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UBV photometry of CX Dra search for rapid variations

UBV Photometry of CX Dra
Search For Rapid Variations

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There is no evidence for light variations of CX Dra on the time scale of 2—3 hours.

Фотоэлектрические наблюдения CX Dra в системе UBV: поиск быстрых колебаний блеска. — Влеск CX Dra является постоянным в течение 2—3 часов.

Autoři ukázali, že jasnost hvězdy CX Dra se nemění na časové škále 2—3 hodin.

1. Introduction

CX Dra (HD 174237, BD + 52°2280, GC 25757, HR 7084, SAO 031165, MWC 608, Boss 4765) is a bright Be star. The behaviour of Hα emission of this star was studied by Lacoarret [1]. Its photometric variability was discovered by Merlin [2]. Koubský [3] announced that the radial velocity of CX Dra varies with a period of 6.691 days. More detailed analysis of radial-velocity changes and a model of the interacting binary CX Dra were presented in [4]. The results of UBV photoelectric observations of this star obtained on 163 nights during 1964—1978 were published by Koubský et al [5]. In that paper modulation of the light of CX Dra with the orbital period 6.696^d was disclosed. The full amplitudes are 0.04^m, 0.03^m and 0.03^m in VBU, respectively. The second type of photometric variation of CX Dra are the large-scale changes with peak-to-peak amplitude 0.2^m in V and B and 0.4 in U.

The time scale of the variability of Be stars is one of the important observational constraints upon the theoretical models. Though the long term variations (years or

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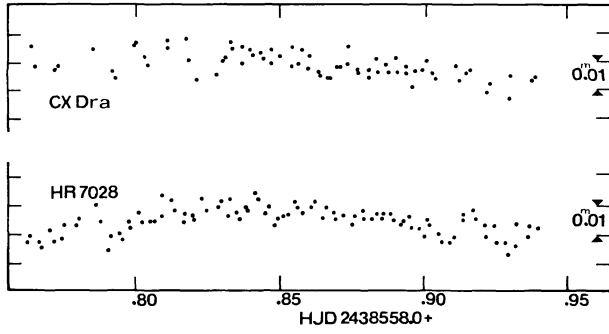
Fig. 1a.
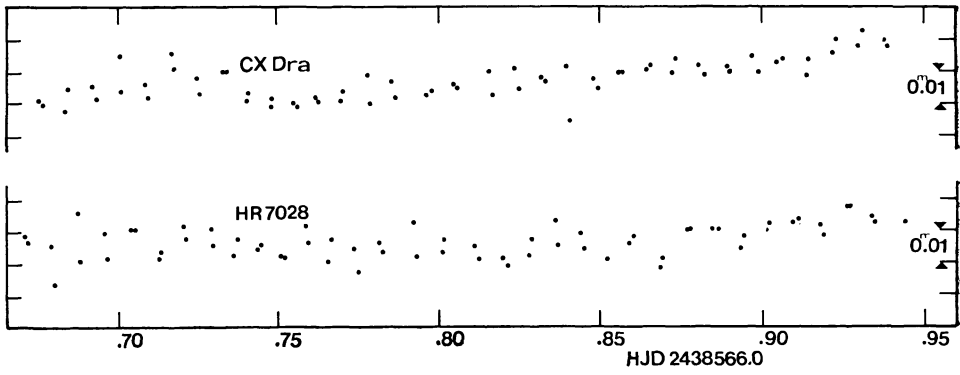
Fig. 1b.
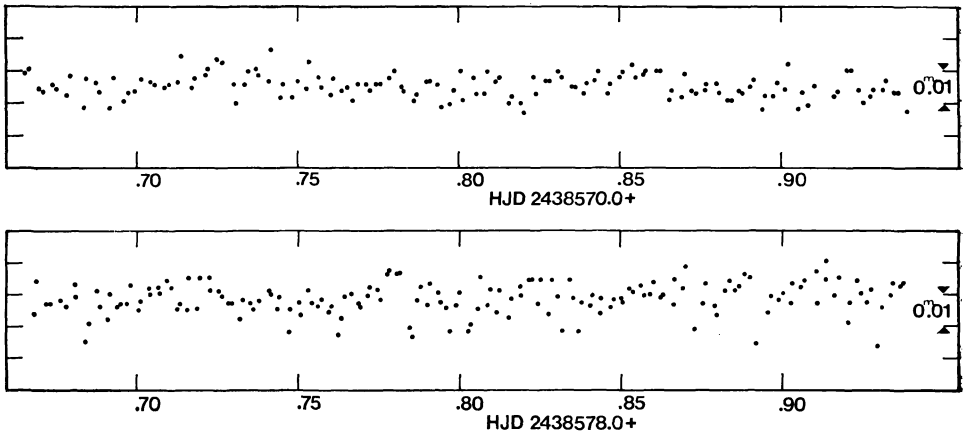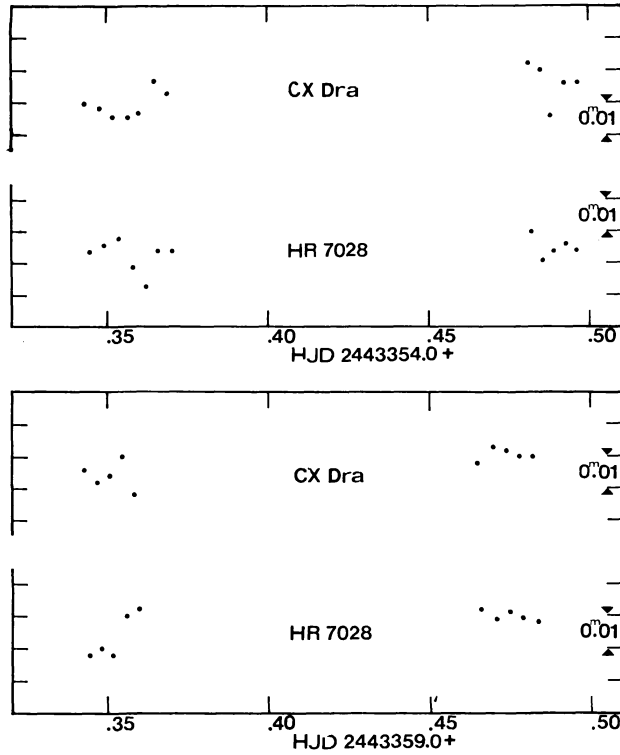
Fig. 1c.

Fig. 1d.

Figs. 1a—d. The magnitude differences CX Dra and HR 7028 minus the comparison star as a function of the Julian date. In Fig. 1c only measurements of magnitude differences CX Dra minus HR 7028 are plotted.

tens of years) and medium term variations (days or tens of days) are well documented in the available observational material, the reports on short-time scale changes (minutes or hours) are rather conflicting.

When searching in the published photometric data only, one can find several papers dealing with the variability on the time scale of hours (EW Lac [6], [7], Wray 795 [8], π Aqr [9]) but on the other hand for some of these stars these variations have not been confirmed (Wray 795 [10], π Aqr [11]).

Lucy [12] have analyzed spectrophotometric scans of 23 Be, Of, WR and normal B stars for the presence of rapid-line variability and found that the variations on time scales ranging from 31 seconds to 5 hours are due to observational errors and/or instrumental effects.

The results obtained by Lucy [12] cannot be simply applied to the photometric

data because the observational effects may not be so important for the photometric measurements when longer wavelength intervals are involved and, moreover, the relation between line profile variations and photometric variability is not well understood yet.

