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VILNIUS MULTICOLOR CCD PHOTOMETRY OF THE OPEN CLUSTER NGC 752

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Abstract. We have performed multicolor CCD observations of the central area of NGC 752 to search for faint, low-mass members of this open cluster. Four $12' \times 12'$ fields were taken on the 1.8 m Vatican Advanced Technology Telescope (Mt. Graham, Arizona) using a 4K CCD camera and eight intermediate-band filters of the *Strömvil* (*Strömgren + Vilnius*) system. In this paper we present a catalog of photometry for 405 stars down to the limiting magnitude $V = 18.5$, which contains V magnitudes and color indices of the *Vilnius* system, together with photometric determinations of spectral types, absolute magnitudes M_V, interstellar reddening values E_{Y-V} and metallicity parameters [Fe/H]. The good quality multicolor data made it possible to identify the locus of the lower main sequence to four magnitudes beyond the previous (photographic) limit. A relatively small number of photometric members identified at faint magnitudes seems to be indicative of actual dissolution of the cluster from the low-mass end.

Key words: techniques: photometric – stars: fundamental parameters – Galaxy: open clusters: individual (NGC 752) – Galaxy: stellar content

1. INTRODUCTION

The open cluster NGC 752 [$\alpha(2000) = 01^{\rm h}57.7^{\rm m}$, $\delta(2000) = +37°47'$; $\ell = 137.1°$, $b = -23.3°$], located in Andromeda at a distance of about 450 pc, is one of the very few nearby clusters in the age range from 1 to 2 Gyr. With its relatively small number of probable proper-motion members, around 130 (Platais 1991), which are observed out to $40'$ from the cluster center, NGC 752 has long been the subject of some controversy regarding its lower main sequence: the great majority of the cluster members are found in the region of the turnoff, whereas the lower part of the main sequence appears to be very sparsely populated. From the available photometric, proper-motion and radial-velocity data the cluster's main sequence has been long known to at most $V \sim 14.5$ mag, or 4 mag below its turnoff

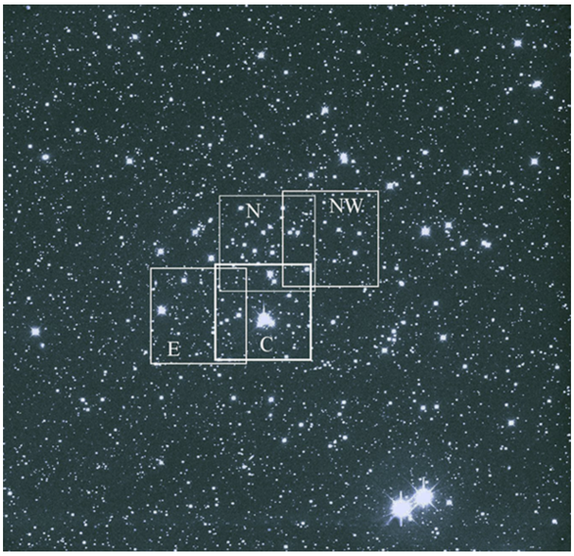

Fig. 1. Four $12' \times 12'$ VATT subfields shown on the image of the total area of NGC 752 taken by Zdanavičius et al. (2010).

point (see, e.g. Daniel et al. 1994). This is generally thought to reflect both a lack of observations at magnitudes fainter than the available (photographic) limit and dynamic escape of low-mass stars from the cluster.

To define the extension of the cluster's main sequence towards fainter magnitudes, multicolor CCD observations of the cluster field have recently been undertaken. In the paper by Zdanavičius et al. (2010), a catalog of photometry for ~ 3000 stars down to $V \sim 18.0$ mag in the 1.5 square degree field observed with the Maksutov-type 35/51 cm telescope of the Molėtai Observatory, Lithuania, was published. The color-magnitude diagram (CMD) based on these wide-field observations has provided a good indication of the extension of the cluster's main sequence to nearly $V \approx 16$, i.e., down to ~ 5 mag below the turnoff point. At fainter magnitudes, however, the scatter of points due to photometric errors has not allowed them to distinguish the cluster sequence from field stars.

In the present paper we publish seven-color CCD photometry down to fainter limiting magnitudes, obtained with the 1.8 m Vatican Advanced Technology Telescope (VATT) in four subfields covering the central part of the cluster. In Section 2 we describe our CCD observations and data reductions, and present the catalog of photometry. The methods used to determine the parameters of individual stars, such as spectral types, absolute magnitudes, color excesses due to interstellar reddening, and metallicities, are described in Section 3. In the same section, the catalog of these parameters is described. Section 4 presents a general discussion of our material, and Section 5 gives a brief conclusion.

2. OBSERVATIONS AND REDUCTIONS

The multicolor observations in eight intermediate-band filters of the *Strömvil* (*Strömgren + Vilnius*) system were obtained during two separate runs, on the nights 2007 November 2–8 (run "SQ") and six nights between 2008 October 28 and November 5 (run "SU"), using a 4K CCD camera on the 1.8 m VATT telescope on Mt. Graham, Arizona. The pixel scale of the CCD, 0.37″ per pixel, yielded a viewing area of 12′ × 12′. Both short and long exposures were taken in four partly overlapping 12′×12′ subfields, C (Central), E (Eastern), N (Northern) and NW (Northwestern), covering roughly the central part of the cluster (Figure 1). The seeing was generally quite good during both runs, mostly 0.8″–1″, but degrading at times to 2″. All observations of the cluster were performed at airmass less than 1.5. The standard field of the open cluster M 67 from Laugalys et al. (2004) was observed during each run for photometric calibrations.

Table 1. Summary of VATT observations. The filters used are listed along with their mean wavelengths λ_0 (in nm) indicated in italics.

