

NGC 7245 ve NGC 7226 nin üç renk fotometresi Three-colour photometry of NGC 7245 and NGC 7226

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Özet : Daha önce RGU üç renk fotometre sistemi ile incelenen NGC 7245 ve NGC 7226 kümeleri şimdi de UBV sistemi ile incelenmiş ve "Çakıştırma Metodu" ile hesaplanan uzaklıklar bundan önce bulunan değerlerle karşılaştırılmıştır.

Summary : Three-Colour photometry of the clusters NGC 7245 and NGC 7226 have been studied in UBV system and their distances determined with the "Fitting Method" have been compared with those found in RGU system.

Plates which were taken by W. BECKER with the 122 cm. reflector of the Assiago Observatory in 1963 for NGC 7245 and in 1966 for NGC 7226 were not available for the studying of these clusters until today because of absence of photoelectric UBV - magnitudes. In 1969 the studying of these clusters in RGU system using other available plates taken with the 48" Palomar Schmidt telescope (1) gave us the opportunity to use BECKER's plates and discuss the results of UBV and RGU systems.

Five plates in U, four plates in B and five plates in V are used for the cluster NGC 7245 and they were measured with Iris - photometer in BASEL. For the other cluster three plates in U, four plates in B and three plates in V are used and were measured with Askania - photometer in Istanbul.

NGC 7245

The coordinates of the cluster are

$$\begin{aligned} l^{11} &= 101^{\circ}.4 & \text{R.A.} &= 22^{\text{h}} 13^{\text{m}}.4 \\ b^{11} &= -1^{\circ}.9 & \text{Decl.} &= +54^{\circ} 05' \end{aligned} \quad (1950)$$

In this cluster 160 stars were measured with a limiting magnitude of $16^{\text{m}}.5$ in V. The data are given in Table I ; remarks in the last column gives : (1) physical members ; (2) non - members and (bl.) blend. Both colour - magnitude diag-

rams (CMD) ($V, B - V$) and ($V, U - B$) are given in Fig. 1. 117 of the stars are considered as physical members for they lie on the main - sequence, 7 stars are also considered as physical members although they do not lie on the main sequence but on a horizontal branch which indicate that they are giants. The rest are field stars. The "Fitting - Method" used in Basel leads to the following results :

$$\begin{aligned}(m - M) &= 12^m.20 \\ E(B - V) &= 0.41 \\ E(U - B) &= 0.31 \\ \text{Absorption (V)} &= 1.23 \\ (m - M)_0 &= 10.97 \\ \text{Distance} &= 1560 \text{ pc.}\end{aligned}$$

NGC 7226

The coordinates of this cluster are

$$\begin{aligned}l^{11} &= 101^\circ.4 & \text{R. A.} &= 22^h 8^m.7 \\ b^{11} &= -0^\circ.6 & \text{Decl.} &= +55^\circ 10'\end{aligned}$$

The stars in NGC 7226 are faint in U therefore less stars were measured with respect to the other cluster (92 stars). The limit magnitude here does not exceed 16^m . The data are given in Table 2. Stars lying on the main - sequence and on the horizontal giant branch in CMD (Fig. 2) have been considered as physical members (68 stars) while the rest seem to be field stars (24 stars). The "Fitting - Method" used in Basel leads to the following results :

$$\begin{aligned}(m - M) &= 13.^m60 \\ E(B - V) &= 0.55 \\ E(U - B) &= 0.39 \\ \text{Absorption (V)} &= 1.65 \\ (m - M)_0 &= 11.95 \\ \text{Distance} &= 2450 \text{ pc.}\end{aligned}$$

Conclusion : If we compare the distances found in two systems it is seen that UB V system gives a distance 370 pc. nearer with respect to RG U system for NGC 7245 and 210 pc. farther for NGC 7226. Both differences are due partly to different limit magnitudes of the two systems and partly to the absence of photoelectric UB V - magnitudes in the present work. Also it is of interest to compare the colour indices in the two systems : the differences between the $E(B - V)$ of this work and those transferred from $E(G - R)$ (2) of previous work are only $0^m.08$ for NGC 7245 and $0^m.06$ for NGC 7226. But scattering is more prominent here.

Finally, I wish to express my gratitude to Prof. Dr. W. BECKER who suggested that I examine this work and gave to me all the necessary material.