Thus new photometric measurements of Be stars with appropriate time-resolution are needed before the range of the time scale of their variability can be determined. That is why we used the longer series of observations of CX Dra at Lowell and Hvar Observatories for the search of the short-time scale photometric variability.

2. Observations and Reductions

The reductions were described in [5]. In Tables 1 and 2 we present individual measurements of CX Dra secured at Lowell and Hvar Observatories. The observations performed at the Lowell Observatory are presented in the form of magnitude differences (variable-comparison in the instrumental UBV system), while the individual measurements taken at Hvar Observatory are in the international UBV system. At both observatories the comparison star was measured as frequently as the variable. At the Lowell Observatory always two successive readings of the variable were followed by two successive readings of the comparison. Table 3 contains the values for the comparison stars used in this study.

3. Discussion and Conclusions

The time resolution of the photometric data obtained at Lowell and Hvar Observatories is 7 − 10 minutes. During most of the observing nights a check star was used in order to estimate the influence of the transparency variations and/or the sensitivity shifts that might occur in the detector. Figures 1a − d display the results of longer monitoring of CX Dra in the B bandpass. In several cases the observations of HR 7028 (check star) are also shown.

Even though the ΔB measurements of CX Dra show a range of 0.02 mag during one hour or so, one can see that the variations of the check star are very similar and more or less correlated. This can indicate variability of the comparison star (HR 7060) or erratic changes in the transparency or sensitivity of the instrument. In Figure 1c the results of monitoring CX Dra when HR 7028 was used as comparison star are presented. The pattern of the variations is the same, thus we can couclude that the only cause of the apparent rapid variability are the observational effects. Merlin [2] described similar type of variability, but he published no results for the check star.

We therefore conclude that there is no evidence for gradual light variations of CX Dra on the time-scale of 2 − 3 hours. In several cases the light of CX Dra changed 0.1 mag within 24 hours [2], [5], but we were not lucky enough to catch the star when it was changing.

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Table 1.

Individual Observations of CX Dra Obtained at Lowell Observatory

J. D. hel.	$U(m_v - m_c)$	J. D. hel.	$U(m_v - m_c)$	J. D. hel.	$U(m_v - m_c)$
2400000.+		38580.7925	−0.564	38638.6771	−1.395
38553.8820	−1.357	.7937	−0.569	.6818	−1.398
.8831	−1.356	.7962	−0.568	.6825	−1.392
.8894	−1.348	.7969	−0.568	38640.6597	−1.354
.8902	−1.350	.7995	−0.571	.6602	−1.350
38555.8629	−1.394	.8001	−0.570	.6649	−1.353
.8640	−1.400	*38582.7976	−0.597	.6656	−1.353
.8709	−1.395	.8004	−0.583	.6702	−1.352
.8716	−1.397	.8012	−0.595	.6709	−1.345
.8792	−1.389	.8039	−0.597	38642.6180	−1.319
.8800	−1.390	.8049	−0.592	.6187	−1.320
38557.8560	−1.382	.8077	−0.597	.6230	−1.305
.8578	−1.377	.8085	−0.595	.6235	−1.307
.8643	−1.374	.8109	−0.598	.6282	−1.332
.8656	−1.376	.8119	−0.598	.6286	−1.334
.8717	−1.378	*38583.7841	−0.595	38885.9567	−1.437
.8723	−1.387	.7851	−0.593	.9576	−1.436
*38560.8571	−0.648	.7879	−0.589	.9608	−1.442
.8578	−0.653	.7886	−0.595	.9617	−1.442
.8603	−0.647	.7910	−0.594	.9645	−1.440
.8613	−0.652	.7917	−0.594	.9653	−1.440
.8639	−0.648	.7942	−0.602	38898.9083	−1.399
.8646	− .0649	.7953	−0.597	.9091	−1.402
38561.8430	−1.405	*38594.7129	−0.534	.9118	−1.405
.8444	−1.399	.7137	−0.540	.9128	−1.406
.8509	−1.395	.7164	−0.533	.9156	−1.402
.8518	−1.404	.7175	−0.533	.9165	−1.408
.8583	−1.397	.7201	−0.538	38899.9167	−1.424
.8592	−1.406	.7211	−0.547	.9177	−1.424
38567.8600	−1.329	.7237	−0.539	.9206	−1.426
.8610	−1.333	.7248	−0.550	.9214	−1.430
.8680	−1.338	.7272	−0.536	.9242	−1.427
.8690	−1.338	.7281	−0.539	.9251	−1.429
.8763	−1.331	38637.6684	−1.379	38902.9317	−1.408
.8772	−1.330	.6689	−1.375	.9325	−1.413
*38576.7927	−0.634	.6739	−1.380	.9356	−1.401
.7938	−0.636	.6745	−1.377	.9366	−1.406
.7965	−0.633	.6796	−1.370	38903.9110	−1.392
.8004	−0.632	.6805	−1.375	.9119	−1.395
.8014	−0.634	38638.6710	−1.386	.9149	−1.396
.8045	−0.635	.6717	−1.390	.9158	−1.399
.8056	−0.639	.6764	−1.393	.9188	−1.403

Table 1 - continued

J. D. hel.	$U(m_v - m_c)$	J. D. hel.	$U(m_v - m_c)$	J. D. hel.	$U(m_v - m_c)$
38903.9198	−1.403	38931.8487	−1.395	38973.7197	−1.352
38908.8797	−1.377	.8498	−1.395	.7206	−1.350
.8805	−1.382	.8530	−1.395	38974.7150	−1.334
.8831	−1.379	.8539	−1.399	.7160	−1.334
.8839	−1.379	.8572	−1.394	.7194	−1.334
38909.8862	−1.402	.8581	−1.392	.7204	−1.335
.8870	−1.416	38932.8430	−1.380	38975.7142	−1.317
.8897	−1.409	.8440	−1.380	.7153	−1.317
.8906	−1.415	.8473	−1.367	.7181	−1.316
38910.8776	−1.400	.8483	−1.369	.7190	−1.315
.8783	−1.403	.8510	−1.372	38976.7121	−1.321
.8808	−1.400	.8518	−1.378	.7131	−1.310
.8816	−1.402	38933.8626	−1.418	.7165	−1.316
38911.8635	−1.402	.8633	−1.416	.7175	−1.318
.8642	−1.403	.8661	−1.423	38992.6666	−1.368
.8671	−1.401	.8670	−1.424	.6675	−1.368
.8680	−1.402	.8698	−1.418	.6701	−1.367
.8704	−1.400	.8709	−1.423	.6710	−1.366
.8713	−1.407	38951.8390	−1.317	38993.6724	−1.377
38918.8489	−1.407	.8404	−1.316	.6732	−1.378
.8498	−1.409	.8434	−1.319	.6757	−1.374
.8527	−1.411	.8444	−1.319	.6766	−1.375
.8535	−1.413	38954.8002	−1.279	38995.6547	−1.382
38926.8612	−1.391	.8011	−1.280	.6556	−1.383
.8621	−1.388	38960.7962	−1.285	.6582	−1.380
.8648	−1.394	.7971	−1.284	.6590	−1.381
.8657	−1.391	.8003	−1.286	.6620	−1.379
38929.8318	−1.372	.8013	−1.282	.6627	−1.384
.8327	−1.370	38972.7409	−1.359	38996.6541	−1.397
.8356	−1.367	.7419	−1.359	.6550	−1.400
.8365	−1.372	.7449	−1.370	.6578	−1.402
.8395	−1.370	38973.7163	−1.352	.6591	−1.400
.8404	−1.370	.7170	−1.352		