		Filters/λ_0 (nm)† and the number of frames × exposure time (sec)							
Subfield	Run	u	v	b	y	P	X	Z	S
		352	*410*	*469*	*548*	*374*	*405*	*516*	*656*
C	2007 Nov 2–8 (SQ)	1×15 3×35 3×350 3×600	3×3 3×30 3×300	3×2 3×20 3×200	9×2 1×4 1×10 3×20 4×200	3×15 4×150 3×600	4×2 3×20 3×200	4×2 2×20 3×200	7×2 1×20 3×200
	2008 Oct 28 – Nov 5 (SU)	2×12 3×14 1×30 2×60 3×140 3×1400	4×5 3×50 6×400	4×3 3×30 3×300 3×500	6×3 3×4 1×5 6×6 2×15 4×30 2×60 5×300	3×10 1×12 3×100 3×1000 2×1800	3×4 2×5 3×40 6×400	3×3 1×4 3×30 7×300	3×3 2×6 3×30 6×300
E	2007 Nov 2–8 (SQ)	3×30 3×300	3×9 3×90	3×7 3×70	4×7 3×70	2×20 1×30 3×200	4×7 4×70	3×7 3×70	3×7 3×70
N	2007 Nov 2–8 (SQ)	2×10 3×30 3×300 4×600	5×9 3×90	3×7 3×70	2×4 3×7 3×79 3×700	3×10 3×20 3×200 3×600	3×7 3×70	3×7 3×70	3×7 3×70
NW	2008 Oct 28 – Nov 5 (SU)	1×20 3×33 3×330	1×4 4×8 3×80 1×1800	3×3 3×30 3×300	3×3 1×6 6×30 3×300	1×10 3×20 3×200	1×4 3×8 3×80 1×1800	1×3 3×9 3×90 1×1800	1×6 5×15 4×150 1×1800

† *Strömgren* magnitudes u, v, b and y can be transformed into *Vilnius* magnitudes U, X, Y and V, respectively, and vice versa.

The numbers of frames taken in each filter and each subfield are summarized in Table 1. The mean wavelengths of the filters used are also given in the table (for a detailed description of the *Strömvil* system, see Straižys et al. 1996). CCD frames

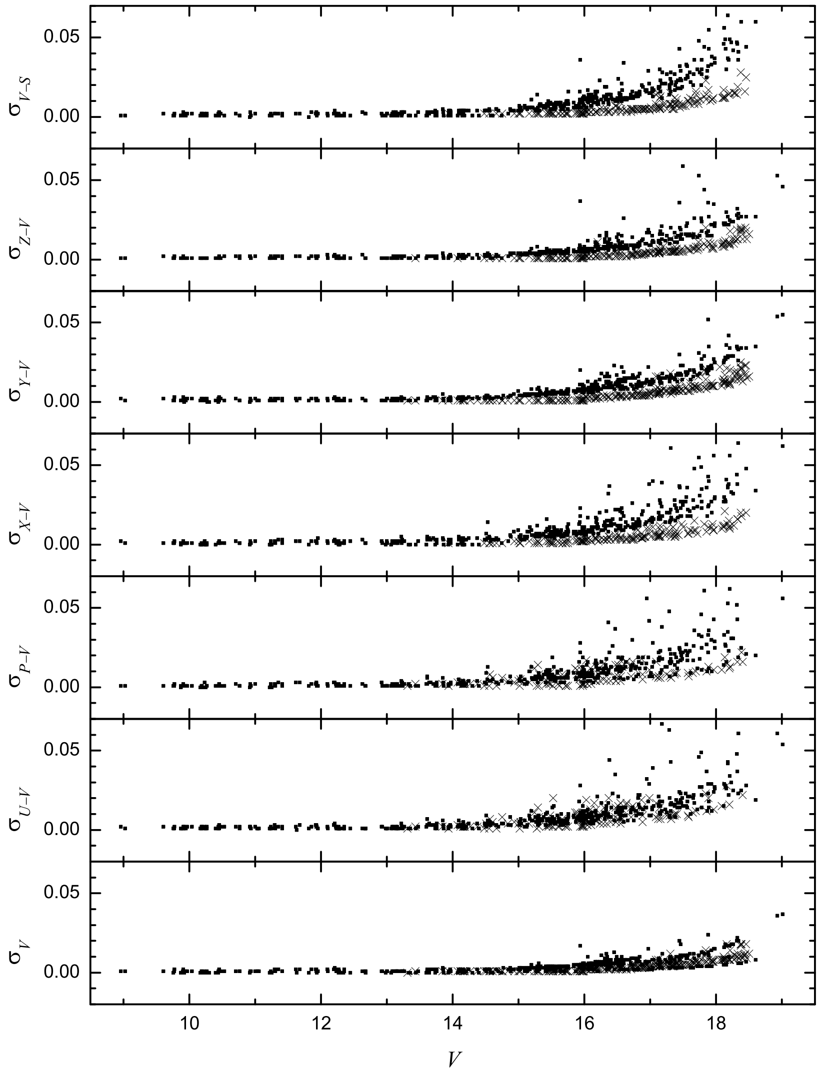

Fig. 2. Standard photometric errors as a function of magnitude. Singled out as four-cornered crosses are the errors in photometry of long-exposure frames of the run SU (subfields C and NW) calibrated using a "catalog" obtained from short and medium exposures of the same subfields.

were processed using the CommandPhot software (Janusz 2007) with IRAF[1]. Flatfield corrections were based on observations of the standard field of M 67, on average three short-exposure frames per filter, calibrated using the catalog by Laugalys et al. (2004). Figure 2 shows photometric standard errors returned from CommandPhot as a function of V magnitude. It can be seen that these are all sufficiently small because of the high S/N ratio. At the fainter end of magnitudes,

