Revista Mexicana de Astronomía y Astrofísica, **33**, 83–95 (1997)

POSITIONS AND PROPER MOTIONS IN THE AREA OF THE OPEN CLUSTER NGC 129

M. Jeanette Stock

Facultad Experimental de Ciencias
Universidad del Zulia, Maracaibo, Venezuela

and

Jurgen Stock

Centro de Investigaciones de Astronomía, Mérida, Venezuela

Received 1995 September 11; accepted 1997 June 9

RESUMEN

Se han determinado posiciones y magnitudes para 537 estrellas en el área del cúmulo abierto NGC 129. Combinando estas posiciones con datos de otras tres fuentes, se hallaron movimientos propios para 86 estrellas.

ABSTRACT

Positions and magnitudes were derived for 537 stars in the area of the open cluster NGC 129. Combining these positions with data from the three other sources, proper motions could be derived for 86 stars.

Key words: **ASTROMETRY — OPEN CLUSTERS AND ASSOCIATIONS–INDIVIDUAL (NGC 129)**

1. INTRODUCTION

Accurate proper motions for galactic clusters may serve a number of purposes. First of all they permit the derivation of probabilities of cluster membership. In this process allowance has to be made for the accuracy of the proper motion data. With data of very high accuracy internal motions in the tangential direction can be detected. Among other things such information can lead to a distance estimate (see for example Cudworth 1979). For very few clusters proper motions of the required accuracy are known. For this reason a cluster position program was started at CIDA, using the 65-cm Refractor with a focal length of 10.5 meters and a field of 0.8 × 0.8 degrees on 16 × 16 cm plates. The principal purpose of this program is to contribute to the study of the distribution and kinematics of open clusters within the Galaxy. In this program only such clusters were included for which one or several old epoch data were available in the literature. One of these clusters is NGC 129. In this particular case another recent epoch is also avalaible. Thus the accuracy of its proper motions can be greatly improved. The area is also of interest because it contains the Cepheid variable DL Cas. In this paper we communicate the data obtained for this cluster.

2. THE OBSERVATIONS

A series of plates of NGC 129 was taken during September and October of 1981. All exposures are of 15 minutes on Kodak 103aG plates with a Schott OG 512 filter. Most of the plates contain two exposures, with the plate reversed within the plate holder between exposures. Of this series, four plates with a total of eight exposures, were selected for measurement. This activity was carried out with a Zeiss PSK2 Stereo-comparator in its stereo version, thus two plates were measured simultaneously. In all cases, the positions of all images available on both plates were obtained.

3. REDUCTION

For the reduction of the measured coordinates the block adjustment method developed by Stock (1981) was employed. Unpublished positions and proper motions, kindly made available by deVegt, were used

TABLE 1

POSITIONS CATALOG

No. (1)	α h	α m (2)	α s	δ °	δ ′ (3)	δ ″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
1	00	23	47.446	60	22	00.62	12.7	1	5	2
2	00	23	49.182	60	07	25.93	13.1	4	2	2
3	00	23	51.686	60	08	39.26	12.4	17	22	2
4	00	23	53.351	59	53	21.97	13.3	30	2	2
5	00	24	04.581	60	08	25.42	13.4	18	1	2
6	00	24	06.825	59	58	02.52	14.2	4	16	2
7	00	24	08.120	59	50	04.62	13.0	4	5	4
8	00	24	09.603	60	09	31.10	13.2	9	1	6
9	00	24	14.783	60	07	32.59	8.5	17	5	8
10	00	24	15.581	60	21	12.37	12.4	10	1	4
11	00	24	17.280	60	24	38.95	13.2	6	8	6
12	00	24	17.297	59	55	22.71	10.7	8	5	8
13	00	24	19.304	60	03	16.67	13.2	7	3	8
14	00	24	20.151	60	05	04.65	12.4	8	5	8
15	00	24	20.779	59	50	27.45	13.4	12	8	4
16	00	24	22.207	60	23	24.34	13.0	10	10	4
17	00	24	22.749	60	25	18.79	13.5	18	14	6
18	00	24	22.908	59	58	39.62	14.2	13	9	4
19	00	24	22.964	60	05	02.89	12.8	5	3	8
20	00	24	22.965	60	15	39.33	13.4	6	20	2
21	00	24	22.996	60	02	27.66	13.2	6	5	4
22	00	24	23.029	59	54	00.49	12.9	6	5	6
23	00	24	23.838	59	55	16.16	13.6	19	47	2
24	00	24	23.913	60	23	25.67	7.6	8	11	5
25	00	24	25.813	60	20	28.31	11.4	6	5	8
26	00	24	26.051	60	24	40.11	11.7	8	8	6
27	00	24	26.634	60	09	53.89	12.7	7	3	8
28	00	24	28.448	60	16	16.33	13.0	6	5	6
29	00	24	30.260	60	18	48.02	13.4	19	2	2
30	00	24	31.640	60	25	39.81	13.3	9	4	5
31	00	24	31.690	60	16	29.43	13.0	8	5	6
32	00	24	31.860	60	08	18.94	12.9	5	6	8
33	00	24	32.733	60	09	40.59	13.5	8	6	6
34	00	24	33.241	59	50	49.86	13.5	17	15	4
35	00	24	33.593	60	16	48.44	12.9	10	6	6
36	00	24	34.804	60	15	02.63	13.3	4	7	8
37	00	24	35.450	60	01	37.92	12.9	7	4	8
38	00	24	36.671	60	15	01.79	13.5	3	10	8
39	00	24	37.465	60	27	35.96	10.7	2	2	4
40	00	24	37.613	60	15	50.41	10.5	6	8	8
41	00	24	38.017	60	02	01.21	13.3	12	6	4
42	00	24	38.663	59	52	47.82	12.2	6	6	8
43	00	24	41.339	60	11	47.61	13.0	3	3	8
44	00	24	42.289	60	33	05.14	10.8	11	5	4
45	00	24	42.836	60	00	04.02	13.5	24	22	2
46	00	24	43.438	59	58	58.73	11.5	3	5	8
47	00	24	44.375	60	02	52.32	13.2	7	7	6
48	00	24	45.124	59	49	45.89	13.1	7	8	4
49	00	24	46.435	60	14	53.73	13.0	10	4	8
50	00	24	46.943	59	48	29.36	13.4	21	17	2
51	00	24	47.657	60	02	49.27	13.3	10	22	2
52	00	24	48.675	59	55	52.56	13.5	16	21	2
53	00	24	49.157	60	03	42.18	13.3	4	6	6
54	00	24	51.570	60	30	53.80	10.9	5	14	4
55	00	24	51.648	59	57	05.55	12.4	6	4	8
56	00	24	52.508	60	06	39.51	13.3	11	4	8
57	00	24	52.664	59	57	40.80	12.5	6	4	8
58	00	24	55.817	60	25	55.50	13.5	2	6	4
59	00	24	57.206	59	45	08.04	7.8	12	8	4
60	00	24	58.252	59	57	20.43	13.5	5	20	2
61	00	24	58.252	60	12	46.44	12.4	5	3	8
62	00	24	58.544	60	01	51.26	12.8	6	3	8
63	00	25	00.003	60	30	57.59	13.4	7	7	4
64	00	25	01.154	60	08	31.90	12.4	11	4	8
65	00	25	01.548	60	01	51.68	13.1	12	6	6
66	00	25	02.287	60	16	42.92	12.9	7	4	6
67	00	25	03.019	60	24	41.28	13.4	6	6	4
68	00	25	03.228	60	27	30.31	13.4	8	10	4
69	00	25	06.234	60	16	54.80	9.4	6	7	6
70	00	25	07.058	60	20	55.92	9.4	12	6	8
71	00	25	07.366	59	46	12.11	11.7	12	4	6
72	00	25	07.625	60	05	11.06	12.8	5	3	8
73	00	25	09.072	60	08	18.60	11.0	8	5	8
74	00	25	10.851	59	56	17.07	13.5	21	4	2
75	00	25	11.129	60	14	46.02	13.5	17	4	4
76	00	25	11.786	60	15	18.63	12.2	7	4	8
77	00	25	13.137	59	51	35.75	13.0	6	4	8
78	00	25	13.955	59	54	56.27	13.1	7	3	8
79	00	25	14.227	60	09	22.25	13.0	10	4	8
80	00	25	14.800	59	53	10.95	13.9	12	11	4
81	00	25	14.972	60	05	10.12	13.2	8	16	4
82	00	25	15.705	59	54	31.36	13.4	8	6	8