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
2400000.+		38558.7918	−0.416	38558.8843	−0.416
38553.8583	−0.409	.7925	−0.414	.8870	−0.419
.8597	−0.404	.7991	−0.425	.8876	−0.416
.8660	−0.398	.7998	−0.426	.8904	−0.421
.8668	−0.398	.8029	−0.421	.8910	−0.416
.8730	−0.404	.8040	−0.418	.8936	−0.418
.8739	−0.407	.8106	−0.427	.8941	−0.416
.8975	−0.410	.8113	−0.424	.8964	−0.411
.8981	−0.412	.8175	−0.428	.8974	−0.417
.9049	−0.399	.8182	−0.420	.9001	−0.417
.9055	−0.402	.8278	−0.415	.9008	−0.420
.9122	−0.401	.8301	−0.420	.9033	−0.416
.9131	−0.407	.8307	−0.421	.9038	−0.414
.9351	−0.388	.8334	−0.427	.9111	−0.419
.9362	−0.388	.8340	−0.424	.9122	−0.413
.9425	−0.402	.8369	−0.425	.9151	−0.416
.9432	−0.403	.8374	−0.419	.9158	−0.417
.9494	−0.380	.8398	−0.424	.9224	−0.409
.9503	−0.379	.8404	−0.422	.9231	−0.412
38555.8397	−0.440	.8432	−0.423	.9297	−0.407
.8404	−0.441	.8439	−0.421	.9302	−0.415
.8466	−0.441	.8467	−0.424	.9376	−0.413
.8473	−0.444	.8473	−0.419	.9383	−0.414
.8543	−0.440	.8499	−0.422	.9454	−0.411
.8555	−0.443	.8508	−0.416	.9461	−0.411
.8834	−0.427	.8531	−0.418	*38560.8391	−0.086
.8841	−0.434	.8536	−0.425	.8398	−0.094
.8869	−0.431	.8565	−0.419	.8460	−0.082
.8875	−0.432	.8574	−0.424	.8471	−0.083
.8907	−0.426	.8598	−0.417	.8532	−0.079
.8914	−0.433	.8604	−0.422	.8539	−0.086
.8942	−0.435	.8633	−0.416	38561.8210	−0.434
.8949	−0.430	.8640	−0.415	.8217	−0.431
38557.8335	−0.422	.8666	−0.414	.8278	−0.431
.8345	−0.417	.8675	−0.414	.8287	−0.431
.8404	−0.424	.8701	−0.418	.8349	−0.434
.8412	−0.426	.8708	−0.418	.8356	−0.434
.8480	−0.432	.8734	−0.425	*38566.6750	−0.051
.8491	−0.424	.8741	−0.419	.6762	−0.050
38558.7635	−0.425	.8769	−0.417	.6831	−0.048
.7651	−0.418	.8772	−0.416	.6839	−0.055
.7722	−0.417	.8807	−0.414	.6916	−0.056
.7729	−0.418	.8811	−0.417	.6928	−0.052
.7854	−0.424	.8835	−0.421	.6996	−0.065

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
*38566.7008	−0.054	*38566.8816	−0.059	38568.7551	−0.419
.7082	−0.056	.8887	−0.062	.7563	−0.409
.7092	−0.052	.8890	−0.060	.7633	−0.409
.7160	−0.066	.8968	−0.065	.7642	−0.407
.7171	−0.061	.8978	−0.060	.7718	−0.416
.7239	−0.058	.9047	−0.063	.7731	−0.408
.7249	−0.053	.9060	−0.064	.7806	−0.424
.7325	−0.060	.9133	−0.059	.7815	−0.422
.7330	−0.060	.9142	−0.064	.7885	−0.415
.7394	−0.051	.9214	−0.066	.7896	−0.415
.7398	−0.053	.9223	−0.070	.7968	−0.413
.7466	−0.049	.9293	−0.068	.7979	−0.415
.7471	−0.052	.9302	−0.073	.8049	−0.423
.7543	−0.050	.9374	−0.070	.8058	−0.420
.7552	−0.052	.9385	−0.068	.8131	−0.426
.7612	−0.052	.9453	−0.068	.8141	−0.419
.7619	−0.051	.9464	−0.072	.8211	−0.411
.7686	−0.051	.9536	−0.069	.8219	−0.409
.7695	−0.054	.9546	−0.069	.8253	−0.420
.7770	−0.059	38567.8376	−0.399	.8260	−0.416
.7781	−0.050	.8385	−0.397	.8336	−0.420
.7847	−0.057	.8446	−0.397	.8347	−0.417
.7855	−0.052	.8452	−0.399	.8425	−0.422
.7955	−0.053	.8520	−0.408	.8435	−0.415
.7966	−0.054	.8526	−0.403	.8513	−0.417
.8041	−0.056	38568.6729	−0.401	.8524	−0.425
.8053	−0.055	.6742	−0.404	.8558	−0.416
.8150	−0.060	.6815	−0.409	.8571	−0.417
.8162	−0.053	.6826	−0.422	.8599	−0.417
.8234	−0.061	.6899	−0.412	.8607	−0.421
.8244	−0.055	.6909	−0.415	.8683	−0.424
.8312	−0.058	.6983	−0.405	.8690	−0.424
.8324	−0.057	.6996	−0.410	.8764	−0.418
.8391	−0.062	.7069	−0.411	.8773	−0.432
.8402	−0.045	.7079	−0.410	.8844	−0.418
.8475	−0.058	.7149	−0.419	.8854	−0.423
.8484	−0.055	.7159	−0.409	.8926	−0.414
.8555	−0.060	.7240	−0.409	.8937	−0.411
.8563	−0.060	.7312	−0.417	.9009	−0.417
.8638	−0.061	.7322	−0.414	.9019	−0.419
.8648	−0.062	.7394	−0.416	*38570.6660	−0.085
.8721	−0.060	.7404	−0.417	.6670	−0.086
.8730	−0.064	.7474	−0.412	.6704	−0.080
.8803	−0.062	.7482	−0.415	.6715	−0.079

