

UBV photometry of stars whose positions are accurately known. VII.*

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Abstract. — *UBV* photometry is presented for about 100 equatorial and southern stars of the faint extension of the FK5 catalogue previously in lack of accurate *V* photometry.

Key words: *UBV* photometry — astrometric standard stars

1. Introduction

This paper is a southern supplement to the *UBV* photometry of northern FK5 stars earlier observed from Kvistaberg Observatory in Sweden (Oja, 1983, 1984, 1985a, 1985b, 1986, 1987a, 1987b, 1991). The programme stars were selected from a recent list of FK5 stars in lack of accurate *V* magnitudes, compiled by Dr. H. Jahreiss (1991) at Astronomisches Rechen-Institut in Heidelberg. From this list all stars north of Decl. -30° were selected for observation.

2. The observations

All stars of the programme were observed with the 60 cm Cassegrain telescope of the Royal Swedish Academy of Sciences at Observatorio Astrofísico del Roque de los Muchachos, La Palma, Canary Islands during two runs (mainly devoted to other programmes) in February-March and August-September 1992. The telescope was equipped with a single-channel photometer, and standard *UBV* filters were used. One measurement generally included at least two ten-second integrations in each colour, low counts (i.e. faint *U* intensities) were integrated longer, and most stars could be observed during at least two nights. The *UBV* standards used at Kvistaberg were used also here. Extinction coefficients were derived, separately for every night, for the *V* magnitude as well as for the colours. On a few of the nights time-dependent zero-point corrections had to be applied. The transformation equations from

the instrumental system to standard *UBV* were the same over the whole period of time, probably a consequence of the high age of the aluminium coatings of the mirrors. The resulting values of the standard stars are presented in Table 1, the result for the programme stars in Table 2, where the stars are identified by their Durchmusterung numbers: the Bonner Durchmusterung for the zone -22° and northwards and the Cordoba Durchmusterung for the southernmost zones. The mean error of one measurement, as calculated from the deviations of the individual measurements from the mean values, is 0.009 for *V*, 0.007 for *B* – *V*, and 0.010 for *U* – *B* in spite of the fact that several stars necessarily had to be measured at rather high air masses. A small number of northern stars were also measured with the 40 cm Cassegrain reflector at Kvistaberg in the spring of 1992. Also the results of these measurements are included in Table 2. A few notes can be found after the tables.

References

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* Tables 1 and 2 of this paper, combined with the corresponding data from the earlier papers of this series, are also available in electronic form

Table 1. Resulting values of standard stars; n = number of measurements

HR/BD	V	B-V	U-B	n	HR/BD	V	B-V	U-B	n	HR/BD	V	B-V	U-B	n
45	4.802	1.575	1.919	9	20 ⁰ 2172	6.837	.200	.159	1	6705	2.228	1.526	1.860	7
343	4.330	.177	.117	9	20 ⁰ 2175	6.778	.168	.137	3	6927	3.575	.487	-.064	7
437	3.615	.977	.733	7	3454	4.297	-.195	-.731	5	7178	3.248	-.046	-.060	6
54 ⁰ 0539	7.632	.032	-.217	5	4456	5.940	-.160	-.627	6	7266	5.230	.336	.017	16
824	4.506	1.116	1.074	7	31 ⁰ 2279	7.380	1.075	1.041	1	27 ⁰ 3307	6.911	-.073	-.503	21
875	5.164	.088	.041	13	4660	3.316	.089	.052	1	7462	4.677	.785	.381	7
882	4.928	1.239	1.278	6	46 ⁰ 1833	6.113	1.016	.809	1	7602	3.714	.852	.480	10
1030	3.602	.891	.602	7	5019	4.739	.701	.270	4	7615	3.884	1.030	.881	16
1046	5.093	.046	.023	4	5062	4.006	.172	.072	1	7906	3.802	-.056	-.191	3
1048	6.030	.957	.680	6	5072	4.967	.706	.266	3	7949	2.476	1.035	.852	6
1411	3.839	.950	.732	7	29 ⁰ 2483	8.175	.166	.129	3	7957	3.414	.914	.624	4
1412	3.410	.186	.123	6	28 ⁰ 2292	8.097	.382	-.053	2	8130	3.730	.390	.012	8
1543	3.189	.441	-.030	3	29 ⁰ 2493	6.889	.995	.786	4	8430	3.770	.426	-.028	6
1781	5.697	-.210	-.880	10	5291	3.682	-.042	-.073	2	8513	5.370	-.031	-.465	10
1995	4.504	.950	.697	2	5359	4.524	.140	.090	2	8597	4.033	-.078	-.260	16
2012	3.952	1.139	1.068	2	5854	2.628	1.170	1.264	6	8622	4.885	-.214	-1.019	14
2077	3.721	1.007	.845	2	5947	4.126	1.234	1.272	13	8795	4.517	1.564	1.906	10
2382	5.834	.992	.781	5	5986	4.001	.520	.094	7	8832	5.567	.993	.893	10
20 ⁰ 1686	7.577	.602	.082	6	6092	3.895	-.151	-.561	14	8969	4.120	.495	-.005	12
3249	3.520	1.483	1.758	6	6573	5.242	.594	.091	5	8974	3.216	1.030	.946	7
20 ⁰ 2171	6.291	.172	.160	6	6603	2.750	1.179	1.249	11					