[1] http://iraf.noao.edu/

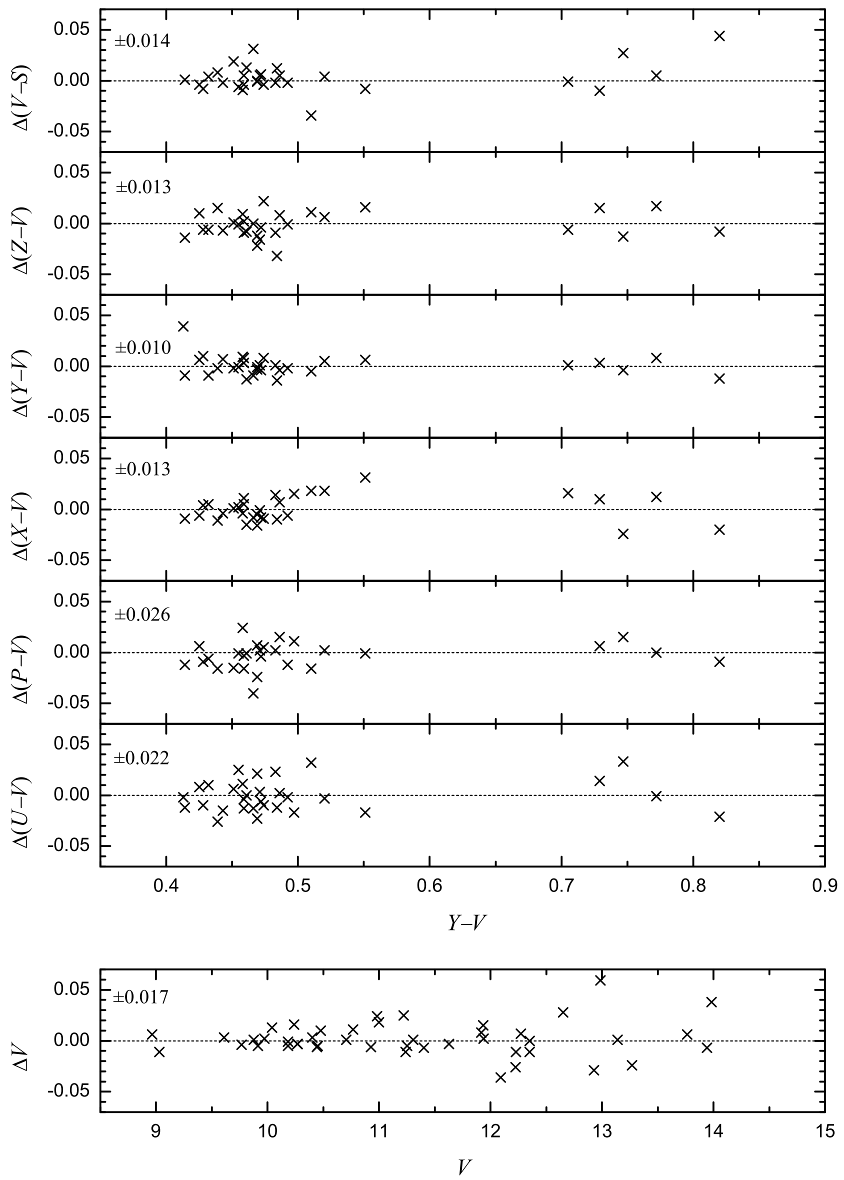

Fig. 3. Magnitude (bottom panel) and color (upper panels) residuals in the sense of VATT CCD minus photoelectric values. Indicated on the left edge of each panel are the rms residuals.

the formal errors are generally lower than 0.02 mag for V and lower than 0.05 mag for color indices. Somewhat better accuracy at fainter magnitudes is achieved for the run SU (subfields C and NW; see four-cornered crosses in Figure 2) for which the long-exposure frames were calibrated using a catalog created from calibrations of short- and medium-exposure frames obtained in the same subfields.

The corrections for atmospheric extinction in each color were determined by the photoelectric standard stars located in the same field of NGC 752 (Bartašiūtė et al. 2007). As we observed partly overlapping subfields, we also checked and confirmed that the photometry derived from different subfields showed very little (< 0.01 mag) difference in the results. For the transformation of the VATT CCD magnitudes and color indices to the standard *Vilnius* system *UPXYZVS*, both the standard cluster M 67 and the photoelectric standards in NGC 752 were used. The latter standards were also used as an independent check on the accuracy of our CCD photometry, as shown in Figure 3. The calibration equations relate observed to standard values with rms residuals of 0.022 mag for U–V, 0.026 mag for P–V, and 0.014 to 0.010 mag for the remaining color indices. A comparison between our V magnitudes and photoelectric estimates from the literature (mainly from compilation by Daniel et al. 1994) reveals no systematic trend or zero-point offset (bottom panel of Figure 3); the rms residual is 0.017 mag.

The (x,y)-coordinates of stars were transformed to the Right Ascension and Declination using stars common to the Guide Star Catalog (version 1.2; Morrison et al. 2001) and may be accurate, on average, to about $1''$.

A total of 405 stars down to 18.5 mag have been measured in the four subfields. The resulting catalog of photometry is given in Table 2. The columns list, in succession, the running number, the Heinemann (1926) number (if available) which in the WEBDA Data Base[2] is accepted for this cluster as the main numbering system, equatorial coordinates J2000.0, V magnitude and the color indices of the *Vilnius* system: U–V, P–V, X–V, Y–V, Z–V and V–S. For some of the stars not all color indices could be measured because of too low S/N ratio, vignetting problems or detector blemishes. Such stars were retained in the final catalog if at least their V magnitudes and Y–V colors are measured.

3. PARAMETERS OF INDIVIDUAL STARS

The stars of our photometric catalog were classified in terms of spectral types, absolute magnitudes M_V, color excesses E_{Y-V} due to interstellar reddening, and metallicities [Fe/H]. For this, a three-step procedure has been applied.

As a first step these parameters were derived through a standard procedure for comparison of five reddening-free Q parameters of observed stars, Q_{UPYV}, Q_{PXYV}, Q_{XYV}, Q_{ZVYV}, and Q_{VSYV}, with those of standard stars. As standards we used a bank of 4391 stars measured in the *Vilnius* system photoelectrically, which all have well determined absolute magnitudes from *Hipparcos* parallaxes and other parameters known, such as spectral types, intrinsic colors $(Y–V)_0$ and metallicities. For each observed star a code finds a given number of standard stars with the closest Q-parameters and assigns to that star M_V, $(Y–V)_0$, [Fe/H] and spectral type, averaged over the selected number of standards (we used typically the average of five).