TABLE 1 (CONTINUED)

No. (1)	α h (2)	α m (2)	α s (2)	δ ° (3)	δ ′ (3)	δ ″ (3)	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
83	00	25	17.020	59	55	33.52	13.5	18	2	2
84	00	25	18.770	59	54	16.23	12.9	5	4	8
85	00	25	20.436	60	11	22.07	12.6	10	3	8
86	00	25	21.025	60	12	54.63	13.5	8	4	6
87	00	25	23.578	60	02	38.34	12.7	4	4	8
88	00	25	23.885	59	52	11.80	13.1	8	5	6
89	00	25	24.488	60	08	15.07	13.6	17	5	4
90	00	25	24.573	59	46	43.69	12.7	13	9	4
91	00	25	24.593	60	11	47.46	13.1	3	5	8
92	00	25	25.411	59	53	07.36	10.9	5	5	8
93	00	25	26.162	60	05	02.48	13.6	17	7	2
94	00	25	28.860	59	59	52.18	11.1	4	3	8
95	00	25	29.332	60	01	37.86	13.1	11	1	6
96	00	25	29.407	59	33	25.09	13.6	9	10	6
97	00	25	29.538	60	17	44.35	13.4	8	7	4
98	00	25	32.354	60	15	12.04	13.3	4	11	6
99	00	25	33.855	60	09	44.39	13.5	10	5	4
100	00	25	35.645	60	23	28.48	13.5	6	7	6
101	00	25	37.637	60	15	44.79	13.2	6	5	6
102	00	25	37.715	60	24	48.24	13.5	5	10	4
103	00	25	38.147	60	03	25.69	13.3	5	3	6
104	00	25	39.553	60	05	48.42	13.2	13	3	8
105	00	25	40.092	59	57	50.96	13.5	15	9	6
106	00	25	41.334	60	11	19.34	12.1	7	3	8
107	00	25	41.992	59	53	57.69	13.3	7	8	8
108	00	25	42.151	60	03	28.30	13.2	6	4	8
109	00	25	42.276	59	55	49.20	13.4	9	52	2
110	00	25	42.439	60	11	13.60	13.0	6	3	8
111	00	25	43.300	59	58	30.69	12.4	6	9	6
112	00	25	43.306	60	09	44.56	12.5	5	4	8
113	00	25	43.783	59	58	56.01	13.0	7	4	6
114	00	25	44.648	60	01	54.75	13.3	8	7	8
115	00	25	50.868	60	03	58.84	11.4	7	4	8
116	00	25	52.212	59	57	50.83	13.6	9	6	2
117	00	25	53.189	59	55	09.03	12.9	5	5	8
118	00	25	53.250	60	15	08.86	12.8	4	3	6
119	00	25	53.659	60	00	58.55	13.6	17	60	2
120	00	25	54.164	60	08	05.95	12.7	6	5	6
121	00	25	54.248	59	52	43.10	13.3	22	16	4
122	00	25	55.529	60	14	41.39	13.3	2	10	4
123	00	25	55.838	60	19	48.04	09.3	13	5	8
124	00	25	56.485	60	26	30.25	13.4	18	6	4
125	00	25	57.389	59	50	48.00	13.4	18	2	2
126	00	25	58.093	59	58	03.35	13.1	22	15	4
127	00	25	58.296	60	19	59.65	13.4	11	8	6
128	00	26	01.447	60	07	16.32	10.9	7	3	8
129	00	26	02.263	60	03	18.15	13.2	5	5	8
130	00	26	02.396	60	20	26.94	13.1	11	5	8
131	00	26	03.084	60	11	01.44	11.4	4	4	8
132	00	26	04.146	59	55	57.86	13.0	9	4	7
133	00	26	05.440	60	01	26.79	13.5	25	28	2
134	00	26	05.912	59	59	19.78	13.6	8	21	2
135	00	26	06.197	60	01	27.19	13.1	3	4	8
136	00	26	06.374	60	27	20.37	11.5	10	3	4
137	00	26	07.743	59	50	43.42	13.1	17	11	4
138	00	26	08.856	60	07	26.01	13.0	9	7	8
139	00	26	08.968	60	29	08.37	13.5	7	6	2
140	00	26	09.385	60	01	57.13	13.3	13	6	6
141	00	26	09.860	60	05	03.52	12.1	6	3	8
142	00	26	10.261	59	55	33.67	11.7	6	4	8
143	00	26	10.416	60	29	59.38	13.5	6	5	4
144	00	26	11.221	60	12	26.89	13.2	8	5	8
145	00	26	12.091	60	12	05.50	13.1	11	3	8
146	00	26	12.770	60	12	16.22	13.3	5	3	8
147	00	26	12.779	60	22	10.88	13.1	10	4	6
148	00	26	13.612	60	13	37.76	13.4	6	6	6
149	00	26	14.358	60	21	51.36	13.3	8	7	6
150	00	26	14.404	60	20	54.23	13.3	5	2	6
151	00	26	14.539	60	08	49.79	11.2	4	6	8
152	00	26	14.825	59	50	46.78	13.3	23	3	2
153	00	26	14.979	60	04	03.59	12.1	5	3	8
154	00	26	15.466	59	52	14.32	13.2	11	7	8
155	00	26	15.579	60	17	31.02	12.7	7	5	8
156	00	26	15.873	59	48	10.07	13.4	11	11	2
157	00	26	16.058	60	29	01.26	12.8	1	5	4
158	00	26	16.471	60	14	02.55	13.2	9	7	4
159	00	26	16.617	60	09	55.32	10.5	4	5	8
160	00	26	17.064	60	26	12.15	13.5	18	14	2
161	00	26	18.037	60	21	43.66	10.5	9	4	6
162	00	26	18.528	60	13	32.90	13.3	6	5	8
163	00	26	18.587	59	52	15.34	13.3	7	4	6
164	00	26	22.220	60	31	16.64	12.5	9	1	4
165	00	26	22.278	60	15	43.33	12.6	7	4	6
166	00	26	22.491	60	28	48.10	10.7	5	3	4

TABLE 1 (CONTINUED)