REFERENCES

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- (2) STEINLIN, U. W. : *Z. Astrophys.* 69, 276, 1968

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Table 1

Star (*)	V	(B - V)	(U - B)	Remarks	Star (*)	V	(B - V)	(U - B)	Remarks	Star (*)	V	(B - V)	(U - B)	Remarks
1	—	—	—		76	14.67	0.87	0.37	1	150	15.49	0.75	0.44	1
2	15.09	0.84	0.31	1	76a	16.39	0.81	0.42	1	151	15.40	0.72	0.32	1
3	14.62	1.10	0.26	2,bl	77	14.16	0.51	0.30	1,bl.	152	13.62	0.74	0.31	1
4	—	—	—		78	—	—	—	bl.	153	13.88	0.99	-0.04	2, bl.
5	15.11	1.18	0.50	2	79	—	—	—	bl.	154	13.27	0.51	0.34	1
6	14.48	0.52	0.30	1	80	—	—	—	bl.	155	15.67	1.00	0.34	2
7	15.03	1.58	0.78	2	81	13.25	1.39	0.59	1	156	15.06	0.66	0.39	1
8	15.25	0.97	0.18	2	82	15.39	0.66	0.41	1	157	15.78	1.07	0.42	2, bl.
9	12.91	-0.01	0.76	2	83	14.33	0.63	0.32	1	158	14.93	1.73	0.94	2
10	16.08	0.96	0.26	1	84	15.64	0.73	0.49	1	159	14.61	0.99	0.18	2
11	13.95	0.39	0.28	1	85	15.74	0.74	0.38	1	160	13.73	1.27	0.30	1
12	15.51	0.93	0.48	1	86	15.15	0.98	0.18	2	161	15.85	1.40	0.72	2
13	13.03	0.50	0.37	1	87	13.83	0.57	0.33	1	162	15.20	0.71	0.41	1
14	13.58	0.99	0.17	2	88	15.98	0.83	0.41	1,bl.	163	13.20	0.51	0.56	1, bl.
15	14.62	0.64	0.28	1	89	15.92	0.81	0.41	1,bl.	164	—	—	—	bl.
16	15.63	0.77	0.47	1	90	15.38	0.75	0.39	1	165	13.88	0.56	0.30	1
17	14.96	0.61	0.27	1	91	14.03	0.53	0.20	1	166	16.07	0.82	0.33	1
18	14.94	0.86	0.15	2	92	13.78	0.44	0.19	1	167	15.96	0.89	0.32	1
19	16.29	0.56	0.37	2	93	16.48	0.73	0.41	1	168	16.32	0.85	0.44	1
20	15.47	0.81	0.40	1	94	15.13	1.07	0.35	2,bl.	169	15.95	0.78	0.48	1
21	15.77	0.96	0.30	1	95	16.28	0.85	0.34	1	170	15.34	0.64	0.40	1
22	16.44	0.85	0.27	1	96	15.84	0.74	0.48	1					
23	13.67	0.30	—	bl.	97	15.00	0.95	0.20	2					
24	14.14	0.47	0.33	1	98	15.67	0.85	0.42	1,bl.					
25	14.50	0.56	0.31	1	99	15.16	0.67	0.35	1					
26	15.38	0.70	0.44	1	100	15.01	0.70	0.35	1					
27	14.94	1.50	0.82	2	101	15.44	0.95	0.28	1					
28	15.75	0.86	0.36	1	102	15.60	1.17	0.48	2					
29	15.43	0.70	0.43	1	103	13.36	1.54	0.79	1					
30	16.15	0.82	0.36	1	104	15.09	0.64	0.36	1					
31	16.00	0.93	0.30	1	105	15.95	0.89	0.32	1					
32	14.03	0.44	0.26	1	106	14.47	0.57	0.23	1					
