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$UBV(RI)_C$ JHK observations of *Hipparcos*-selected nearby stars

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ABSTRACT

We present homogeneous, standardized $UBV(RI)_C$ photometry for over 700 nearby stars selected on the basis of *Hipparcos* parallaxes. Additionally, we list *JHK* photometry for about half of these stars, as well as *L* photometry for 86 of the brightest. A number of stars with peculiar colours or anomalous locations in various colour–magnitude diagrams are discussed.

Key words: stars: distances – stars: fundamental parameters.

1 INTRODUCTION

This is effectively the fourth and last paper in a series based on $UBV(RI)_C$ $JHKL$ photometry of *Hipparcos*-selected stars. In the first paper (Koen et al. 2002, hereafter Paper I), we presented $UBV(RI)_C$ photometry for nearly 550 southern M stars fainter than about $V = 7.6$; these were used to select a subset of around 100 stars which appeared to be relatively constant and which were observed more intensively to provide supplementary red standards for photometric purposes (Kilkenny et al. 2007, hereafter Paper II). Additionally, Paper II listed *JHK* photometry for about half the Paper I stars and *L* photometry for the brightest ($L < 6$) of them. The third paper (Koen et al. 2007, hereafter Paper III) used the *JHKL* photometry from Paper II together with photometry presented here, to calculate transformations between the near-infrared (*JHK*) system (Carter 1990) used at the South African Astronomical Observatory (SAAO) and the JHK_S system of the Two-Micron All Sky Survey (2MASS; Skrutskie et al. 2006).

In the cases of Papers I and II, it was felt that homogeneous and standardized photometry for a significant sample of redder (M) stars would be useful in a number of applications and that stars which appeared constant in observations spread over several seasons could fill a longstanding need for additional very red standards – especially M dwarf stars. This being the case, some effort was invested in making sure the $UBV(RI)_C$ photometry for the observed stars was internally homogeneous and, as closely as possible, transformed to the Cousins 'E region' standard system, as compiled by Menzies et al. (1989) with supplementary standards from Kilkenny et al. (1998). Along with the *Hipparcos* stars, significant numbers of red GJ stars (Gliese & Jahreiss 1979; stars within 25 pc) were observed, so that the resulting photometry could be compared with earlier sources (Cousins 1980; Laing 1989; Bessell 1990; Kilkenny et al. 1998). All the comparisons indicated that there were no gross differences between the photometry of Papers I and II and sources generally accepted as being on the standard system; indeed, almost all the differences were <0.01 mag and could be regarded as insignificant.

In the current paper, we present photometry for just over 730 stars, selected from the *Hipparcos* catalogue (ESA 1997) on the basis of the following criteria.

(i) Declination south of $\delta = +26°$.
(ii) Distance $r < 25$ pc, according to the *Hipparcos* parallax (ESA 1997; Perryman et al. 1997). Note though that the parallaxes have since been revised by van Leeuwen (2007).
(iii) A general brightness limit $V > 6.5$ was imposed to prevent overillumination of the photoelectric photometer used for the optical photometry. For the reddest stars, a fainter limit had to be used to prevent overillumination in the *R* and/or *I* bands.

There are 834 stars which satisfy these criteria but some stars were not observed because the presence of close companions (separations typically less than 10–15 arcsec) made accurate photoelectric photometry impossible. This applies to cases where companions were visible in the telescope eyepiece – in many instances faint nearby stars have been included in the observing aperture inadvertently. A further few were later rejected at the data 'quality control' stage.

The value of studying the nearby stars has been concisely summarized by Reid & Cruz (2002). Briefly, the nearby stars give us the brightest examples – and therefore the easiest to study – of many types of star. Additionally, these stars as a group provide a basis for many astrophysically important relations such as the mass–luminosity function, the initial mass function, stellar binarity/multiplicity statistics and so on. It is clear, however, that even within the relatively small radius of 20 pc, we do not have complete samples of the stellar population (Reid & Cruz 2002), nor even complete – let alone homogeneous – data sets for the known stars.

Note that, as in Papers I and II, we generally refer to $(V - R)$ and $(V - I)$ colours without a 'C' subscript; in all cases it should be understood that we refer to the $UBV(RI)_C$ system, that is to say, the *RI* photometry is on the Cousins system.

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2 *UBVRI* PHOTOMETRY

All *UBVRI* observations were made using the 0.5-m telescope and photomultiplier-based modular photometer (Kilkenny et al. 1988) at the Sutherland site of the SAAO between 2000 June and 2005 November. The usual SAAO reduction procedures were followed; these are briefly described in the appendix to Kilkenny et al. (1998) and extensive comments on the reduction and standardization of red star photometry were made in Paper I and will not be repeated here. Given that the bulk of the observations reported in this paper were obtained over the same time, with the same equipment, and reduced along with the observations reported in Papers I and II, we feel confident that, with regard to the red stars [$(V - I) > 1.7$] they are as close as possible to being on the same system as the results reported in those papers. For bluer stars, all observations were reduced to the 'E-region' standard system as represented by Menzies et al. (1989) and, again, we feel that the results are homogeneous and very close to standard.

A few measurements – about 70 observations, or around 4 per cent of the total – were obtained in 2005, after the red star programmes were completed. To ensure that these results are homogeneous with the earlier data, we used all the current programme stars with photometry from both 2000–2004 and 2005 to make comparisons as a function of $(V - I)$. Small corrections were applied to the 2005 data, over the range $0.5 < (V - I) < 2.7$, amounting to zero-point corrections of $+0.009$ mag in V and $+0.008$ mag in $(V - I)$; linear, colour-dependent corrections of less than 0.015 in $(V - R)$ and $(U - B)$ and a piece-wise linear, colour-dependent correction of no more than 0.01 mag in $(B - V)$. After these small corrections, we believe that we have assembled an homogeneous set of photometric measurements for these nearby stars.

The *UBVRI* results are presented in Table 1 for stars nearer than 30 pc according to the revised *Hipparcos* parallaxes (van Leeuwen 2007). We had originally selected stars with *Hipparcos* distances less than 25 pc but, according to the new parallaxes, 32 of the stars in the programme are beyond 25 pc; of these, 12 are more distant than 30 pc, with quite large distance errors and these 12 stars are listed separately in Table 2, together with a single object (HIP 14559) with a negative new parallax.

Tables 1 and 2 contain the mean *UBVRI* photometry. In a few cases, only *UBV* results are given; this is because for some of the redder stars near the bright limit, the photometer can measure U, B and V, but R and I are too bright for the upper limit to the count rate. Following the mean photometry values are the number (n) of observations in the means; the derived distances (r) and absolute magnitudes (M_V) together with their associated standard errors (σ_r and σ_M) derived from the *Hipparcos* parallax errors; variability and multiplicity flags copied from *Hipparcos* and spectral types for all stars taken from recent classification sources ('Ref'). The references are (1) Gray et al. (2006); (2) Gray et al. (2003); (3) Reid, Hawley & Gizis (1995), Hawley, Gizis & Reid (1996) and (4) the *Hipparcos* catalogue. In case of multiple classifications this was also the order of preference we followed. There are new (i.e. post-1994) classifications for 648 (88 per cent) of the stars.

For the convenience of the reader, we repeat here the meanings of the *Hipparcos* variability flags:

C – not detected as variable;

D – probably spurious variability, due to the presence of a close companion;

M – microvariable;

P – periodic variable;

R – possible spurious magnitude trend, due to a revised colour index;

U – 'unsolved' variable (possibly multiperiodic or irregular variable).

Similarly, the 'multiple systems annex' flags are

C – solutions for multiple components;

G – higher order terms required in solution (probable long-period astrometric binary);

O – partial binary orbital element solution;

V – double system with a variable component;

X – model uncertainty larger than expected from errors on individual measurements (probable short-period astrometric binary).

3 QUALITY CONTROL OF THE OPTICAL PHOTOMETRY

A disadvantage of photoelectric aperture photometry is that faint companion stars may be included in the aperture. This is particularly the case for the optical photometry presented here, for which the standard aperture size was 30 arcsec. Fig. 1 shows the differences between V magnitudes measured at SAAO, and those given in the *Hipparcos* photometry. The excess of large negative residuals (SAAO magnitudes brighter than *Hipparcos* magnitudes) is obvious. Measurements of stars with Catalogue of Components of Double and Multiple Stars (CCDM) identifiers (non-zero flags in field H57 of the *Hipparcos* catalogue) are circled in Fig. 1: it is clear that multiplicity can account for most of the overly bright SAAO measurements. Stars which have CCDM identifiers and are more than 0.15 mag brighter in the SAAO photometry are therefore excluded in what follows – there are 16 such objects, out of the total number of 750 stars for which measurements were obtained. The particular cut-off chosen leaves the distribution of residuals roughly symmetrical around zero (Fig. 2); for example, the mean residual is then -6 mmag.

There are some distinct outliers left in Fig. 2. A number of these are no doubt due to variability and/or inaccurate photometry (although it is perhaps worth mentioning that HIP 75187, the bottommost star in Fig. 2, is not an outlier in any colour–colour or colour–magnitude plot below, suggesting that the SAAO photometry of the star is reliable). Data for stars with 'duplicity-induced variability' (flag 'D' in field H52 of the *Hipparcos* catalogue) are shown circled in the figure, while the squares denote stars flagged as periodic ('P') and unsolved ('U') variables.

For all but 90 of the 734 stars we obtained multiple optical measurements, and are therefore able to estimate photometric accuracies. The standard deviations

$$\sigma_V = \left[\frac{1}{n-1} \sum_{i=1}^{n} (V_i - \overline{V})^2 \right]^{1/2} \quad (1)$$

are plotted against the mean magnitudes $\overline{V}$ in Fig. 3; the symbols have the same meanings as in Fig. 2. With the exception of one star (HIP 51271) all objects with $\sigma_V > 0.05$ are flagged as variable in the *Hipparcos* catalogue. The mean value of σ_V is 12 mmag; the mean scatter for the colour indices are $\overline{\sigma}_{(B-V)} = 8.4$, $\overline{\sigma}_{(U-B)} = 27.0$, $\overline{\sigma}_{(V-R)} = 6.3$ and $\overline{\sigma}_{(V-I)} = 8.6$ mmag, *including* overt variables.

The fact that there is little increase in σ_V with magnitude is due to the fact that a deliberate policy was followed of increasing integration times towards fainter stars. In a similar vein, much longer integration times were generally used for U than the other colours. Even so, the very red nature of many of the target stars is

Table 1. *UBVRI* photometry, distances (r) and spectral types for *Hipparcos* nearby stars. 'n' is the number of observations in the mean photometry; σ_r and σ_M are standard errors in distance and absolute magnitude (M_V), derived from the parallax errors. 'Var' and 'Mlt' are the *Hipparcos* variability and multiplicity flags.

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
169	9.241	1.405	1.192	0.869	1.708	4	15.33	0.41	8.31	0.06	D	C	K5.0	3
436	8.485	1.084	0.934	0.647	1.206	2	15.89	0.18	7.48	0.02			K4.5V	1
439	8.562	1.460	1.052	0.973	2.130	7	4.34	0.02	10.37	0.01	C		M1.5	3
523	12.174	1.577	1.195	1.068	2.393	3	16.71	0.74	11.06	0.10	U		M2.5	3
687	10.763	1.479	1.221	0.934	1.895	4	21.75	0.91	9.08	0.09			M0	3
738	11.670	1.514	1.148	0.941	1.907	2	23.45	1.46	9.82	0.13			M0V	1
1031	7.226	0.774	0.344	0.423	0.810	3	20.19	0.24	5.70	0.03	C		K0V	1
1242	11.483	1.704	1.303	1.210	2.772	14	4.99	0.23	12.99	0.10		X	M:	4
1276	11.546	1.509	1.162	1.040	2.311	15	22.78	2.28	9.76	0.22			M2.5	3
1292	6.578	0.757	0.357			1	17.50	0.09	5.36	0.01	M		G8.5V(k)	1
1322	12.348	1.531	1.104	1.012	2.208	3	22.20	1.66	10.62	0.16			M4	4
1349	6.852	0.645	0.040	0.377	0.757	3	22.60	0.32	5.08	0.03	C	O	G5V Fe-1.2 CH-0.9	1
1463	10.864	1.526	1.182	0.995	2.126	4	16.34	0.57	9.80	0.08			M1.5	3
1532	9.897	1.349	1.188	0.836	1.586	3	21.08	0.73	8.28	0.08			M0V	2
1696	10.394	1.480	1.203	0.938	1.904	6	17.13	0.59	9.22	0.07			K7.0	3
1720	12.240	1.534	0.975	1.104	2.511	3	19.31	1.64	10.81	0.18	U		M3.0	3
1734	11.130	1.505	1.185	1.009	2.211	11	17.98	0.75	9.86	0.09	C		M1.5	3
1768	8.315	0.900	0.605	0.509	0.958	4	28.88	3.82	6.01	0.29		X	K2V(k)	1
1837	8.758	1.091	0.968	0.635	1.176	2	22.17	0.43	7.03	0.04	U		K4V(k)	1
1842	11.887	1.518	1.175	1.045	2.327	12	19.68	1.06	10.42	0.12			M2.5	3
1936	7.916	0.945	0.699	0.551	1.022	3	18.22	0.29	6.61	0.03	D		K3V	1
3143	11.401	1.487	1.191	0.968	2.030	5	23.99	1.61	9.50	0.15	C		M0.5	3
3261	10.525	1.444	1.169	0.906	1.784	3	19.53	0.85	9.07	0.09	C		K9V	1
3497	6.552	0.641	0.117			1	22.06	0.16	4.83	0.02	C		G6V Fe-0.9	1
3535	8.001	1.020	0.918	0.561	1.025	3	21.57	0.29	6.33	0.03			K3IV-V	2
3588	7.881	1.263	1.214	0.766	1.415	5	15.82	0.24	6.89	0.03	D	C	K6V(k)	1
3813	10.734	1.458	1.235	0.930	1.878	10	21.59	0.97	9.06	0.10			K7.0	3
3829	12.374	0.546	0.064	0.268	0.520	2	4.26	0.11	14.23	0.05		G	DG	4
3850	7.155	0.772	0.317	0.423	0.811	4	18.69	0.19	5.80	0.02			G9V	1
3937	12.151	1.628	1.042	1.188	2.729	3	11.85	0.65	11.78	0.12	D	C	M3Vkee	2
3979	6.972	0.671	0.149	0.368	0.720	2	21.52	0.31	5.31	0.03	C		G6V	2
3998	9.197	1.233	1.191	0.740	1.363	5	21.37	0.73	7.55	0.07			K6-V	2
4022	8.954	1.302	1.190	0.797	1.487	3	15.63	0.26	7.98	0.04	C		K7-Vk	1
4148	7.171	0.939	0.691	0.532	0.992	3	14.17	0.12	6.41	0.02	C		K2.5V(k)	1
4189	11.907	1.540	1.232	1.005	2.161	3	23.98	5.20	10.01	0.47	D	X	M1-V	1
4443	11.121	1.470	1.224	0.927	1.868	2	24.77	1.72	9.15	0.15				4
4473	9.482	1.320	1.256	0.806	1.493	4	19.66	0.38	8.01	0.04			K6.5V(k)	1
4569	11.801	1.581	1.256	1.138	2.599	2	12.35	0.49	11.34	0.09			M3V	1
4845	9.993	1.396	1.248	0.862	1.645	3	20.38	0.78	8.45	0.08	C	X	M0V	2
4849	8.131	1.044	0.843	0.615	1.160	4	21.14	0.55	6.51	0.06	D	C	K3V	2
4927	11.358	1.597	1.215	1.072	2.391	2	16.23	0.87	10.31	0.12	D	C	M2	3
5215	11.403	1.510	1.211	0.988	2.171	2	22.11	1.12	9.68	0.11			M2	3
5286	8.362	1.141	1.114	0.664	1.220	1	21.05	0.42	6.75	0.04			K4V	2
5410	12.250	1.533	1.372	1.084	2.453	3	22.58	1.54	10.48	0.15			M3	3
5496	9.824	1.544	1.147	1.094	2.471	1	8.19	0.16	10.26	0.04	C	X	M2.5V	1
5643	12.074	1.811	1.430	1.378	3.136	3	3.69	0.11	14.24	0.07			M4.5	3
5663	9.539	1.286	1.241	0.780	1.445	3	22.66	0.70	7.76	0.07			K6V(k)	1
5812	11.077	1.514	1.200	0.983	2.092	15	16.56	0.50	9.98	0.07	C		M0.0	3
5842	7.239	0.977	0.777	0.542	1.013	3	21.65	0.38	5.56	0.04	D	C	K2+V(k)	1
5957	10.068	1.379	1.292	0.849	1.635	2	23.64	0.98	8.20	0.09			M0V	2
6005	11.284	1.530	1.198	1.020	2.234	3	16.21	0.90	10.23	0.12			M2.5V	1
6008	10.786	1.474	1.248	0.942	1.930	13	23.38	1.39	8.94	0.13	C		M1	4
6069	10.791	1.300	0.786	0.880	1.868	4	20.48	4.51	9.23	0.48	D	X	M0.5	3
6097	11.796	1.467	1.108	1.008	2.230	10	22.12	1.71	10.07	0.17			M2	3
6351	10.130	1.397	1.103	0.877	1.754	2	16.71	0.43	9.02	0.06			M0V(k)	1
6365	11.403	1.490	1.210	0.977	2.093	12	22.37	1.29	9.66	0.12		X	M1.0	3
6917	7.704	0.985	0.708	0.562	1.051	1	23.74	0.38	5.83	0.04			K2.5V	2
7170	11.155	1.513	1.188	0.976	2.064	3	17.86	0.61	9.90	0.07	U		M1.5V(k)	1
7235	6.963	0.759	0.319	0.415	0.787	4	19.05	0.17	5.56	0.02	M		G8.5V	1
7372	7.096	0.934	0.575	0.545	1.061	3	21.63	1.44	5.42	0.14	P	C	K2V(k)	1
7554	10.391	1.443	1.240	0.910	1.836	5	22.49	0.76	8.63	0.07			K7.0	3
7576	7.656	0.803	0.403	0.438	0.839	4	23.95	0.42	5.76	0.04	M		G9Vk	2