No. (1)	α h (2)	α m	α s	δ ° (3)	δ ′	δ ″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)	No. (1)	α h (2)	α m	α s	δ ° (3)	δ ′	δ ″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
167	00	26	22.935	60	20	20.82	13.3	11	6	6	208	00	26	44.114	59	55	54.85	12.9	5	5	8
168	00	26	23.457	60	05	14.31	13.2	4	4	8	209	00	26	44.572	60	11	43.20	13.0	7	4	8
169	00	26	24.724	59	55	37.55	11.8	5	6	8	210	00	26	44.957	60	04	18.23	12.2	4	6	8
170	00	26	25.455	60	26	05.61	13.3	4	8	4	211	00	26	45.139	60	04	00.59	11.4	6	7	8
171	00	26	25.477	60	23	03.29	13.0	11	2	6	212	00	26	46.035	59	57	06.81	12.3	6	5	8
172	00	26	25.661	60	12	14.43	12.5	8	5	8	213	00	26	46.887	59	45	54.69	13.0	9	32	2
173	00	26	25.962	59	48	17.48	13.3	16	15	2	214	00	26	47.431	60	01	43.66	12.1	6	4	8
174	00	26	26.017	60	12	14.66	13.4	10	5	6	215	00	26	47.538	60	08	12.79	12.6	7	4	8
175	00	26	26.165	60	19	12.93	12.7	7	6	8	216	00	26	47.580	60	18	58.11	13.2	11	5	8
176	00	26	26.495	60	23	00.86	13.4	5	7	6	217	00	26	47.602	59	56	28.63	13.1	6	6	8
177	00	26	27.551	59	55	21.32	13.1	5	6	8	218	00	26	47.913	60	32	47.50	13.4	5	11	4
178	00	26	30.697	60	15	46.57	11.0	7	6	6	219	00	26	47.939	60	14	18.21	12.9	5	2	6
179	00	26	30.715	59	54	16.01	12.4	25	20	2	220	00	26	48.382	59	56	53.35	12.9	5	3	8
180	00	26	30.783	60	08	30.71	11.7	6	6	8	221	00	26	48.396	60	28	21.75	13.4	13	7	4
181	00	26	31.133	59	45	52.77	12.7	1	3	4	222	00	26	49.769	59	50	52.26	12.8	5	2	8
182	00	26	31.570	59	59	33.06	12.9	1	2	2	223	00	26	49.790	60	22	18.23	13.3	4	7	6
183	00	26	32.521	59	46	17.50	12.0	3	4	4	224	00	26	49.879	59	52	06.06	11.2	5	5	8
184	00	26	32.735	59	57	23.43	13.1	8	4	8	225	00	26	50.090	59	56	54.21	13.1	7	4	8
185	00	26	33.068	60	15	30.29	12.4	5	5	6	226	00	26	50.863	60	26	38.83	13.5	5	7	4
186	00	26	33.331	60	24	21.98	13.4	2	30	2	227	00	26	52.181	60	26	03.50	13.4	21	3	4
187	00	26	33.387	60	00	04.06	13.6	8	9	2	228	00	26	52.922	59	55	34.02	13.6	13	12	2
188	00	26	33.472	59	56	35.73	13.4	11	3	6	229	00	26	53.643	59	59	30.26	12.6	6	4	6
189	00	26	33.945	60	09	17.10	13.1	6	5	6	230	00	26	54.265	60	07	00.07	13.0	19	4	2
190	00	26	33.984	59	52	14.38	12.4	3	6	8	231	00	26	54.670	59	54	52.03	13.4	17	11	2
191	00	26	34.160	59	54	25.80	13.5	10	11	6	232	00	26	54.900	59	56	58.86	13.3	12	6	8
192	00	26	34.313	59	56	43.55	13.6	0	31	2	233	00	26	56.086	59	53	40.20	13.6	13	8	6
193	00	26	34.735	60	23	38.08	11.2	9	7	4	234	00	26	57.026	59	49	16.18	13.4	2	2	2
194	00	26	35.522	59	57	25.78	12.7	5	6	8	235	00	26	57.026	60	07	54.82	13.3	6	7	6
195	00	26	36.534	60	02	29.10	12.0	5	4	8	236	00	26	57.454	60	17	45.06	13.4	8	7	6
196	00	26	36.737	60	29	26.92	13.6	17	7	2	237	00	26	57.653	60	01	02.13	13.2	2	6	4
197	00	26	37.238	60	09	55.24	12.9	7	4	8	238	00	26	58.264	60	20	35.67	13.1	5	6	8
198	00	26	38.086	60	03	15.20	13.0	8	4	6	239	00	26	58.378	60	03	02.17	12.8	6	6	6
199	00	26	38.817	60	23	00.82	12.7	7	4	6	240	00	26	58.651	59	59	45.75	12.5	5	7	8
200	00	26	39.197	60	20	37.02	12.3	7	5	8	241	00	26	59.521	60	16	49.42	12.6	5	5	8
201	00	26	40.847	60	04	21.20	13.2	8	2	8	242	00	26	59.596	60	19	12.75	11.1	7	5	8
202	00	26	41.541	60	00	49.68	13.1	3	5	8	243	00	27	00.231	60	13	09.18	9.5	10	5	8
203	00	26	41.756	59	45	51.94	13.0	2	14	2	244	00	27	00.504	60	01	47.99	13.2	6	8	8
204	00	26	41.839	59	58	30.18	12.9	4	2	6	245	00	27	00.785	60	27	38.92	12.9	7	2	4
205	00	26	41.868	60	07	45.91	11.8	4	2	8	246	00	27	00.910	60	18	38.66	10.6	10	6	8
206	00	26	42.536	59	48	32.24	13.3	1	10	2	247	00	27	01.581	59	59	13.54	13.3	35	1	2
207	00	26	44.014	59	47	43.86	12.9	16	8	4	248	00	27	01.711	59	58	09.96	12.9	9	4	6

TABLE 1 (CONTINUED)

No. (1)	α h (2)	α m	α s	δ ° (3)	δ ′	δ ″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
249	00	27	01.762	59	55	42.03	12.9	6	6	8
250	00	27	02.002	60	29	50.34	13.5	9	9	4
251	00	27	02.288	60	09	47.99	13.0	5	4	8
252	00	27	02.618	60	01	16.19	12.2	11	5	8
253	00	27	02.773	60	10	02.74	12.7	4	6	8
254	00	27	03.139	60	01	25.04	13.0	5	4	8
255	00	27	03.725	59	56	35.87	13.5	19	4	2
256	00	27	04.339	59	57	00.43	13.4	7	9	8
257	00	27	04.671	60	05	37.05	13.2	3	24	2
258	00	27	04.876	59	54	12.51	13.5	21	13	6
259	00	27	06.038	59	59	25.81	13.4	11	18	2
260	00	27	06.125	59	55	55.33	11.9	7	3	8
261	00	27	06.249	59	59	48.51	11.9	6	3	8
262	00	27	06.318	60	11	10.08	13.3	9	6	8
263	00	27	06.373	60	16	44.46	13.2	5	6	8
264	00	27	06.631	59	53	56.57	13.2	4	7	8
265	00	27	07.161	60	14	59.12	12.8	7	6	6
266	00	27	07.431	60	18	41.42	13.1	10	6	8
267	00	27	08.128	59	54	37.64	12.7	6	4	8
268	00	27	08.171	60	04	35.02	11.8	6	2	7
269	00	27	08.374	60	22	32.76	11.1	10	4	6
270	00	27	08.811	60	23	46.37	11.6	6	5	6
271	00	27	10.375	59	56	09.21	8.6	8	8	8
272	00	27	10.753	60	07	29.15	13.5	9	18	4
273	00	27	11.071	60	04	48.52	13.1	12	12	4
274	00	27	11.083	60	01	11.34	11.2	8	3	6
275	00	27	11.527	59	52	51.50	11.5	4	6	8
276	00	27	13.119	59	54	48.85	13.3	40	16	2
277	00	27	13.575	60	21	15.28	13.4	5	4	6
278	00	27	15.670	60	26	29.80	13.6	7	3	4
279	00	27	15.704	60	13	00.10	11.0	5	5	8
280	00	27	15.724	59	56	51.07	13.5	24	1	2
281	00	27	16.797	60	19	47.28	10.7	4	2	8
282	00	27	17.785	59	52	30.24	9.0	15	7	8
283	00	27	18.319	59	51	33.09	13.0	9	4	8
284	00	27	18.396	60	25	39.47	13.4	14	3	4
285	00	27	18.671	59	51	06.62	13.2	5	5	8
286	00	27	18.718	59	59	40.79	13.0	10	6	2
287	00	27	19.523	60	24	41.44	13.5	7	16	6
288	00	27	19.810	59	55	33.74	11.2	5	3	7
289	00	27	19.868	60	31	58.89	13.4	30	8	2
290	00	27	20.017	59	53	38.97	13.3	6	5	9
291	00	27	20.465	60	32	42.73	13.4	5	16	2
292	00	27	21.110	59	46	19.05	13.4	3	0	2
293	00	27	21.225	59	54	33.01	13.0	7	5	8
294	00	27	21.447	59	58	28.23	13.0	6	8	6
295	00	27	21.469	59	49	56.98	12.8	5	6	8
296	00	27	21.663	60	28	47.42	11.5	5	6	4
297	00	27	21.966	60	12	05.36	12.9	7	5	8
298	00	27	22.068	60	00	34.07	13.2	9	4	6
299	00	27	22.326	59	58	15.40	12.9	6	5	6
300	00	27	22.864	60	06	32.96	13.6	7	2	2
301	00	27	23.748	59	58	49.31	13.2	8	7	4
302	00	27	24.439	60	02	14.04	12.9	2	3	4
303	00	27	25.327	60	15	07.35	13.4	11	14	4
304	00	27	25.795	60	09	56.13	11.3	4	4	8
305	00	27	25.994	59	57	15.98	13.6	8	10	2
306	00	27	26.035	59	52	18.32	13.1	4	4	8
307	00	27	26.807	59	50	41.99	13.0	6	4	8
308	00	27	26.955	59	51	41.87	12.4	5	3	8
309	00	27	27.101	59	52	22.54	12.5	4	5	8
310	00	27	27.257	60	16	35.79	12.9	10	6	8
311	00	27	27.533	59	52	13.68	13.6	4	7	2
312	00	27	27.703	60	02	03.20	13.4	9	12	6
313	00	27	27.801	60	02	01.45	13.1	5	11	8
314	00	27	29.013	60	11	53.24	12.5	4	6	8
315	00	27	32.625	60	23	39.40	11.1	8	6	6
316	00	27	33.061	59	54	34.47	9.1	10	8	8
317	00	27	33.086	59	53	38.72	13.5	20	45	2
318	00	27	33.658	59	55	01.11	13.6	19	24	2
319	00	27	34.083	59	56	05.06	13.5	5	33	2
320	00	27	34.970	59	56	55.98	13.0	11	4	2
321	00	27	34.976	59	57	06.05	13.2	9	4	8
322	00	27	35.974	59	55	43.30	12.5	5	5	8
323	00	27	36.046	59	53	35.58	11.0	7	6	8
324	00	27	36.988	59	45	04.20	12.4	11	2	4
325	00	27	37.086	59	54	34.41	12.9	6	4	7
326	00	27	37.891	59	55	41.44	13.5	34	7	2
327	00	27	38.921	59	54	57.66	13.3	7	6	8
328	00	27	39.135	59	58	39.71	13.6	4	9	2
329	00	27	40.478	59	57	29.29	12.0	4	3	8
330	00	27	40.542	59	56	48.93	12.3	6	6	8