33	14.85	0.64	0.37	1	107	14.90	0.74	0.31	1					
34	15.21	0.72	0.39	1,bl.	108	16.40	0.78	0.39	1,bl.					
35	14.70	0.80	0.40	1,bl.	109	16.43	0.85	0.36	1,bl.					
36	13.35	1.09	0.52	1	110	15.71	0.80	0.41	1					
37	15.27	0.93	0.19	2	111	14.98	0.64	0.42	1					
38	15.30	1.04	0.28	2	112	13.73	0.52	0.38	1					
39	15.42	0.84	0.37	1	113	14.73	0.70	0.33	1,bl.					
40	14.56	0.72	0.30	1	114	14.72	0.65	0.36	1,bl.					
41	15.67	1.36	0.72	2	115	15.07	0.70	0.39	1					
42	14.73	0.96	0.18	2	116	15.61	0.83	0.45	1					
43	15.11	0.68	0.32	1	117	14.44	0.69	0.27	1					
44	16.25	0.75	0.28	1	118	—	—	—	bl.					
45	14.66	0.68	0.30	1	119	15.79	0.70	0.43	1					
46	15.49	0.94	0.27	1	120	14.23	0.72	0.40	1					
47	15.74	1.01	0.38	2	121	14.88	0.93	0.20	2					
48	14.02	1.69	0.90	2	122	14.27	0.67	0.25	1					
49	15.73	0.78	0.48	1	123	14.70	0.67	0.31	1					
50	15.51	0.93	0.21	1	124	15.12	0.77	0.34	1					
51	15.50	0.81	0.36	1	125	14.83	1.26	0.55	2,bl					
52	16.13	0.90	0.30	1	126	15.07	0.73	0.39	1,bl.					
53	14.83	1.03	0.15	2	127	13.61	—	—	bl.					
54	16.16	0.79	0.31	1	128	—	—	—	bl.					
55	16.07	0.73	0.41	1	129	14.58	0.70	0.24	1					
56	13.21	0.90	0.18	1	130	16.06	0.73	0.40	1					
57	15.05	1.50	0.67	2	131	14.90	0.69	0.33	1					
58	13.13	1.49	0.73	1	132	16.30	0.96	0.32	1					
59	16.40	0.72	0.34	1	133	15.53	0.72	0.41	1					
60	15.45	1.40	0.67	2	134	14.34	0.78	0.39	1,bl.					
61	14.40	0.75	0.28	1	135	14.48	0.61	0.28	1					
62	13.93	0.54	0.21	1	136	14.80	1.67	1.03	2					
63	16.12	0.74	0.43	1	137	14.97	0.75	0.38	1					
64	13.50	0.42	0.37	1	138	14.05	0.66	0.21	1					
65	16.17	0.80	0.34	1	139	14.76	1.69	0.94	2,bl.					
66	16.09	0.97	0.47	1	140	15.01	0.74	0.34	1					
67	15.83	0.82	0.47	1,bl.	141	15.22	0.94	0.18	2					
68	15.84	1.18	0.59	2,bl.	142	16.15	0.93	0.34	1					
69	16.01	0.85	0.42	1	143	14.96	0.65	0.29	1,bl.					
70	14.01	0.56	0.22	1	144	13.78	0.60	0.32	bl.					
71	14.74	0.70	0.36	1	145	—	—	—	bl.					
72	16.10	0.73	0.35	1	146	15.22	1.70	0.82	2					
73	15.88	1.09	0.43	2	147	15.48	0.75	0.43	1					
74	16.04	0.82	0.37	1	148	16.05	0.92	0.25	1					
75	16.07	0.96	0.19	1,bl.	149	15.71	0.73	0.52	1					