Table 2. *UBV* photometry of the FK5 stars; n = number of measurements

DM	V	B-V	U-B	n	DM	V	B-V	U-B	n	DM	V	B-V	U-B	n
-29 ⁰ 01555	9.34	.36	.03	2	-15 ⁰ 6305	8.00	1.29	1.24	2	-1 ⁰ 0700	8.93	.24	.05	2
07391	7.97	.32	.05	2	-11 ⁰ 1269	8.72	.05	-.05	2	1779	7.19	1.59	1.88	2
09030	9.06	.99	.77	1	2372	7.52	1.25	1.39	2	3419	7.90	2.01	2.14	2
-28 ⁰ 05217	9.29	-.05	-.32	3	4175	8.42	1.86	2.25	2	3448	9.09	.46	.32	2
-27 ⁰ 12824	8.75	1.16	.95	3	-10 ⁰ 0679	9.27	.22	.09	2	-0 ⁰ 1849	8.67	.95	.70	2
-26 ⁰ 00958	7.56	1.18	1.15	3	-10 ⁰ 3790	8.72	1.13	1.04	2	-0 ⁰ 2479 ^k	8.16	1.67	2.00	1
02029	8.04	.60	.23	2	3920	8.38	.85	.54	2	2479 ^k	8.25	1.66		1
02558	6.84	.19	.08	2	4216	8.67	1.11	.86	2	2678	8.63	1.05	.94	1
-25 ⁰ 09091	7.42	1.22	1.32	1	6002	8.39	1.34	1.43	2	+0 ⁰ 1489	8.10	.04	-.26	2
09397	7.50	1.15	1.10	1	-9 ⁰ 0324	6.97	1.12	1.08	2	2793	7.87	1.57	1.94	1
-24 ⁰ 01569	8.52	.30	.05	2	-9 ⁰ 1645	8.35	.90	.59	3	+0 ⁰ 2793 ^k	7.90	1.56	2.00	1
08060	6.71	-.02	-.22	2	1953	7.74	1.58	1.92	2	3118	7.92	.92	.60	2
-23 ⁰ 00520	7.07	1.25	1.18	3	2931	9.08	.09	.07	2	3118 ^k	7.88	.93	.62	1
03436	7.46	.14	.08	2	3298	7.26	.29	.05	1	4033	8.84	.09	.00	2
12931	8.66	1.21	.99	3	-8 ⁰ 0564	9.38	1.05	.81	2	+1 ⁰ 1781	8.70	.03	.07	2
-22 ⁰ 2479	8.53	.21	.14	2	-8 ⁰ 1167	7.78	.39	.10	2	+1 ⁰ 2428	8.43	.38	-.05	2
4318	9.15	.42	.18	3	2565	9.05	1.00	.82	2	4657	8.87	.53	-.01	2
4992	8.63	1.05	.84	3	2954	8.97	1.53	1.86	2	+2 ⁰ 1200	7.28	1.00	.78	2
-21 ⁰ 0619	7.12	1.10	1.03	2	-7 ⁰ 0737	8.46	.89	.55	1	1991	9.06	.24	.10	2
2032	7.96	1.04	.84	3	3999	7.49	1.26	1.30	2	2334	6.64	1.28	1.38	2
-21 ⁰ 2912	7.49	.12	.06	2	-7 ⁰ 4485	9.31	.55	.34	3	+2 ⁰ 2334 ^k	6.63	1.29	1.39	1
3985	8.63	.36	.17	1	-6 ⁰ 4400	6.90	1.13	.89	2	3550	8.88	.16	-.36	2
4760	8.69	1.18	.84	3	-5 ⁰ 0644	6.98	.94	.72	1	+3 ⁰ 0218	7.81	1.12	1.02	2
-20 ⁰ 0318	7.18	1.43	1.51	2	4143	7.31	1.01	.74	2	0447	8.85	.22	.04	2
2284	6.83	.03	.04	2	-4 ⁰ 0586	7.21	1.02	.84	2	0595	8.77	.28	.12	2
-20 ⁰ 3420	6.88	.05	-.14	1	-4 ⁰ 1927	8.76	.12	.22	2	+3 ⁰ 2685	8.44	.48	-.03	1
-19 ⁰ 3080	7.71	.22	.19	2	2427	8.59	1.15	1.10	2	2836	7.63	1.28	1.47	1
3664	7.60	.13	.08	2	6019	7.56	1.06	.86	2	2836 ^k	7.61	1.27	1.47	1
-18 ⁰ 0883	7.55	1.11	1.04	2	-3 ⁰ 2445	6.88	1.37	1.61	1	+4 ⁰ 1627	7.55	.99	.71	3
4295	8.77	.76	.35	3	3013	8.85	.39	.03	2	2014	9.00	.94	.63	2
-17 ⁰ 0707	6.86	.91	.63	3	-3 ⁰ 3406	8.29	.51	.08	1	+4 ⁰ 2423	7.81	.13	.14	2
1746	8.53	.10	.04	3	-2 ⁰ 2928	8.62	.21	.11	2	2423 ^k	7.82	.11	.13	2
1747	8.57	.10	.04	2	3714	6.68	1.22	1.25	1	4896	6.76	1.59	1.88	2
2493	8.06	1.64	1.98	2	3849	7.79	.08	.06	2	+5 ⁰ 1747	8.94	1.29	1.39	2
-15 ⁰ 0052	9.06	.82	.44	2	4094	8.19	1.48	1.65	2	+6 ⁰ 2971	8.48	1.08	.96	2
-15 ⁰ 3513	8.60	1.42	1.65	1	-2 ⁰ 6059	7.58	1.64	1.97	2	+8 ⁰ 2883	8.39	1.52	1.88	2

Notes to Table 2.

 k : measured with the 40 cm telescope at Kvistaberg.- 0⁰2479: the difference between the two measurements of V indicate variability.