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
7646	11.562	1.518	1.093	1.019	2.208	2	20.23	1.23	10.03	0.13			M2.5V	2
8051	10.915	1.535	1.190	1.036	2.301	10	11.41	0.26	10.63	0.05	C		M2	3
8275	8.890	1.063	0.925	0.620	1.150	3	24.02	0.70	6.99	0.06			K3.5V	2
8382	12.156	1.583	1.204	1.061	2.373	2	20.38	1.40	10.61	0.15			M2.5	3
8486	6.754	0.632	0.104	0.362	0.714	4	22.56	1.54	4.99	0.15	M	X	G1V(k)	2
8691	11.791	1.483	1.075	1.005	2.206	11	16.57	0.85	10.69	0.11			M2	3
8768	8.883	1.439	1.250	0.908	1.811	3	11.01	0.14	8.67	0.03			K9Vk	1
9044	8.608	1.160	1.111	0.677	1.237	3	19.94	0.28	7.11	0.03	C		K4.5V(k)	1
9724	10.189	1.516	1.155	1.048	2.338	11	9.14	0.16	10.38	0.04	C		M2.5	3
9749	10.875	1.387	1.148	0.899	1.842	3	23.24	1.12	9.04	0.10	C		M1+V	1
9786	12.167	1.690	1.239	1.120	2.482	4	9.28	0.25	12.33	0.06			M2.5+V	1
9829	6.885	0.657	0.130	0.334	0.704	3	22.77	0.30	5.10	0.03	C		G2V-	2
10072	11.770	1.524	1.175	1.055	2.343	3	19.73	0.99	10.29	0.11			M2.5V	1
10279	10.042	1.435	1.075	0.950	2.054	6	10.41	0.18	9.95	0.04	C		M1.5	3
10337	9.831	1.364	1.273	0.829	1.574	3	22.29	0.80	8.09	0.08			K5	3
10395	10.324	1.498	1.163	1.001	2.176	3	12.55	0.27	9.83	0.05		X	M2Vk	1
10416	8.536	1.073	0.945	0.623	1.150	3	22.72	0.53	6.75	0.05			K3.5V	2
10542	7.940	1.025	0.833	0.597	1.109	4	23.15	0.71	6.12	0.07	D	C	K3+V(k)	1
10617	12.027	1.561	1.141	1.142	2.621	2	14.32	0.64	11.25	0.10			M3Vkee	1
10688	11.431	1.396	1.076	0.914	1.911	2	22.93	1.34	9.63	0.13	D		M0.5	3
10812	11.595	1.554	1.212	1.068	2.384	3	14.07	0.64	10.85	0.10			M2.5+V	1
11439	10.888	1.468	1.203	0.959	2.011	3	20.62	0.83	9.32	0.09			M2V	1
11452	8.673	1.428	1.297	0.876	1.701	3	17.14	0.32	7.50	0.04	D	C	M1V	2
11565	8.767	1.161	1.063	0.701	1.322	3	19.55	0.51	7.31	0.06		C	K4.5Vk	1
11650	12.799	−0.051	−0.738	−0.079	−0.164	2	26.65	3.67	10.67	0.30			DA	4
11852	8.815	1.063	0.930	0.615	1.142	3	22.73	0.34	7.03	0.03	C		K3.5V(k)	1
11964	8.817	1.384	1.104	0.891	1.828	5	11.60	0.11	8.49	0.02	U		K8Vkee	1
12097	10.628	1.510	1.182	1.017	2.225	3	13.59	0.34	9.96	0.05	C		M2	3
12110	8.328	1.078	0.969	0.611	1.120	4	21.27	0.43	6.69	0.04			K3.5V(k)	1
12158	8.100	0.946	0.722	0.522	0.970	4	24.13	0.56	6.19	0.05	C		K2.5V(k)	2
12261	12.459	1.566	1.162	1.173	2.654	3	15.01	0.76	11.58	0.11	U		M3V	1
12351	9.552	1.443	1.116	0.924	1.873	3	16.84	0.35	8.42	0.04	C	C	K7.0	3
12493	9.509	1.203	1.135	0.740	1.378	3	23.30	0.80	7.67	0.07	C		K5	3
12709	8.210	1.100	0.998	0.641	1.201	3	18.88	0.37	6.83	0.04	C	O	K3.5Vk	2
12749	11.914	1.469	1.074	0.967	2.089	4	27.46	3.40	9.72	0.27			M1.5	3
12781	10.563	1.578	1.222	1.073	2.448	3	7.51	0.13	11.18	0.04		V	M3	3
12929	8.574	1.280	1.266	0.761	1.409	3	16.01	0.35	7.55	0.05	C		K6V	2
12961	10.237	1.414	1.260	0.877	1.693	3	23.01	0.91	8.43	0.09			M0	4
13218	10.717	1.521	1.204	1.003	2.170	5	12.96	0.28	10.15	0.05	C		M1.5	3
13258	8.873	1.190	1.185	0.681	1.253	3	22.73	0.47	7.09	0.04	C		K4.5V	2
13389	11.382	1.585	1.198	1.064	2.390	7	11.65	0.27	11.05	0.05			M2.5	3
13772	7.331	0.869	0.539	0.479	0.907	5	22.47	1.05	5.57	0.10	D	C	K2V	1
13976	7.955	0.953	0.727	0.519	0.961	3	24.39	0.67	6.02	0.06			K2.5Vk	2
14101	10.529	1.662	1.253	1.165	2.642	3	9.42	1.46	10.66	0.34	D	X		4
14165	11.792	1.532	1.175	1.046	2.329	3	19.58	1.53	10.33	0.17			M2.5Vke	1
14445	9.055	1.385	1.257	0.854	1.628	3	14.51	0.42	8.25	0.06	C		K5	3
14555	10.291	1.425	1.039	0.926	1.919	3	19.20	0.79	8.87	0.09	R	C	M0Vkee	1
14587	9.259	1.228	1.192	0.740	1.358	3	21.71	0.51	7.58	0.05			K5V(k)	1
14589	10.910	1.413	1.191	0.874	1.721	5	20.71	2.60	9.33	0.27	U	C	K9V(k)	1
14731	11.847	1.554	1.143	1.025	2.276	2	16.91	1.34	10.71	0.17	U		M2	3
14754	11.394	0.019	−0.656	−0.076	−0.164	3	10.24	0.19	11.34	0.04			DA	4
15095	9.141	1.246	1.171	0.758	1.402	3	19.17	0.47	7.73	0.05			K5.5V(k)	1
15099	7.800	0.880	0.598	0.481	0.905	3	22.65	0.43	6.02	0.04	C		K1V	2
15131	6.756	0.578	−0.008	0.330	0.653	4	24.19	0.23	4.84	0.02	C		G5V Fe-1.2 CH-1	1
15332	11.779	1.481	0.889	0.996	2.153	3	21.60	1.39	10.11	0.14			M2.5V	2
15360	10.998	1.485	1.202	0.944	1.953	3	22.99	1.35	9.19	0.13			M1V	1
15439	11.881	1.553	1.121	1.062	2.368	3	20.17	1.28	10.36	0.14			M2+Vkee	1
15442	7.039	0.658	0.123	0.348	0.696	4	25.22	0.47	5.03	0.04	C		G2V	2
15799	6.903	0.855	0.544	0.464	0.917	4	17.42	0.20	5.70	0.03		X	K1V	1
15844	10.422	1.491	1.127	0.984	2.124	2	19.49	1.77	8.97	0.20	D	C	M1	3
15919	7.841	1.171	1.160	0.679	1.234	3	15.39	0.17	6.90	0.02	C		K4V	2
15973	11.254	1.456	1.130	0.929	1.901	4	23.30	1.15	9.42	0.11			M0.5V	1
16069	8.143	1.159	1.144	0.713	1.278	4	16.81	0.30	7.02	0.04	D	C	K4.5V	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
16134	8.367	1.345	1.283	0.819	1.549	3	12.49	0.15	7.88	0.03	D	O	K6Vk	1
16242	9.991	1.424	1.277	0.875	1.704	3	22.08	0.96	8.27	0.09	C		K7	3
16445	12.263	1.583	1.279	1.053	2.310	3	22.88	3.37	10.47	0.32	U	X	M2	3
16536	11.478	1.585	1.214	1.079	2.416	3	10.74	0.22	11.32	0.05			M2.5V	1
17147	6.667	0.555	−0.076	0.321	0.651	3	25.56	0.37	4.63	0.03	C		F9V	4
17405	10.763	1.502	1.211	0.983	2.082	3	16.69	0.67	9.65	0.09			M1	3
17414	9.900	1.455	1.259	0.905	1.799	5	17.71	0.60	8.66	0.07			K7	3
17420	7.081	0.931	0.699	0.526	0.983	4	13.95	0.13	6.36	0.02			K2.5V	1
17439	6.996	0.879	0.574	0.480	0.906	4	16.03	0.13	5.97	0.02	M		K2V(k)	1
17496	9.079	1.210	1.193	0.724	1.322	3	22.56	0.57	7.31	0.05			K8V:	4
17544	8.184	1.002	0.766	0.586	1.127	4	21.57	0.40	6.52	0.04	D	C	K3+V(k)	1
17695	11.530	1.518	1.004	1.078	2.415	3	16.13	0.75	10.49	0.10			M2.5Vkee	2
17743	11.044	1.536	1.191	0.958	1.985	1	16.85	0.69	9.91	0.09	C		M0.5	3
18115	11.455	1.525	1.157	1.005	2.164	3	24.35	2.85	9.52	0.25	D	C	M2V(k)	1
18267	6.799	0.740	0.300	0.404	0.796	3	20.43	0.29	5.25	0.03	C		G7V	2
18280	9.015	1.376	1.302	0.848	1.615	3	15.57	0.26	8.05	0.04			K7	3
18450	8.847	1.238	1.189	0.748	1.375	4	17.76	0.26	7.60	0.03	C		K6V(k)	1
18512	8.014	1.152	1.058	0.678	1.290	2	15.53	0.26	7.06	0.04		C	K4V	2
19165	9.675	1.229	1.191	0.745	1.366	4	23.12	0.86	7.85	0.08	C		K7	4
19394	11.811	1.491	1.095	1.077	2.491	3	14.99	0.41	10.93	0.06			M3.5	3
19832	9.332	1.229	1.194	0.741	1.379	3	20.79	1.49	7.74	0.16	C	X	K5+V	2
19855	6.935	0.695	0.210	0.381	0.740	3	21.06	0.30	5.32	0.03			G6V	2
19884	7.634	1.125	1.084	0.667	1.222	3	13.04	0.08	7.06	0.01	D		K4.5V(k)	1
19948	10.901	1.533	1.207	1.003	2.163	3	21.36	1.97	9.25	0.20	D	C	M1.5+V	1
20917	8.300	1.388	1.300	0.854	1.644	3	11.39	0.13	8.02	0.02	C		M0.5V	2
21086	11.536	1.524	1.169	1.047	2.327	3	19.11	1.30	10.13	0.15	U	C	M2.5V	1
21284	8.801	1.126	1.035	0.659	1.208	3	22.42	0.32	7.05	0.03	C		K4V(k)	1
21556	10.331	1.507	1.203	1.004	2.194	7	11.10	0.21	10.10	0.04			M1.5	3
21765	10.257	1.478	1.171	0.955	2.006	2	19.69	1.45	8.79	0.16	D		M0V. . .	4
21818	7.987	1.133	0.944	0.674	1.290	3	13.19	0.20	7.39	0.03	U		K4Vke	2
21932	9.951	1.539	1.178	1.020	2.249	3	9.27	0.25	10.11	0.06			M2	3
22122	7.588	0.886	0.580	0.483	0.912	3	20.86	0.20	5.99	0.02			K2V	1
22451	7.495	0.902	0.604	0.503	0.947	3	17.75	0.15	6.25	0.02			K2V	4
22627	12.018	1.550	1.223	1.164	2.684	1	12.29	0.61	11.57	0.11			M3.5	3
22738	10.759	1.557	1.010	1.133	2.608	2	11.11	0.24	10.53	0.05	D	C	M2Ve	4
22762	10.894	1.549	1.155	1.018	2.223	2	12.12	0.35	10.48	0.06			M2	3
22907	8.122	1.085	0.998	0.627	1.145	3	17.89	0.22	6.86	0.03			K3.5V(k)	1
23437	7.021	0.631	0.035	0.361	0.728	3	22.48	0.18	5.26	0.02	U		G7V Fe-1.4 CH-1.2	1
23452	8.317	1.453	1.200	0.912	1.825	4	8.58	0.11	8.65	0.03	D	C	M0V	4
23512	11.735	1.636	1.241	1.132	2.543	3	9.21	0.23	11.91	0.05			M3V	1
23708	8.932	1.415	1.212	0.870	1.677	3	11.66	0.12	8.60	0.02	C		K7Vk	1
23786	7.728	0.813	0.401	0.441	0.874	3	23.67	0.52	5.86	0.05	C	O	G9V	2
23932	10.302	1.507	1.084	1.141	2.641	2	9.27	0.18	10.47	0.04			M3.5	3
24186	8.853	1.580	1.191	0.953	1.954	3	3.91	0.01	10.89	0.01	U		sdM1.0	3
24284	10.746	1.562	1.185	1.018	2.217	3	12.29	0.62	10.30	0.11	C	X	M2	3
24472	11.542	1.531	1.160	0.972	2.035	3	22.45	2.05	9.79	0.20			M0.5	3
24783	9.339	1.326	1.238	0.820	1.592	4	19.89	0.53	7.85	0.06	D	C	K6Vk	1
24819	7.761	1.057	0.887	0.628	1.211	3	15.45	0.26	6.82	0.04	D	C	K3V	2
24874	8.717	1.026	0.820	0.597	1.107	3	24.30	0.67	6.79	0.06			K3.5V(k)	1
25119	7.747	0.969	0.719	0.563	1.084	3	20.23	0.48	6.22	0.05	D	C	K2.5V	2
25220	7.919	1.129	1.045	0.653	1.216	2	14.08	0.27	7.18	0.04	D		K4V	2
25283	9.079	1.286	1.175	0.786	1.458	4	18.00	0.30	7.80	0.04	U		K6Vke	1
25421	7.711	0.962	0.758	0.527	1.011	3	17.77	0.19	6.46	0.02	C		K3-V	1
25544	6.983	0.767	0.318	0.410	0.792	3	19.20	0.17	5.57	0.02	U		G9V	1
25578	12.425	1.636	1.227	1.157	2.647	2	8.81	0.39	12.70	0.10			M3.5	3
25623	7.642	1.135	1.087	0.674	1.241	3	13.02	0.13	7.07	0.02			K5-V	1
25647	6.999	0.857	0.403	0.503	1.006	3	15.17	0.13	6.09	0.02	U	G	K2Vk	1
25775	9.706	1.390	1.237	0.855	1.628	3	18.78	0.37	8.34	0.04	R	X	M0V	4
25878	7.968	1.475	1.183	0.972	2.055	3	5.66	0.04	9.21	0.01			M1.5	3
25953	11.529	1.629	1.068	1.159	2.661	3	12.79	0.61	10.99	0.10			M3.5	3
26081	11.456	1.566	0.934	1.074	2.384	6	15.94	1.02	10.44	0.14			M2.5	3
26335	8.841	1.435	1.232	0.878	1.730	3	11.24	0.13	8.59	0.02	C		M0.5Vke	2
26369	9.865	1.205	0.980	0.767	1.484	3	25.63	4.82	7.82	0.41	D	C	K5Vke	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
26844	10.568	1.463	1.227	0.908	1.820	3	21.35	1.03	8.92	0.10			K7	3
26857	11.481	1.611	1.127	1.204	2.795	2	5.83	0.14	12.65	0.05			M4	3
27323	9.722	1.398	1.283	0.859	1.653	3	20.76	0.42	8.14	0.04			K7.0	3
27359	10.736	1.458	1.113	0.973	2.122	2	15.03	0.32	9.85	0.05			M1.5	3
27803	9.693	1.348	1.229	0.838	1.594	3	20.31	0.68	8.15	0.07	C		K7	3
27887	7.147	0.950	0.717	0.550	1.028	4	13.00	0.06	6.58	0.01	C		K2.5V	1
27922	7.465	0.732	0.190	0.423	0.835	1	23.57	0.55	5.60	0.05	M	C	G8V Fe-0.7	1
28035	10.816	1.481	1.117	1.040	2.343	4	14.58	0.46	10.00	0.07			M2.5V	1
28153	10.583	1.448	1.251	0.919	1.861	4	23.57	0.62	8.72	0.06	D	C	M:	4
28267	6.984	0.731	0.259	0.406	0.801	3	23.55	0.35	5.12	0.03	C		G7V	2
28442	7.873	1.140	0.980	0.710	1.347	2	16.39	5.75	6.80	0.76	D	X	K6.5V	1
28954	6.740	0.825	0.451			1	15.27	0.16	5.82	0.02	U		G9V	2
29052	11.889	1.595	1.223	1.103	2.498	4	11.35	0.32	11.61	0.06				4
29295	8.125	1.482	1.194	0.961	2.004	2	5.75	0.03	9.33	0.01			M0.5	3
29316	10.385	1.459	1.056	1.020	2.320	3	10.91	0.42	10.20	0.08	D	C	M3	4
29432	6.839	0.657	0.136	0.361	0.696	2	23.50	0.30	4.98	0.03	C		G3V	2
30256	10.693	1.368	1.157	0.889	1.850	4	25.00	1.97	8.70	0.17	U	X	M1Vk	1
30314	6.508	0.602	0.076			1	23.78	0.15	4.63	0.01	U		G0Vp CH-0.3	1
30630	6.768	0.972	0.662			1	14.73	0.33	5.93	0.05	U		K3Vk	2
30920	11.071	1.693	1.178	1.301	3.021	6	4.13	0.05	12.99	0.03	C	G	M4.5	3
31126	10.566	1.462	1.229	0.938	1.940	4	23.40	0.78	8.72	0.07	D	C	M0V(k)	1
31300	11.592	1.552	1.178	1.058	2.372	3	16.46	0.53	10.51	0.07	U		M2.5	3
31555	10.592	1.480	1.205	0.930	1.873	4	19.55	0.64	9.14	0.07		G	K8Vk	1
31634	9.604	1.443	1.218	0.923	1.899	3	15.36	0.29	8.67	0.04	D	C	K8V(k)	1
31635	9.593	1.511	1.199	0.932	1.875	3	9.75	0.16	9.65	0.03			K7	3
31862	9.809	1.470	1.207	0.926	1.882	3	13.30	0.19	9.19	0.03	C		M0V(k)	1
31878	9.731	1.312	1.181	0.798	1.492	3	22.35	0.45	7.98	0.04			M1V	4
32010	8.056	1.059	0.919	0.615	1.126	2	17.45	0.35	6.85	0.04	C		K3.5V	2
33499	10.846	1.691	1.157	1.129	2.530	1	8.01	0.14	11.33	0.04	D	C	M3.0	3
33537	6.918	0.646	0.074			1	24.63	0.32	4.96	0.03	C		G5V Fe-1	2
33560	9.157	1.171	1.047	0.714	1.360	3	21.70	0.58	7.47	0.06	C	C	K5-Vk	1
33690	6.803	0.806	0.426	0.428	0.813	2	18.33	0.11	5.49	0.01	U		K0IV-V(k)	1
33817	6.688	0.892	0.623			1	14.65	0.13	5.86	0.02	M	G	K1V(k)	1
33955	8.351	1.091	1.008	0.643	1.171	2	18.44	0.32	7.02	0.04	C		K4V	2
34052	8.686	1.196	1.128	0.737	1.359	2	17.42	0.35	7.48	0.04	C	G	K6V	1
34069	6.851	0.781	0.346	0.424	0.838	1	20.84	4.29	5.26	0.45	D	C	K0.5V	1
34104	11.303	1.519	1.078	1.116	2.565	6	16.02	0.81	10.28	0.11	D		M3.5	3
34361	11.081	1.440	1.058	0.989	2.214	1	17.30	0.71	9.89	0.09			M2V:	4
34567	7.062	0.730	0.262	0.391	0.760	2	25.17	0.34	5.06	0.03	M		G6V	2
34890	9.079	1.269	1.246	0.776	1.435	3	19.48	0.35	7.63	0.04	D	G	K6V(k)	1
35296	6.669	0.977	0.716			1	14.59	0.12	5.85	0.02	D	C	K2.5V(k)	1
35943	10.315	1.397	1.250	0.871	1.669	4	24.41	0.92	8.38	0.08	C		M0V:	4
36208	9.872	1.571	1.115	1.173	2.711	1	3.80	0.02	11.97	0.01	C		M3.5	3
36210	6.714	0.714	0.261	0.384	0.738	2	22.68	0.19	4.94	0.02	C		G6.5V	1
36215	11.198	1.514	1.229	0.994	2.160	3	19.35	1.13	9.76	0.13	C		M1.5	3
36338	11.456	1.567	1.275	1.105	2.502	4	12.29	0.38	11.01	0.07	C		M3-V	1
36349	9.919	1.457	1.094	0.974	2.090	4	15.69	0.43	8.94	0.06	U	C	M1V:e...	4
36515	6.635	0.639	0.112	0.355	0.690	2	21.82	0.18	4.94	0.02	U		G2V	1
36551	8.926	1.139	1.068	0.671	1.248	3	20.81	0.49	7.33	0.05	C		K5	4
36827	8.144	0.883	0.527	0.490	0.930	3	24.55	0.60	6.19	0.05	M		K2.5V	2
36985	9.871	1.476	1.204	0.946	1.953	3	14.17	0.33	9.11	0.05				4
37217	11.712	1.582	1.222	1.096	2.483	4	10.60	0.37	11.58	0.08			M3	3
37288	9.589	1.466	1.273	0.906	1.812	3	14.58	0.31	8.77	0.05	C		K7	3
37349	7.169	0.967	0.754	0.543	1.019	2	14.21	0.13	6.41	0.02	M		K3-V	2
37766	11.225	1.606	0.930	1.267	2.962	4	5.96	0.08	12.35	0.03	U		M4.5	3
37798	10.170	1.381	1.321	0.846	1.594	3	27.66	1.55	7.96	0.12	C		K5	3
38082	11.418	1.539	1.151	0.981	2.114	3	14.77	0.58	10.57	0.09	C		M1	3
38594	9.715	1.392	1.179	0.870	1.686	4	19.41	0.55	8.27	0.06			M	4
38625	7.433	0.732	0.155	0.426	0.864	2	20.09	0.75	5.92	0.08	D	C	K0V Fe-1.5	2
38657	7.726	0.989	0.833	0.544	1.003	2	20.69	0.37	6.15	0.04	C		K2.5V	2
38910	8.824	1.157	1.070	0.696	1.308	2	18.50	0.60	7.49	0.07		X	K4.5V(k)	1
38931	8.046	1.038	0.885	0.611	1.162	2	17.81	0.39	6.79	0.05	C		K3+V	2
38939	8.439	1.058	0.869	0.621	1.159	2	18.51	0.38	7.10	0.04			K4-V(k)	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
39064	7.649	0.845	0.510	0.454	0.873	2	23.72	0.40	5.77	0.04	C		K0V	2
39342	7.166	0.883	0.607	0.481	0.907	2	17.31	0.12	5.97	0.02			K2V(k)	1
39950	11.777	1.540	1.212	1.015	2.214	3	22.29	1.67	10.04	0.16			M1.5	3
39987	11.745	1.511	1.133	1.071	2.431	3	16.48	0.67	10.66	0.09	U		M3.0	3
40239	9.374	1.411	1.214	0.874	1.716	9	20.64	2.27	7.80	0.24	D	C	M0V	4
40375	8.797	1.211	1.148	0.706	1.310	2	18.84	0.40	7.42	0.05	C		K5V	2
40501	10.091	1.539	1.194	1.020	2.240	4	9.12	0.13	10.29	0.03			M2	3
40774	8.347	0.919	0.592	0.518	0.982	3	22.93	0.66	6.54	0.06			G5	4
40910	9.748	1.320	1.264	0.795	1.483	3	24.26	1.02	7.82	0.09			K5	3
41802	11.159	1.399	1.122	0.935	2.004	3	26.35	1.87	9.06	0.15	C	X	M2V	1
42074	7.334	0.825	0.454	0.443	0.842	2	21.14	0.32	5.71	0.03	C		K0-V	2
42267	11.749	1.485	1.104	1.027	2.346	3	18.96	1.33	10.36	0.15		X	M2.5	3
42333	6.725	0.669	0.183	0.360	0.696	2	23.98	0.40	4.83	0.04	C		G5V	2
42499	7.582	0.848	0.465	0.483	0.927	2	18.14	0.23	6.29	0.03	C		K2V	2
42697	8.107	0.911	0.636	0.520	0.970	2	22.87	0.29	6.31	0.03			K2+V	1
42748	9.629	1.464	1.322	0.918	1.857	2	15.43	0.56	8.69	0.08		X	K7	3
42762	11.806	1.551	1.170	1.066	2.388	1	14.93	0.87	10.94	0.13			M2.5	3
42881	10.608	1.406	0.921	0.984	2.186	4	18.56	0.76	9.27	0.09	D	C	M2V:	4
43510	11.523	1.507	1.147	0.973	2.106	2	18.34	1.21	10.21	0.14			M1.5	3
43790	9.955	1.414	1.273	0.883	1.751	2	19.79	0.74	8.47	0.08	C		K7	3
43948	10.582	1.537	1.254	0.984	2.083	4	17.01	0.79	9.43	0.10	D	C	M1	3
44072	9.214	1.147	1.034	0.710	1.307	3	20.90	0.50	7.61	0.05	C		M0	4
44263	12.688	1.470	1.049	1.080	2.501	3	20.94	3.49	11.08	0.36			M3.5	3
44376	11.728	1.461	1.081	1.022	2.327	3	19.51	1.42	10.28	0.16			M2.5	3
44722	9.478	1.450	1.256	0.914	1.825	1	14.56	0.27	8.66	0.04	C		K7	3
44899	10.305	1.359	1.188	0.842	1.583	5	22.55	0.78	8.54	0.08			K7V(k)	1
45383	7.925	1.042	0.865	0.605	1.171	2	17.96	0.45	6.65	0.05	C	G	K3+V	2
45637	9.531	1.210	1.122	0.760	1.444	6	23.19	0.56	7.70	0.05	C		K6.5V(k)	1
45839	9.082	1.177	1.139	0.694	1.262	4	23.36	0.79	7.24	0.07	C		K5-V	2
45908	9.465	1.490	1.190	0.948	1.954	3	10.46	0.10	9.37	0.02			M0.0	3
46488	12.104	1.523	1.147	1.060	2.378	3	16.24	1.05	11.05	0.14			M2.5	3
46549	9.742	1.330	1.287	0.797	1.482	5	24.25	0.86	7.82	0.08	C		K5	3
46580	7.197	1.026	0.848	0.571	1.067	2	12.91	0.11	6.64	0.02			K3V	2
46626	8.319	0.992	0.787	0.595	1.131	2	19.31	0.32	6.89	0.04	C		K3.5V	1
46655	11.710	1.588	1.235	1.127	2.583	3	9.67	0.37	11.78	0.08	U		M3.5	3
46816	7.825	0.936	0.555	0.537	1.042	2	18.62	0.29	6.47	0.03	U		K0	4
47103	10.906	1.574	1.167	1.048	2.329	3	9.02	0.16	11.13	0.04	C		M2.5V	1
47201	9.406	1.288	1.268	0.778	1.446	3	21.94	0.70	7.70	0.07			K5	3
47425	10.694	1.521	1.180	1.077	2.450	10	9.47	0.15	10.81	0.03	C		M2.0	3
47513	10.370	1.521	1.206	0.999	2.188	4	11.26	0.21	10.11	0.04	C		M1.5	3
47619	11.953	1.551	1.214	1.051	2.354	3	15.76	0.88	10.97	0.12			M2.5V	1
47780	9.979	1.393	0.906	0.960	2.150	2	9.87	0.31	10.01	0.07	D	X	M1.0	3
48190	10.278	1.472	1.234	0.939	1.944	10	20.96	0.81	8.67	0.08	D	C	M2V:	4
48331	7.651	1.179	1.133	0.717	1.332	2	11.16	0.08	7.41	0.02			K6V(k)	1
48336	10.016	1.462	1.117	0.938	1.943	1	13.71	0.34	9.33	0.05		X	M0.5	3
48411	8.840	1.239	1.212	0.728	1.327	2	20.47	0.52	7.28	0.05	C		K5+V	2
48447	10.553	1.414	1.254	0.864	1.669	4	22.75	1.40	8.77	0.13		X	K4	4
48477	10.521	1.521	1.158	1.024	2.257	2	16.04	0.55	9.49	0.07	C		M2	3
48659	12.081	1.600	1.259	1.159	2.595	3	11.32	0.41	11.81	0.08			M3V	1
48904	11.275	1.525	0.970	1.142	2.653	5	15.46	0.42	10.33	0.06			M3.5	3
49091	11.440	1.478	1.108	1.077	2.465	10	16.29	0.68	10.38	0.09			M3.0	3
49366	8.124	0.913	0.606	0.504	0.951	2	24.03	0.55	6.22	0.05			K2V(k)	1
49376	11.999	1.537	1.249	1.025	2.252	5	22.99	1.82	10.19	0.17			M2+V	1
49544	9.914	1.398	1.284	0.867	1.700	1	22.56	1.00	8.15	0.10			K7	3
49969	10.629	1.576	1.210	1.048	2.326	11	12.33	0.44	10.17	0.08	C		M2.5	3
49973	9.910	1.437	1.249	0.904	1.811	5	17.18	0.49	8.73	0.06	C	G	K7	3
49986	9.256	1.501	1.184	0.998	2.171	3	7.87	0.12	9.78	0.03			M1.5	3
50156	10.042	1.409	1.216	0.887	1.802	3	23.08	0.96	8.23	0.09			K7	3
50341	10.998	1.466	1.095	1.045	2.374	8	13.64	0.49	10.32	0.08	C		M3	3
50808	10.541	1.420	1.057	0.948	2.031	1	19.90	0.74	9.05	0.08	D	C	M	4
50921	6.920	0.683	0.155	0.386	0.731	2	22.35	0.24	5.17	0.02			G5V	1
51007	10.139	1.492	1.203	0.978	2.088	9	12.35	0.29	9.68	0.05	C		M1	3
51271	8.976	1.046	0.863	0.579	1.092	2	23.96	0.49	7.08	0.04	C		K3.5V(k)	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
51317	9.631	1.526	1.192	1.019	2.238	1	7.07	0.11	10.38	0.03			M2	3
52186	11.281	1.509	1.149	1.037	2.320	7	16.45	0.85	10.20	0.11			M2.5	3
52190	11.082	1.562	1.154	1.098	2.483	4	13.98	0.48	10.35	0.08	D	C	M2.5Vkee	1
52296	9.944	1.478	1.186	0.948	1.965	1	16.34	0.41	8.88	0.05	D	C	M0.5	3
52341	10.175	1.433	1.052	0.923	1.855	1	16.18	1.08	9.13	0.14	D	C	M0V(k)	1
52369	6.767	0.639	0.113	0.347	0.684	2	23.83	0.27	4.88	0.02	C		G1.5V	1
52462	7.719	0.877	0.548	0.487	0.913	2	21.40	0.32	6.07	0.03	U		K1.5V(k)	1
52596	11.217	1.531	1.221	1.009	2.192	5	14.00	0.46	10.49	0.07			M1.5V	1
52708	9.373	1.165	1.041	0.709	1.309	5	21.51	0.50	7.71	0.05	C		K5V(k)	1
53020	11.667	1.647	1.171	1.200	2.775	2	6.76	0.16	12.52	0.05		X	M4	3
53486	7.322	0.930	0.692	0.507	0.939	2	17.30	0.26	6.13	0.03			K2.5V	2
53767	10.020	1.564	1.242	1.068	2.374	3	6.66	0.08	10.90	0.02			M2.5	3
53985	9.572	1.477	1.197	0.934	1.938	3	11.77	0.15	9.22	0.03			M0	3
54227	12.369	1.595	1.167	1.078	2.422	3	19.65	1.77	10.90	0.20			M2.5	3
54373	10.379	1.449	1.210	0.921	1.857	4	18.69	0.57	9.02	0.07	C		K5	4
54532	10.446	1.528	1.199	1.021	2.252	10	10.75	0.20	10.29	0.04	C		M2	3
54651	9.219	1.114	0.927	0.688	1.274	4	20.25	0.39	7.69	0.04	C		K5V	1
54677	9.038	1.222	1.134	0.753	1.431	4	21.57	0.61	7.37	0.06		O	K5V(k)	1
54704	7.037	0.778	0.363	0.416	0.796	2	22.14	0.25	5.31	0.02			G8.5V	1
54803	10.295	1.447	1.142	0.903	1.803	1	25.37	1.31	8.27	0.11	D		K7	3
54810	8.639	1.204	1.157	0.706	1.304	2	18.28	0.41	7.33	0.05			K5V	4
54906	7.714	0.855	0.480	0.455	0.879	2	21.11	0.33	6.09	0.03	M		K1V	2
54922	9.005	1.135	1.057	0.705	1.350	4	23.05	0.64	7.19	0.06	D	C	K5V	1
55042	11.516	1.332	0.818	1.019	2.384	7	12.67	0.42	11.00	0.07			M3.5	3
55066	9.980	1.417	1.209	0.881	1.696	4	17.91	0.48	8.71	0.06	C		K5	3
55119	9.758	1.411	1.206	0.874	1.692	4	17.69	0.40	8.52	0.05	C		K7	3
55210	7.232	0.761	0.285	0.410	0.794	2	21.57	0.30	5.56	0.03	C		G8V	4
55454	8.569	1.352	1.204	0.845	1.648	2	13.16	0.22	7.97	0.04	U	C	K6Vke	1
55625	11.185	1.493	1.159	0.965	2.048	1	21.36	1.09	9.54	0.11	C		M0.5	3
55848	7.530	1.024	0.913	0.560	1.022	2	17.96	0.47	6.26	0.06	D	C	K2V	4
56153	8.332	1.071	0.980	0.601	1.087	2	22.86	0.42	6.54	0.04	U		K3.5V(k)	1
56157	12.010	1.548	1.206	1.117	2.560	3	13.20	0.74	11.41	0.12	U		M3V	1
56238	10.270	1.475	1.193	0.944	1.985	3	15.89	0.37	9.26	0.05	D		M0.5	3
56244	11.535	1.547	1.047	1.151	2.655	10	10.36	0.26	11.46	0.05			M3.5	3
56284	11.453	1.508	1.220	0.963	2.028	4	22.81	1.38	9.66	0.13			M1.5Vk	1
56466	11.166	1.523	1.194	0.955	1.970	4	17.74	0.64	9.92	0.08	C		M0	3
56528	9.813	1.509	1.186	0.992	2.149	2	8.88	0.11	10.07	0.03	C	O	M1.5	3
56998	7.762	1.071	0.920	0.635	1.178	3	12.40	0.11	7.29	0.02	C		K4.5V(k)	1
57361	11.811	1.536	1.231	1.044	2.261	2	19.26	1.24	10.39	0.14			M2.5V	1
57367	11.513	0.212	−0.645	0.173	0.350	3	4.61	0.05	13.20	0.02			DC:	4
57459	11.700	1.490	1.141	1.061	2.413	1	19.99	1.24	10.20	0.13			M3	3
57494	9.033	1.154	1.110	0.676	1.255	4	25.36	0.71	7.01	0.06	C	C	K4.5V	1
57548	11.095	1.736	1.339	1.282	2.957	7	3.36	0.03	13.47	0.02	C		M4	3
57959	11.894	1.539	1.164	1.046	2.327	1	19.57	1.37	10.44	0.15			M2.5	3
58170	11.955	1.530	1.215	0.976	2.042	3	24.34	1.71	10.02	0.15			M1V	1
58345	6.964	1.150	1.116	0.666	1.206	2	10.16	0.06	6.93	0.01			K4+V	1
58451	7.921	0.976	0.786	0.552	1.008	2	21.07	0.40	6.30	0.04			K3-V(k)	1
58688	10.518	1.441	1.214	0.914	1.871	1	22.92	1.01	8.72	0.10	C	C	M0V	4
59000	10.016	1.356	1.199	0.845	1.607	6	22.00	0.67	8.30	0.07		G	K7-Vke	1
59296	8.438	1.135	1.075	0.661	1.199	2	19.77	0.34	6.96	0.04			K4V(k)	1
59406	11.709	1.567	1.199	1.090	2.456	6	12.59	0.37	11.21	0.06			M3	3
59616	11.471	1.504	1.204	0.957	1.984	5	23.41	1.11	9.62	0.10			M1-V(k)	1
59780	9.761	1.413	1.233	0.874	1.707	6	21.40	1.07	8.11	0.11	D	C	K7V(k)	1
60310	8.512	1.081	1.022	0.605	1.099	3	24.69	0.68	6.55	0.06			K3.5V	1
60475	10.385	1.435	1.211	0.909	1.823	4	21.00	1.08	8.77	0.11			M0.5V	2
60559	11.272	1.591	1.091	1.029	2.281	1	8.85	0.20	11.54	0.05			M2	3
60866	9.227	1.232	1.215	0.736	1.346	4	24.59	0.64	7.27	0.06			K5V(k)	1
60910	12.047	1.571	1.210	1.185	2.718	1	13.18	0.69	11.45	0.11			M3.5	3
61094	9.664	1.474	1.248	0.916	1.842	1	13.65	0.24	8.99	0.04	C		K7	3
61291	7.140	0.847	0.485	0.479	0.903	2	16.18	0.13	6.10	0.02			K1V	1
61413	11.405	1.445	1.034	0.992	2.234	1	18.28	1.02	10.09	0.12	C		M2.5	3
61451	7.844	1.046	0.868	0.615	1.131	2	21.43	0.27	6.19	0.03	C		K3.5V(k)	1
61495	11.096	1.482	1.170	1.003	2.190	4	18.99	1.10	9.70	0.13		X	M1.0	3