(*) : Numbered in Basel
Remarks : (1) Physical mem-
ber, (2) non - member, (bl) blend.

Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																													
1	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300

(*) : Rounded in Base
 Remarks : (1) Ristrict mem-
 ber (2) non - member (3) blank

Table 2

Star (*)	V	(B - V)	(U - B)	Remarks	Star (*)	V	(B - V)	(U - B)	Remarks
1	15.28	0.63	0.55	1	52	13.32	0.57	0.51	2,bl.
2	14.43	1.46	1.24	1	53	14.27	0.38	0.50	1
3	14.01	1.35	1.10	1	54	13.16	1.34	1.03	2
4	14.54	0.64	0.32	1	55	13.42	0.81	0.46	2
5	14.18	0.62	0.37	1	56	15.60	0.69	0.56	1
6	15.29	0.66	0.51	1	57	14.61	1.70	—	1
7	15.37	0.57	0.55	1	58	14.13	0.71	0.41	1
8	13.20	0.73	0.49	2	59	15.77	0.85	0.52	1
9	15.39	0.58	0.45	1	60	14.30	1.41	1.12	1
10	14.89	0.57	0.55	1	61	15.07	1.03	0.45	2
11	15.73	0.79	0.42	1	62	15.07	1.03	0.45	1
12	15.65	0.71	0.46	1	63	13.68	0.76	0.39	1
13	15.82	0.76	—	1	64	14.84	0.66	0.36	1
14	15.99	—	—	1	65	12.80	—	—	bl.
15	15.96	0.81	—	1	66	14.18	1.02	0.87	1
16	16.11	0.89	—	1	67	14.51	0.30	0.44	1
17	14.40	1.38	0.95	1	68	14.51	0.30	0.44	1
18	15.01	0.79	0.39	2	69	15.41	0.54	0.47	1
19	15.79	0.92	0.38	2	70	15.42	1.30	0.58	2
20	15.72	1.02	0.34	2	71	15.42	0.93	0.51	2
21	14.29	0.39	0.29	1,bl.	72	15.27	0.71	0.43	1
22	15.78	0.71	0.41	1,bl.	73	15.85	0.71	0.39	1
23	15.70	0.80	0.37	1,bl.	74	15.45	0.53	0.23	2
24	14.16	0.42	0.64	1	75	15.47	0.89	0.23	2
25	15.59	0.75	0.39	1	76	15.77	0.73	0.42	1
26	14.73	0.68	0.38	1	77	15.77	0.73	0.42	2
27	15.37	0.56	0.50	1	78	13.15	1.48	1.25	1
28	14.98	1.59	—	2	79	15.34	0.53	0.49	1
29	15.75	1.00	0.35	2	80	14.97	0.56	0.46	1
30	15.30	1.09	0.43	2	81	14.76	0.70	0.39	1
31	15.09	0.81	0.23	2	82	16.10	0.48	0.55	1
32	13.78	0.34	0.53	1	83	14.35	0.48	0.55	1
33	15.90	0.78	0.37	1	84	14.59	0.31	0.38	1
34	15.88	0.65	0.33	1	85	14.59	0.31	0.38	1
35	14.00	1.37	1.03	1	86	15.85	1.05	0.22	2
36	13.53	0.54	0.49	2	87	15.81	0.74	0.39	1
37	15.12	1.76	—	2	88	14.04	1.29	1.05	1
38	13.36	0.59	0.47	2	89	15.71	0.70	0.42	1
39	15.66	0.83	0.44	1	90	14.38	1.36	0.97	1
40	13.03	1.60	1.24	2	91	15.30	0.50	0.39	1
41	15.46	0.62	0.50	1	92	15.30	0.50	0.39	1
42	15.36	1.02	0.47	2	93	15.01	0.46	0.44	1
43	14.27	0.41	0.48	1	94	15.01	0.46	0.44	1
44	15.75	0.82	0.51	1	95	14.91	0.44	0.41	1
45	15.21	0.75	0.18	2	96	15.31	0.61	0.53	1
46	13.45	0.52	0.50	2	97	14.12	0.86	0.52	1
47	15.66	0.75	0.42	1	98	14.45	0.48	0.57	1
48	15.65	0.87	0.46	1	99	14.57	0.54	0.66	1
49	15.69	0.85	0.31	1	100	14.90	0.44	0.50	1
50	15.51	0.58	0.51	1	101	14.90	0.44	0.50	1
51	15.65	0.92	0.54	2	102	15.49	0.66	0.56	1
					103	15.49	0.66	0.56	1
					104	14.52	0.40	0.51	1
					105	14.52	0.40	0.51	1
					106	14.52	0.40	0.51	1
					107	15.07	0.64	0.60	1
					108	15.07	0.64	0.60	1
					109	14.57	0.48	0.63	1
					110	14.57	0.48	0.63	1
					111	14.62	0.54	0.56	1
					112	14.62	0.54	0.56	1
					113	15.77	0.77	0.57	1
					114	15.77	0.77	0.57	1
					115	15.48	0.68	—	1
					116	15.48	0.68	—	1
					117	15.90	0.93	—	2
					118	15.90	0.93	—	2
					119	15.42	0.96	0.29	2
					120	15.42	0.96	0.29	2

(*) : Numbered in Istanbul
 Remarks : (1) physical member, (2) non-member, (bl.) blend.