As a second step, we have undertaken quite a similar procedure, but instead of five Q parameters we used a comparison of six intrinsic color indices (hereafter CI). For the observed stars the latter were calculated with the reddening values E_{Y-V} taken as the difference between observed Y–V (Table 2) and $(Y–V)_0$ obtained from the above-described first step of classification. As standards we used here a set of 3122 stars, extracted from the above-mentioned bank of 4391

[2]http://www.univie.ac.at/webda/

stars, which are either unreddened (nearby) or, if slightly reddened (e.g., at higher Galactic latitudes), have well-determined intrinsic colors. Both steps of classification, with Q parameters and with intrinsic color indices, give generally the same result. But in rare occasions a comparison of Qs alone can give an ambiguous or erroneous result, especially when not all six color indices are available. In the case of disagreement between the two results of classification, i.e. from Qs and CIs, for such a star the second step was repeated by varying its E_{Y-V} until successive iterations found the closest standards with the minimum rms difference, ΔCI, between the corresponding intrinsic color indices of that star and the standards found. Thus, a comparison of intrinsic color indices was used to confirm and refine the results of photometric classification obtained from comparison of Qs.

Finally, the results of classification were used for the determination of interstellar extinction values (using extinction to reddening ratios from Kazlauskas 1996), distances (using M_V, V and A_V) and refined values of [Fe/H]. The latter were determined using the color indices $(P–X)_0$, $(X–Y)_0$ and $(P–Y)_0$ calibrated in terms of [Fe/H] by Bartkevičius & Sperauskas (1983). We only slightly extended their calibrations by incorporating the index $(P–X)_0$ for dwarf stars, which was originally calibrated only for giants. The calibrations are valid for stars of spectral classes F to M and metallicities down to –2.5 dex for dwarfs and –3.0 dex for giants. Application of these calibrations to stars with accurate colors can provide estimates of [Fe/H] accurate to ±0.15 dex, that is, of similar or somewhat better accuracy than those extracted from comparison of Qs or CIs. The primary advantage of using the calibrated color indices against the method of comparison is that the latter is highly dependent on the degree of representation of all metallicities in the bank of standards, often a major source of classification error for extremely metal-deficient or otherwise peculiar stars. For late-type dwarfs, K7 to M, to which metallicity calibrations do not apply, [Fe/H] values were extracted from the closest standards found, but only in those rare cases when such standard stars had [Fe/H] estimates from high-dispersion spectra. In the case when either P or X magnitude was not measured, metallicities were determined using only one calibrated color index instead of three. No metallicity values could be determined for stars lacking both P and X magnitudes.

In Figure 4 we plot for each star classified the rms differences ΔCI between its intrinsic color indices and those of the closest standards as a function of the color index $Y–V$ (panel *a*) and V magnitude (panel *b*). It should be noted that ΔCI (as well as ΔQ) reflects the combined effect of photometric errors (S/N ratio, calibrations), uncertainties in stellar parameters of standard stars used for comparison of CIs (or Qs) and the degree of representation of various types of stars in the bank of standards used. As we can see, the dependence on magnitude follows the trend of photometric errors seen in Figure 2. Late type stars ($Y–V > 0.9$, or K–M; panel *a*) are classified, on average, less accurately, with ΔCI values reaching 0.04 mag or sometimes even larger.

The results of classification are presented in Table 3. The running number, Heinemann number, coordinates and V magnitude from Table 2 are repeated in the first five columns. The next seven columns list, in succession, photometric spectral type, intrinsic color index $(Y–V)_0$, color excess E_{Y-V}, absolute magnitude M_V, metallicity [Fe/H], rms difference ΔCI, and a remark concerning the cluster membership or the classification. The nomenclature used for photometric spectral types is similar to that of the MK system, except that we use lower-case

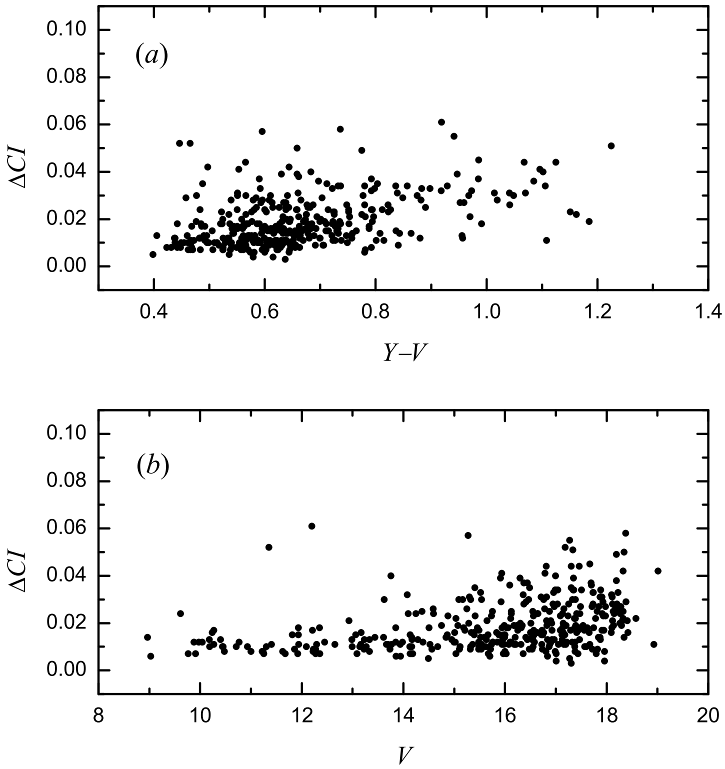

Fig. 4. Mean differences between the intrinsic color indices of the observed stars and those of the closest standards as a function of the color index Y–V (panel a) and magnitude V (panel b).

letters to denote spectral classes and the designations sd, mdsg and mdg to denote subdwarfs, metal-deficient subgiants and giants with photometric metallicities [Fe/H] ≤ –0.6. In the column of remarks, the designation "M" indicates a probable member according to proper-motion and/or radial-velocity analyses summarized by Daniel et al. (1994), "pm" stands for photometric members identified from our classification (see §4.1). An asterisk indicates that there is a note at the end of the catalog.