TABLE 1 (CONTINUED)

No. (1)	α h (2)	α m (2)	α s (2)	δ ° (3)	δ ′ (3)	δ ″ (3)	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
331	00	27	41.051	60	11	07.58	12.2	4	5	8
332	00	27	41.121	59	50	45.46	12.6	18	21	2
333	00	27	41.566	59	49	35.64	13.4	3	4	2
334	00	27	42.315	60	04	24.02	13.3	4	6	4
335	00	27	42.428	59	57	10.85	13.0	11	4	2
336	00	27	42.429	59	54	17.79	13.5	7	6	8
337	00	27	43.112	60	01	27.93	13.5	16	19	4
338	00	27	43.212	60	30	47.56	13.4	16	7	2
339	00	27	43.624	60	03	24.30	13.2	11	5	6
340	00	27	43.807	60	03	47.91	13.4	14	8	6
341	00	27	43.910	60	20	36.09	12.8	8	5	8
342	00	27	44.140	60	15	35.84	13.6	3	1	2
343	00	27	44.852	60	00	53.91	9.7	8	9	6
344	00	27	45.633	59	46	23.05	13.1	5	4	2
345	00	27	46.520	60	02	33.02	11.6	5	3	8
346	00	27	47.086	59	58	31,06	13.6	9	0	2
347	00	27	47.272	60	24	27.76	11.5	7	7	6
348	00	27	47.606	59	56	41.90	13.6	13	7	4
349	00	27	48.269	60	30	54.11	13.1	12	8	4
350	00	27	49.189	59	58	34.49	13.3	20	6	2
351	00	27	50.220	60	01	23.01	12.6	5	7	8
352	00	27	51.184	60	23	14.12	13.2	6	10	6
353	00	27	51.415	59	52	12.12	13.3	8	4	4
354	00	27	52.234	60	19	18.87	13.2	3	13	4
355	00	27	52.708	60	16	28.42	13.2	7	11	6
356	00	27	53.368	60	03	41.13	13.2	7	5	8
357	00	27	55.605	60	17	08.26	13.2	3	10	6
358	00	27	55.845	60	02	04.39	13.1	10	7	6
359	00	27	56.458	60	17	09.08	13.6	9	11	2
360	00	27	56.927	59	45	50.30	12.5	6	6	4
361	00	27	57.449	60	11	11.67	13.1	7	4	8
362	00	27	57.590	60	06	02.75	12.8	9	2	4
363	00	27	58.194	60	31	54.76	13.2	5	4	4
364	00	27	58.216	60	12	32.05	13.4	9	2	2
365	00	27	58.473	60	00	33.03	13.2	9	11	4
366	00	27	58.694	59	58	02.08	12.7	7	3	6
367	00	27	59.983	59	47	47.87	13.1	6	3	2
368	00	28	00.091	60	14	53.21	12.9	7	4	6
369	00	28	00.376	59	50	56.28	13.2	10	6	4
370	00	28	00.979	60	30	57.44	12.2	12	8	4
371	00	28	01.690	59	57	33.86	13.0	6	4	8
372	00	28	01.797	60	04	13.25	13.1	17	8	4
373	00	28	02.180	60	16	18.78	13.6	7	7	4
374	00	28	02.415	59	52	20.32	13.7	15	3	2
375	00	28	02.779	60	12	58.30	13.0	5	7	8
376	00	28	03.279	59	52	06.74	12.9	1	4	2
377	00	28	03.473	60	05	55.65	12.5	6	5	8
378	00	28	03.528	59	56	43.43	12.0	3	5	8
379	00	28	03.695	59	56	19.83	13.4	10	5	6
380	00	28	04.379	60	08	47.99	13.8	16	7	2
381	00	28	04.788	59	55	37.76	13.0	6	5	8
382	00	28	04.817	59	58	15.87	13.4	11	1	2
383	00	28	04.930	60	07	27.24	11.6	5	6	8
384	00	28	05.128	60	08	36.22	13.0	8	12	6
385	00	28	05.548	60	04	08.02	13.1	13	11	8
386	00	28	05.677	60	08	43.90	13.4	2	18	2
387	00	28	05.821	60	02	48.63	13.4	12	6	2
388	00	28	05.955	60	21	38.13	13.0	10	6	6
389	00	28	06.678	60	22	41.45	13.4	23	10	2
390	00	28	07.463	59	57	01.85	13.7	30	8	2
391	00	28	08.074	59	53	29.75	12.9	8	8	8
392	00	28	08.596	60	00	00.30	13.2	5	6	8
393	00	28	08.901	59	54	49.64	12.3	6	4	8
394	00	28	09.358	59	48	23.62	13.2	14	6	4
395	00	28	09.681	60	12	39.29	12.9	8	6	8
396	00	28	10.532	59	50	42.83	13.5	5	14	2
397	00	28	10.872	59	47	42.55	13.1	15	2	2
398	00	28	10.958	59	55	15.25	12.8	9	3	8
399	00	28	13.048	60	17	14.88	12.9	4	5	8
400	00	28	14.263	60	12	38.06	13.1	5	6	8
401	00	28	15.484	59	54	13.42	13.8	10	11	4
402	00	28	15.856	60	13	49.51	13.0	14	15	2
403	00	28	16.068	60	05	48.09	13.2	9	9	8
404	00	28	16.282	59	50	43.36	11.9	5	5	8
405	00	28	16.420	59	56	21.22	13.5	26	1	2
406	00	28	16.430	59	52	49.26	13.5	26	73	2
407	00	28	16.739	60	21	53.12	13.5	23	13	4
408	00	28	17.354	59	57	43.56	13.0	8	3	8
409	00	28	17.682	59	55	08.51	13.4	23	16	2
410	00	28	19.454	59	45	02.98	12.2	10	9	4
411	00	28	20.103	60	05	28.72	12.6	7	5	8
412	00	28	20.903	60	04	14.19	13.0	6	5	8

