1.49		
24	07 50 14.8	−55 19 22	1.10	0.90	Ir	L	17.3		
	07 51 22.8	−55 27 08	1.00	0.85			0.89		
25	07 54 33.4	−26 07 03	0.50	0.40	Ir	VL	17.7		
	07 56 38.4	−26 15 07	0.55	0.40			1.45		
26	07 55 43.5	−26 44 00	0.80	0.35	Ir	VL	18.0		
	07 57 47.8	−26 52 09	0.70	0.35			2.67		
27	08 44 39.8	−21 36 43	0.80	0.60	Ir	L	17.4		
	08 46 53.6	−21 47 46	0.80	0.60			0.74		

Table 1. continued

#	RA (1950) Dec RA (2000) Dec		$(a \times b)_b$ $(a \times b)_r$		Type	SB	B_t A_b	NED identif.	Notes
(1)	(2)		(3)		(4)	(5)	(6)	(7)	(8)
28	08 52 39.5	−32 37 34	1.20	0.50	Ir	VL	17.42	E371-27	distant?
	08 54 42.1	−32 49 03	1.10	0.40			1.36		Vh = 1313, NED
29	09 08 51.2	−63 41 27	0.75	0.45	Ir	VL	17.5		
	09 09 53.0	−63 53 44	0.50	0.35			0.89		
30	09 20 51.7	−19 57 10	0.60	0.40	Im	H	15.53	E565-03	
	09 23 09.9	−20 10 03	0.50	0.50			0.27		
31	09 30 38.2	−33 01 20	1.3:	0.7:	Ir	L	16.4	E373-07	Vh = 862, NED
	09 32 45.7	−33 14 40	—	—			0.58		
32	09 32 24.3	−74 01 55	0.80	0.60	Ir	VL	16.69	E037-04	
	09 32 36.9	−74 15 17	0.50	0.40			0.48		
33	09 53 30.2	−67 50 06	0.70	0.50	Sph?	L	17.2	AM0953-675	Irr?
	09 54 37.8	−68 04 21	0.75	0.55			0.80		
34	10 03 11.4	−31 47 17	0.80	0.40	Ir	L	17.5		distant?
	10 05 25.0	−32 01 54	0.70	0.35			0.45		
35	10 05 32.0	−64 07 16	1.00	0.90	Ir?	VL	14.3	E092-10	emiss.neb.?
	10 06 59.8	−64 21 57	1.00	0.90			0.93		Vh = 57+−58
36	10 28 25.0	−46 00 51	1.60	1.20	Sph?	L	14.86	E263-47	distant S?
	10 30 32.0	−46 16 16	1.40	1.20			0.77		
37	10 29 18.9	−21 59 33	1.20	0.60	Ir	L	16.44	E568-15	
	10 31 42.3	−22 15 00	0.90	0.50			0.28		
38	10 43 38.3	−44 25 04	0.80	0.40	Ir	L	16.8		
	10 45 50.8	−44 40 53	—	—			0.77		
39	10 53 00.6	−47 26 12	1.10	0.80	Ir	VL	17.5		
	10 55 13.6	−47 42 13	0.80	0.60			0.93		
40	10 55 16.8	−47 54 40	2.00	1.20	Ir?	VL	16.03	E215-09	em.neb.?
	10 57 30.2	−48 10 44	1.60	1.00			0.95		
41	11 17 39.2	−68 48 49	0.90	0.60	Ir	VL	18.0		refl.neb.?
	11 19 41.8	−69 05 15	0.7:	0.5:			1.20		
42	11 24 11.0	−72 20 19	1.00	0.60	Ir?	VL	17.8	P35171	refl.neb.?
	11 26 12.7	−72 36 50	0.70	0.50			1.46		
43	11 32 51.7	−41 16 14	0.70	0.50	Ir?	VL	17.9		distant S?
	11 35 18.8	−41 32 50	0.40	0.40			0.35		
44	11 35 25.2	−38 56 37	1.40	0.90	Ir	H	15.85	E320-14	blue knots
	11 37 53.4	−39 13 14	1.00	0.70			0.61		
45	11 37 59.9	−46 55 44	0.60	0.50	Ir	VL	18.2		
	11 40 27.2	−47 12 22	—	—			0.71		
46	11 40 02.3	−25 38 08	0.80	0.70	Ir	L	16.60	E504-9	blue knots
	11 42 33.4	−25 54 47	—	—			0.20		
47	11 54 57.6	−27 50 45	1.30	1.10	Ir/Sph	VL	17.5		
	11 57 30.8	−28 07 27	—	—			0.32		
48	12 03 01.0	−43 29 30	1.30	0.90	Ir	L	17.20	E267-14	Vh = 2989, NED
	12 05 36.0	−43 46 12	0.90	0.60			0.53		HIPASS w.em.
49	12 05 02.6	−30 54 58	0.80	0.60	Ir/Sph	L	17.25	E441-3	yellow
	12 07 37.5	−31 11 40	—	—			0.28		
50	12 06 55.1	−30 05 07	0.60	0.45	Sph?	L	18.0		
	12 09 30.3	−30 21 49	0.50	0.35			0.25		
51	12 41 36.2	−42 39 58	0.90	0.40	E/Sph	L	16.7		HIPASS no em.
	12 44 21.5	−42 56 23	—	—			0.38		
52	12 55 13.5	−45 32 31	1.60	1.10	Ir/Sm	VL	16.4	P044397	HIPASS w.em.
	12 58 04.0	−45 48 43	—	—			0.38		at 2000 km s^{-1}
53	13 08 24.3	−38 38 26	0.80	0.70	Sph	VL	17.3	Cen 7	HIPASS no em.
	13 11 14.2	−38 54 22	—	—			0.38		
54	13 18 44.5	−31 37 29	1.10	0.75	Ir?	EL	17.6		HIPASS no em.
	13 21 32.4	−31 53 11	0.65	0.45			0.29		
55	13 19 17.8	−42 28 00	0.80	0.70	Sph	EL	18.5		Cen.gr.mem.
	13 22 12.8	−42 43 41	0.80	0.70			0.63		HIPASS no em.