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
*38570.6746	−0.081	*38570.7642	−0.079	*38570.8468	−0.078
.6755	−0.080	.7652	−0.080	.8475	−0.081
.6788	−0.078	.7677	−0.076	.8503	−0.083
.6797	−0.084	.7690	−0.081	.8513	−0.085
.6840	−0.074	.7718	−0.081	.8543	−0.087
.6850	−0.083	.7727	−0.079	.8552	−0.083
.6882	−0.082	.7752	−0.081	.8579	−0.084
.6891	−0.079	.7762	−0.081	.8586	−0.085
.6925	−0.074	.7791	−0.083	.8621	−0.085
.6934	−0.083	.7802	−0.085	.8627	−0.085
.6966	−0.076	.7829	−0.080	.8656	−0.076
.6979	−0.078	.7835	−0.079	.8665	−0.079
.7009	−0.079	.7865	−0.076	.8693	−0.077
.7018	−0.083	.7875	−0.078	.8701	−0.084
.7051	−0.082	.7902	−0.082	.8732	−0.079
.7061	−0.081	.7912	−0.082	.8739	−0.078
.7093	−0.080	.7941	−0.081	.8767	−0.079
.7104	−0.081	.7947	−0.074	.8775	−0.081
.7135	−0.082	.7976	−0.075	.8802	−0.081
.7145	−0.090	.7982	−0.079	.8812	−0.078
.7173	−0.080	.8013	−0.085	.8837	−0.074
.7184	−0.083	.8020	−0.076	.8847	−0.076
.7218	−0.084	.8052	−0.083	.8875	−0.079
.7225	−0.086	.8059	−0.078	.8884	−0.078
.7257	−0.089	.8086	−0.078	.8909	−0.080
.7267	−0.088	.8094	−0.085	.8920	−0.082
.7302	−0.081	.8122	−0.082	.8947	−0.073
.7312	−0.075	.8132	−0.083	.8955	−0.077
.7340	−0.081	.8159	−0.075	.8982	−0.077
.7350	−0.085	.8170	−0.077	.8993	−0.081
.7377	−0.086	.8197	−0.075	.9020	−0.079
.7384	−0.084	.8208	−0.072	.9030	−0.087
.7413	−0.082	.8239	−0.083	.9059	−0.073
.7420	−0.092	.8246	−0.078	.9066	−0.078
.7451	−0.077	.8274	−0.082	.9093	−0.074
.7460	−0.081	.8284	−0.082	.9102	−0.080
.7493	−0.077	.8316	−0.085	.9132	−0.071
.7504	−0.082	.8325	−0.083	.9142	−0.071
.7532	−0.080	.8354	−0.080	.9170	−0.077
.7537	−0.088	.8363	−0.080	.9178	−0.078
.7566	−0.083	.8392	−0.078	.9210	−0.085
.7578	−0.080	.8402	−0.081	.9218	−0.085
.7606	−0.078	.8427	−0.082	.9246	−0.079
.7614	−0.083	.8437	−0.085	.9253	−0.075

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
*38570.9283	−0.077	*38578.6724	−0.072	*38578.7441	−0.070
.9291	−0.079	.6736	−0.072	.7448	−0.074
.9319	−0.078	.6768	−0.073	.7473	−0.063
.9329	−0.082	.6775	−0.071	.7480	−0.070
.9355	−0.078	.6809	−0.078	.7504	−0.072
.9364	−0.078	.6816	−0.074	.7511	−0.068
.9392	−0.072	.6844	−0.060	.7536	−0.076
.9400	−0.077	.6851	−0.066	.7542	−0.072
.9430	−0.073	.6882	−0.076	.7566	−0.071
.9438	−0.075	.6889	−0.071	.7573	−0.073
.9468	−0.067	.6913	−0.067	.7594	−0.069
.9475	−0.074	.6920	−0.075	.7601	−0.071
.9502	−0.074	.6945	−0.071	.7629	−0.062
.9510	−0.078	.6953	−0.072	.7634	−0.067
.9538	−0.079	.6976	−0.072	.7657	−0.074
.9547	−0.083	.6983	−0.078	.7664	−0.075
*38576.7817	−0.090	.7011	−0.070	.7691	−0.072
.7828	−0.086	.7016	−0.073	.7698	−0.071
.7854	−0.091	.7038	−0.077	.7719	−0.074
.7862	−0.095	.7045	−0.075	.7726	−0.077
.7889	−0.087	.7070	−0.077	.7749	−0.076
.7897	−0.085	.7076	−0.075	.7757	−0.073
*38577.6752	−0.082	.7099	−0.079	.7779	−0.081
.6761	−0.077	.7108	−0.077	.7785	−0.082
.6788	−0.081	.7129	−0.070	.7809	−0.081
.6797	−0.078	.7136	−0.072	.7816	−0.081
.6826	−0.075	.7160	−0.070	.7842	−0.064
.6837	−0.077	.7164	−0.080	.7851	−0.061
.6865	−0.080	.7191	−0.070	.7872	−0.073
.6872	−0.076	.7196	−0.080	.7879	−0.077
.6903	−0.078	.7223	−0.080	.7903	−0.071
.6910	−0.090	.7229	−0.076	.7909	−0.078
.6932	−0.077	.7254	−0.076	.7934	−0.075
.6940	−0.083	.7261	−0.074	.7940	−0.072
.6962	−0.075	.7286	−0.072	.7969	−0.063
.6969	−0.079	.7295	−0.072	.7997	−0.071
.6997	−0.076	.7320	−0.067	.8004	−0.075
.7006	−0.075	.7327	−0.073	.8028	−0.063
.7036	−0.080	.7351	−0.072	.8035	−0.065
.7045	−0.077	.7357	−0.070	.8059	−0.070
.7073	−0.081	.7379	−0.073	.8066	−0.080
.7081	−0.081	.7386	−0.073	.8091	−0.071
*38578.6684	−0.069	.7412	−0.076	.8100	−0.076
.6692	−0.079	.7418	−0.075	.8122	−0.069

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
*38578.8129	−0.076	*38578.8861	−0.076	*38579.7080	−0.030
.8154	−0.067	.8868	−0.077	.7107	−0.041
.8163	−0.073	.8893	−0.081	.7115	−0.040
.8188	−0.077	.8903	−0.080	.7143	−0.043
.8195	−0.074	.8931	−0.059	.7155	−0.046
.8218	−0.079	.8962	−0.069	.7181	−0.049
.8225	−0.079	.8969	−0.074	.7189	−0.046
.8247	−0.071	.8997	−0.073	.7216	−0.049
.8254	−0.079	.9004	−0.075	.7226	−0.045
.8282	−0.068	.9028	−0.072	.7257	−0.046
.8288	−0.079	.9035	−0.078	.7266	−0.047
.8309	−0.074	.9059	−0.077	.7292	−0.047
.8320	−0.063	.9070	−0.079	.7299	−0.048
.8344	−0.079	.9101	−0.072	.7325	−0.050
.8351	−0.073	.9108	−0.082	.7511	−0.040
.8372	−0.063	.9135	−0.079	.7518	−0.044
.8379	−0.072	.9141	−0.085	.7542	−0.043
.8407	−0.071	.9168	−0.074	.7552	−0.042
.8411	−0.074	.9174	−0.080	.7578	−0.038
.8438	−0.068	.9205	−0.066	.7587	−0.041
.8441	−0.073	.9212	−0.072	.7611	−0.040
.8469	−0.070	.9236	−0.079	.7618	−0.049
.8478	−0.073	.9243	−0.075	.7646	−0.044
.8504	−0.073	.9269	−0.072	.7657	−0.044
.8507	−0.072	.9278	−0.076	.7684	−0.042
.8532	−0.076	.9309	−0.070	.7693	−0.035
.8538	−0.075	.9337	−0.074	.7719	−0.040
.8566	−0.077	.9343	−0.078	.7727	−0.041
.8573	−0.074	.9372	−0.077	.7754	−0.040
.8596	−0.074	.9379	−0.079	.7761	−0.037
.8602	−0.078	.9407	−0.070	.7785	−0.037
.8629	−0.073	.9413	−0.080	.7791	−0.046
.8636	−0.074	.9441	−0.068	.7816	−0.048
.8663	−0.071	.9446	−0.077	.7827	−0.050
.8670	−0.079	*38579.6914	−0.022	.7855	−0.046
.8696	−0.076	.6939	−0.026	.7865	−0.052
.8704	−0.083	.6946	−0.029	.7889	−0.049
.8733	−0.064	.6976	−0.030	.7898	−0.049
.8761	−0.072	.6982	−0.032	.7928	−0.041
.8768	−0.078	.7006	−0.027	.7934	−0.041
.8793	−0.071	.7011	−0.035	.7962	−0.040
.8800	−0.068	.7035	−0.032	.7970	−0.037
.8830	−0.076	.7043	−0.036	.7997	−0.047
.8837	−0.079	.7073	−0.034	.8007	−0.044

