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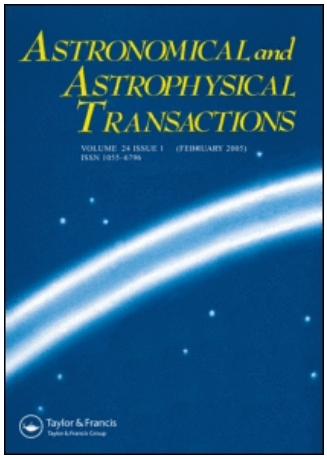

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CATALOGUE OF REFERENCE STARS FOR THE "LOMONOSOV"ASTROMETRIC PROJECT

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CATALOGUE OF REFERENCE STARS FOR THE "LOMONOSOV" ASTROMETRIC PROJECT

III. ADDITIONAL RESULTS OF PHOTOELECTRIC UBV PHOTOMETRY

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The results of photoelectric UBV photometry of 118 reference stars derived during preparatory ground-based work for the "Lomonosov" space project are presented.

Keywords: Catalogues; Stars; UBV photometry

1 INTRODUCTION

The selection of about 250 stars was proposed for a good reference star system. The procedure of their choice, and the results of UBV photometry of 150 stars in 1990–1994, were reported earlier in Paper I by Voroshilov *et al.* (1992) and in paper II by Kolotilov and Metlov (2000) respectively. In the present paper III the results of photoelectric photometry carried out in October 1994–January 2002 are presented.

2 OBSERVATIONS AND DATA REDUCTION

The observations of this programme were started in general in April 1990 with the use of the 60-cm Zeiss reflector of the Sternberg Astronomical Institute located in Crimea, and were continued, with some interruptions, until January 2002. For this programme, which contains stars of 7th–8th V magnitudes, we use the photon counting UBV photometer developed by Lyuty (1971). Here we report the results of UBV measurements (performed mainly in October 1994–January 2002) of those 118 stars for which two or more flux measures were made during different nights. The data for some part of the stars (48 stars) was published already in paper II, but the amount of their measurements has increased since then. The results for 70 stars are published here for the first time.

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The observations were carried out during 76 nights in the above-mentioned interval; each night had excellent sky conditions, with stable and good atmospheric transparency, with no clouds or inhomogeneous haze up to the horizon. These requirements were dictated by our decision to use only standard stars from the high-precision system of the photoelectric standards determined earlier by Khaliullin *et al.* (1985).

This system however, contains only 72 standards, therefore the angular distances between those stars and stars of the programme were as a rule quite large. Consequently it was necessary to determine the atmospheric extinction coefficients using the method of measurements of two or more standard stars at different zenith distances. Each measurement of stellar brightness was thus obtained on the basis of its own atmospheric extinction coefficient, interpolated for the time moment of observation of given programme star during a given night.

The procedure of measurements of sufficiently bright stars and standards (up to 4th V magnitudes) and the following reduction to standard UBV system was described in paper II By Kolotilov and Metlov (2000). However, one should note the following: the above mentioned system of standards contains R, V, B and W magnitudes. We used only V and B values from that system; the U values were taken from the BS catalogue.

3 RESULTS

Table I presents the final results of measurements of 118 reference stars reduced to the standard UBV System. For each star it gives: HD number of the star (in one case, the BD number substitutes the missed HD number), equatorial coordinates for 2000.0 equinox, mean values V, B − V and U − B, together with their uncertainties (determined on the basis of dispersion of the data), and also a number of individual measurements for each star. Those stars whose data was published in paper II (with fewer measurements) are marked by asterisk.

TABLE I Results of the UBV Photometry.

HD[1]	*RA*	*DEC*	*V*	*error*	*B − V*	*error*	*U − B*	*error*	*n*
896*	00 13.4	08 56	7.699	0.020	0.300	0.009	− 0.118	0.042	4
976	00 14.2	26 16	6.998	0.001	0.504	0.019	− 0.014	0.028	2
984	00 14.2	− 07 12	7.347	0.004	0.464	0.001	− 0.093	0.032	2
1094*	00 15.4	28 36	7.324	0.005	0.432	0.005	− 0.102	0.012	5
1160	00 16.0	04 15	7.152	0.010	0.051	0.015	0.041	0.011	2
4186	00 44.2	− 07 54	7.829	0.026	0.269	0.009	0.167	0.023	2
6374	01 04.6	07 03	7.978	0.020	0.478	0.014	− 0.086	0.029	2
6664*	01 08.0	39 15	7.795	0.004	0.579	0.005	− 0.085	0.016	4
8274*	01 22.4	22 06	7.227	0.020	0.560	0.008	− 0.040	0.015	3
17331	02 47.5	23 39	7.477	0.005	0.413	0.001	− 0.116	0.025	2
26112	04 11.4	60 05	8.038	0.002	0.107	0.003	0.091	0.008	2
26294	04 09.4	− 07 55	7.235	0.004	0.201	0.004	0.049	0.014	2
26337	04 09.7	− 07 53	7.087	0.021	0.631	0.014	0.016	0.014	2
26385	04 11.7	31 33	7.719	0.008	0.137	0.005	− 0.174	0.027	2
27887	04 25.1	25 45	7.876	0.003	0.421	0.002	− 0.079	0.011	2
29497	04 39.1	13 00	7.211	0.002	0.402	0.001	− 0.116	0.005	2
30700	04 49.7	− 06 25	7.743	0.010	0.854	0.016	0.648	0.026	2
31817	05 00.6	36 38	7.322	0.022	0.203	0.001	0.164	0.030	2
32619	05 06.6	44 44	7.521	0.002	0.154	0.004	0.060	0.003	2
34905	05 22.1	31 23	8.047	0.001	0.467	0.004	− 0.020	0.007	2
37444	05 38.5	− 05 02	7.664	0.005	0.301	0.007	0.136	0.004	2

From the internal agreement of the results one can conclude that the majority of stars appear to be stationary at level of 0.01 mag in the V and B bands, and may be used as standard stars. Only some stars might be suspected as variables with low amplitudes.

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