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
61629	10.663	1.535	1.199	1.077	2.430	3	9.69	0.22	10.73	0.05			M2.0	3
61706	11.502	1.473	1.131	1.108	2.539	4	14.37	0.58	10.71	0.09			M3	3
61874	12.239	1.730	1.396	1.164	2.620	2	7.78	0.24	12.78	0.07			M3.0	3
61901	7.885	1.141	1.056	0.680	1.255	1	14.18	0.15	7.13	0.02	C		K4.5V	2
62229	7.843	0.956	0.698	0.532	0.992	2	20.50	0.37	6.28	0.04			K2+V(k)	1
62452	11.395	1.563	1.130	1.160	2.688	7	8.37	0.19	11.78	0.05			M3.5	3
62505	7.865	0.944	0.627	0.537	1.007	3	23.83	1.70	5.98	0.16		C	K2.5V(k)	1
62687	8.470	1.422	1.295	0.880	1.718	2	10.57	0.09	8.35	0.02			K7	3
62951	8.410	0.544	0.026	0.322	0.631	3	7.53	2.17	9.03	0.63	D	C	A2	4
63257	9.126	1.119	1.003	0.676	1.273	5	24.03	0.90	7.22	0.08	D		K4.5V	1
63366	7.588	0.796	0.353	0.425	0.859	2	20.89	0.39	5.99	0.04	D		G9V	1
63480	10.625	1.462	1.226	0.938	1.927	5	19.74	0.78	9.15	0.09			Mp	4
63510	9.760	1.473	1.081	0.975	2.083	5	11.69	0.21	9.42	0.04	U	G	M0.5	3
63550	10.929	1.512	1.196	0.967	2.027	6	16.97	0.69	9.78	0.09			M1V	1
63618	8.351	1.222	1.171	0.743	1.404	2	17.81	0.27	7.10	0.03	C		K5V(k)	1
63742	7.679	0.876	0.487	0.494	0.958	2	21.69	0.38	6.00	0.04	U	O	K1V(k)	2
63833	9.057	1.376	1.300	0.855	1.639	6	15.87	0.34	8.05	0.05			K9V(k)	1
63942	9.398	1.317	1.194	0.823	1.575	4	18.80	0.61	8.03	0.07	C	C	K5	3
64457	7.550	0.919	0.668	0.497	0.923	2	20.50	0.25	5.99	0.03			K1V	2
64550	6.940	0.643	0.098	0.381	0.714	2	24.42	0.33	5.00	0.03	C		G1.5V	1
64690	7.143	0.704	0.227	0.367	0.730	2	24.57	0.23	5.19	0.02			G5V	1
65083	11.591	1.512	1.197	0.978	2.067	6	21.54	1.50	9.92	0.15	U		M1.5V(k)	1
65520	11.015	1.513	1.164	0.996	2.144	2	16.74	0.68	9.90	0.09			M1	3
65669	11.775	1.545	1.208	0.998	2.178	6	21.08	1.25	10.16	0.13			M1.5V	1
65714	11.223	1.527	1.141	1.105	2.534	10	13.89	0.55	10.51	0.09			M3	3
65859	9.029	1.495	1.204	0.959	2.016	5	7.66	0.06	9.61	0.02			M0.5	3
65877	12.340	0.058	−0.595	−0.050	−0.096	5	17.38	1.16	11.14	0.15	U		DA	4
66077	11.401	1.563	1.200	1.082	2.446	3	12.76	3.24	10.87	0.55	D	X	M2.5	3
66125	9.280	0.930	0.637	0.528	1.000	4	17.93	3.22	8.01	0.39	D	C	K2.5V(k)	1
66147	7.959	1.067	0.954	0.601	1.103	2	19.07	0.32	6.56	0.04			K3+V	2
66212	7.338	0.934	0.707	0.510	0.932	3	26.56	0.92	5.22	0.07	D	C	K2V	2
66222	9.927	1.413	1.261	0.879	1.714	6	21.32	0.70	8.28	0.07			K7	3
66252	9.348	1.204	1.026	0.746	1.420	6	20.21	0.29	7.82	0.03	U		K4.5Vke	2
66587	10.724	1.442	1.259	0.908	1.799	6	23.57	1.23	8.86	0.11	C		M0.5V	2
66675	9.589	1.419	1.204	0.879	1.700	11	14.80	0.26	8.74	0.04	C		K5	3
66765	6.925	0.859	0.494	0.477	0.887	4	15.65	0.12	5.95	0.02	M		K0V(k)	1
66840	9.753	1.314	1.276	0.811	1.522	6	23.64	0.83	7.88	0.08	C		K5	3
66886	9.210	1.210	1.188	0.713	1.292	6	24.13	0.70	7.30	0.06	C		K5V	2
67090	9.750	1.442	1.133	0.887	1.747	4	13.24	0.18	9.14	0.03			M1-V	2
67105	8.459	1.076	0.959	0.616	1.125	3	20.99	0.43	6.85	0.04			K3V	2
67155	8.430	1.464	1.095	0.965	2.067	3	5.39	0.03	9.77	0.01			M1.5	3
67164	11.872	1.551	1.158	1.147	2.646	9	10.24	0.53	11.82	0.11			M3.5	3
67487	8.166	1.261	1.263	0.772	1.389	3	14.30	0.18	7.39	0.03	C		K5.5V(k)	1
67655	7.982	0.665	0.032	0.377	0.765	4	25.37	0.62	5.96	0.05			G7V Fe-1.4 CH-1	1
67742	7.391	0.889	0.553	0.505	0.991	3	17.08	0.20	6.23	0.03		G	K2V	1
67761	11.773	1.517	1.289	0.984	2.133	3	23.29	1.76	9.94	0.16			M2V(k)	1
67808	9.767	1.401	1.293	0.871	1.737	5	20.95	0.74	8.16	0.08	C	G	K7	3
67960	9.524	1.433	1.271	0.920	1.888	6	17.26	0.44	8.34	0.06	D	C	M0Vk	1
68337	9.040	1.169	1.148	0.687	1.265	3	24.80	0.59	7.07	0.05	C		K5V	2
68469	9.707	1.470	1.166	0.962	2.047	8	10.03	0.16	9.70	0.03			M1.5V	2
68570	10.636	1.462	1.242	0.945	1.958	6	19.86	0.80	9.15	0.09			M0.5	3
69285	10.825	1.516	1.260	0.977	2.097	10	16.78	0.58	9.70	0.08	C		M2V	1
69357	7.946	0.873	0.532	0.487	0.915	2	23.39	0.67	6.10	0.06	C		K1V(k)	1
69414	7.039	0.744	0.289	0.405	0.774	4	22.05	0.26	5.32	0.03	C		G8+V	2
69454	10.191	1.530	1.215	0.985	2.083	4	11.68	0.26	9.85	0.05	C		M2V:	4
69485	10.139	1.436	1.225	0.893	1.737	2	19.36	0.66	8.70	0.07			K5	3
69962	9.112	1.304	1.189	0.806	1.521	6	21.75	0.75	7.42	0.08	D	C	K7V	2
70016	7.569	0.857	0.520	0.476	0.905	3	20.88	0.35	5.97	0.04	C		K1V	4
70308	10.274	1.434	1.285	0.891	1.777	2	23.47	0.81	8.42	0.07	C		M1V:	4
70475	12.257	1.603	1.295	1.103	2.485	3	14.28	1.00	11.48	0.15	U		M2.5	3
70529	9.720	1.449	1.229	0.909	1.843	6	16.36	0.38	8.65	0.05			M0	3
70536	9.973	1.459	1.199	0.934	1.926	4	16.05	0.46	8.95	0.06			M0.5	3
70849	10.376	1.422	1.261	0.884	1.739	5	23.57	1.16	8.51	0.11	C		K7Vk	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
70865	10.676	1.500	1.209	1.002	2.209	4	14.01	0.41	9.94	0.06			M2	3
70956	9.392	1.417	1.296	0.875	1.720	2	16.99	0.42	8.24	0.05	U		M0.5-V	2
70975	11.903	1.587	1.120	1.152	2.646	2	10.82	0.46	11.73	0.09	U		M3.5	3
71253	11.317	1.598	1.126	1.224	2.844	10	6.06	0.12	12.40	0.04			M4	3
71395	7.446	0.995	0.791	0.551	1.021	3	16.50	0.23	6.36	0.03			K3-V	2
71743	7.240	0.737	0.270	0.403	0.770	3	23.68	0.30	5.37	0.03			G8V(k)	1
71855	6.765	0.717	0.243	0.384	0.750	3	20.00	0.17	5.26	0.02			G5V	1
71914	9.043	1.321	1.252	0.801	1.490	2	21.58	1.01	7.37	0.10	D	C	K5	3
72146	7.837	0.933	0.647	0.524	0.992	2	18.90	0.29	6.46	0.03	C		K2.5V	2
72237	9.204	1.286	1.176	0.786	1.459	5	17.24	0.30	8.02	0.04			K5V	4
72312	7.755	0.909	0.598	0.510	0.958	3	19.37	0.30	6.32	0.03	C		K2.5V	2
72493	7.264	0.845	0.460	0.476	0.914	2	24.93	0.55	5.28	0.05	D	C	K1V	1
72509	12.066	1.500	1.088	0.998	2.173	2	4.66	0.95	13.72	0.44	D	C	M1.5	3
72511	11.656	1.475	1.082	0.970	2.078	2	4.03	0.73	13.63	0.39	D	C	M1	3
72688	7.805	1.020	0.870	0.589	1.081	2	17.03	0.20	6.65	0.03	C		K3.5V	1
72875	8.608	0.993	0.762	0.562	1.063	2	23.55	0.62	6.75	0.06	C	G	K3V	4
72896	11.663	1.583	1.015	1.175	2.690	1	10.16	0.46	11.63	0.10		C	M3V	2
72944	10.150	1.536	1.174	1.034	2.278	3	9.65	0.16	10.23	0.04	C		M2	3
72981	11.251	1.401	1.179	0.925	1.945	2	24.52	1.49	9.30	0.13			M2V	2
73182	8.065	1.494	1.200	0.990	2.122	2	5.93	0.76	9.20	0.28	D	C	M1.5V	1
73457	9.472	1.393	1.272	0.865	1.650	8	19.34	0.74	8.04	0.08	C		K8Vk	1
73631	9.858	1.204	1.105	0.730	1.343	5	25.30	1.09	7.84	0.09			K5.5V(k)	1
73633	8.960	1.163	1.056	0.705	1.348	4	24.57	0.90	7.01	0.08	U	C	K4.5V(k)	1
73786	9.815	1.315	1.132	0.817	1.558	4	18.59	0.97	8.47	0.11	D		K8V	2
74190	11.473	1.513	1.145	1.068	2.421	2	14.45	0.54	10.67	0.08			M3	3
74702	6.905	0.843	0.467	0.467	0.877	3	15.85	0.18	5.91	0.02			K0V	2
74815	11.046	1.393	1.175	0.875	1.745	3	29.43	3.27	8.70	0.24		G	K9Vkee	1
74995	10.567	1.602	1.234	1.106	2.500	13	6.21	0.10	11.60	0.04			M3	3
75187	10.003	1.519	1.140	1.010	2.160	3	11.41	0.24	9.72	0.04	U		M1.5	3
75201	9.459	1.328	1.242	0.813	1.508	4	18.90	0.57	8.08	0.07	C		K5	3
75253	7.942	0.990	0.834	0.540	0.993	2	22.11	0.55	6.22	0.05			K3IV-V	2
75277	7.123	0.809	0.383	0.426	0.821	2	19.60	0.25	5.66	0.03			G9V	2
75542	8.796	1.072	0.935	0.629	1.161	2	24.10	0.73	6.89	0.07	C		K4V	1
75718	6.883	0.821	0.459	0.458	0.874	2	20.58	0.56	5.32	0.06		G	G9V	2
75722	7.532	0.917	0.665	0.501	0.923	2	20.49	0.37	5.97	0.04	U		K2V	2
76074	9.311	1.504	1.103	1.046	2.364	1	5.93	0.05	10.45	0.02			M2.5	3
76779	8.910	1.325	1.253	0.816	1.508	2	15.56	0.34	7.95	0.05	C		K6Vk	1
76901	11.855	1.605	1.099	1.117	2.550	2	10.43	0.61	11.76	0.13	U	X	M3	3
77349	11.279	1.601	1.299	1.066	2.372	3	15.10	0.73	10.38	0.10	C	G	M2.5V	1
77408	7.422	0.820	0.408	0.449	0.857	2	21.29	0.36	5.78	0.04	U		G9V (k)	2
77725	9.363	1.416	1.256	0.874	1.691	5	22.47	0.65	7.61	0.06		C	K7	3
78170	8.055	1.124	1.037	0.673	1.227	2	14.73	0.17	7.21	0.02	C		K5-V	1
78353	10.487	1.512	1.198	0.990	2.122	12	13.90	0.36	9.77	0.06	C		M1	3
78734	10.075	1.375	1.232	0.860	1.670	7	22.90	1.12	8.28	0.11		G	K8Vk	1
78843	7.393	1.063	0.923	0.609	1.132	2	18.71	0.43	6.03	0.05	C		K3V	1
79190	7.124	0.852	0.473	0.481	0.919	2	14.67	0.14	6.29	0.02			K1V	1
79431	11.372	1.508	1.135	1.083	2.455	4	14.40	0.65	10.58	0.10	C		M3V	1
79537	7.540	0.825	0.298	0.486	0.952	2	13.89	0.13	6.83	0.02			K3V Fe-1.7	1
80018	10.586	1.559	1.169	1.091	2.470	12	8.34	0.18	10.98	0.05		G	M2.0	3
80229	11.783	1.464	1.050	0.979	2.130	5	23.94	2.06	9.89	0.19			M1.5	3
80268	10.216	1.461	1.186	0.932	1.902	2	16.44	0.56	9.14	0.07	C	G	M0	3
80300	11.033	−0.157	−0.961	−0.117	−0.270	2	13.16	0.44	10.44	0.07			DA	4
80366	8.382	0.954	0.702	0.559	1.038	2	21.52	0.49	6.72	0.05	C		K3-V(k)	1
80440	10.377	1.454	1.209	0.903	1.786	6	18.27	0.77	9.07	0.09	C		K7	3
80612	10.851	1.490	1.192	0.959	2.009	1	22.87	1.64	9.05	0.16	C		M1V:	4
80817	12.280	1.492	1.040	1.086	2.480	3	22.43	2.70	10.53	0.26	U		M2.5V/M3V	1
80824	10.075	1.577	1.170	1.158	2.674	1	4.29	0.03	11.91	0.01	C		M3.5	3
80925	7.239	0.857	0.469	0.479	0.917	2	24.53	1.21	5.29	0.11	D	C	K1V	1
81018	12.158	1.484	1.008	1.043	2.387	3	16.77	1.00	11.04	0.13		X	M3	3
81262	8.781	1.115	0.985	0.664	1.252	2	22.90	0.65	6.98	0.06			K4V(k)	1
81375	7.065	0.851	0.535	0.461	0.878	1	20.33	0.26	5.52	0.03	C		K0V	2
81520	7.034	0.610	0.030	0.355	0.700	2	22.45	0.27	5.28	0.03	C		G5V Fe-1.2 CH-0.9	1
81935	7.514	1.030	0.861	0.585	1.083	2	14.26	0.13	6.74	0.02			K3+V(k)	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
82099	11.649	1.530	1.167	1.054	2.377	2	16.08	0.80	10.62	0.11			M2.5	3
82256	11.326	1.561	1.190	0.985	2.084	1	15.88	0.50	10.32	0.07			M0.5	3
82283	10.887	1.478	1.197	0.974	2.077	4	18.23	0.72	9.58	0.09	C		M1.5V(k)	1
82694	10.742	1.439	1.175	0.899	1.795	4	19.47	0.82	9.29	0.09	C		K7	3
82724	11.772	1.391	1.541	0.850	1.541	1	3.70	0.59	13.93	0.35	D	C	Mp	4
82809	11.748	1.672	1.248	1.179	2.704	4	6.72	0.18	12.61	0.06	R		M3.5	3
82817	9.023	1.570	1.054	1.086	2.458	2	6.20	0.22	10.06	0.08	D	C	M3Ve	4
82834	9.572	1.399	1.268	0.869	1.669	5	18.25	0.39	8.27	0.05	C		K8Vk	1
82926	11.254	1.552	0.997	1.111	2.524	1	15.78	1.02	10.26	0.14		C	M3Ve+ċ	4
83043	9.655	1.484	1.203	0.970	2.053	1	10.34	0.15	9.58	0.03			M1	3
83101	8.320	1.177	1.100	0.718	1.357	2	19.11	0.54	6.91	0.06	D	C	K4.5V(k)	1
83405	10.817	1.479	1.196	0.940	1.925	10	18.93	0.71	9.43	0.08		X	M0	3
83591	7.709	1.172	1.064	0.724	1.345	3	10.71	0.11	7.56	0.02			K5V	4
83599	10.073	1.438	1.075	0.972	2.122	3	10.57	0.21	9.95	0.04		X	M2	3
83762	11.677	1.571	1.187	1.098	2.438	2	13.36	0.55	11.05	0.09	U		M3	3
84051	10.017	1.484	1.184	0.961	2.018	5	12.47	0.29	9.54	0.05			M1-V	1
84123	11.393	1.612	1.275	1.107	2.516	3	10.18	1.25	11.35	0.27	D		M3-V	1
84212	11.622	1.477	1.138	0.922	1.871	3	19.96	1.44	10.12	0.16		G	M1V	2
84277	12.032	1.540	1.186	1.098	2.501	4	18.72	1.67	10.67	0.19	U		M3.5	3
84460	10.828	1.510	1.183	0.970	2.061	2	17.79	0.72	9.58	0.09			M1	3
84487	10.333	1.378	1.239	0.854	1.631	2	27.23	1.36	8.16	0.11	R		K7	3
84521	11.529	1.558	1.214	1.049	2.310	2	14.91	0.60	10.66	0.09			M2	3
84581	11.169	0.828	0.481	0.508	1.041	3	9.68	5.12	11.24	1.15	D	C	F0IV	1
84652	10.578	1.462	1.266	0.928	1.877	4	19.28	0.93	9.15	0.10	R	G	M0	3
85126	11.635	1.502	1.218	0.987	2.103	1	23.93	2.36	9.74	0.21			M1.5	3
85295	7.492	1.373	1.261	0.843	1.602	1	7.70	0.04	8.06	0.01			K7V	2
85523	9.407	1.566	1.204	1.070	2.401	5	4.54	0.03	11.12	0.01	C		M2+V	1
85561	9.597	1.307	1.149	0.799	1.486	5	18.86	0.62	8.22	0.07			K7-V(k)	1
85647	9.585	1.443	1.289	0.910	1.829	2	16.45	0.44	8.50	0.06	C		M0.0	3
85665	9.293	1.482	1.206	0.945	1.911	1	9.98	0.11	9.30	0.02	C		M0	3
86057	10.127	1.546	1.202	1.026	2.256	5	9.72	0.26	10.19	0.06	C		M1.5V	1
86214	10.946	1.647	1.198	1.217	2.801	4	5.08	0.06	12.42	0.02	C		M3.5	3
86287	9.577	1.532	1.206	0.978	2.052	3	8.09	0.11	10.04	0.03			M1	3
86707	10.672	1.510	1.218	0.976	2.053	1	19.96	0.99	9.17	0.11	D	C	M1	3
86961	10.485	1.465	1.116	0.986	2.154	1	14.64	9.69	9.66	1.44	D	C	M2V:	4
86963	11.411	1.453	0.961	1.098	2.535	3	13.13	3.08	10.82	0.51	D	C	M2V:	4
86990	10.783	1.637	1.193	1.135	2.540	2	5.83	0.08	11.95	0.03			M2.0	3
87322	10.154	1.430	1.307	0.898	1.777	1	21.79	1.04	8.46	0.10			M0	3
87768	9.151	1.199	1.145	0.724	1.327	1	25.04	1.32	7.16	0.11	U	C	K5V	2
87937	9.511	1.729	1.257	1.213	2.770	1	1.82	0.01	13.21	0.01			M4	3
88574	9.360	1.518	1.212	0.975	2.056	9	7.76	0.09	9.91	0.02			M1	3
88622	6.786	0.613	0.044	0.354	0.696	1	23.91	0.34	4.89	0.03			G0V	2
89490	10.817	1.511	1.194	0.945	1.926	3	22.72	1.25	9.04	0.12	C		M0	3
89517	10.179	1.463	1.302	0.908	1.781	3	18.18	0.55	8.88	0.07	C	X	K7	3
89825	9.656	1.365	1.258	0.837	1.573	6	19.56	0.62	8.20	0.07	C		K7Vk	1
90265	10.767	1.493	1.217	0.920	1.873	4	21.85	0.92	9.07	0.09			M0	3
90656	8.004	1.106	1.077	0.630	1.133	1	18.62	0.32	6.65	0.04	C		K3V	4
90790	6.810	0.868	0.539	0.486	0.913	1	13.25	0.12	6.20	0.02	C		K2V	1
90959	8.866	1.146	1.110	0.671	1.224	1	22.97	0.62	7.06	0.06			K4V	4
91154	9.315	1.167	1.110	0.690	1.300	4	21.41	0.66	7.66	0.07			K4.5V(k)	1
91430	11.224	1.558	1.187	1.041	2.299	8	12.89	0.46	10.67	0.08		C	M2.5	3
91608	10.630	1.485	1.188	0.975	2.068	2	16.35	0.55	9.56	0.07			M1	3
92200	8.766	1.314	1.206	0.808	1.489	1	14.28	0.24	7.99	0.04			K5	3
92283	7.912	1.091	1.004	0.631	1.143	1	16.86	0.24	6.78	0.03			K0	4
92311	9.155	1.307	1.194	0.818	1.555	3	17.00	0.39	8.00	0.05			K7	3
92403	10.495	1.740	1.293	1.217	2.780	2	2.97	0.02	13.13	0.01			M3.5	3
92417	10.740	1.471	1.203	0.942	1.937	2	21.24	0.96	9.10	0.10			M0.5	3
92444	9.680	1.396	1.222	0.870	1.679	7	16.93	0.54	8.54	0.07			K8Vk	1
92451	10.703	1.477	1.161	0.969	2.013	2	16.19	0.54	9.66	0.07			M3	4
92573	10.104	1.481	1.202	0.930	1.874	3	15.48	0.40	9.16	0.06	C		M0	3
92871	10.194	1.543	1.121	1.104	2.504	2	11.77	0.24	9.84	0.04			M3	3
92919	8.019	0.922	0.583	0.536	1.061	1	21.39	0.39	6.37	0.04	U		K0V	4
93069	8.837	1.468	1.215	0.936	1.922	2	12.29	0.29	8.39	0.05	D	C	M2V	4