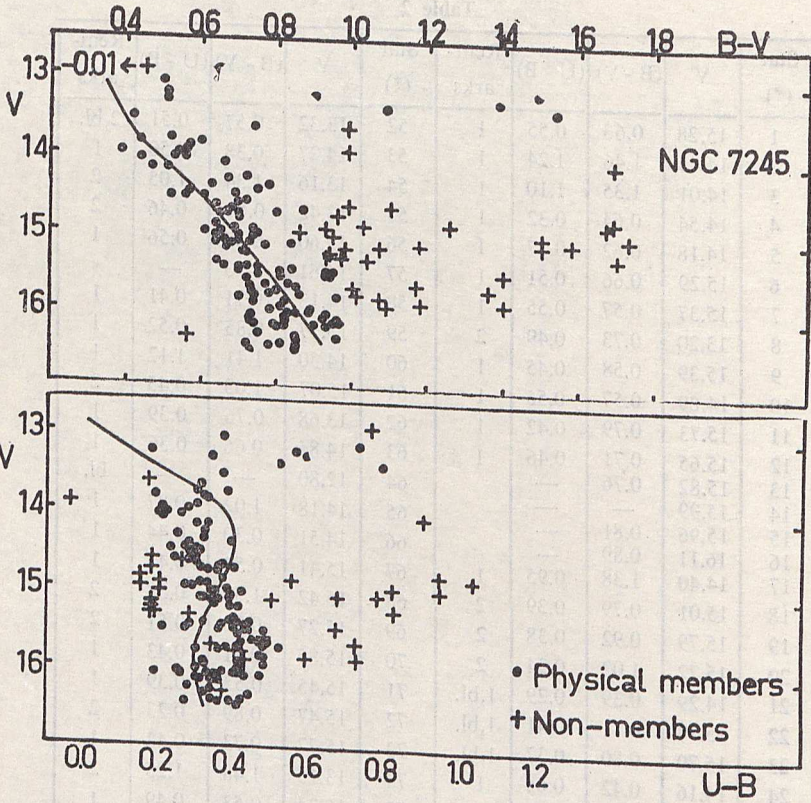


Fig. 1

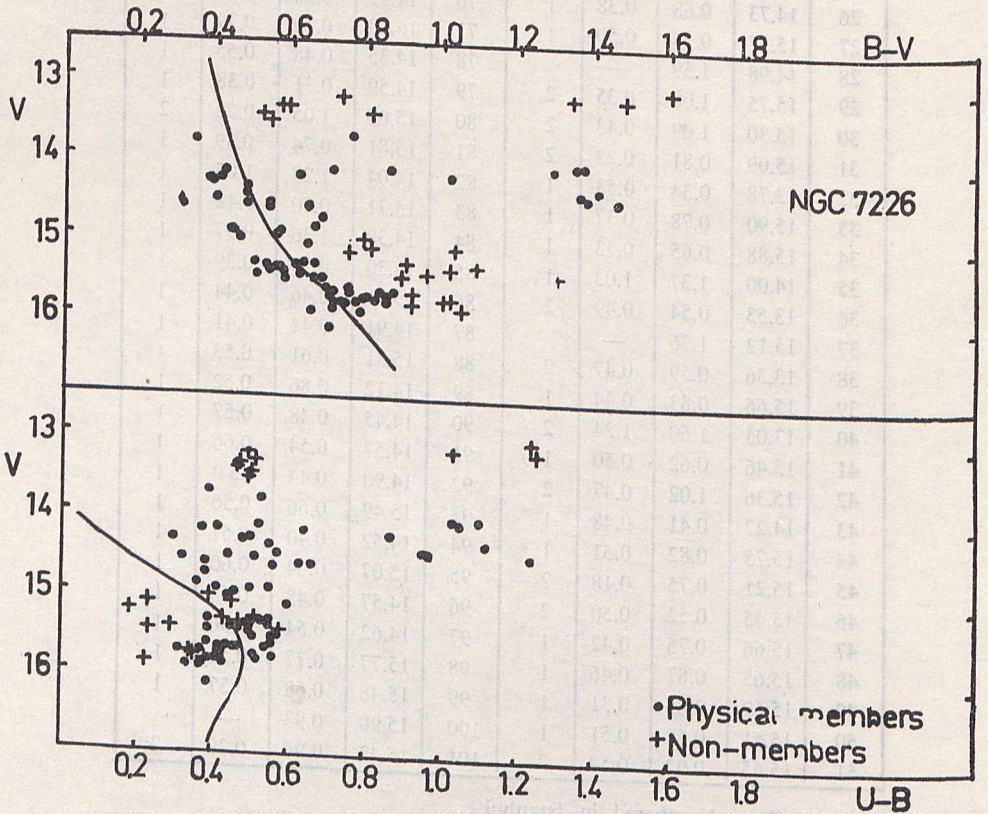


Fig. 2