It should be noted that some cases remain where a definitive classification was impossible, especially when too few color indices were measured. For stars having no U and P magnitudes measured, their M_V values should be considered to be of significantly lower quality despite the generally good ΔCI values (ΔCI simply is smaller for fewer color indices). For a few stars with clearly ambiguous results of classification, alternative parameters are provided in the notes to Table 3. We also note that in the case of unresolved binaries, the photometric effects of their non-equal-mass secondaries can significantly affect the photometrically determined metallicity, as well as the derived values of M_V and E_{Y-V}.

We do not present in the catalog the distances from the Sun as these can be calculated from the tabulated values of V, M_V and E_{Y-V}. The latter can be converted to A_V using the extinction to reddening ratio $R_{Y-V} = A_V/E_{Y-V}$ of 4.16 (Kazlauskas 1996).

4. DISCUSSION

4.1. Photometric members

The derived photometric parameters of individual stars can be used to identify candidate members of the cluster, or, at least, to eliminate field stars. We consider any star to be a photometric member if its distance modulus, metallicity and color excess due to reddening match within given errors the corresponding parameters of the cluster, based on probable members known from proper-motion and/or radial-velocity analysis. In Table 3, we have 40 stars (marked as "M") which, according to the list by Daniel et al. (1994), are probable members. The cluster parameters derived from an average of our classifications for 39 of these stars (one star, No. 320, has only U, Y, V magnitudes measured and cannot be classified) are the following: $V{-}M_V = 8.26{\pm}0.32$ mag, $E_{Y-V} = 0.038 \pm 0.009$ mag, [Fe/H] $= -0.17 \pm 0.08$ dex; the errors given here and throughout the paper are standard deviations for one star. Adopting to these values of $V{-}M_V$ and [Fe/H] a 2σ criterion to allow for the effect of classification errors and taking into account the photometric effect of unknown binaries, a total of 70 stars from Table 3 can be classified as photometric members. Their mean distance modulus is $V{-}M_V = 8.37{\pm}0.32$ mag and the mean metallicity [Fe/H] $= -0.16 \pm 0.09$ dex. Of these 70 stars, 37 are known members, two stars are known nonmembers and the rest 31 stars are photometric candidates (in Table 3 marked by "pm") that remain to be checked for their membership on the more rigorous basis. For 61 stars from Table 3, which we have in common with the list by Daniel et al. (including both probable members and nonmembers), photometric and astrometric/radial-velocity results show a remarkable coincidence in membership status, with only four stars, or less than 10%, showing the opposite. At fainter magnitudes this percentage can be larger because of lower S/N ratio and, consequently, larger classification errors.

4.2. CMD

The color magnitude diagrams V,$Y{-}V$ and V,$Y{-}S$ of all 405 stars from Table 3 are shown in Figure 5, with the cluster stars (known members and photometric members) and field stars indicated by different symbols. To better discern among field stars the location of the cluster's lower main sequence, we plotted in the figure the same Padova isochrone (Z=0.016, 1.41 Gyr) which in the paper by Bartašiūtė et al. (2007) was fitted to the CMD of the cluster members measured in the *Vilnius* system photoelectrically. The model isochrone was transformed to the observational plane of the *Vilnius* system by Bressan & Tautvaišienė (1996) and is adjusted to an apparent distance modulus of 8.38 mag, taken from the above cited photoelectric work, and the foreground reddening E_{Y-V}=0.038 derived in the present work (§4.3). For the lower mass end of the main sequence ($Y{-}V$>1.0), however, transformations of the theoretical Padova or other models to the *Vilnius* system are not available. Therefore, at the fainter end of the CMDs we added a segment of the corresponding Y^2(Yonsei-Yale[3]) isochrone with *Vilnius* $Y{-}V$ and $Y{-}S$ colors converted from $B{-}V$ (dashed line). The reason for choosing the latter isochrone was that for this particular region of CMD the Padova database provides quite discrepant color transformations than does, e.g., the Yonsei-Yale database (this has been shown, e.g., in Figs. 2 and 4 by Dotter et al. 2008 or, from compar-

[3] http://www.astro.yale.edu/demarque/yyiso.html

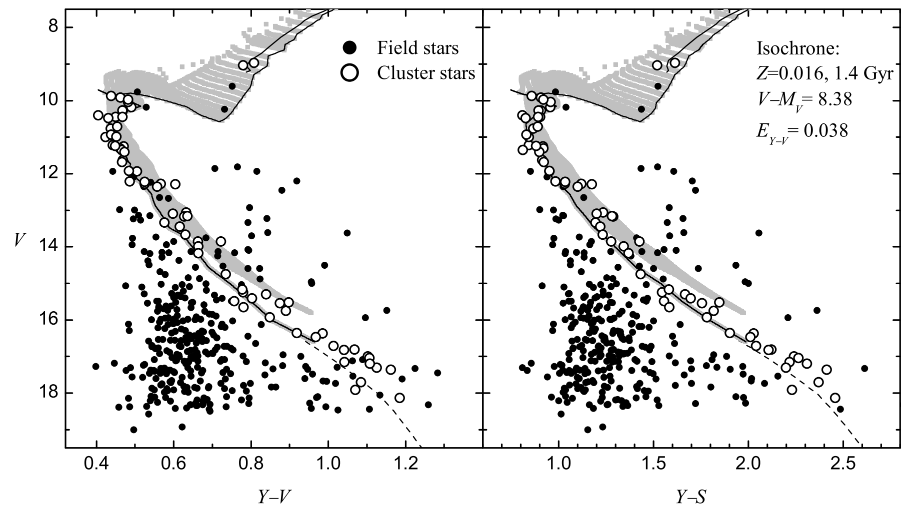

Fig. 5. CMD diagram for stars in four CCD fields in the central part of NGC 752. The best fit Padova isochrone (continuous line) with color transformations to the *Vilnius* system by Bressan & Tautvaišienė (1996) is shown together with the locus of model binaries (shaded area). Shown at the fainter end is a segment of Y^2 isochrone (dashed line) with $Y–V$ and $Y–S$ colors converted from $B–V$.

ison with the sequence of late-type *Hipparcos* dwarfs, in Fig. 1 of Just & Jahreiß 2008).