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
93072	10.637	1.450	1.171	0.905	1.804	5	23.82	1.69	8.75	0.15	D	C	K9V(k)	1
93101	9.217	1.456	1.215	0.931	1.907	2	10.91	0.18	9.03	0.04			M0.5	3
93206	11.142	1.473	1.115	1.038	2.342	8	14.09	0.51	10.40	0.08			M2.0	3
93449	11.917	0.734	0.130	0.675	1.505	3	24.43	16.68	9.98	1.48	U	X	B5IIIpe	1
93871	9.215	1.082	0.946	0.656	1.219	3	24.78	0.87	7.24	0.08	C		K5V	4
93873	10.774	1.623	1.143	1.029	2.231	2	8.51	0.17	11.12	0.04	U		M1.5	3
93899	10.771	1.612	1.170	1.032	2.240	2	8.75	0.18	11.06	0.04	U		M2	3
94225	9.342	1.330	1.300	0.816	1.533	6	20.58	0.65	7.77	0.07	C		K6.5V	1
94349	11.143	1.520	1.059	1.127	2.609	2	10.22	0.31	11.10	0.07	D	O	M3.5	3
94368	11.318	1.437	1.050	0.936	1.955	1	21.74	1.57	9.63	0.16	C		M0.5	3
94557	11.536	1.428	0.897	1.091	2.524	3	19.08	1.07	10.13	0.12			M3.5	3
94739	9.356	1.461	1.227	0.924	1.878	6	16.10	0.51	8.32	0.07	D	C	M0V(k)	1
94761	9.115	1.515	1.138	1.039	2.333	3	5.87	0.03	10.27	0.01	C		M2.5	3
95071	12.290	0.055	−0.792	0.061	0.126	3	10.95	0.48	12.09	0.10	U	X	DAw...	4
96113	8.645	1.097	0.998	0.653	1.184	1	21.01	0.49	7.03	0.05			K4+V	1
96121	10.410	1.438	1.243	0.894	1.760	2	22.46	0.87	8.65	0.08			K7	3
96183	6.864	0.738	0.336	0.396	0.766	1	20.56	0.27	5.30	0.03			G8V	2
96285	9.326	1.381	1.210	0.851	1.626	4	14.43	0.32	8.53	0.05	C		K8V	2
96710	10.482	1.413	1.209	0.921	1.906	5	23.22	1.04	8.65	0.10	C		M1V	1
97051	9.958	1.286	1.210	0.788	1.448	2	23.11	0.88	8.14	0.08			M0	4
98204	9.285	1.327	1.239	0.812	1.511	4	18.68	0.45	7.93	0.05	C		K7V	1
98505	7.648	0.930	0.663	0.522	0.968	1	19.45	0.26	6.20	0.03	M		K2V	2
98677	7.115	0.739	0.244	0.419	0.811	1	18.97	0.23	5.72	0.03	D		K0V Fe-0.9	2
98792	7.240	0.831	0.430	0.481	0.926	1	15.77	0.14	6.25	0.02	C		K1V	2
98828	7.767	0.942	0.753	0.508	0.950	1	21.95	0.37	6.06	0.04			K2.5V	2
99150	12.496	1.600	1.112	1.210	2.772	3	14.91	1.12	11.63	0.16			M3.0	3
99316	7.515	0.857	0.453	0.482	0.944	1	23.66	0.55	5.64	0.05	D	C	G9V	2
99385	8.901	1.290	1.203	0.800	1.487	1	15.62	0.37	7.93	0.05	C		K6Vk	1
99438	12.242	0.044	−0.632	−0.069	−0.139	2	16.37	1.21	11.17	0.16				4
99452	7.323	0.844	0.498	0.461	0.886	1	20.39	0.27	5.78	0.03			K0V	2
99701	7.966	1.453	1.208	0.913	1.842	3	6.20	0.04	9.00	0.01			K7.0	3
99711	7.767	0.957	0.723	0.536	0.996	1	19.32	0.29	6.34	0.03	C		K2.5V	2
99764	10.168	1.378	1.167	0.847	1.607	5	20.27	0.60	8.63	0.06	C		M0V	2
100223	8.708	1.181	1.127	0.710	1.295	1	17.91	0.38	7.44	0.05	C		K5.5V	1
100356	10.227	1.464	1.213	0.917	1.842	13	24.01	1.16	8.33	0.10	D	C	K7.0	3
100490	10.583	1.454	1.189	0.897	1.766	2	19.39	0.72	9.15	0.08	C		K5.0	3
100923	11.433	1.493	1.134	1.059	2.406	2	14.84	0.66	10.58	0.10		X	M3	3
101516	11.546	−0.075	−0.784	−0.102	−0.182	2	15.55	0.62	10.59	0.09			DA	4
101955	7.842	1.242	1.134	0.777	1.460	1	16.72	0.96	6.73	0.12	D	C	K5V	2
102119	9.920	1.178	0.892	0.761	1.518	5	23.83	0.76	8.03	0.07	U		K5+Vke	1
102141	10.343	1.566	0.844	1.245	2.924	13	10.70	0.42	10.20	0.09	D	C	Mpe	4
102207	12.396	−0.081	−0.804	−0.092	−0.206	3	20.74	1.62	10.81	0.17	U		DAw	4
102235	10.735	1.397	1.067	0.943	2.034	4	17.95	0.77	9.47	0.09	C	X	M1.5	3
102264	6.960	0.675	0.143	0.377	0.731	1	22.31	0.45	5.22	0.04	C		G6V	1
102357	10.304	1.456	1.211	0.918	1.872	3	21.08	0.94	8.68	0.10		G	M0	3
103039	11.458	1.571	1.065	1.207	2.800	3	5.71	0.11	12.67	0.04	C		M4V	1
103256	8.770	1.092	0.975	0.633	1.150	1	22.42	0.47	7.02	0.05			K4V	2
103388	11.487	1.512	1.113	1.059	2.381	3	15.32	0.75	10.56	0.11	U	X	M2.5	3
103393	11.916	1.528	1.011	1.140	2.650	3	17.69	1.23	10.68	0.15			M4	3
103441	12.013	1.613	1.122	1.058	2.318	3	13.78	0.60	11.32	0.09			M2	3
103768	9.326	1.262	1.185	0.768	1.428	6	20.31	0.60	7.79	0.06			K6V(k)	1
103800	11.219	1.511	1.153	1.052	2.359	12	14.38	0.61	10.43	0.09			M3	3
103910	12.799	1.660	1.452	1.170	2.633	2	12.72	0.96	12.28	0.16	U		M4	4
104059	11.467	1.479	1.115	0.962	2.046	4	19.17	1.07	10.05	0.12			M1	3
104092	8.272	1.246	1.205	0.753	1.363	1	15.06	0.22	7.38	0.03	C		K6V	2
104137	12.195	1.493	1.057	1.038	2.330	2	24.98	2.29	10.21	0.20			M2.5	3
104239	7.090	0.905	0.583	0.509	0.989	1	17.57	0.19	5.87	0.02	U	C	G9.5V(k)	1
104432	10.858	1.526	1.103	0.962	2.046	4	12.17	0.32	10.43	0.06			M1	3
104436	6.995	0.618	0.052	0.343	0.697	1	23.84	0.21	5.11	0.02			G1V	1
104644	11.998	1.603	1.208	1.040	2.266	12	14.80	0.82	11.15	0.12			M1:	4
105038	7.878	1.045	0.879	0.602	1.104	1	16.39	0.24	6.81	0.03			K3V	2
105152	8.158	1.007	0.846	0.587	1.081	1	19.82	0.40	6.67	0.04	C		K3V	2
105336	10.897	1.491	1.209	0.964	2.038	4	20.48	0.92	9.34	0.10		X	M1.5V	1