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
*38579.8035	−0.048	*38579.8775	−0.050	*38579.9525	−0.033
.8039	−0.047	.8785	−0.045	.9532	−0.034
.8063	−0.040	.8809	−0.047	.9559	−0.038
.8070	−0.043	.8823	−0.046	.9566	−0.034
.8098	−0.048	.8844	−0.046	.9594	−0.039
.8106	−0.046	.8853	−0.045	.9603	−0.041
.8129	−0.046	.8884	−0.048	38580.7825	−0.049
.8136	−0.042	.8893	−0.045	-7835	−0.039
.8163	−0.042	.8914	−0.050	.7855	−0.048
.8171	−0.046	.8922	−0.046	.7869	−0.044
.8198	−0.044	.8948	−0.045	.7891	−0.047
.8205	−0.048	.8955	−0.044	.7897	−0.047
.8230	−0.045	.8983	−0.039	*38582.7820	−0.074
.8240	−0.046	.8991	−0.039	.7829	−0.074
.8264	−0.042	.9018	−0.041	.7855	−0.079
.8271	−0.049	.9025	−0.048	.7865	−0.077
.8299	−0.041	.9049	−0.043	.7893	−0.070
.8309	−0.046	.9059	−0.046	.7901	−0.076
.8330	−0.044	.9084	−0.039	.7928	−0.078
.8341	−0.046	.9092	−0.049	.7938	−0.077
.8365	−0.040	.9117	−0.048	.7966	−0.080
.8372	−0.041	.9125	−0.045	*38583.7706	−0.079
.8400	−0.041	.9150	−0.039	.7716	−0.077
.8409	−0.049	.9160	−0.046	.7744	−0.076
.8431	−0.045	.9184	−0.046	.7747	−0.074
.8441	−0.050	.9191	−0.041	.7773	−0.075
.8466	−0.050	.9221	−0.022	.7779	−0.072
.8476	−0.050	.9226	−0.030	.7803	−0.069
.8497	−0.045	.9250	−0.041	.7813	−0.071
.8507	−0.049	.9257	−0.041	*38594.6984	−0.037
.8532	−0.048	.9285	−0.034	.6994	−0.038
.8539	−0.046	.9292	−0.035	.7019	−0.040
.8566	−0.045	.9323	−0.039	.7026	−0.041
.8577	−0.045	.9330	−0.042	.7052	−0.034
.8601	−0.043	.9356	−0.036	.7060	−0.031
.8611	−0.044	.9364	−0.035	.7088	−0.035
.8636	−0.040	.9388	−0.033	.7095	−0.047
.8648	−0.038	.9396	−0.038	38637.6512	−0.430
.8674	−0.043	.9421	−0.042	.6519	−0.426
.8684	−0.045	.9428	−0.041	.6569	−0.439
.8707	−0.043	.9455	−0.041	.6574	−0.441
.8716	−0.043	.9462	−0.038	.6623	−0.437
.8743	−0.045	.9490	−0.030	.6631	−0.439
.8752	−0.043	.9497	−0.037	38638.6550	−0.448

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m - m_c)$
38638.6556	−0.444	38902.9286	−0.454	38929.8256	−0.426
.6605	−0.447	38903.8993	−0.446	.8279	−0.416
.6610	−0.446	.9003	−0.447	.8285	−0.421
.6656	−0.443	.9032	−0.445	38931.8378	−0.436
.6661	−0.446	.9042	−0.445	.8387	−0.437
38640.6438	−0.401	.9068	−0.449	.8413	−0.443
.6445	−0.407	.9078	−0.448	.8420	−0.444
.6491	−0.410	38908.8732	−0.440	.8446	−0.440
.6494	−0.409	.8740	−0.446	.8455	−0.439
.6540	−0.404	.8763	−0.437	38932.8551	−0.425
.6546	−0.410	.8769	−0.437	.8560	−0.426
38642.6016	−0.407	38909.8793	−0.460	.8583	−0.429
.6022	−0.409	.8801	−0.458	.8589	−0.430
.6073	−0.410	.8826	−0.454	38933.8513	−0.450
.6077	−0.411	.8832	−0.453	.8522	−0.449
.6125	−0.405	38910.8634	−0.457	.8548	−0.450
.6131	−0.405	.8642	−0.460	.8554	−0.449
38885.9456	−0.473	.8670	−0.459	.8581	−0.448
.9467	−0.476	.8679	−0.466	.8589	−0.452
.9495	−0.476	.8704	−0.458	38951.8296	−0.407
.9501	−0.475	.8710	−0.453	.8304	−0.406
.9524	−0.475	.8735	−0.457	.8329	−0.402
.9531	−0.475	.8744	−0.459	.8338	−0.401
38889.9266	−0.471	38911.8524	−0.454	.8360	−0.406
.9276	−0.475	.8532	−0.451	.8365	−0.399
.9300	−0.478	.8558	−0.456	38954.7884	−0.379
.9310	−0.480	.8567	−0.451	.7893	−0.376
.9338	−0.476	.8595	−0.449	.7920	−0.378
.9349	−0.479	.8604	−0.450	.7929	−0.376
38898.9009	−0.455	38918.8396	−0.450	.7960	−0.375
.9018	−0.455	.8404	−0.450	.7969	−0.374
.9044	−0.455	.8426	−0.448	38960.7854	−0.394
.9053	−0.455	.8431	−0.450	.7864	−0.389
38899.9047	−0.471	.8458	−0.447	.7890	−0.390
.9057	−0.471	.8463	−0.447	.7896	−0.388
.9084	−0.473	38926.8502	−0.441	.7921	−0.385
.9093	−0.474	.8511	−0.437	.7929	−0.388
.9119	−0.473	.8537	−0.436	38972.7281	−0.417
.9128	−0.469	.8547	−0.437	.7290	−0.414
38902.9206	−0.460	.8573	−0.440	.7324	−0.415
.9216	−0.459	.8583	−0.439	.7333	−0.420
.9241	−0.458	38929.8218	−0.423	.7366	−0.424
.9250	−0.457	.8227	−0.423	.7374	−0.421
.9276	−0.451	.8250	−0.426	38973.7058	−0.416

Table 1 - continued

J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$	J. D. hel.	$B(m_v - m_c)$
38973.7067	−0.413	38975.7101	−0.388	38993.6660	−0.436
.7094	−0.412	.7110	−0.388	.6686	−0.433
.7102	−0.416	38976.7018	−0.390	.6693	−0.433
.7127	−0.417	.7026	−0.395	38995.6412	−0.424
.7133	−0.411	.7051	−0.399	.6419	−0.424
38974.7048	−0.393	.7060	−0.398	.6445	−0.430
.7056	−0.396	.7087	−0.396	.6454	−0.429
.7081	−0.396	.7095	−0.395	.6477	−0.432
.7088	−0.394	38992.6571	−0.430	.6482	−0.430
.7113	−0.395	.6578	−0.423	.6508	−0.428
.7119	−0.397	.6602	−0.423	.6517	−0.429
38975.7033	−0.391	.6608	−0.422	38996.6470	−0.429
.7041	−0.398	.6629	−0.423	.6479	−0.426
.7069	−0.388	.6638	−0.429	.6504	−0.430
.7074	−0.387	38993.6653	−0.436	.6510	−0.430