As we have an unbiased sample of stars observed in the central area of NGC 752, its main sequence should normally extend to the limit of our data, with the number of potential members increasing toward lower mass end. However, below the limit of the most complete census of astrometric membership ($V \sim 14.5$ mag; Platais 1991) we actually count only about 30 stars along the isochrone and within the binary domain. Despite their location on, or near to, the isochrone, some of the photometric candidates may not necessarily be members of the cluster. On the other hand, a few stars with $Y–V > 1.0$, which have only two or three *Vilnius* magnitudes measured and cannot be classified (Nos. 3, 6, 134, 211, 215), fall within the expected sequence (see the left-hand panel of the figure) and may not necessarily all be field stars.

If we extrapolate the number of stars located along the main sequence in Figure 5 across the entire diameter of the cluster, we would still have the paucity of lower-mass stars relative to the cluster's initial mass spectrum (and a total initial mass of $2200 M_{\odot}$) obtained from simulations (Bartašiūtė et al. 2010). A relatively small number of stars at faint magnitudes in the region of the main sequence locus seems to be indicative of dissolution of the cluster from the low-mass end.

4.3. Reddening in the direction of NGC 752

Figure 6 shows the distribution of the color excesses E_{Y-V} for stars in Table 3. Individual values of interstellar reddening vary mainly in the range from 0.01 to about 0.09 mag. Taking only the probable members of the cluster, which are known from the literature (39 stars), we find the mean reddening $E_{Y-V} = 0.038$ (or $E_{B-V} = 0.048$), with a standard deviation of only 0.009 mag. If we

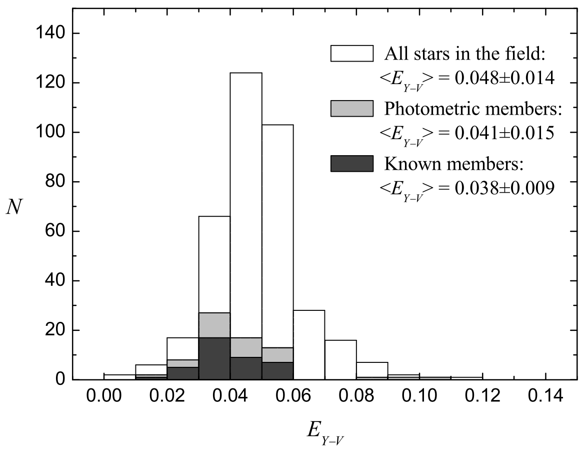

Fig. 6. Histogram distribution of the color excesses E_{Y-V} from Table 3. Shaded areas represent probable (shaded black) and photometric (shaded grey) members of NGC 752.

consider together all photometric members (including the above-mentioned 39), the average value of reddening remains closely the same, $E_{Y-V} = 0.041$, but with a slightly larger standard deviation ($\pm$ 0.015 mag). However, three of the stars in this group, M dwarfs Nos. 9 and 236 and K dwarf No. 396, are classified (or, most probably, misclassified) as having discrepantly large values of E_{Y-V} (0.09 to 0.11 mag) and account for most of the dispersion. If these three are dropped, the average reddening decreases marginally ($E_{Y-V} = 0.039$), while the standard deviation drops to $\pm$ 0.010 mag. We note that from photoelectric *Vilnius* photometry of the cluster members the mean reddening was found to be somewhat lower, $E_{Y-V} = 0.027$, or $E_{B-V} = 0.034$ (Bartašiūtė et al. 2007). From reanalysis of published estimates, Taylor (2007) found for NGC 752 the foreground reddening $E_{B-V} = 0.044$.

Considering all stars in the field ($N = 373$), we find the average reddening slightly larger, $E_{Y-V} = 0.048$ (or $E_{B-V} = 0.060$), with a standard deviation of 0.014 mag. No growth of reddening with increasing distance was noticed beyond the distance of the cluster (450 pc). For comparison, NASA/IPAC Infrared Science Archive[4] gives $E_{B-V} = 0.055$ along the line of sight toward the center of NGC 752.

4.4. Background field stars

The overwhelming majority of the stars observed are background field stars (a sheet below $V \approx 15$ in the diagram of Figure 5), which are located at distances out to $\sim$3 kpc and larger. They are classified mostly as metal-deficient dwarfs of spectral types from late F to late K, with a small admixture of metal-deficient giants. In Figure 7 we plotted their metallicities vs. z-distance from the Galactic plane. The cluster stars are shown as a single point, with the mean metallicity [Fe/H] = –0.16±0.09. The progressive decrease in metallicity with distance is evident by the wedge-shaped distribution of field stars. There does appear to be a clear indication of a gradient within the first kiloparsec from the Galactic plane. A linear least-squares fit to the data points in this distance range yields a slope of

[4]http://irsa.ipac.caltech.edu/application/DUST/

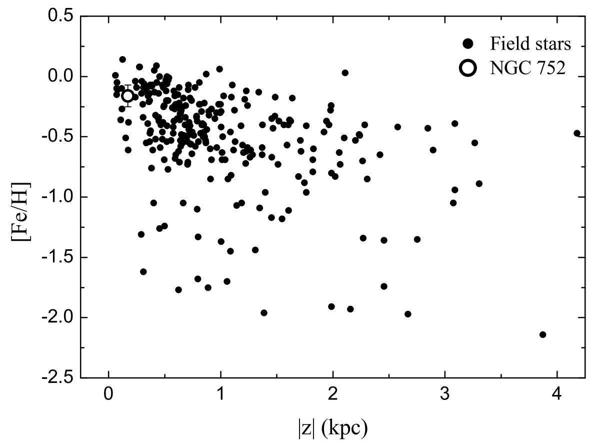

Fig. 7. [Fe/H] vs. distance below the Galactic plane for stars in Table 3. NGC 752 is shown as open circle with the error bar representing a standard deviation in [Fe/H] (the error bar in distance z is too small to be shown).