TABLE 1 (CONTINUED)

No. (1)	α h (2)	m	s	δ ° (3)	′	″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
413	00	28	21.187	59	57	22.87	13.7	32	20	2
414	00	28	22.396	60	17	56.44	12.5	6	4	8
415	00	28	25.886	59	59	58.63	13.2	8	9	8
416	00	28	26.058	59	53	25.26	13.1	24	16	2
417	00	28	26.159	60	21	40.78	13.2	10	7	6
418	00	28	26.469	60	07	21.46	12.3	5	4	8
419	00	28	26.550	60	24	14.74	13.5	6	7	2
420	00	28	27.203	60	14	15.11	13.3	10	3	4
421	00	28	27.798	59	46	30.21	13.2	8	1	2
422	00	28	29.558	60	31	31.73	12.4	3	7	4
423	00	28	30.322	60	07	58.74	13.2	19	4	2
424	00	28	30.647	60	08	32.37	13.3	24	4	2
425	00	28	30.731	59	54	21.48	12.5	6	3	8
426	00	28	32.698	59	57	52.80	13.3	9	5	8
427	00	28	33.579	60	04	55.81	13.5	30	5	2
428	00	28	34.027	60	29	58.13	10.6	16	6	4
429	00	28	34.040	60	24	43.77	11.7	10	12	6
430	00	28	34.260	59	54	09.43	13.3	13	7	8
431	00	28	34.381	60	02	25.66	13.4	25	2	2
432	00	28	36.161	60	04	06.87	13.3	14	6	2
433	00	28	36.484	59	58	46.62	8.1	8	8	8
434	00	28	37.348	59	58	35.10	13.2	8	5	8
435	00	28	38.625	60	04	34.28	12.5	5	5	8
436	00	28	38.995	59	56	07.62	13.1	6	4	8
437	00	28	39.118	60	05	38.63	13.5	25	1	2
438	00	28	39.329	60	32	31.73	13.3	11	0	4
439	00	28	42.174	59	57	18.84	12.6	7	3	8
440	00	28	42.506	59	53	47.10	9.1	16	4	8
441	00	28	44.110	59	47	46.40	8.5	17	8	2
442	00	28	44.262	60	14	54.41	11.4	5	6	6
443	00	28	46.032	60	09	19.26	13.1	9	9	8
444	00	28	46.351	60	32	54.58	13.0	10	6	4
445	00	28	46.371	60	14	20.82	12.9	5	7	4
446	00	28	47.217	60	10	36.48	12.9	10	10	8
447	00	28	48.621	60	10	08.82	12.8	6	2	8
448	00	28	49.188	60	06	12.57	13.2	5	4	8
449	00	28	49.269	59	58	46.40	7.7	20	5	8
450	00	28	50.278	59	48	01.80	12.3	18	6	4
451	00	28	51.215	59	57	12.90	13.2	6	7	6
452	00	28	52.232	59	54	28.59	13.2	4	5	8
453	00	28	52.375	60	06	33.29	13.1	10	4	8
454	00	28	52.685	60	04	31.17	12.9	7	4	8
455	00	28	53.926	60	24	28.88	11.4	8	9	6
456	00	28	54.088	60	10	11.65	12.7	7	3	8
457	00	28	54.142	60	19	30.46	12.9	7	6	8
458	00	28	54.254	59	59	14.24	10.0	9	8	8
459	00	28	54.540	60	15	31.48	13.3	14	5	4
460	00	28	55.019	60	06	13.54	13.9	11	21	4
461	00	28	55.198	59	50	02.87	13.6	7	14	2
462	00	28	55.736	60	06	50.20	12.8	7	5	8
463	00	28	56.367	59	59	14.63	13.0	8	6	8
464	00	28	58.640	60	12	33.37	13.2	6	4	6
465	00	28	58.646	60	17	32.68	10.9	8	7	8
466	00	28	59.369	59	57	33.82	12.4	3	3	8
467	00	29	01.474	59	52	53.74	13.2	9	5	8
468	00	29	01.866	59	54	23.35	13.4	5	6	2
469	00	29	02.920	59	51	15.51	10.8	6	12	8
470	00	29	03.021	60	02	17.17	13.6	39	8	2
471	00	29	03.205	60	07	50.04	13.1	9	3	8
472	00	29	03.832	59	51	08.96	12.1	5	3	8
473	00	29	04.086	60	12	25.43	12.8	5	6	8
474	00	29	04.402	59	53	57.03	13.4	4	3	2
475	00	29	04.511	60	01	05.35	13.3	24	10	2
476	00	29	05.238	59	59	54.08	13.5	9	15	2
477	00	29	06.015	59	55	28.41	13.3	6	6	8
478	00	29	07.333	59	48	16.40	12.7	11	2	4
479	00	29	07.484	60	01	20.56	13.4	20	9	2
480	00	29	07.794	60	28	07.00	13.0	19	4	4
481	00	29	07.920	60	19	26.03	13.4	11	4	6
482	00	29	08.818	59	52	59.91	12.1	5	3	8
483	00	29	14.272	60	21	45.82	13.4	15	6	4
484	00	29	14.488	60	05	09.62	13.1	11	6	4
485	00	29	14.732	59	56	49.35	13.4	13	18	2
486	00	29	15.656	60	04	21.43	12.2	7	4	8
487	00	29	15.820	60	33	24.80	13.1	9	1	2
488	00	29	16.054	60	00	07.56	13.3	14	10	4
489	00	29	16.556	60	22	00.03	11.8	11	11	6
490	00	29	16.605	59	52	56.83	13.6	16	1	2
491	00	29	16.636	60	07	14.55	12.7	5	4	8
492	00	29	16.680	60	22	03.32	11.1	10	7	6
493	00	29	16.784	60	12	14.86	13.5	20	14	2
494	00	29	19.009	60	13	53.05	13.0	9	4	6

TABLE 1 (CONTINUED)

No. (1)	α h	α m (2)	α s	δ °	δ ′ (3)	δ ″	V (4)	rmsα 0.0001s (5)	rmsδ 0.001″ (6)	No. of images (7)
495	00	29	19.063	60	23	06.06	12.7	10	7	6
496	00	29	20.848	60	32	26.19	12.8	8	8	4
497	00	29	22.297	60	16	28.05	13.5	9	21	2
498	00	29	22.502	60	24	41.46	13.6	0	10	2
499	00	29	25.049	60	07	22.93	12.4	8	4	8
500	00	29	26.137	60	28	57.23	13.6	20	13	2
501	00	29	26.559	60	00	27.13	13.4	2	0	2
502	00	29	26.652	60	15	57.62	13.1	7	11	4
503	00	29	27.558	60	09	57.74	11.6	5	3	8
504	00	29	28.046	60	28	50.52	12.8	8	3	4
505	00	29	30.853	60	01	03.79	13.3	13	4	2
506	00	29	32.009	59	49	29.85	12.9	4	3	4
507	00	29	32.025	60	09	29.29	12.9	6	3	8
508	00	29	32.655	59	48	08.03	13.0	2	11	2
509	00	29	33.470	60	24	00.02	12.5	9	12	6
510	00	29	33.588	59	52	07.53	12.3	4	6	6
511	00	29	34.370	60	10	38.64	13.5	13	3	4
512	00	29	34.873	60	05	10.34	13.5	17	28	2
513	00	29	34.972	60	06	41.15	13.5	14	5	2
514	00	29	34.973	60	02	19.16	10.5	27	2	2
515	00	29	35.211	60	05	12.09	13.6	15	21	2
516	00	29	37.197	60	05	14.97	13.5	13	13	2
517	00	29	37.547	59	46	28.66	13.4	9	10	2
518	00	29	38.507	60	14	58.27	13.4	10	16	4
519	00	29	40.914	60	19	57.35	13.4	9	8	6
520	00	29	41.637	60	03	47.53	13.3	12	6	4
521	00	29	42.923	59	48	34.81	13.4	25	6	2
522	00	29	43.189	60	07	52.88	13.1	8	11	6
523	00	29	43.504	60	18	42.10	12.5	6	4	8
524	00	29	43.954	60	00	42.98	13.2	7	11	8
525	00	29	46.720	60	24	47.06	11.5	11	18	6
526	00	29	47.377	59	51	21.35	13.3	2	9	2
527	00	29	48.487	60	20	08.01	11.1	7	6	8
528	00	29	49.458	60	02	03.14	13.2	7	6	8
529	00	29	49.993	59	50	40.90	13.6	6	0	2
530	00	29	50.566	60	15	52.46	13.3	5	3	6
531	00	29	51.472	60	22	25.18	13.1	20	5	6
532	00	29	51.983	60	04	13.10	13.1	9	8	6
533	00	29	53.702	60	24	33.65	13.5	11	15	5
534	00	29	54.079	60	04	03.61	13.2	19	10	4
535	00	29	55.368	59	47	20.26	13.0	4	10	2
536	00	30	00.998	60	04	03.48	12.8	31	24	2
537	00	30	02.761	60	05	36.61	13.1	11	7	4