J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$
2400000.+		38557.8185	−0.267	*38576.7660	−0.077
38550.8844	−0.249	.8192	−0.267	.7691	−0.075
.8854	−0.238	.8258	−0.273	.7703	−0.069
.8917	−0.241	.8265	−0.276	.7733	−0.067
.8924	−0.248	*38560.8186	−0.067	.7745	−0.070
.8990	−0.274	.8194	−0.066	.7774	−0.071
.9000	−0.286	.8252	−0.058	.7785	−0.071
38553.8447	−0.240	.8259	−0.062	38580.7698	−0.008
.8459	−0.240	.8300	−0.070	.7707	−0.010
.8522	−0.239	.8325	−0.061	.7732	−0.008
.8534	−0.245	38561.7982	−0.287	.7738	−0.018
.9202	−0.235	.7993	−0.290	.7762	−0.006
.9209	−0.239	.8057	−0.290	.7767	−0.009
.9272	−0.232	.8066	−0.291	.7789	−0.002
.9285	−0.232	.8134	−0.281	.7798	−0.009
38555.8175	−0.295	.8144	−0.279	*38582.7706	−0.053
.8186	−0.302	38567.8135	−0.234	.7714	−0.055
.8251	−0.293	.8145	−0.234	.7744	−0.054
.8258	−0.296	.8213	−0.233	.7752	−0.056
.8324	−0.296	.8224	−0.237	.7781	−0.057
.8331	−0.298	.8291	−0.231	.7789	−0.056
38557.8112	−0.266	.8301	−0.234	*38583.7567	−0.051
.8120	−0.271	*38576.7649	−0.076	.7577	−0.052

Table 1 - continued

J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$
*38583.7602	−0.044	38640.6388	−0.241	38903.8951	−0.328
.7608	−0.051	.6393	−0.242	.8961	−0.328
.7635	−0.050	38642.5868	−0.245	38908.8661	−0.294
.7642	−0.064	.5873	−0.242	.8670	−0.296
.7667	−0.045	.5914	−0.249	.8696	−0.294
.7677	−0.045	.5921	−0.248	.8702	−0.293
*38593.7508	0.006	.5962	−0.245	38909.8703	−0.325
.7515	0.011	.5966	−0.241	.8712	−0.336
.7545	−0.013	38646.6267	−0.206	.8734	−0.331
.7553	−0.001	.6274	−0.211	.8739	−0.335
.7581	0.009	.6331	−0.201	.8762	−0.330
.7588	0.025	.6336	−0.206	.8767	−0.328
.7616	0.009	38885.9374	−0.355	38910.8539	−0.340
.7623	0.024	.9385	−0.357	.8547	−0.336
*38594.6848	0.001	.9415	−0.358	.8570	−0.333
.6856	−0.006	.9426	−0.360	.8576	−0.339
.6880	−0.010	38889.9141	−0.359	.8598	−0.333
.6890	−0.013	.9151	−0.357	.8606	−0.337
.6914	−0.009	.9180	−0.356	38911.8430	−0.332
.6920	−0.011	.9193	−0.356	.8436	−0.330
.6949	−0.002	.9222	−0.359	.8458	−0.329
.6957	−0.004	.9234	−0.361	.8466	−0.334
38631.6393	−0.270	38898.8904	−0.324	.8488	−0.329
.6398	−0.268	.8913	−0.332	.8495	−0.329
.6464	−0.274	.8940	−0.330	38918.8299	−0.320
.6469	−0.271	.8945	−0.321	.8308	−0.320
38637.6333	−0.282	.8969	−0.329	.8333	−0.325
.6341	−0.285	.8979	−0.326	.8340	−0.319
.6394	−0.286	38899.8939	−0.345	.8366	−0.325
.6398	−0.284	.8948	−0.345	.8375	−0.327
.6451	−0.280	.8973	−0.356	38926.8391	−0.310
.6457	−0.285	.8984	−0.352	.8400	−0.315
38638.6344	−0.306	.9010	−0.348	.8428	−0.308
.6348	−0.300	.9021	−0.350	.8435	−0.311
.6398	−0.299	38902.9105	−0.328	.8462	−0.307
.6402	−0.305	.9115	−0.332	.8471	−0.312
.6448	−0.297	.9141	−0.330	38929.8100	−0.285
.6453	−0.296	.9147	−0.328	.8109	−0.285
.6496	−0.299	.9170	−0.329	.8138	−0.282
.6501	−0.296	.9176	−0.333	.8147	−0.280
38640.6289	−0.244	38903.8889	−0.330	.8175	−0.286
.6296	−0.240	.8899	−0.327	.8184	−0.286
.6339	−0.251	.8922	−0.327	38931.8282	−0.316
.6344	−0.248	.8929	−0.328	.8291	−0.314

Table 1 - continued

J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$	J. D. hel.	$V(m_v - m_c)$
38931.8313	−0.314	38955.7847	−0.228	38975.6926	−0.235
.8320	−0.309	.7872	−0.224	.6935	−0.239
.8343	−0.312	.7879	−0.230	.6963	−0.232
.8349	−0.315	.7908	−0.232	.6969	−0.230
38932.8618	−0.296	.7918	−0.234	.6994	−0.236
.8628	−0.296	38960.7743	−0.247	.6999	−0.240
.8656	−0.291	.7752	−0.238	38976.6906	−0.246
.8662	−0.296	.7782	−0.236	.6915	−0.246
.8680	−0.295	.7791	−0.237	.6942	−0.244
.8692	−0.293	.7817	−0.236	.6952	−0.238
38933.8409	−0.323	.7823	−0.238	.6978	−0.250
.8417	−0.322	38972.7177	−0.288	.6987	−0.248
.8442	−0.321	.7188	−0.285	38992.6473	−0.283
.8448	−0.326	.7212	−0.284	.6484	−0.284
.8473	−0.326	.7218	−0.283	.6510	−0.285
.8483	−0.326	.7241	−0.287	.6515	−0.288
38951.8186	−0.247	.7251	−0.286	.6537	−0.285
.8195	−0.251	38973.6959	−0.279	.6547	−0.287
.8222	−0.251	.6968	−0.281	38993.6586	−0.305
.8231	−0.251	.6995	−0.278	.6596	−0.308
.8261	−0.251	.7001	−0.285	.6619	−0.304
.8267	−0.251	.7023	−0.277	.6625	−0.306
38954.7762	−0.226	.7029	−0.281	38995.6336	−0.276
.7772	−0.225	38974.6937	−0.256	.6345	−0.279
.7802	−0.223	.6947	−0.257	.6370	−0.280
.7811	−0.221	.6974	−0.251	.6378	−0.284
.7845	−0.224	.6983	−0.253	38996.6403	−0.302
.7855	−0.227	.7008	−0.254	.6412	−0.298
38955.7838	−0.230	.7017	−0.254	.6435	−0.297
				.6441	−0.299

* *The comparison star was HR 7028*

Table 2.