d[Fe/H]$/dz$=–0.49±0.07 dex kpc^{-1}. This gradient can be explained by the transition from the intermediate-age to old thin disk and then to the thick disk and the contribution from the radial metallicity gradient in the Galactic disk. Assuming for the latter a slope of –0.06 dex kpc^{-1} (Friel et al. 2002), the above value of vertical gradient should be scaled to d[Fe/H]$/dz$=–0.35±0.07 dex kpc^{-1}. At z distances larger than 1 kpc (or, respectively, at distances from the Sun, projected onto the Galactic plane, larger than roughly 2.5 kpc), our data show no further evidence for a metallicity gradient. A number of metal-poor giants, presumably of the spheroidal component, were classified to lie out to $\sim$10 kpc from the Galactic plane.

5. CONCLUSION

This work has provided multicolor observational material down to $V \sim 18.5$ mag across the central part of NGC 752, covering less than one tenth of its entire area in the sky. The color-magnitude diagram clearly shows an inadequate number of low-mass stars with respect to the expected main sequence, at least in the central, observed part of the cluster. This points to the status of NGC 752 as a dissolving cluster. A more complete sampling of the cluster stars and analysis of its properties will be provided in a subsequent paper, where the present material is to be combined with recent wide-field (but less deep) *Vilnius* photometry obtained by Zdanavičius et al. (2010) for the entire field.

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Table 2. VATT photometry in the area of NGC 752.

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	*V* mag	*U–V* mag	*P–V* mag	*X–V* mag	*Y–V* mag	*Z–V* mag	*V–S* mag
1		1 56 27.7	+37 54 08	17.112				0.607		
2		1 56 28.7	+37 51 44	17.385			0.997	0.477	0.206	0.356
3		1 56 29.4	+37 53 10	17.534				1.064		1.091
4		1 56 29.5	+37 44 02	14.762	2.411			0.578		
5		1 56 30.6	+37 51 21	16.031	3.420	2.984	2.000	0.752	0.392	0.747
6		1 56 31.1	+37 55 05	18.055				1.134		
7		1 56 31.5	+37 42 57	17.444				0.672		
8		1 56 31.8	+37 43 30	12.676	2.618			0.586		
9		1 56 31.8	+37 44 58	16.808			2.882	1.068	0.709	1.053
10		1 56 32.3	+37 53 57	17.846				0.654		0.603
11		1 56 32.4	+37 52 51	15.896	2.994	2.546	1.773	0.710	0.334	0.701
12		1 56 32.9	+37 45 41	16.743			1.693	0.713	0.326	0.742
13		1 56 32.9	+37 46 26	17.088	2.206	1.768	1.206	0.550	0.199	0.506
14		1 56 33.0	+37 50 26	14.750	3.253	2.858	1.930	0.735	0.373	0.697
15		1 56 33.1	+37 49 18	16.918			1.855	0.701	0.345	0.646
16		1 56 33.2	+37 45 41	16.780			1.694	0.748	0.330	
17		1 56 33.3	+37 52 55	17.716			1.396	0.618	0.218	0.568
18		1 56 33.4	+37 49 05	16.995				1.102	0.600	1.139
19		1 56 33.5	+37 47 10	15.994	2.237	1.740	1.192	0.542	0.207	0.491
20		1 56 34.1	+37 44 54	16.926			1.704	0.689	0.312	0.653
21		1 56 34.3	+37 53 08	15.033	2.684	2.224	1.517	0.622	0.245	0.599
22		1 56 34.3	+37 54 18	18.135				0.543		
23		1 56 34.4	+37 53 44	16.865	2.622	2.165	1.498	0.635	0.253	0.581
24	91	1 56 34.9	+37 44 17	11.814	3.425	2.908	1.966	0.765	0.304	0.757
25		1 56 35.2	+37 51 47	16.762	2.129	1.676	1.194	0.560	0.204	0.517
26		1 56 35.5	+37 43 58	13.332	3.566	2.969	2.054	0.792	0.307	0.781
27		1 56 36.2	+37 47 28	14.284	2.466	1.969	1.375	0.570	0.201	0.564