Table 1. continued

#	RA (1950) Dec RA (2000) Dec		$(a \times b)_b$ $(a \times b)_r$		Type	SB	B_t A_b	NED identif.	Notes
(1)	(2)		(3)		(4)	(5)	(6)	(7)	(8)
56	13 32 56.1	−56 16 46	1.10	0.95	Ir?	L	16.7	P48001	
	13 36 10.2	−56 32 04	1.10	0.80			3.02		
57	13 38 38.5	−42 19 47	0.80	0.70	Sph	EL	18.1		Cen.gr.?
	13 41 38.2	−42 34 55	—	—			0.39		HIPASS no em.
58	13 43 05.7	−36 04 41	1.00	0.70	Sph?	VL	17.1		PN?; HIPASS
	13 46 01.0	−36 19 41	—	—			0.27		w.em 100 km s^{-1}
59	13 44 43.9	−53 06 08	3.00	1.30	Ir	L	14.2	E174-01	$Vh = 680$, NED
	13 47 57.7	−53 21 04	2.30	1.20			2.13		
60	13 50 42.2	−61 59 18	1.70	1.20	RN?	L	17.1		
	13 54 15.5	−62 14 02	1.60	1.10			77.92		
61	15 05 56.6	−67 45 15	1.50	0.60	Ir	L	18.0		refl.neb.?
	15 10 30.5	−67 56 38	2.00	0.80			0.79		red, arched
62	15 40 49.7	−27 55 07	1.00	0.50	Ir	L	18.1		distant?
	15 43 52.8	−28 04 33	0.70	0.35			0.90		
63	15 56 42.3	−31 08 45	2.5:	1.5:	Ir?	EL	16.0		cirrus?
	15 59 51.0	−31 17 13	2.5:	1.2:			0.94		
64	16 06 01.7	−65 37 14	0.90	0.75	Ir?	L	16.9	P57387	refl.neb.?
	16 10 46.2	−65 45 03	0.80	0.70			0.56		
65	16 44 08.9	−27 05 17	0.80	0.60	S?	L	17.5		distant?
	16 47 15.1	−27 10 36	0.70	0.50			1.24		
66	16 49 29.1	−59 00 29	1.50	0.70	Ir	VL	16.7		comp. of
	16 53 49.4	−59 05 24	1.50	0.80			0.58		N6221?
67	17 00 38.2	−18 48 14	0.70	0.70	Ir	VL	17.7		
	17 03 34.1	−18 52 25	0.70	0.50			1.40		
68	18 18 05.8	−62 17 42	1.00	0.55	Ir	L	16.59	E140-19	distant?
	18 22 46.3	−62 16 13	0.95	0.50			0.34		
69	18 46 22.8	−64 04 02	0.50	0.40	Ir	L	18.09	Sersic129	comp. of
	18 51 10.7	−64 00 30	0.45	0.35			0.37		N6744?
70	19 02 12.3	−64 02 28	0.55	0.50	Ir?	L	17.7		comp. of
	19 06 57.7	−63 57 50	0.50	0.45			0.20		N6744?
71	19 04 00.6	−63 48 41	2.70	0.70	Ir	L	15.10	E104-38	comp. of
	19 08 44.4	−63 43 55	2.20	0.60			0.19		N6744
72	19 07 40.0	−63 56 21	0.60	0.45	Ir	VL	17.9		comp. of
	19 12 23.9	−63 51 19	0.35	0.25			0.17		N6744?
73	19 17 20.4	−60 46 41	1.20	1.00	Ir	L	16.9		
	19 21 46.3	−60 41 00	1.30	0.90			0.23		
74	19 23 16.9	−61 06 43	0.90	0.45	Ir	VL	17.6		
	19 27 43.2	−61 00 38	0.85	0.45			0.34		
75	20 17 21.2	−22 03 48	0.50	0.45	Ir	L	18.2		blue knots
	20 20 17.2	−21 54 17	0.50	0.40			0.34		
76	20 39 57.8	−61 26 52	0.80	0.70	Ir	L	17.11	APM	blue knots
	20 44 04.6	−61 16 01	0.60	0.50			0.23		
77	20 49 44.9	−39 06 43	0.80	0.30	Ir	L	17.8	AM2049-390	
	20 52 58.4	−38 55 21	0.70	0.30			0.24		
78	21 50 30.9	−26 48 54	1.10	0.50	Ir	L	16.25	E532-02	
	21 53 22.5	−26 34 44	1.00	0.40			0.15		
79	22 04 02.0	−46 39 31	0.9:	0.7:	Sph?	L	17.5	AM2204-463	
	22 07 09.5	−46 24 51	0.7:	0.4:			0.06		
80	22 12 51.8	−59 46 48	0.90	0.70	Ir	L	17.4		blue knots
	22 16 16.3	−59 31 50	0.70	0.55			0.11		
81	22 44 29.4	−19 06 33	1.10	0.60	Ir	L	16.47	E603-13	
	22 47 10.5	−18 50 43	1.00	0.50			0.14		