Individual Measurements Obtained at Hvar Observatory

J. D. hel.	V	B	U	J. D. hel.	V	B	U
2400000+				43013.4504	5.961	5.865	5.169
42977.3419	5.865	5.787	5.072	.4566	5.965	5.864	5.172
.3658	5.897	5.831	5.118	.4625	5.978	5.873	5.185
.3793	5.870	5.785	5.077	.4688	5.969	5.864	5.179
.3968	5.866	5.781	5.063	43014.4970	5.966	5.878	5.214
42981.3311	5.866	5.784	5.027	.5029	5.957	5.876	5.209
.3533	5.922	5.809	5.077	.5109	5.942	5.851	5.187
.3770	5.875	5.795	5.044	.5206	5.940	5.864	5.219
.3908	5.886	5.809	5.054	43015.3572	5.884	5.839	5.167
.4138	5.890	5.790	5.046	.3631	5.912	5.850	5.162
42989.3550	5.924	5.843	5.126	.3687	5.931	5.857	5.164
.3728	5.918	5.831	5.120	.3756	5.913	5.842	5.157
.3871	5.952	5.827	5.114	.3812	5.904	5.834	5.136
.4001	5.903	5.773	5.060	43016.4120	5.925	5.828	5.121
42990.3519	5.929	5.813	5.118	43017.4210	5.946	5.858	5.152
.3745	5.945	5.827	5.130	.4305	5.923	5.834	5.127
.3855	5.932	5.831	5.135	.4429	5.930	5.835	5.150
.3918	5.929	5.820	5.117	.4514	5.915	5.829	5.147
.4108	5.927	5.817	5.116	.4597	5.933	5.839	5.162
42993.4534	5.978	5.878	5.195	43018.3632	5.918	5.843	5.131
.4802	5.976	5.869	5.205	.3697	5.916	5.848	5.101
42994.4017	5.961	5.866	5.190	.3772	5.924	5.850	5.156
.4135	5.961	5.862	5.176	.3850	5.927	5.845	5.146
.4188	5.939	5.838	5.176	43027.3009	5.954	5.848	5.152
.4455	5.973	5.876	5.201	.3078	5.950	5.855	5.151
.4531	5.969	5.858	5.172	.3137	5.946	5.848	5.146
42996.5423	5.944	5.859	5.186	.3200	5.940	5.852	5.155
42998.3955	5.941	5.850	5.167				
.4042	5.966	5.877	5.197	.3300	5.974	5.862	5.150
.4306	5.960	5.876	5.187	43029.3177	5.932	5.838	5.138
.4368	5.937	5.845	5.170	.3257	5.926	5.844	5.143
.4423	5.947	5.859	5.203	.3309	5.921	5.839	5.135
43003.3670	5.939	5.847	5.162	43031.2863	5.935	5.858	5.154
3.903	5.912	5.839	5.169	.2930	5.933	5.849	5.141
.3990	5.944	5.856	5.178	.2982	5.933	5.843	5.152
.4105	5.950	5.842	5.168	43313.5096	5.964	5.864	5.148
.4163	5.952	5.847	5.176	.5149	5.964	5.874	5.161
43012.4611	5.947	5.872	5.210	.5191	5.968	5.864	5.160
.4808	5.963	5.868	5.205	.5243	5.946	5.871	5.155
.4843	5.981	5.884	5.218	.5289	5.951	5.861	5.154
43013.4240	5.972	5.875	5.175	43315.4632	5.967	5.862	5.178
.4358	5.958	5.877	5.180	.4684	5.982	5.868	5.162

Table 2 - continued

J. D. hel.	V	B	U	J. D. hel.	V	B	U
43315.4726	5.963	5.856	5.170	43342.4078	5.993	5.887	5.173
.4772	5.984	5.868	5.163	43343.3588	5.921	5.863	5.165
.4815	5.987	5.881	5.186	.3651	5.957	5.848	5.144
43319.4593	5.940	5.843	5.166	.3696	5.934	5.850	5.144
.4649	5.937	5.866	5.210	.3744	5.947	5.856	5.176
.4701	5.922	5.847	5.178	.3796	5.912	5.797	5.128
.4761	5.921	5.840	5.169	43344.3982	5.948	5.853	5.161
.4980	5.954	5.844	5.155	.4024	5.946	5.861	5.169
.5036	5.946	5.831	5.155	.4061	5.952	5.850	5.155
43323.4854	5.940	5.865	5.150	.4111	5.955	5.854	5.157
.4910	5.945	5.861	5.157	.4158	5.952	5.859	5.160
.4970	5.945	5.860	5.165	43345.3404	5.953	5.853	5.157
.5028	5.931	5.857	5.160	.3443	5.946	5.850	5.156
.5084	5.936	5.863	5.160	.3492	5.949	5.847	5.158
43326.4432	5.952	5.869	5.164	.3541	5.947	5.856	5.171
.4484	5.944	5.853	5.151	.3581	5.944	5.851	5.154
.4538	5.961	5.856	5.149	43347.5414	5.976	5.878	5.186
.4591	5.976	5.870	5.169	.5465	5.971	5.874	5.186
.4637	5.978	5.887	5.188	.5510	5.983	5.866	5.175
.4684	5.972	5.873	5.186	.5559	5.977	5.869	5.178
.4751	5.950	5.867	5.171	.5601	5.982	5.892	5.201
.4804	5.951	5.870	5.170	43349.3485	5.964	5.886	5.194
43327.4482	5.989	5.897	5.195	.3531	5.950	5.880	5.199
.4525	5.977	5.893	5.213	.3575	5.936	5.853	5.168
.4574	5.984	5.903	5.226	.3612	5.959	5.882	5.200
.4637	5.976	5.880	5.212	.3646	5.981	5.873	5.182
43336.3938	5.952	5.881	5.193	43352.3291	5.947	5.839	5.150
.4079	5.941	5.854	5.155	.3339	5.937	5.841	5.152
.4192	5.952	5.855	5.136	.3379	5.935	5.849	5.157
.4298	5.928	5.835	5.132	.3423	5.940	5.836	5.139
43337.4226	5.936	5.840	5.132	.3473	5.954	5.839	5.137
.4313	5.931	5.839	5.120	.3533	5.936	5.833	5.135
.4410	5.942	5.860	5.160	.3581	5.949	5.850	5.151
.4524	5.948	5.862	5.154	.3622	5.948	5.853	5.161
.4618	5.941	5.864	5.170	.3667	5.926	5.837	5.152
43338.3896	5.950	5.859	5.158	.4665	5.949	5.870	5.158
.3976	5.932	5.850	5.146	.4703	5.938	5.863	5.162
.4050	5.926	5.841	5.142	.4790	5.941	5.861	5.168
.4120	5.938	5.849	5.154	.4833	5.952	5.851	5.168
.4193	5.921	5.851	5.141	.4865	5.932	5.851	5.167
43342.3721	5.958	5.846	5.152	43353.3492	5.953	5.873	5.180
.3827	5.978	5.864	5.151	.3536	5.933	5.865	5.184
.3906	5.955	5.837	5.136	.3579	5.940	5.860	5.171
.4019	5.975	5.863	5.164	.3617	5.951	5.866	5.179