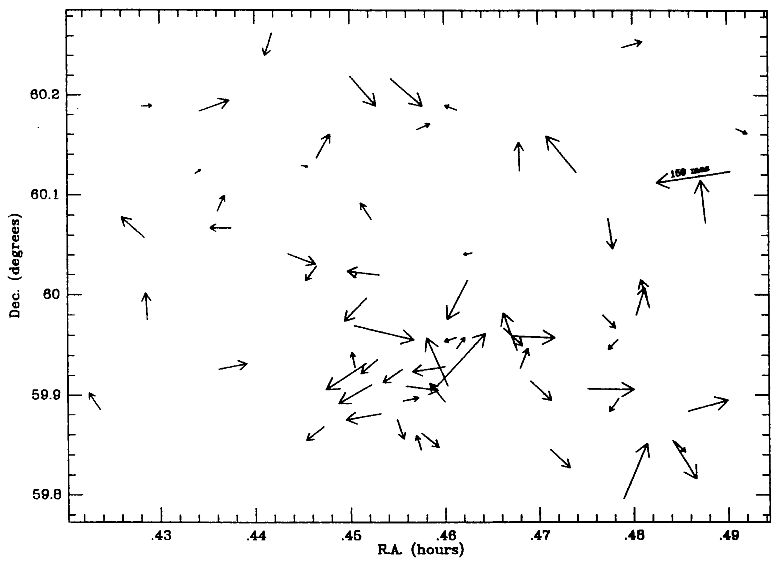

Fig. 1. Position residuals of the data given by De Vegt with respect to our final catalog.

as reference system. The epoch of these positions is 1977.11. Proper motions were derived by deVegt (1983), using the positions derived from the respective coordinates of the Astrographic Catalogue with a mean epoch of 1906.28. The final coordinates derived from our plates are listed in Table 1, together with their respective mean errors. The description is as follows: col. (1) running number; cols. (2) and (3), R.A. and declination equinox 1950.0, epoch 1981.70; col. (4) average visual magnitude; col. (5) mean error in R.A. in units of 0.0001 seconds of time; col. (6) mean error in declination, in units of 0.001 seconds of arcs; col. (7) number of measured images.

4. RECOVERY OF OTHER EPOCHS

The epoch of the positions given by deVegt is too close to our epoch to permit the derivation of proper motions. However, from the positions and proper motions given by deVegt the positions of his first epoch, namely that of the plates of the Astrographic Catalogue, could readily be recovered. In this form we obtained two additional epochs for a total of 65 stars and positions only (1977.11) for an additional 15 stars.

Another source of positions is a paper published by Lenham & Franz in 1961. It gives rectangular coordinates X and Y as well as proper motions for the equinox and epoch 1950.0 for 70 stars. These data were derived from two plate pairs taken with the Yerkes refractor, one with the mean epoch 1916.78, the other with the mean epoch 1958.84. With the above data, rectangular coordinates could then be derived for the two mentioned epochs. These were then reduced with the same method that was applied to our plates, using again the data by deVegt as reference system. A study of the residuals with arrow diagrams made it clear that there was no need to include second order or magnitude dependent terms in the reductions. An example of such arrow diagrams is shown in Figure 1.

For 14 of the stars measured by us, positions and proper motions are found in the AGK3 catalogue. From it, two additional epochs, namely 1929.81 and 1956.84, could be recovered for these stars.

The entire set of epochs is listed in Table 2.

5. THE PROPER MOTIONS

Proper motions could be calculated for every star with more than one position. An improved position for the epoch 1981.70 could be calculated also, for

TABLE 2

COMPLETE SET OF EPOCHS

Source	Epoch	Weight
Astrographic Catalogue	1906.28	1.0
Lenham & Franz, 1st epoch	1916.78	1.0
AGK2	1929.81	0.3
AGK3	1956.84	0.3
Lenham & Franz, 2nd epoch	1958.84	0.7
deVegt	1977.11	1.0
this paper	1981.70	1.0

all stars with more than two positions. In a first approach average residuals were derived for each of the seven sources. From these, weights were derived for each of the sources, and subsequently new positions and proper motions were derived applying these weights. The latter are listed in Table 2.

In Table 3, we present the final positions. The description is as follows: col. (1) number; col. (2) R.A. equinox 1950.0, epoch 1981.70; col. (3) rms error in R.A. in seconds of time; col. (4) declination equinox 1950.0, epoch 1981.70; col. (5) rms error in declination in seconds of arc; cols. (6)–(7) proper motion in R.A. and respective rms error in units of 0.001 seconds of arc per year; cols. (8)–(9): proper motion in declination and respective rms error in units of 0.001 seconds of arc per year; col. (10) total weight; col. (11) number of epochs that had contributed to the final positions.

Figure 2 shows the point diagram of the proper motions with their respective error bars in mas y^{-1} in both coordinates. The diagram is restricted to the range $\pm$ 22 mas y^{-1} in right ascension and