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
105341	9.086	1.366	1.254	0.842	1.589	5	16.22	0.30	8.04	0.04	C		K6.5Vk	1
105533	9.921	1.397	1.252	0.865	1.667	2	20.47	0.65	8.37	0.07			M0	4
105905	8.678	0.917	0.613	0.539	1.031	3	23.00	0.53	6.87	0.05			K2.5V	1
105911	7.493	0.896	0.685	0.483	0.903	3	23.51	0.73	5.64	0.07	C	G	K2III-IV	1
105932	11.085	1.544	1.196	0.962	1.973	12	16.35	0.64	10.02	0.08	C		M0.5	3
106106	10.303	1.625	1.249	1.140	2.594	2	6.70	0.08	11.17	0.03			M3.5	3
106147	9.075	1.285	1.230	0.795	1.489	4	18.41	0.40	7.75	0.05			K7V(k)	1
106255	12.014	1.664	1.231	1.275	2.973	6	8.30	0.41	12.42	0.11		X	M4e. . .	4
106440	8.672	1.504	1.183	1.007	2.193	2	4.95	0.02	10.20	0.01			M1.5	3
106696	7.157	0.887	0.559	0.497	0.947	3	14.62	0.12	6.33	0.02			K1.5V	1
106803	10.619	1.447	1.192	0.951	1.999	3	21.25	1.15	8.98	0.12		X	M0.0	3
107143	8.833	1.045	0.891	0.624	1.195	3	26.79	2.03	6.69	0.16		X	K3.5V	1
107317	12.122	1.523	1.147	1.083	2.447	2	20.82	1.46	10.53	0.15			M3	3
107427	10.928	0.472	−0.041	0.277	0.554	4	13.78	5.08	10.23	0.80		X	F5.5V	1
107625	8.623	0.966	0.756	0.561	1.054	2	23.70	0.52	6.75	0.05			K3V	1
107705	9.624	1.445	1.141	0.942	1.982	4	16.32	0.41	8.56	0.05	D	C	M0.5	3
107711	11.510	1.623	1.250	1.100	2.481	13	20.45	11.78	9.96	1.25	D	X	M2.5	3
107772	10.544	1.393	1.186	0.863	1.644	3	23.20	1.12	8.72	0.11			M0	4
108028	8.148	0.930	0.656	0.510	0.968	1	23.04	0.40	6.34	0.04	C		K2.5V	2
108159	11.954	1.591	1.188	1.045	2.297	5	14.63	0.82	11.13	0.12			M2.5	3
108380	11.031	1.456	1.132	0.975	2.125	2	20.49	0.89	9.47	0.09	C		M1.5	3
108405	10.487	1.521	0.960	1.071	2.386	3	15.97	0.74	9.47	0.10			M2.5	3
108567	9.562	1.282	1.240	0.777	1.430	6	23.45	0.86	7.71	0.08			K5.5V	1
108569	9.715	1.474	1.181	0.953	1.977	5	11.99	0.25	9.32	0.05	C		M0.5	3
108752	10.653	1.522	1.203	1.043	2.319	3	16.18	0.58	9.61	0.08	C		M2	3
108782	9.146	1.470	1.222	0.933	1.901	2	10.24	0.16	9.09	0.03	C		M0	3
108890	12.098	1.543	1.193	1.020	2.234	2	20.65	1.92	10.52	0.20	U	X	M1.5	3
109084	10.106	1.435	1.214	0.906	1.823	4	22.22	1.32	8.37	0.13	C	X	M0	3
109388	10.366	1.502	1.138	1.087	2.489	14	9.10	0.17	10.57	0.04	C		M3.5	3
109555	10.232	1.505	1.115	1.028	2.267	3	11.62	0.19	9.91	0.03			M2	3
109638	11.982	1.563	1.168	1.069	2.401	4	14.96	0.99	11.11	0.14			M3	4
110400	12.030	1.551	1.223	1.043	2.307	3	18.64	1.09	10.68	0.13			M1.0	3
110443	8.992	1.346	1.170	0.825	1.557	3	13.53	0.22	8.34	0.04	C		K7V(k)	1
110534	10.708	1.477	1.196	0.960	2.007	3	19.15	0.80	9.30	0.09			M1-V(k)	1
110640	8.770	1.214	1.125	0.732	1.400	1	21.58	0.51	7.10	0.05	D	C	M0	4
110922	12.082	1.599	1.266	1.153	2.625	2	20.41	2.69	10.53	0.29	D	C	M3-V	1
110951	10.738	1.465	1.244	0.919	1.859	2	22.02	0.84	9.02	0.08	C		M1V	2
110980	10.499	1.452	1.205	0.922	1.847	3	21.32	0.90	8.86	0.09	C		M1V	2
110996	7.645	1.097	1.042	0.623	1.132	3	16.06	0.21	6.62	0.03	C		K4-V	1
111313	10.373	1.532	1.214	0.974	2.044	4	12.71	0.43	9.85	0.07	C		M1	3
111391	11.256	1.511	1.109	1.030	2.279	3	16.08	0.79	10.22	0.11	C		M2+Vk	1
111766	11.446	1.604	1.168	1.179	2.702	2	13.18	1.01	10.85	0.17	D	C	M3.5Vke	1
111802	9.083	1.512	1.119	1.010	2.207	2	8.69	0.10	9.39	0.02	U		M1.5	3
111888	8.435	0.952	0.665	0.545	1.022	1	24.10	0.44	6.52	0.04	C		K3V	2
111932	11.749	1.481	1.204	0.929	1.861	2	25.62	7.92	9.71	0.67	U	X	M0V:	4
111960	7.841	1.156	1.065	0.685	1.261	1	13.55	0.14	7.18	0.02			K4.5Vk	1
111983	9.101	1.070	0.903	0.648	1.200	5	22.49	0.67	7.34	0.06			K5-V	1
112120	11.704	1.468	1.029	1.050	2.350	2	21.04	1.25	10.09	0.13			M2.5	3
112312	12.104	1.523	0.956	1.188	2.758	2	23.34	1.97	10.26	0.18	U		M3	4
112388	11.960	1.492	1.114	0.953	1.965	5	26.62	2.89	9.83	0.24			M1V:	4
112774	9.847	1.469	1.203	0.914	1.827	3	14.13	0.37	9.10	0.06	C		M0.5-V	2
112870	8.263	0.864	0.453	0.491	0.957	1	21.28	0.46	6.62	0.05			K2.5V	2
112978	11.869	1.542	1.198	1.018	2.222	7	19.61	1.09	10.41	0.12			M:	4
113020	10.179	1.571	1.168	1.182	2.733	7	4.69	0.05	11.82	0.02			M4	3
113201	11.506	1.492	1.302	0.981	2.067	2	24.79	1.75	9.53	0.15	U		M0.5	3
113229	10.377	1.496	1.131	1.065	2.419	2	8.62	0.09	10.70	0.02	C		M3-V	1
113244	11.212	1.449	1.135	0.945	1.996	3	24.46	1.27	9.27	0.11	C		M1	3
113296	8.638	1.505	1.180	0.981	2.096	1	6.85	0.05	9.46	0.01	C		M1.5	3
113576	7.869	1.382	1.243	0.855	1.631	4	8.22	0.05	8.30	0.01			K7+Vk	1
113602	11.554	1.535	1.215	0.993	2.114	16	20.64	1.52	9.98	0.16			M1	3
113605	11.573	1.523	1.172	0.991	2.118	6	20.15	1.30	10.05	0.14			M1	3
113718	7.464	0.964	0.771	0.530	0.982	3	17.04	0.27	6.31	0.03		O	K2.5V	2
113829	6.616	0.633	0.115	0.337	0.668	1	24.72	0.35	4.65	0.03			G1V	2