Table 2 - continued

J. D. hel.	V	B	U	J. D. hel.	V	B	U
43353.3653	5.954	5.868	5.179	43372.4055	5.926	5.836	5.107
.4680	5.950	5.862	5.188	.4082	5.951	5.834	5.104
.4728	5.946	5.872	5.195	.4111	5.948	5.850	5.123
.4776	5.940	5.873	5.193	.4134	5.939	5.839	5.113
.4821	5.962	5.871	5.191	43373.3787	5.941	5.850	5.128
.4865	5.957	5.864	5.190	.3814	5.942	5.845	5.122
43354.3426	5.986	5.890	5.185	.3841	5.933	5.840	5.123
.3472	5.999	5.889	5.186	.3873	5.934	5.847	5.125
.3515	5.992	5.886	5.186	.3897	5.927	5.832	5.115
.3561	5.997	5.886	5.177	43380.3732	5.935	5.855	5.121
.3599	5.986	5.887	5.182	.3776	5.937	5.859	5.134
.3646	5.988	5.897	5.196	.3807	5.917	5.840	5.114
.3683	5.995	5.893	5.190	.3855	5.938	5.842	5.115
.4802	6.003	5.902	5.202	.3915	5.920	5.827	5.106
.4840	5.991	5.900	5.203	.3958	5.916	5.841	5.119
.4873	5.994	5.886	5.189	.4335	5.925	5.863	5.160
.4915	5.997	5.896	5.197	.4395	5.927	5.834	5.110
.4954	5.998	5.896	5.197	.4442	5.924	5.855	5.128
43358.4282	5.910	5.834	5.139	.4488	5.933	5.868	5.139
43359.3427	5.933	5.846	5.148	.4540	5.928	5.843	5.127
.3469	5.928	5.842	5.145	43381.3066	5.950	5.851	5.104
.3502	5.925	5.844	5.147	.3106	5.938	5.846	5.102
.3541	5.927	5.850	5.153	.3133	5.932	5.845	5.105
.3579	5.929	5.838	5.144	.3173	5.940	5.839	5.101
.4641	5.939	5.848	5.139	.3225	5.950	5.850	5.114
.4692	5.939	5.853	5.145	.3264	5.944	5.846	5.110
.4733	5.931	5.852	5.156	43382.3613	5.948	5.853	5.113
.4774	5.937	5.850	5.154	.3687	5.948	5.848	5.113
.4814	5.938	5.850	5.157	.3783	5.952	5.848	5.119
43362.4477	5.968	5.875	5.170	43385.4090	5.908	5.829	5.110
.4528	5.972	5.864	5.156	.4156	5.913	5.832	5.119
.4575	5.982	5.844	5.120	.4210	5.925	5.832	5.113
.4643	5.976	5.880	5.184	.4306	5.923	5.836	5.117
43366.3823	5.867	5.808	5.066	.4359	5.907	5.835	5.117
.3863	5.891	5.802	5.053	43391.3543	5.957	5.845	5.137
.3907	5.888	5.830	5.075	.3608	5.948	5.844	5.147
.4125	5.883	5.804	5.045	.3668	5.937	5.849	5.150
43367.4560	5.944	5.845	5.139	.3725	5.943	5.847	5.142
.4633	5.962	5.852	5.137	.3776	5.931	5.841	5.154
43371.3795	5.912	5.816	5.077	43392.3676	5.915	5.846	5.139
.3832	5.921	5.819	5.074	.3735	5.899	5.840	5.143
.3895	5.913	5.819	5.076	.3781	5.917	5.832	5.133
.3925	5.907	5.818	5.080	.3832	5.937	5.850	5.141
43372.4029	5.917	5.822	5.110	.3883	5.947	5.859	5.149

Table 2 - continued

J. D. hel.	V	B	U	J. D. hel.	V	B	U
43394.3402	5.981	5.901	5.195	43669.5344	5.878	5.837	5.048
.3462	5.990	5.912	5.206	.5370	5.842	5.761	4.981
.3500	5.981	5.885	5.178	43724.3951	5.924	5.831	5.092
.3542	5.962	5.891	5.189	.3985	5.929	5.831	5.095
.3593	5.980	5.901	5.206	.4024	5.928	5.850	5.122
43395.3746	5.961	5.883	5.170	.4055	5.908	5.824	5.102
.3798	5.958	5.881	5.167	43725.4083	5.926	5.810	5.111
.3836	5.969	5.876	5.174	.4132	5.900	5.814	5.098
.3878	5.969	5.871	5.165	.4167	5.897	5.832	5.112
.3926	5.973	5.872	5.162	.4206	5.905	5.812	5.080
43398.3637	5.932	5.844	5.125	.4237	5.921	5.803	5.074
.3663	5.929	5.847	5.133	43735.4016	5.899	5.827	5.082
.3746	5.934	5.858	5.135	.4090	5.922	5.831	5.082
.3796	5.923	5.842	5.138	.4170	5.910	5.830	5.074
.3846	5.925	5.848	5.136	.4230	5.904	5.846	5.079
43413.2873	5.917	5.849	5.134	.4289	5.916	5.842	5.090
.2954	5.916	5.836	5.113	43736.3576	5.885	5.805	5.055
.3018	5.911	5.831	5.115	.3648	5.916	5.812	5.051
.3087	5.932	5.834	5.120	.3713	5.920	5.813	5.052
43414.2712	5.963	5.864	5.157	.3767	5.905	5.828	5.065
.2783	5.948	5.852	5.141	.3821	5.905	5.831	5.066
.2911	5.969	5.858	5.144	43740.4470	5.825	5.788	4.997
.2977	5.961	5.855	5.147	.4515	5.814	5.760	4.984
.3013	5.965	5.861	5.150	.4552	5.813	5.764	4.986
43415.2649	5.986	5.882	5.185	.4600	5.848	5.761	4.981
.2721	5.986	5.886	5.191	.4629	5.838	5.763	4.981
.2782	5.989	5.894	5.191	43741.4288	5.802	5.778	4.997
.2836	5.995	5.870	5.174	.4328	5.808	5.778	4.997
.2874	5.989	5.870	5.168	.4362	5.810	5.752	4.966
43420.2604	5.943	5.850	5.136	.4460	5.807	5.749	4.964
.2661	5.960	5.870	5.147	43742.3665	5.856	5.806	5.007
.2717	5.950	5.838	5.124	.3712	5.852	5.798	5.005
.2794	5.961	5.876	5.172	.3747	5.854	5.803	5.025
.2851	5.934	5.860	5.137	.3836	5.863	5.800	5.004
43421.2531	5.990	5.877	5.172	.3897	5.880	5.801	4.995
.2579	5.978	5.871	5.155	43744.3109	5.862	5.819	5.035
.2628	5.983	5.872	5.151	.3179	5.852	5.799	5.013
.2671	5.971	5.873	5.153	.3229	5.840	5.804	5.031
.2699	5.975	5.873	5.150	.3267	5.844	5.795	5.022
43422.2642	5.957	5.860	5.128	43745.3977	5.839	5.779	5.010
.2688	5.967	5.851	5.114	.4017	5.822	5.762	4.997
.2750	5.954	5.856	5.124	.4048	5.843	5.767	5.006
.2806	5.961	5.862	5.135	.4104	5.854	5.777	4.996
43669.5311	5.829	5.764	4.996	43746.3762	5.867	5.763	5.013

Table 2 - continued

J. D. hel.	V	B	U	J. D. hel.	V	B	U
43746.3811	5.875	5.812	5.049	43750.3177	5.921	5.829	5.088
.3842	5.866	5.793	5.025	.3215	5.917	5.826	5.079
.3893	5.865	5.793	5.030	.3247	5.922	5.826	5.089
.3924	5.846	5.775	5.051	.3293	5.920	5.818	5.072
				.3326	5.921	5.825	5.079

Table 3.

Comparison Stars Used

HR	V	B − V	U − B	Status	Source
7060	6.187	0.080	0.132	comp. at Hvar and at Lowell	Lowell Obs. meas.
7028	5.994	−0.069	−0.232	comp. at Lowell in several cases (see Table 1)	Lowell Obs. meas. dif. to HR 7060