TABLE 3

POSITIONS AND PROPER MOTIONS

No. (1)	α h m s (2)	rmsα s (3)	δ ° ′ ″ (4)	rmsδ ″ (5)	μ_α mas y^{-1} (6)	rmsμ_α mas y^{-1} (7)	μ_δ mas y^{-1} (8)	rmsμ_δ mas y^{-1} (9)	Total weight (10)	No. of Epochs (11)
9	0 24 14.7825	0.0021	60 07 32.566	0.094	151.3	0.6	117.4	3.8	1.6	3
24	0 24 23.9170	0.0154	60 23 25.679	0.037	11.7	4.6	0.8	1.5	1.6	3
59	0 24 57.2072	0.0048	59 45 08.007	0.128	−7.2	1.5	−8.5	5.1	1.6	3
69	0 25 06.2321	0.0076	60 16 54.762	0.148	7.0	2.3	0.4	5.9	1.6	3
70	0 25 07.0582	0.0009	60 20 55.904	0.063	0.5	0.3	1.6	2.5	1.6	3
92	0 25 25.4042	0.0085	59 53 07.262	0.081	−0.1	1.4	4.0	1.7	4.7	5
94	0 25 28.8554	0.0088	59 59 52.134	0.089	4.0	1.6	2.3	2.1	2.7	3
106	0 25 41.3262	0.0063	60 11 19.363	0.022	−5.9	1.0	7.8	0.5	4.7	5
108	0 25 42.1538	0.0039	60 03 28.233	0.046	1.0	0.8	3.2	1.3	3.7	4
111	0 25 43.2999	0.0057	59 58 30.654	0.037	−1.0	0.9	4.5	0.8	4.7	5
115	0 25 50.8660	0.0039	60 03 58.840	0.001	−9.3	0.7	4.8	0.0	2.7	3
123	0 25 55.8404	0.0096	60 19 48.029	0.041	−13.3	2.8	−16.3	1.6	1.6	3
128	0 26 01.4494	0.0019	60 07 16.303	0.023	−2.5	0.3	5.3	0.5	4.7	5
131	0 26 03.0789	0.0080	60 11 01.492	0.040	1.7	1.7	5.6	1.1	3.7	4
141	0 26 09.8616	0.0031	60 05 03.528	0.008	−0.1	0.5	7.3	0.2	4.7	5
142	0 26 10.2556	0.0053	59 55 33.660	0.071	−3.1	0.8	2.3	1.5	4.7	5
151	0 26 14.5400	0.0019	60 08 49.775	0.029	4.3	0.3	6.2	0.7	2.7	3
153	0 26 14.9827	0.0029	60 04 03.551	0.029	−3.9	0.5	5.6	0.6	4.7	5
159	0 26 16.6150	0.0039	60 09 55.373	0.101	−9.3	0.7	−2.2	2.5	2.7	3
169	0 26 24.7266	0.0050	59 55 37.601	0.097	−2.2	0.9	−7.3	2.4	2.7	3
178	0 26 30.6880	0.0049	60 15 46.505	0.045	−2.7	0.8	8.8	1.0	4.7	5
180	0 26 30.7844	0.0026	60 08 30.717	0.013	−0.8	0.5	5.7	0.3	2.7	3
190	0 26 33.9803	0.0071	59 52 14.368	0.023	59.6	1.3	36.0	0.6	2.7	3
195	0 26 36.5399	0.0067	60 02 29.143	0.030	−9.8	1.1	7.0	0.6	4.7	5
205	0 26 41.8742	0.0052	60 07 45.952	0.028	−5.1	0.8	5.4	0.6	4.7	5
210	0 26 44.9590	0.0039	60 04 18.252	0.042	54.5	0.7	−3.1	1.0	2.7	3
211	0 26 45.1405	0.0029	60 04 00.595	0.010	5.8	0.5	10.4	0.2	2.7	3
212	0 26 46.0358	0.0007	59 57 06.813	0.004	−3.3	0.1	2.4	0.1	4.7	5
214	0 26 47.4335	0.0058	60 01 43.638	0.013	−2.7	0.9	3.1	0.3	4.7	5
215	0 26 47.5464	0.0054	60 08 12.860	0.054	−1.5	0.9	8.3	1.2	4.7	5
224	0 26 49.8706	0.0064	59 52 05.998	0.042	−0.5	1.0	2.6	0.9	4.7	5
229	0 26 53.6505	0.0144	59 59 30.321	0.117	−1.0	2.6	10.3	2.8	2.7	3
243	0 27 00.2265	0.0056	60 13 09.155	0.063	−1.7	0.9	6.6	1.3	4.7	5
248	0 27 01.7073	0.0040	59 58 10.079	0.127	−4.4	0.7	3.5	2.9	3.0	3
249	0 27 01.7659	0.0041	59 55 42.024	0.006	−6.6	0.7	−0.5	0.1	3.0	3
252	0 27 02.6197	0.0042	60 01 16.202	0.019	−2.2	0.7	4.5	0.4	4.7	5
256	0 27 04.3390	...	59 57 00.430	...	−3.3	...	6.5	...	4.7	2

TABLE 3 (CONTINUED)

No.	α h m s	rmsα s	δ ° ′ ″	rmsδ ″	μ_α mas y^{-1}	rmsμ_α mas y^{-1}	μ_δ mas y^{-1}	rmsμ_δ mas y^{-1}	Total weight	No. of Epochs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
260	0 27 06.1275	0.0073	59 55 55.278	0.046	−1.7	1.2	2.8	1.0	4.7	5
261	0 27 06.2475	0.0041	59 59 48.511	0.038	−3.3	0.7	0.8	0.8	4.7	5
264	0 27 06.6310	...	59 53 56.570	...	8.2	...	2.2	...	4.7	2
267	0 27 08.1271	0.0042	59 54 37.638	0.056	−3.6	0.7	1.7	1.2	4.7	5
268	0 27 08.1712	0.0056	60 04 34.992	0.015	−2.1	0.9	4.3	0.3	4.7	5
271	0 27 10.3759	0.0069	59 56 09.153	0.045	−5.1	1.1	1.6	1.0	5.3	7
274	0 27 11.0902	0.0052	60 01 11.288	0.035	−9.4	0.8	2.1	0.7	4.7	5
275	0 27 11.5286	0.0024	59 52 51.439	0.038	1.5	0.4	−1.1	0.8	4.7	5
279	0 27 15.7046	0.0062	60 13 00.149	0.035	−2.1	1.0	8.1	0.7	4.7	5
282	0 27 17.7750	0.0052	59 52 30.240	0.056	−2.3	0.8	0.9	1.2	5.3	7
283	0 27 18.3190	...	59 51 33.090	...	0.0	...	8.7	...	5.3	2
285	0 27 18.6710	...	59 51 06.620	...	−23.0	...	32.7	...	5.3	2
288	0 27 19.8092	0.0030	59 55 33.738	0.030	−4.3	0.5	1.5	0.6	4.7	5
290	0 27 20.0179	0.0010	59 53 39.001	0.033	−3.5	0.2	3.2	0.8	3.0	3
293	0 27 21.2238	0.0012	59 54 33.074	0.069	−3.9	0.2	0.7	1.6	3.0	3
295	0 27 21.4692	0.0003	59 49 56.986	0.006	−2.5	0.0	0.5	0.1	3.0	3
304	0 27 25.7993	0.0037	60 09 56.179	0.040	−1.8	0.6	10.1	0.8	4.7	5
307	0 27 26.8107	0.0040	59 50 41.980	0.010	−0.4	0.7	4.4	0.2	3.0	3
308	0 27 26.9528	0.0032	59 51 41.905	0.021	−1.9	0.5	2.7	0.4	4.7	5
316	0 27 33.0595	0.0121	59 54 34.508	0.059	176.0	2.0	92.2	1.3	5.3	7
321	0 27 34.9760	...	59 57 06.050	...	−14.7	...	19.6	...	5.3	2
322	0 27 35.9680	0.0059	59 55 43.280	0.043	−2.3	1.0	2.4	0.9	4.7	5
323	0 27 36.0523	0.0037	59 53 35.542	0.022	−2.3	0.6	2.3	0.5	4.7	5
325	0 27 37.0988	0.0136	59 54 34.368	0.045	−2.7	2.3	5.0	1.0	3.0	3
327	0 27 38.9210	...	59 54 57.660	...	−13.1	...	−4.4	...	3.0	2
329	0 27 40.4786	0.0023	59 57 29.268	0.015	−2.6	0.4	2.6	0.3	4.7	5
330	0 27 40.5478	0.0045	59 56 48.996	0.045	−3.3	0.7	3.1	1.0	4.7	5
331	0 27 41.0535	0.0033	60 11 07.622	0.085	−3.7	0.5	7.9	1.8	4.7	5
336	0 27 42.4290	...	59 54 17.790	....	−21.3	...	6.5	...	4.7	2
343	0 27 44.8353	0.0095	60 00 53.865	0.026	26.3	1.5	0.1	0.5	4.7	5
345	0 27 46.5228	0.0067	60 02 32.996	0.022	−1.0	1.1	4.0	0.5	4.7	5
366	0 27 58.6893	0.0050	59 58 02.117	0.040	−1.1	0.9	3.6	0.9	3.0	3
371	0 28 01.6895	0.0005	59 57 33.947	0.093	0.0	0.1	6.5	2.1	3.0	3
377	0 28 03.4722	0.0015	60 05 55.678	0.055	−27.0	0.3	−2.6	1.3	2.7	3
378	0 28 03.5364	0.0068	59 56 43.422	0.034	−0.2	1.1	2.8	0.7	4.7	5
381	0 28 04.7933	0.0056	59 55 37.776	0.017	−0.2	1.0	2.9	0.4	3.0	3
383	0 28 04.9343	0.0046	60 07 27.258	0.023	−2.7	0.7	5.6	0.5	4.7	5
393	0 28 08.8992	0.0040	59 54 49.719	0.047	−3.8	0.6	2.8	1.0	4.7	5
398	0 28 10.9580	...	59 55 15.250	...	13.1	...	−6.5	...	4.7	2
404	0 28 16.2760	0.0037	59 50 43.396	0.035	2.9	0.6	3.7	0.7	4.7	5
408	0 28 17.3540	...	59 57 43.560	...	1.6	...	−8.7	...	4.7	2
418	0 28 26.4725	0.0060	60 07 21.455	0.048	−0.2	1.0	6.8	1.0	4.7	5
425	0 28 30.7321	0.0028	59 54 21.549	0.060	−3.6	0.5	1.7	1.3	4.7	5
433	0 28 36.4766	0.0062	59 58 46.551	0.074	3.5	1.0	−4.6	1.6	5.3	7
434	0 28 37.3480	...	59 58 35.100	...	13.1	...	−56.6	...	5.3	2
435	0 28 38.6215	0.0052	60 04 34.280	0.039	−3.4	0.8	6.5	0.8	4.7	5
439	0 28 42.1709	0.0097	59 57 18.785	0.100	−6.2	1.6	1.1	2.1	4.7	5
440	0 28 42.4957	0.0064	59 53 46.995	0.078	−5.0	1.0	3.3	1.7	5.3	7
441	0 28 44.1271	0.0101	59 47 46.416	0.044	5.9	1.8	1.4	1.0	3.6	5
442	0 28 44.2597	0.0041	60 14 54.439	0.049	0.7	0.7	4.8	1.0	4.7	5
449	0 28 49.2703	0.0059	59 58 46.331	0.049	0.1	1.0	1.8	1.1	5.3	7