Table 1 – *continued*

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
113850	10.667	1.460	1.219	0.932	1.914	1	20.32	0.83	9.13	0.09	R		M0.0	3
114156	9.640	1.306	1.201	0.798	1.481	5	20.94	0.80	8.04	0.08			K6Vk	1
114233	10.887	1.519	1.202	0.947	1.926	12	15.86	0.54	9.89	0.07	D		M0	3
114252	10.872	1.410	1.118	0.908	1.842	5	22.28	1.14	9.13	0.11			M0	3
114411	11.273	1.535	1.260	1.017	2.209	2	16.08	0.85	10.24	0.11			M2V	1
114719	10.464	1.469	1.244	0.950	1.985	2	19.83	0.84	8.98	0.09	D	X	M0.5Vk	1
114859	10.003	1.402	1.256	0.883	1.776	2	22.46	0.66	8.25	0.06	C	C	M	4
114954	10.847	1.444	1.199	0.887	1.752	2	21.34	0.77	9.20	0.08			M0V(k)	1
115332	11.710	1.526	1.063	1.196	2.768	2	10.99	0.35	11.51	0.07			M4	3
115445	7.796	0.899	0.577	0.508	0.962	3	19.12	0.31	6.39	0.04			K2.5V	2
115680	10.528	1.460	1.170	0.905	1.776	2	23.27	1.07	8.69	0.10	C		K7	3
116003	11.113	1.520	1.053	1.102	2.514	8	16.20	0.93	10.07	0.12	C	X	M3	3
116132	10.165	1.584	0.988	1.183	2.719	2	6.18	0.06	11.21	0.02	R	C	M3.5	3
116215	8.607	1.296	1.213	0.787	1.463	3	15.16	0.45	7.70	0.06	D		K6Vk	1
116317	11.160	1.478	1.083	1.019	2.279	14	13.98	0.64	10.43	0.10		X	M2.5	3
116384	9.546	1.347	1.189	0.843	1.667	3	19.03	0.47	8.15	0.05	C		K7	3
116491	10.079	1.381	1.228	0.861	1.657	2	23.03	0.81	8.27	0.08			K7.0	3
116645	11.934	1.552	1.158	1.044	2.311	7	18.68	1.23	10.58	0.14			M2.0	3
116745	7.087	1.001	0.824	0.585	1.100	3	11.42	0.07	6.80	0.01			K3+V	1
116763	7.191	0.811	0.406	0.446	0.851	4	18.57	0.22	5.85	0.03			G9.5V	1
116936	10.293	1.371	1.028	0.853	1.619	2	22.10	1.00	8.57	0.10	C		K5	3
117081	8.991	0.643	0.171	0.340	0.669	2	15.73	5.20	8.01	0.72	D	X	G1V	1
117473	8.981	1.463	1.086	0.950	2.033	7	5.98	0.04	10.10	0.02	C		M1	3
117828	10.023	1.492	1.114	1.029	2.303	6	9.99	0.10	10.02	0.02			M...	4
117886	10.809	1.459	1.215	0.913	1.817	5	24.26	1.55	8.88	0.14			K7	3
117966	11.158	1.486	1.125	1.031	2.286	3	18.60	1.00	9.81	0.12		X	M2.5Vk	1
118008	8.225	0.985	0.767	0.556	1.031	2	21.97	0.45	6.52	0.04			K2.5V(k)	1
118200	11.739	1.519	1.124	1.085	2.462	3	16.82	0.76	10.61	0.10			M3	3
118261	8.697	1.058	0.911	0.617	1.141	2	22.99	0.53	6.89	0.05			K4V(k)	1

Table 2. Mean *UBVRI* photometry, distances (r) and spectral types for *Hipparcos* stars with $r > 30$ pc.

HIP	V	$(B-V)$	$(U-B)$	$(V-R)$	$(V-I)$	n	r (pc)	σ_r	M_V	σ_M	Var	Mlt	Sp. type	Ref
1663	9.282	0.309	0.093	0.175	0.353	3	313.48	105.15	1.80	0.73		X	kA7hA9mF0III	2
1692	9.178	1.337	1.452	0.695	1.319	3	310.56	137.92	1.72	0.96	C	X	K2III	2
35389	9.698	0.158	0.106	0.070	0.154	3	370.37	197.53	1.85	1.16	U	X	A5V	2
55605	10.375	1.257	1.115	0.803	1.549	3	32.13	2.43	7.84	0.16	U	X	M0	4
60553	10.503	1.040	0.754	0.626	1.216	6	72.62	8.54	6.20	0.26	U	X	K3Vk	1
67795	12.495	1.435	1.193	0.975	2.106	3	37.50	7.63	9.63	0.44			M2.5V	1
76051	9.902	0.683	0.219	0.398	0.763	1	81.10	73.60	5.36	1.97	D	C	G2V CH-0.3	2
88118	12.236	0.845	0.175	0.480	1.011	1	65.19	54.10	8.17	1.80	U	X	Fp	4
101574	12.164	1.453	1.295	0.961	1.960	3	47.28	15.29	8.79	0.70		C	M3	4
109670	11.494	0.609	0.012	0.356	0.706	3	284.90	249.19	4.22	1.90	U	X	G5V Fe-1.2 CH-1	1
114242	10.148	1.128	1.027	0.662	1.199	3	35.68	2.10	7.39	0.13	C	X	K4V(k)	1
117042	9.084	0.426	−0.003	0.244	0.493	5	235.85	67.86	2.22	0.62	C	X	F3V	2
14559	11.683	0.578	−0.009	0.331	0.661	4	−15.87	10.19			D	C	F9-V	1

undoubtedly responsible for the much larger value for $\overline{\sigma}_{(U-B)}$ than for the other colours. A cursory inspection of Table 1 shows that a red star with a V magnitude near 11 can easily be nearly 14th magnitude at U – very faint for photoelectric work on a 0.5-m telescope.

4 *JHKL* PHOTOMETRY

All infrared photometric observations were made with the MkII photometer on the 0.75-m telescope at the SAAO Sutherland site. The MkII infrared instrument uses an InSb detector and is very similar to the MkI photometer described in Glass (1973). Standard stars were observed between every three or four programme stars (equivalent to about one per hour) to track zero-point changes and all observations were reduced to the SAAO standard system (Carter 1990). Photometry in *JHK* was obtained for 365 of the stars for which measurements were made in the optical. *L*-band photometry was acquired for 86 of the infrared targets. Results are given in Tables 3 and 4.

The data discussed here formed part of a larger observational programme which is discussed in Paper III. The interested reader is referred to that paper for a fairly extensive discussion of photometric

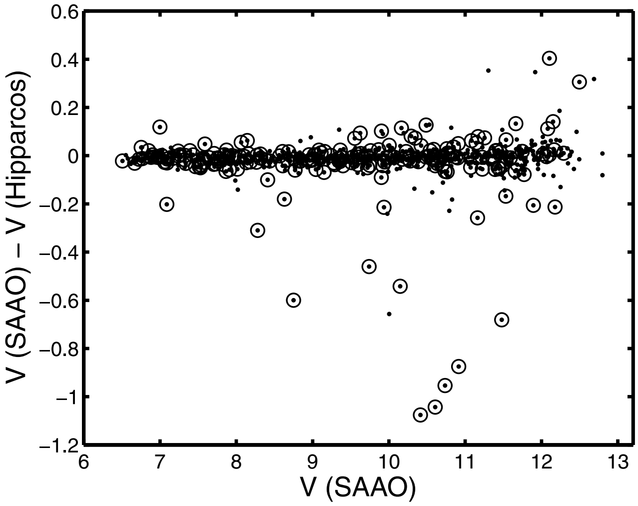

Figure 1. The difference between SAAO and *Hipparcos* V magnitudes (dots), for 750 stars. Data corresponding to stars with CCDM designations are indicated by circles.

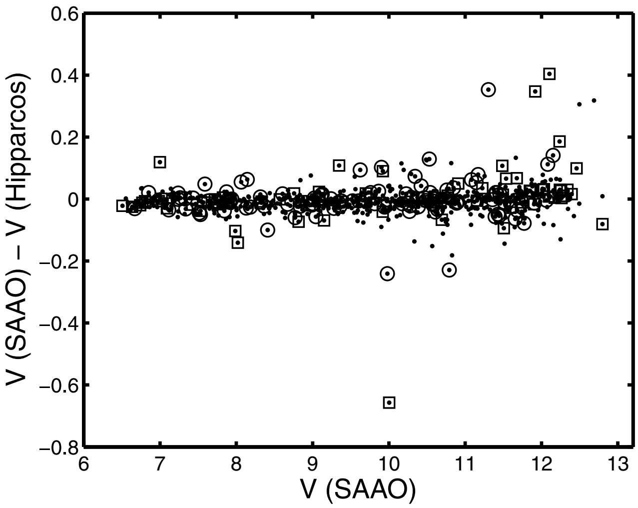

Figure 2. The difference between SAAO and *Hipparcos* V magnitudes (dots), after removal of CCDM stars with large negative residuals. Data corresponding to stars with 'D' variability flags are indicated by circles, and squares denote stars with flags 'P' and 'U'.

errors. For present purposes it is sufficient to mention that for the ∼170 stars with multiple *JHK* measurements, the mean errors are 12, 11 and 11 mmag, respectively. [Note that measure of error used by Paper III was

$$\sigma_V = \left[\frac{1}{n} \sum_{i=1}^{n} (V_i - \overline{V})^2 \right]^{1/2} \qquad (2)$$

which differs by a factor $\sqrt{n/(n-1)}$ from that in equation (1) above. The numbers quoted in the present paper have been adjusted to be in line with the definition of equation (1).] Multiple L-band measurements were obtained for 41 stars – the mean scatter for these is 41 mmag. Fig. 4 shows the J-band errors for stars with multiple measurements, plotted against the J magnitude.

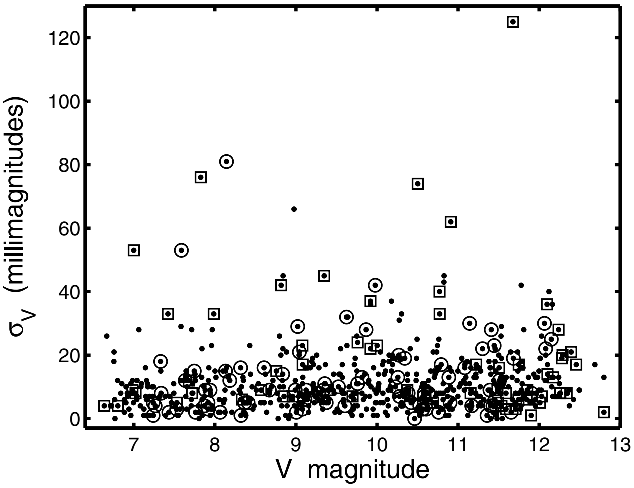

Figure 3. Photometric σ_V error sizes against V magnitude. One outlying point with $\sigma_V = 0.583$ mag, for the variable star HIP 93449 (R CrA), is not shown. Circles and squares denote stars flagged as variable ('D' and 'U' respectively) in the *Hipparcos* catalogue.

5 STARS WITH UNUSUAL ABSOLUTE MAGNITUDES AND/OR COLOURS

Some of the results in the tables are displayed in Figs 5–9, in the form of colour–magnitude and two-colour plots. There are a number of outlying points – in particular, the $M_V/(B - V)$ plot (Fig. 5) shows a grouping of five stars in the no man's land between the main sequence and the white dwarfs. Most of these have fairly normal colours. Points corresponding to these five stars are marked with diamonds in Figs 5–9. A number of other stars have unusual colours [usually most pronounced in $(U - B)$] and may also be slightly over- or underluminous; the data points are marked with squares in the diagrams. Brief discussions of the stars follow.

