

AN ANALYSIS OF FIFTY-FIVE BRIGHT SOUTHERN CLUSTERS OF GALAXIES

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ABSTRACT. We present the results of an analysis of fifty-five bright clusters of galaxies as a homogeneous sample taken from a new effort to catalogue galaxy clusters in the Southern Hemisphere. The positions of some 21,000 galaxies in clusters have been catalogued along with visual magnitudes, morphological types, position angles of extended objects and pertinent remarks. For all of the clusters, various cluster parameters have been determined and form the basis of comparative studies for these fundamental aggregates of matter in the universe.

1. The Cluster Catalogue

The aims of this study are to produce a homogeneous sample of galaxy clusters measured to a uniform limiting magnitude of $m_v = 19.0$; catalogued with accurate positions relative to nearby astrometric standard stars; morphologically classified and population typed; and statistically analysed in a uniform fashion to deduce certain cluster parameters. The cluster parameters of interest include an estimate of cluster distance, center and richness; galaxy distributions as a function of morphological type, magnitude distribution and core radius. A succinct table (Table 1-a,b) gives the following information: Cluster Identification, Celestial Coordinates, ESO/SERC J Field Number, X-Y Coordinates measured from the Field center, Redshift as determined from the tenth brightest cluster member, Abell Richness, Abell Type and Bautz-Morgan Classification.

The Catalogue has been extracted from a new Survey of Southern Galaxy Clusters discovered on the ESO/SERC J Survey of the Southern Sky.

CATALOGUE OF BRIGHT SOUTHERN GALAXY CLUSTERS													
N	RA		DEC		FLD	X	Y	Z	R	TY	B-M		
	(1950)		(1950)								TYPE		
01	00	00	45.6	-36	19	39.4	349	005.543	-070.735	0.042	1	R	I-II
02	00	03	13.9	-35	4	01.6	349	035.621	-003.767	0.072	2	R	II
03	00	06	49.1	-35	43	49.9	349	071.702	-039.543	0.057	2	IR	II-III
04	00	07	28.7	-57	14	52.8	149	051.069	-119.610	0.044	1	IR	III
05	00	18	08.3	-49	32	34.3	194	-107.031	024.617	0.050	1	R	II
06	00	22	49.7	-33	17	33.7	350	-015.272	094.597	0.038	2	RI	II
07	01	29	33.8	-51	32	55.7	196	-005.774	-082.259	0.040	0	RI	III
08	01	39	50.0	-42	23	49.0	297	-043.427	-127.677	0.050	1	RI	I-II
09	02	55	44.0	-52	56	09.1	154	087.306	109.669	0.049	2	I	II
10	03	44	04.7	-41	21	11.8	302	-103.679	-070.538	0.050	2	R	I
11	04	04	04.0	-39	00	28.8	302	101.219	054.375	0.042	1	IR	II
12	05	24	00.3	-45	01	46.1	253	-115.824	-001.271	0.061	0	I	III
13	06	21	39.4	-64	56	34.9	087	-083.921	004.016	0.038	0	R	II-III
14	06	25	02.5	-53	39	26.8	161	-088.653	070.926	0.049	2	R	I
15	06	26	25.1	-54	22	29.4	161	-076.713	032.793	0.048	2	R	II
16	12	51	41.2	-28	44	33.4	442	146.553	065.348	0.048	2	RI	II
17	13	03	25.3	-37	17	59.6	382	-095.233	-121.728	0.049	0	R	II
18	14	00	40.6	-33	44	13.9	384	005.223	069.735	0.020	0	RI	I
19	14	09	17.9	-32	50	02.6	384	102.148	117.241	0.044	1	I	III
20	14	09	28.3	-34	01	38.5	384	102.819	053.059	0.038	1	RI	II
21	14	30	26.3	-31	32	40.5	447	-043.965	-081.811	0.054	0	RI	II-III
22	19	56	35.4	-38	32	47.9	339	003.581	080.348	0.026	2	I	I-II
23	20	38	34.4	-35	23	58.1	401	-105.191	-022.456	0.065	1	R	III
24	20	48	40.7	-52	08	45.6	235	-095.831	-115.415	0.037	1	I	III
25	21	13	10.0	-59	36	24.2	145	-131.705	018.574	0.042	2	I	II

TABLE 1-a

CATALOGUE OF BRIGHT SOUTHERN GALAXY CLUSTERS													
N	RA		DEC		FLD	X	Y	Z	R	TY	B-M		
	(1950)		(1950)								TYPE		
26	21	22	58.0	-35	00	38.8	403	-144.719	-001.784	0.052	2	RI	III
27	21	26	09.6	-51	04	18.4	236	-033.381	-057.179	0.048	0	I	III
28	21	29	13.5	-35	22	50.6	403	-075.807	-019.961	0.044	1	I	II
29	21	31	05.9	-53	50	08.2	188	028.755	064.519	0.050	1	I	II
30	21	31	14.2	-62	15	40.3	145	-008.471	-118.667	0.048	2	R	I
31	21	32	18.2	-52	44	02.1	188	039.266	123.490	0.044	1	I	III
32	21	41	46.5	-51	43	57.4	236	096.553	-093.917	0.043	2	I	I-II
33	21	42	50.8	-57	29	48.5	145	074.215	134.600	0.042	2	R	II
34	21	43	46.1	-44	06	15.9	288	-119.835	051.560	0.048	2	I	II
35	21	44	40.6	-46	13	32.3	288	-107.000	-061.752	0.043	2	R	II-III
36	21	50	32.0	-58	03	48.4	145	127.534	102.014	0.050	2	R	II-III
37	21	55	17.4	-60	35	13.4	146	-098.536	-032.630	0.048	2	R	III
38	21	58	08.7	-60	11	45.0	146	-080.549	-010.760	0.065	2	R	I
39	22	01	11.1	-58	18	36.8	146	-063.530	090.895	0.043	1	I	I-II
40	22	01	06.9	-50	18	11.9	237	008.125	-014.404	0.042	0	R	I-II
41	22	19	59.2	-50	23	08.1	190	-101.125	-022.117	0.040	2	R	II-III
42	22	21	25.9	-56	38	22.8	190	-087.461	-088.514	0.043	2	I	II-III
43	22	22	36.0	-56	05	57.1	190	-079.768	-059.436	0.043	1	I	III
44	22	24	46.3	-30	51	42.7	468	-143.511	-045.125	0.038	1	RI	II
45	23	16	35.3	-42	22	36.6	347	-075.547	-126.152	0.030	2	I	III
46	23	27	57.5	-39	37	06.8	347	038.794	021.784	0.049	1	I	I
47	23	34	24.3	-69	34	43.5	077	038.221	025.705	0.057	0	I	III
48	23	38	44.8	-30	30	04.2	471	-086.526	-026.689	0.044	1	I	I
49	23	44	55.4	-28	24	42.6	471	-015.479	085.995	0.023	1	R	I-II
50	23	59	05.8	-44	06	46.5	292	104.794	047.058	0.038	0	I	II

TABLE 1-b