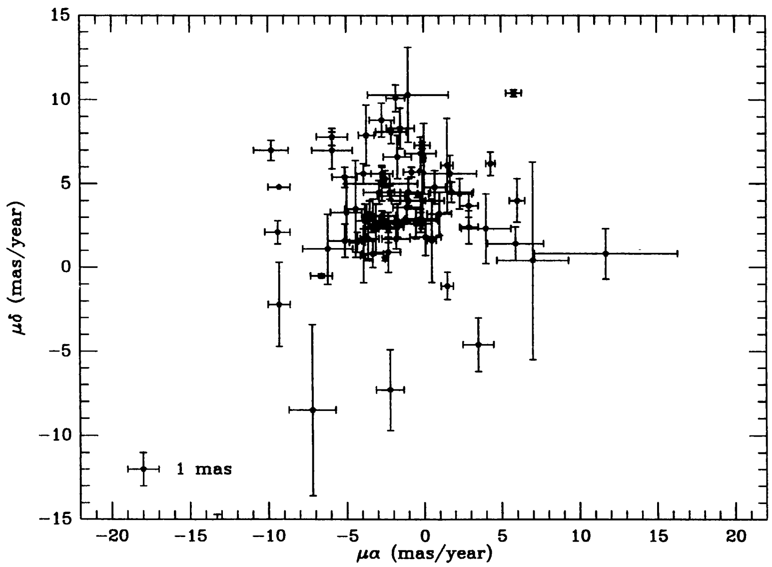

Fig. 2. Point diagram of proper motions for stars considered as probable members in this paper.

± 15 mas y^{-1} in declination. It becomes evident from the diagram that the scatter around a central value significantly exceeds the mean errors of the data, a fact which makes it difficult to assign membership probabilities to every point in the diagram as long as it is not clear how much of the scatter is due to internal motions. Schmidt (1980) derived membership probabilities for a number of stars in the area on the basis of a photometric study in the Strömgren narrow-band system. A point diagram of proper motions restricted to the stars wich are considered as probable members by Schmidt is shown in Figure 3. It is obviously desirable to extend the photometric study to more stars, and hence to more probable cluster members in order to verify the reality of the asymmetric appearance of the diagram. Recently Turner, Forbes, & Pedredos (1992) made a compilation of various photometric studies and de-

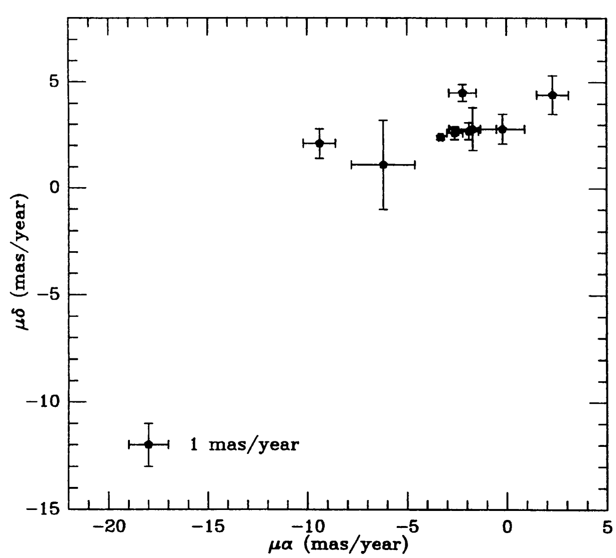

Fig. 3. Point diagram of proper motions for stars considered as probable members by Schmidt.

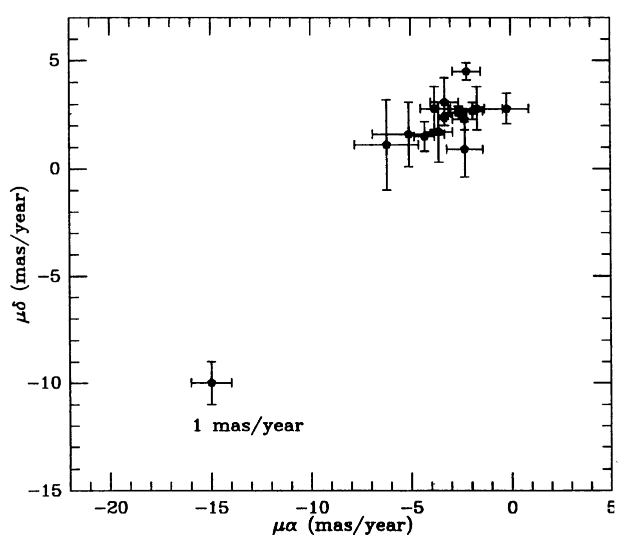

Fig. 4. Point diagram of proper motions for stars considered as probable members by Turner et al.

rived membership probabilities for a larger number of stars. The respective point diagram is shown in Figure 4. Radial velocities were observed by Kraft (1958) for eleven stars in the area. Of these he considered four stars as cluster members. For these we derived an internal dispersion of the radial velocities of 5.0 km s^{-1}. Using the average distance modulus of several authors of 11.0 magnitudes, we find that the internal motion of the cluster members in the direction of right ascension corresponds to 10.9 km s^{-1} and in declination to 5.6 km s^{-1}, based on members determined by Turner et al. (1992).

6. THE MAGNITUDES

Image diameters were estimated during the measuring process. These estimates were then transformed into visual magnitudes, using the photometric data given by Arp, Sandage, & Stephens (1959) for the calibration. The averaged magnitudes are included in Table 1.

This work was financially supported by project F-139 of the Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICIT). We also thank I. Inciarte for helping in the edition of the latex files.

REFERENCES

Arp, H., Sandage, A., & Stephens, C. 1959, ApJ, 130, 80
Cudworth, K. M. 1979, AJ, 84, 1312
de Vegt, Chr. 1983, private communication
Kraft, R. P. 1958, ApJ, 128, 161
Lenham, A. P. & Franz, O. G. 1961, AJ, 66, 16
Schmidt, E. G. 1980, AJ, 85, 695
Stock, J. 1981, RevMexAA, 6, 115
Turner, D. G. Forbes, D., & Pedredos, M. 1992, AJ, 104, 1132

Jeanette Stock: Facultad Experimental de Ciencias, Depto. de Física, Unidad Académica de Astrofísica, Apartado 15439, Maracaibo, Venezuela (jstock@ciens.luz.ve).
Jurgen Stock: Centro de Investigaciones de Astronomía, (CIDA), Apartado Postal 264, Mérida 5101-A, Venezuela.