The following five stars have large parallax errors, and lie between the main sequence and white dwarfs (see Fig. 5).

HIP 62951: our colour indices, consistent with those in the *Hipparcos* catalogue, suggest an F8 star, rather than the spectral type A2 given in the *Hipparcos* catalogue. Of course, this does not explain the peculiar position of the star in colour–magnitude plots.

HIP 84581: HIP 84582 (CCDM J17174−0752A) and HIP 84581 (CCDM J17174−0752B) are a close pair. Magnitudes of $V = 8.32$ and 11.09 are quoted for the two stars in the *Hipparcos* catalogue – we therefore observed the fainter of the two stars, finding $V = 11.17$. However, the colours of our target are consistent with the spectral type K2 of HIP 84582, rather than the recently determined F0IV classification of HIP 84581 (no spectral type given in the catalogue). A check reveals that the coordinates specified for HIP 84581 are indeed those of the fainter star – hence the spectral types given in the literature probably need to be interchanged. Of course, this does not resolve the dilemma that HIP 84581 lies about 4 mag below the main sequence in colour–magnitude plots.

HIP 93449: the well-known pre-main sequence star R CrA, with spectral classification B5IIIpe (Gray et al. 2006). The star is in a nebula, so that it is not surprising that it has unusual colours. Note also that it is one of five stars in Fig. 2 with a substantial positive residual.

HIP 107427: the large parallax can probably be ascribed to the fact that the star is an astrometric binary (Makarov & Kaplan 2005), rather than to spatial proximity to earth. Both optical and infrared colours are consistent with the F5.5 spectral classification (Gray

Table 3. *JHKL* photometry for *Hipparcos* nearby stars. The '*nnnn*' values are the number of observations in J, H, K and L, respectively.

HIP	J	H	K	L	*nnnn*	M_J
439	5.344	4.732	4.535	4.388	1111	7.16
523	8.517	7.853	7.616		1110	7.40
1242	7.287	6.681	6.399	5.923	1111	8.80
1276	8.026	7.334	7.113		1110	6.24
1463	7.672	6.977	6.771		1110	6.61
1532	7.404	6.709	6.579		1110	5.78
1696	7.467	6.764	6.586		2220	6.30
1720	8.395	7.699	7.479		1110	6.97
1734	7.749	7.018	6.815		2220	6.48
1842	8.348	7.645	7.425		1120	6.88
3143	8.294	7.578	7.395		1110	6.39
3261	7.793	7.104	6.931		2220	6.34
3813	7.878	7.141	6.967		2220	6.21
3998	7.067	6.385	6.282		1110	5.42
4473	7.137	6.430	6.307		3330	5.67
4569	7.832	7.172	6.926		2220	7.37
4845	7.456	6.734	6.585		2220	5.91
4927	7.700	7.052	6.796		1110	6.65
5215	8.096	7.350	7.142		1110	6.37
5410	8.532	7.855	7.607		1110	6.76
5496	6.067	5.391	5.160	4.957	2222	6.50
5643	7.370	6.736	6.438	6.128	2221	9.53
5663	7.277	6.581	6.460		3330	5.50
5812	7.899	7.220	7.011		1110	6.80
6005	7.899	7.194	6.964		2220	6.85
6008	7.840	7.090	6.918		2220	6.00
6069	7.916	7.241	7.040		2220	6.36
6097	8.427	7.728	7.513		1110	6.70
6351	7.435	6.754	6.578		3430	6.32
6365	8.224	7.534	7.322		1110	6.48
7170	8.015	7.335	7.121		3330	6.76
7554	7.568	6.804	6.659		3330	5.81
7646	8.264	7.538	7.322		2220	6.73
8051	7.429	6.766	6.543		2220	7.14
8382	8.600	7.908	7.673		1110	7.05
8691	8.445	7.850	7.627		1110	7.35
9724	6.620	5.930	5.707	5.488	2222	6.81
9749	8.073	7.342	7.174		3330	6.24
9786	8.429	7.815	7.550		2220	8.59
10279	6.921	6.287	6.089	6.007	2222	6.83
10337	7.391	6.685	6.548		3330	5.65
10395	7.020	6.327	6.112	6.020	3331	6.53
10617	8.036	7.378	7.132		2220	7.26
10688	8.533	7.843	7.654		1110	6.73
10812	7.975	7.283	7.052		2220	7.23
11439	7.831	7.120	6.929		2220	6.26
12097	7.285	6.583	6.377		1110	6.62
12261	8.437	7.767	7.526		2220	7.56
12351	6.703	5.973	5.810	5.655	3332	5.57
12493	7.333	6.652	6.535		2220	5.50
12749	8.754	8.147	7.939		1110	6.56
12781	6.852	6.208	5.972	5.691	1111	7.47
12961	7.632	6.908	6.765		3330	5.82
13218	7.427	6.750	6.536		3330	6.86
13389	7.763	7.094	6.862		1110	7.43
14165	8.284	7.573	7.327		1110	6.83
14445	6.557	5.816	5.701	5.595	2222	5.75
14555	7.297	6.561	6.391		2220	5.88
14587	7.137	6.468	6.380		1110	5.45
14731	8.408	7.714	7.485		1110	7.27
15095	6.924	6.242	6.113		1110	5.51
15332	8.557	7.889	7.703		1110	6.88
15360	8.032	7.329	7.127		2220	6.22
15439	8.293	7.621	7.424		1110	6.77
15844	7.203	6.470	6.276	6.252	1111	5.75
15973	8.337	7.688	7.518		1110	6.50
16242	7.350	6.609	6.469		3330	5.63
16445	8.804	8.132	7.919		1110	7.01
16536	7.880	7.268	6.993		1110	7.72
17496	7.017	6.343	6.252	6.374	1111	5.25
17743	8.005	7.327	7.120		1110	6.87
18115	8.193	7.514	7.287		2220	6.26
18280	6.517	5.812	5.677	5.691	1111	5.56
19165	7.525	6.829	6.749		1110	5.70
19394	8.024	7.370	7.148		1110	7.14
19832	7.141	6.481	6.363		2220	5.55
19948	7.585	6.884	6.681		1110	5.94
21086	8.016	7.283	7.053		3330	6.61
21556	7.021	6.340	6.122		2220	6.79
21932	6.563	5.840	5.635	5.550	1111	6.73
22627	7.923	7.216	6.955		1110	7.48
22762	7.515	6.857	6.634		1110	7.10
23512	7.885	7.229	6.980		3330	8.06
23932	6.254	5.563	5.328	5.150	4444	6.42
24472	8.423	7.746	7.547		1110	6.67
25283	6.763	6.067	5.951	5.918	1111	5.49
25578	8.413	7.797	7.568		1110	8.69
25775	7.202	6.474	6.337		2220	5.83
25953	7.493	6.839	6.581		1110	6.96
26081	7.831	7.109	6.872		2220	6.82
27323	7.148	6.444	6.299		3330	5.56
27359	7.486	6.837	6.626		2220	6.60
27803	7.221	6.490	6.358		2220	5.68
28035	7.252	6.526	6.314		2220	6.43
28153	7.684	6.981	6.790		2220	5.82
29295	5.062	4.357	4.162	3.993	3333	6.26
30920	6.459	5.799	5.492	5.278	2222	8.38
31126	7.596	6.887	6.682		3330	5.75
31300	7.995	7.303	7.061		1110	6.91
31555	7.708	7.049	6.845		2220	6.25
31634	6.652	5.939	5.762		1110	5.72
31862	6.927	6.227	6.036		2220	6.31
31878	7.408	6.677	6.550		1110	5.66
33499	6.948	6.338	6.077		2220	7.43
33560	6.970	6.312	6.188		2220	5.29
34104	7.389	6.672	6.425		1110	6.37
34361	7.709	7.016	6.815		1110	6.52
34890	6.806	6.106	5.991		2220	5.36
35943	7.729	7.006	6.861		2220	5.79
36208	5.747	5.131	4.883	4.673	2222	7.85
36349	6.681	5.957	5.753		2220	5.70
36985	6.877	6.175	5.980		1110	6.12
37217	7.959	7.322	7.067		1110	7.83
37288	6.854	6.093	5.924		1110	6.03
38594	7.098	6.378	6.228		2220	5.66
39987	8.058	7.383	7.152		1110	6.97
40239	6.719	6.012	5.849		1110	5.15
40501	6.708	6.048	5.808	5.603	1111	6.91
41802	8.115	7.416	7.212		1110	6.01
42748	6.768	6.046	5.874	5.734	1111	5.83
42762	8.169	7.492	7.263		1110	7.30
44899	7.814	7.120	6.957		1110	6.05
45637	7.207	6.525	6.397		1110	5.38
45839	7.090	6.452	6.335		1110	5.25
45908	6.495	5.781	5.589	5.520	2222	6.40
46549	7.414	6.723	6.601		1110	5.49

Table 3 – *continued*

HIP	J	H	K	L	*nnnn*	M_J
46655	7.759	7.114	6.851		1110	7.83
47103	7.390	6.742	6.510		1110	7.61
47425	6.964	6.306	6.070		1110	7.08
47513	7.041	6.352	6.135		1110	6.78
47619	8.384	7.714	7.500		1110	7.40
48336	7.038	6.364	6.167	6.161	1111	6.35
48477	7.086	6.373	6.163		1110	6.06
48659	8.079	7.428	7.155		1110	7.81
48904	7.221	6.540	6.290		3330	6.28
49091	7.668	6.962	6.719		1110	6.61
49376	8.558	7.855	7.650		1110	6.75
49969	7.103	6.459	6.206		1110	6.65
49973	7.126	6.403	6.235		1110	5.95
49986	5.962	5.250	5.029	4.876	2222	6.48
51317	6.233	5.582	5.349	5.141	1111	6.99
52190	7.329	6.638	6.387		1110	6.60
52296	6.920	6.222	6.023	5.845	3333	5.85
52596	7.906	7.240	7.008		1110	7.17
52708	7.275	6.595	6.480		1110	5.61
53767	6.412	5.745	5.503	5.322	1111	7.29
54373	7.529	6.805	6.644		1110	6.17
54677	6.759	6.081	5.942	6.058	1111	5.09
54803	7.520	6.829	6.649		1110	5.50
54922	6.807	6.157	6.039		1110	4.99
55042	7.850	7.337	7.111		1120	7.34
55066	7.349	6.632	6.473		1110	6.08
55119	7.128	6.394	6.247		1110	5.89
55625	8.041	7.347	7.148		1110	6.39
56244	7.474	6.810	6.556		2220	7.40
56284	8.369	7.654	7.433		1110	6.58
56466	8.142	7.519	7.277		1220	6.90
56528	6.525	5.850	5.637	5.477	3333	6.78
57459	8.008	7.296	7.076		1110	6.50
57494	6.994	6.366	6.248		1110	4.97
57959	8.354	7.669	7.444		1110	6.90
58688	7.598	6.874	6.696		3330	5.80
59000	7.480	6.763	6.627		1110	5.77
59406	7.974	7.309	7.075		1110	7.47
59780	7.096	6.399	6.228		1110	5.44
60475	7.596	6.852	6.683		1110	5.99
60559	7.809	7.219	6.999		2230	8.07
60866	7.092	6.434	6.324		2220	5.14
61495	7.748	7.053	6.850		1110	6.36
61629	6.955	6.262	6.035		1110	7.02
61706	7.645	6.940	6.691		1110	6.86
61874	8.253	7.659	7.383		1110	8.80
62452	7.290	6.634	6.377		1110	7.68
63257	7.059	6.416	6.307		1110	5.15
63480	7.682	6.943	6.764		2220	6.20
63510	6.556	5.810	5.608	5.454	1111	6.22
63833	6.505	5.802	5.664	5.670	2222	5.50
63942	6.901	6.197	6.049		1110	5.53
65520	7.748	7.113	6.856		2220	6.63
65669	8.452	7.778	7.561		1110	6.83
65859	5.949	5.265	5.053	4.902	1111	6.53
66222	7.278	6.551	6.390		1110	5.63
66675	6.941	6.223	6.086	5.920	1111	6.09
66886	7.129	6.488	6.375		1110	5.22
67164	7.835	7.170	6.925		1110	7.78
67761	8.519	7.836	7.613		2220	6.68
67960	6.594	5.851	5.686	5.587	2222	5.41
68469	6.581	5.886	5.688	5.611	1111	6.57
69285	7.613	6.901	6.712		1110	6.49
69454	7.000	6.321	6.109	6.228	2221	6.66

Table 3 – *continued*

HIP	J	H	K	L	*nnnn*	M_J
69485	7.455	6.753	6.577		2220	6.02
69962	6.704	6.016	5.887		1110	5.02
70308	7.486	6.776	6.625		2220	5.63
70849	7.692	6.962	6.803		2220	5.83
70865	7.321	6.621	6.406		1110	6.59
70956	6.715	5.963	5.825	5.786	2222	5.56
70975	7.888	7.219	6.957		1110	7.72
71253	6.957	6.257	5.985	5.752	2222	8.04
72237	6.936	6.228	6.094		1110	5.75
72509	8.733	8.103	7.907		1110	10.39
72511	8.480	7.871	7.619		2330	10.45
72944	6.693	5.992	5.771	5.641	1111	6.77
73457	6.894	6.160	6.026	5.983	2221	5.46
73631	7.711	7.018	6.909		1110	5.70
73786	7.348	6.644	6.512		1110	6.00
74190	7.792	7.104	6.873		3330	6.99
74815	8.275	7.574	7.399		1110	5.93
74995	6.762	6.111	5.859	5.727	2222	7.79
75201	7.063	6.356	6.240	6.105	1111	5.68
76074	5.705	5.001	4.779	4.631	2222	6.84
76901	7.983	7.398	7.154		2220	7.89
77349	7.637	6.983	6.754		1110	6.74
77725	6.738	6.012	5.876	5.757	1111	4.98
78353	7.275	6.564	6.335	6.233	2221	6.56
78734	7.444	6.755	6.593		2220	5.64
79431	7.608	6.859	6.636		2220	6.82
80018	6.796	6.136	5.887	5.541	1111	7.19
80229	8.537	7.888	7.670		1120	6.64
80268	7.304	6.589	6.415		3330	6.22
80440	7.636	6.932	6.750		1110	6.33
80612	7.779	7.036	6.866		2220	5.98
80817	8.487	7.840	7.608		2220	6.73
80824	6.009	5.355	5.102	4.924	3443	7.85
82256	8.114	7.448	7.212		2220	7.11
82283	7.715	7.005	6.806		2220	6.41
82694	7.993	7.323	7.115		1110	6.55
82817	5.279	4.634	4.406	4.212	4444	6.32
82834	7.000	6.295	6.152		2220	5.69
82926	7.386	6.706	6.477		4440	6.40
83405	7.893	7.186	6.999		1110	6.51
83599	6.859	6.196	6.000	5.772	3331	6.74
84051	6.933	6.240	6.045		2220	6.45
84123	7.554	6.925	6.668		2220	7.51
84212	8.688	8.077	7.883		1110	7.19
84277	8.181	7.508	7.275		1110	6.82
84487	7.811	7.099	6.945		2330	5.64
84521	8.015	7.355	7.118		1110	7.15
84652	7.663	6.953	6.769		2220	6.24
85523	5.758	5.114	4.872	4.704	3222	7.47
85561	7.263	6.577	6.431		2220	5.89
85647	6.787	6.039	5.880	5.911	2222	5.71
85665	6.373	5.680	5.487	5.419	2221	6.38
86057	6.689	6.024	5.785	5.639	2222	6.75
86214	6.642	5.923	5.641	5.402	1111	8.11
86287	6.468	5.800	5.586	5.456	1111	6.93
86707	7.542	6.842	6.651		1110	6.04
86961	7.048	6.409	6.145		1120	6.22
86963	7.474	6.848	6.619		2220	6.88
87322	7.453	6.713	6.561		1110	5.76
88574	6.237	5.565	5.358	5.191	1111	6.79
89517	7.416	6.715	6.542		1110	6.12
89825	7.183	6.464	6.328		2220	5.73
91154	7.220	6.586	6.458		1110	5.57
91430	7.736	7.063	6.829		1110	7.19

Table 3 – *continued*

HIP	*J*	*H*	*K*	*L*	*nnnn*	M_J
91608	7.495	6.773	6.575		3330	6.43
92444	7.071	6.359	6.202		2220	5.93
92451	7.603	6.925	6.722		3330	6.56
92573	7.237	6.539	6.347		1110	6.29
92871	6.375	5.668	5.440	5.241	2222	6.02
93072	7.863	7.167	6.979		2220	5.98
93101	6.329	5.595	5.424	5.283	2222	6.14
93206	7.608	6.909	6.704	6.558	1111	6.86
93871	7.227	6.562	6.443		2220	5.26
93873	7.372	6.754	6.522		1110	7.72
93899	7.371	6.746	6.530		1110	7.66
94225	6.911	6.215	6.080		2220	5.34
94349	7.182	6.550	6.333	6.279	1111	7.13
94557	7.664	7.016	6.813		1110	6.26
94739	6.482	5.764	5.583	5.483	3333	5.45
94761	5.591	4.884	4.663	4.496	2222	6.75
96121	7.725	7.002	6.835		2220	5.97
96285	6.775	6.080	5.933	5.799	1111	5.98
96710	7.567	6.839	6.674		3330	5.74
97051	7.660	6.981	6.867		1110	5.84
98204	6.902	6.184	6.064	5.995	1111	5.55
99150	8.275	7.671	7.416		1110	7.41
99764	7.649	6.929	6.780		2220	6.11
100356	7.385	6.681	6.510		1110	5.48
100490	7.853	7.168	6.990		2220	6.42
100923	7.773	7.103	6.880		3330	6.92
102119	7.447	6.757	6.615		2220	5.56
102141	5.847	5.161	4.905	4.705	2222	5.70
102235	7.645	6.929	6.764		2220	6.38
102357	7.429	6.734	6.545		2220	5.81
103039	7.137	6.487	6.212	5.926	2222	8.35
103388	7.856	7.153	6.924		2220	6.93
103393	7.893	7.312	7.067		1110	6.65
103441	8.512	7.887	7.659		1110	7.82
103768	7.046	6.357	6.249	6.196	2222	5.51
103800	7.634	6.937	6.708	6.661	1111	6.84
103910	8.786	8.145	7.883		1110	8.26
104059	8.373	7.753	7.533		2220	6.96
104137	8.651	7.925	7.720		2220	6.66
104432	7.740	7.147	6.934		3220	7.31
104644	8.550	7.917	7.701		1110	7.70
105336	7.793	7.031	6.851		1110	6.24
105341	6.603	5.885	5.753	5.702	2222	5.55
105533	7.358	6.620	6.483		2220	5.80
105932	8.079	7.421	7.213		1110	7.01
106106	6.365	5.717	5.462	5.315	2222	7.23
106147	6.710	6.014	5.891	5.932	2222	5.39
106255	7.376	6.678	6.402	6.132	1111	7.78
106440	5.364	4.691	4.473	4.311	2222	6.89
106803	7.551	6.821	6.633		1110	5.91
107317	8.352	7.663	7.434		1110	6.76
107427	9.995	9.763	9.738		1110	9.30
107705	6.576	5.841	5.663	5.622	1111	5.51
107711	7.761	7.079	6.826		1110	6.21
107772	8.007	7.293	7.144		2220	6.18
108159	8.468	7.811	7.584		1110	7.64
108380	7.801	7.054	6.869		1110	6.24
108405	6.827	6.122	5.910	5.806	2222	5.81
108567	7.325	6.616	6.503		2220	5.47
108569	6.694	5.990	5.795	5.660	2222	6.30
108752	7.136	6.433	6.208	6.253	1111	6.09
108782	6.257	5.525	5.355	5.220	2222	6.20
108890	8.728	8.069	7.860		2240	7.15
109084	7.281	6.575	6.413		2220	5.55

Table 3 – *continued*

HIP	*J*	*H*	*K*	*L*	*nnnn*	M_J
109388	6.570	5.838	5.616	5.436	1111	6.78
109555	6.793	6.041	5.845	5.705	1111	6.47
110400	8.554	7.870	7.645		1110	7.20
110534	7.681	6.959	6.776		2220	6.27
110951	7.891	7.177	6.999		1110	6.18
110980	7.674	6.952	6.796		1110	6.03
111313	7.265	6.585	6.371		1110	6.74
111391	7.808	7.111	6.905		1110	6.78
111766	7.358	6.693	6.445		1110	6.76
111932	8.758	8.095	7.919		1110	6.71
111983	7.170	6.523	6.431		2220	5.41
112120	8.139	7.423	7.201		1110	6.52
112312	7.886	7.179	6.943		2220	6.05
112388	8.982	8.278	8.097		1110	6.86
112774	7.021	6.318	6.146	6.040	2222	6.27
112978	8.501	7.804	7.594		1110	7.04
113020	5.993	5.307	5.044	4.813	2222	7.64
113201	8.420	7.656	7.401		2220	6.45
113229	6.722	6.051	5.829	5.717	1111	7.05
113244	8.199	7.473	7.289		1110	6.26
113602	8.343	7.672	7.445		2220	6.77
113850	7.742	7.035	6.851		1110	6.20
114156	7.264	6.572	6.455		2220	5.66
114233	7.924	7.280	7.070		1110	6.92
114252	7.997	7.269	7.113		1110	6.26
114411	7.939	7.260	7.032		2220	6.91
114719	7.444	6.696	6.497		2220	5.96
114954	8.141	7.451	7.278		2220	6.50
115332	7.469	6.789	6.542		1110	7.26
116003	7.292	6.600	6.370		1110	6.24
116317	7.700	7.074	6.861	6.663	2221	6.97
116491	7.513	6.798	6.660		2220	5.70
116645	8.441	7.744	7.488		1110	7.08
116936	7.801	7.044	6.901		1110	6.08
117473	5.887	5.272	5.068	4.929	4444	7.00
117828	6.519	5.785	5.581	5.488	1111	6.52
117886	8.017	7.313	7.136		2220	6.09
117966	7.681	6.963	6.743		1110	6.33
118200	7.964	7.311	7.064		2220	6.84

Table 4. *JHK* photometry for *Hipparcos* stars with $r > 30$ pc.

HIP	*J*	*H*	*K*	*nnnn*	M_J	σ_M
1663	8.729	8.593	8.560	111	1.25	0.73
1692	6.951	6.201	6.097	111	−0.51	0.96
55605	7.931	7.227	7.085	111	5.40	0.16
67795	9.263	8.565	8.355	111	6.39	0.44
109670	10.373	9.996	9.943	111	3.10	1.90
114242	8.233	7.613	7.510	222	5.47	0.13
14559	7.280	6.623	6.400	111		

et al. 2006). It follows that the star is an extreme outlier in any colour combining optical and infrared magnitudes – being bluer by far than any other star in the sample.

HIP 117081: according to the Simbad data base the star is a very close double, measured as a single object by *Hipparcos*. This explains the large parallax error, and hence possibly the fact that the star is an outlier in colour–magnitude diagrams. The colours are consistent with the spectral type of early G.

Other outliers are the following.

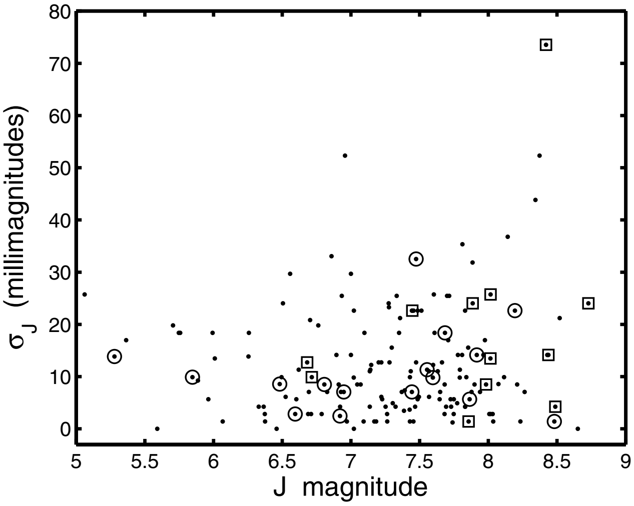

Figure 4. Photometric σ_J error sizes against J magnitude. Circles and squares denote stars flagged as variable ('D' and 'U' respectively) in the *Hipparcos* catalogue.

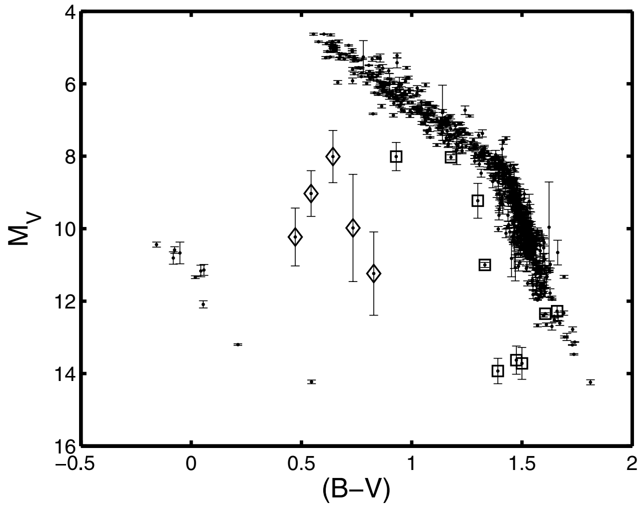

Figure 5. $M_V/(B-V)$ diagram. The five stars plotted as diamonds between the main sequence and the white dwarf sequence are discussed in Section 5.

HIP 5410: a slight outlier in a plot of M_V against $(U-B)$ (abnormally red). The value $(U-B)=1.373$ is the mean of three measurements, with substantial scatter of 0.44 mag. A colour index of 1.28 was reported by Eggen (1976).

HIP 6069: the SAAO photometry finds the star −0.23 mag brighter than the *Hipparcos* V magnitude, but it is 1.34 mag *below* the main sequence in a $(B-V)-M_V$ plot. It is also an outlier in two-colour plots. The star is flagged 'S' in field H60 of the *Hipparcos* catalogue ('binary with a separation $\rho < 0.2$ arcsec'), but has not been resolved by speckle interferometry (Balega et al. 2006).

HIP 37766 = YZ CMi: a slight outlier in $(U-B)-M_V$, or $(U-B)-(V-I)$ plots, in which it appears anomalously blue. The value $(U-B)=0.930$ is the mean of four measurements with a substantial scatter of 0.11 mag. A colour index of 0.97 was reported by Sandage & Kowal (1986). It is a flare star, hence the blue excess is probably due to activity. Its closest neighbour in the $(U-B)-(V-I)$ diagram is HIP 102141, another flare star.

HIP 55042: a substantial outlier (too blue) in all plots against $(B-V)$ or $(U-B)$ [but not $(V-I)$]. The indices $(B-V)=$

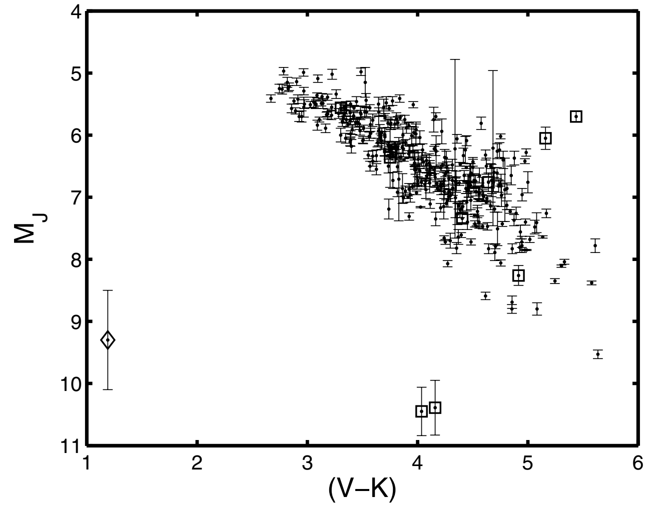

Figure 6. $M_J/(V-K)$ diagram. The two subluminous stars are HIP 72509 and HIP 72511 (see also Fig. 5), and the two overluminous stars are HIP 102141 and HIP 112312. The point marked by a diamond corresponds to the F5.5 star HIP 107427. See Section 5 for a discussion of these objects and other outliers.

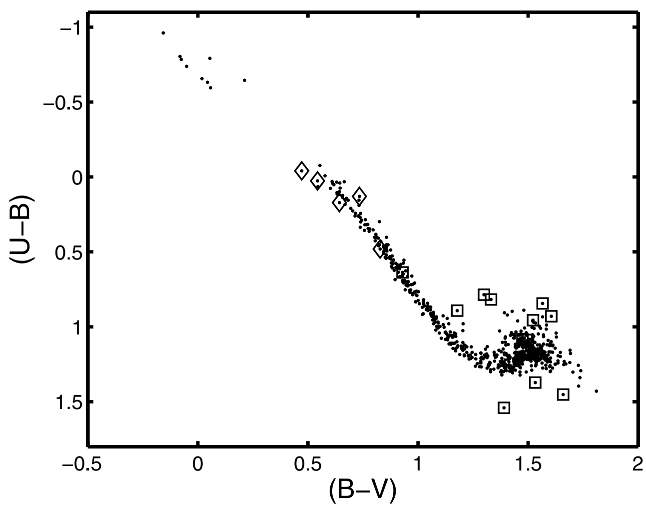

Figure 7. $(U-B)/(B-V)$ diagram. Note that stars which lie between the main sequence and the white dwarf domain (diamonds) do not show unusual colours, suggesting that the parallaxes/distances are questionable.

1.332 and $(U-B)=0.818$ are averages over seven measurements, with $\sigma_{(B-V)}=0.008$ mag and $\sigma_{(U-B)}=0.028$ mag. Indices $(B-V)=1.49$ and $(U-B)=0.92$ are given in the Simbad data base (Mermilliod 1986), while Laing (1989) measured $(B-V)=1.46$, $(U-B)=1.0$. According to Morales, Ribas & Jordi (2008) the star does not have high levels of chromospheric activity (i.e. Hα is not in emission), hence this is probably not the source of the blue light excess.

HIP 66125: the colours of the star are consistent with the K2.5 spectral classification, but it lies more than 1 mag below the main sequence. We cannot explain this.

HIP 72509 and HIP 72511: the colour indices and absolute magnitudes of this common proper motion pair are very similar, hence they lie close together in all colour–magnitude and colour–colour plots. They are particularly conspicuous in colour–magnitude diagrams, in which they lie well to the left of the bottom of the main sequence. Our photometry is in reasonable agreement with that given

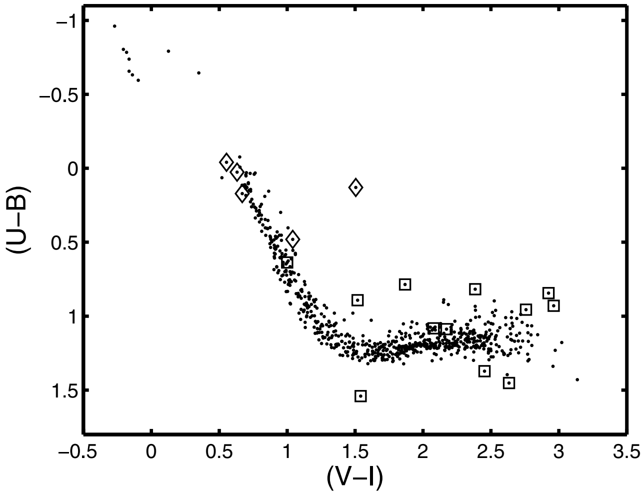

Figure 8. $(U-B)/(V-I)$ diagram. With the exception of the pre-main-sequence star HIP 93449, the colours of data points marked with diamonds are not unusual. Note that the main sequence is parallel to the $(V-I)$ axis for the redder stars, and that the outlying points are discrepant in their $(U-B)$ indices.

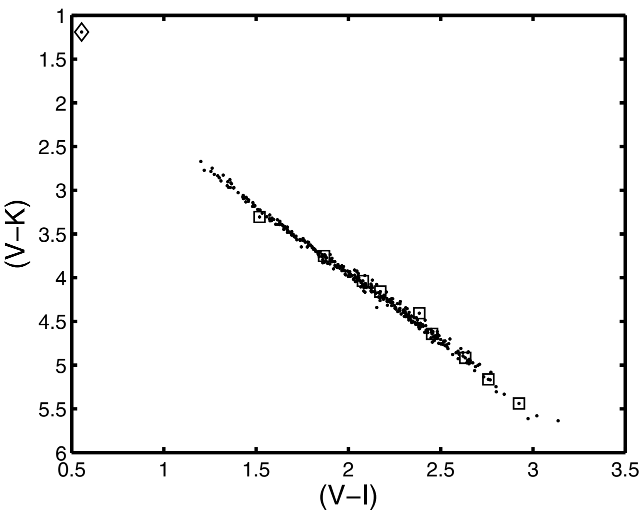

Figure 9. The $(V-K)/(V-I)$ relation is almost perfectly linear for the lower main sequence. The outlying point corresponds to the F5.5 star HIP 107427.

in the Simbad data base (Mermilliod 1986). The spectral types are M1.5 (HIP 72509) and M1 (HIP 72511), respectively (Reid et al. 1995); the colour indices are slightly red for the spectral types. It may therefore be concluded that the two stars are subluminous by about 3 mag, for unknown reasons.

HIP 82724: an outlier in absolute magnitude and also in $(U-B)$ (for which we obtained only one measurement). Very little has been published on this star.

HIP 102119: the star is an outlier in two-colour plots involving $(U-B)$ – it appears anomalously blue in $(U-B)$. The mean of five measurements is $(U-B) = 0.892$, with a scatter of 0.01 mag. Like most other stars in our sample with ultraviolet excesses, it is magnetically active (e.g. Morales et al. 2008).

HIP 102141 = AT Mic: a well-studied flare star. It lies above the main sequence in $(V-I) - M_V$ and $(V-J) - M_V$ diagrams, and is anomalously blue in two-colour plots involving $(U-B)$. The mean of 13 measurements is $(U-B) = 0.844$, with a scatter of 0.06 mag. A recent study by Morales et al. (2008) suggests that the active stars are more luminous than inactive stars of similar temperature – this could explain why the star appears overluminous in plots against colour indices which are good temperature indicators for cool stars.

HIP 103910: after HIP 82724, this star is the reddest in the ultraviolet. The mean of two measurements is $(U-B) = 1.45$, with an error of 0.03 mag. The Simbad data base (Mermilliod 1986) gives $(U-B) = 1.36$. Very little is known about the star.

HIP 112312: the star lies above the main sequence, close to, but not as extreme as HIP 102141. The colours are unremarkable, aside from $(U-B)$ which is a little bluer than usual for the spectral type. It is a pre-main-sequence binary consisting of two M dwarfs (Song, Bessell & Zuckerman 2002). Note also that it is the object with the largest positive residual in Figs 1 and 2.

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