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	U–V mag	P–V mag	X–V mag	Y–V mag	Z–V mag	V–S mag
28		1 56 36.8	+37 50 47	16.711	2.407	1.994	1.422	0.615	0.236	0.595
29		1 56 36.9	+37 44 50	17.175			2.180	0.837	0.454	0.777
30	94	1 56 36.9	+37 45 13	13.851	2.856	2.414	1.640	0.663	0.285	0.614
31		1 56 37.2	+37 54 41	13.331	2.439	1.985	1.397	0.576	0.222	0.618
32		1 56 38.1	+37 46 45	16.357	2.442	1.958	1.393	0.595	0.231	0.567
33		1 56 38.8	+37 44 39	15.535	2.247	1.774	1.188	0.532	0.199	0.491
34	96	1 56 39.2	+37 51 41	10.401	2.287	1.668	0.986	0.405	0.134	0.403
35		1 56 39.3	+37 53 17	16.644			2.234	0.812	0.485	0.799
36		1 56 39.8	+37 54 04	16.724			1.911	0.738	0.339	0.703
37		1 56 40.5	+37 46 43	17.933			1.895	0.751	0.382	0.699
38		1 56 44.1	+37 50 41	18.192			1.976	0.775	0.506	0.744
39		1 56 44.3	+37 52 46	15.316	3.238	2.757	1.853	0.705	0.336	0.692
40		1 56 45.1	+37 47 46	14.592	3.466	2.922	2.036	0.792	0.355	0.709
41		1 56 45.4	+37 45 06	16.876			1.682	0.682	0.329	0.631
42		1 56 46.3	+37 54 08	17.037			2.824	1.106	0.611	1.157
43		1 56 46.4	+37 55 06	17.679				0.996		
44		1 56 46.5	+37 48 23	16.734	2.518	2.080	1.457	0.619	0.248	0.590
45		1 56 46.8	+37 49 51	17.381			1.219	0.549	0.200	0.506
46		1 56 46.9	+37 46 39	16.214	2.279	1.786	1.249	0.559	0.216	0.507
47		1 56 49.3	+37 51 46	16.835	2.676		1.593	0.644	0.249	0.632
48		1 56 49.5	+37 48 05	14.587	3.842	3.342	2.313	0.822	0.516	0.914
49		1 56 49.9	+37 51 13	15.735			2.826	1.151	0.618	1.210
50		1 56 50.2	+37 55 05	14.841	2.609	2.158	1.454	0.638	0.256	0.615
51		1 56 50.3	+37 54 11	17.370			1.216	0.540	0.219	0.482
52		1 56 50.7	+37 53 27	17.345			2.591	0.947	0.558	0.958
53		1 56 51.3	+37 51 56	15.881	2.414	1.926	1.376	0.609	0.218	0.550
54		1 56 51.4	+37 43 03	17.446				1.283	0.496	1.592
55		1 56 51.9	+37 50 30	16.571	2.479	2.023	1.447	0.619	0.256	0.560
56		1 56 52.1	+37 44 25	16.094	2.967	2.421	1.750	0.697	0.326	0.691
57		1 56 52.2	+37 47 53	16.906			1.765	0.699	0.324	0.665
58		1 56 52.2	+37 54 52	15.485	3.190	2.642	1.836	0.749	0.285	0.713
59		1 56 52.3	+37 48 30	17.432			1.261	0.602	0.224	0.551
60		1 56 52.7	+37 48 51	14.387	2.221	1.733	1.157	0.533	0.187	0.528
61		1 56 52.8	+37 51 05	18.374			1.664	0.736	0.400	
62	117	1 56 53.1	+37 52 09	10.267	2.336	1.719	1.082	0.468	0.151	0.438
63		1 56 53.4	+37 53 50	15.300	3.891	3.379	2.339	0.839	0.489	0.827
64		1 56 53.8	+37 48 10	17.009			1.487	0.615	0.246	0.603
65		1 56 54.3	+37 46 24	17.251			2.442	0.882	0.563	0.896
66		1 56 54.3	+37 49 14	17.671			1.570	0.669	0.256	0.608
67	123	1 56 55.8	+37 48 00	11.221	2.191		1.024	0.442	0.158	0.401
68		1 56 58.7	+37 44 55	16.632	2.765	2.243	1.593	0.658	0.275	0.595
69		1 56 58.7	+37 54 00	17.957			1.457	0.628	0.273	
70		1 56 59.0	+37 46 42	16.474	2.621	2.173	1.515	0.631	0.257	0.612
71		1 56 59.1	+37 55 07	17.613				1.191		
72		1 56 59.3	+37 46 44	16.507	2.659	2.195	1.571	0.646	0.287	0.597
73		1 56 59.4	+37 44 26	17.130			1.622	0.663	0.280	0.591
74		1 56 59.5	+37 48 07	17.504			2.339	0.836	0.547	0.826
75		1 57 00.1	+37 47 50	18.118				0.970	0.647	1.005
76		1 57 00.6	+37 46 13	17.364			2.903	1.162	0.621	1.251
77		1 57 02.1	+37 54 22	18.278				0.952	0.666	1.033
78		1 57 02.4	+37 49 45	15.490	2.268	1.823	1.224	0.560	0.211	0.506
79		1 57 02.4	+37 53 57	18.096				0.973	0.622	0.961
80		1 57 02.5	+37 46 14	18.325			1.630	0.675	0.256	0.580
81	135	1 57 02.5	+37 53 08	11.250	2.233		1.087	0.470	0.158	0.448
82		1 57 02.7	+37 45 11	15.985	2.986	2.502	1.681	0.670	0.287	0.609
83		1 57 02.8	+37 48 15	15.752			2.482	0.890	0.565	0.928
84		1 57 02.9	+37 46 37	18.267			1.473	0.657	0.305	0.698
85		1 57 03.0	+37 50 15	17.667			2.565	0.986	0.635	1.029
86		1 57 03.8	+37 54 57	15.952	2.860	2.391	1.624	0.660	0.258	0.631
87		1 57 04.1	+37 52 10	18.374				0.486		
88		1 57 04.8	+37 52 17	17.332				1.225	0.538	1.388
89		1 57 04.9	+37 45 31	17.087			1.945	0.724	0.372	0.679
90	146	1 57 05.5	+37 50 43	13.064	2.635	2.192	1.499	0.632	0.256	0.601
91		1 57 06.3	+37 44 50	17.958			1.337	0.579	0.212	0.554

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	U–V mag	P–V mag	X–V mag	Y–V mag	Z–V mag	V–S mag
92		1 57 06.7	+37 48 47	17.305				0.637	0.253	0.632
93		1 57 07.1	+37 44 57	17.731				1.019	0.680	1.066
94		1 57 07.8	+37 49 28	16.369	4.127	3.596	2.651	0.985	0.611	1.042
95		1 57 08.1	+37 48 57	13.735	2.347	1.889	1.300	0.554	0.194	0.554
96		1 57 08.2	+37 48 08	13.937	2.260	1.716	1.114	0.492	0.167	0.477
97		1 57 09.2	+37 44 39	16.303	2.882	2.478	1.697	0.673	0.313	0.638
98		1 57 09.5	+37 51 16	13.607	3.882	3.288	2.220	0.843	0.344	0.817
99		1 57 09.6	+37 43 24	17.144			1.947	0.788	0.332	0.703
100		1 57 09.7	+37 46 55	18.292				0.794	0.505	0.928
101		1 57 10.1	+37 44 28	17.144	2.614	2.308	1.554	0.639	0.269	0.675
102		1 57 10.4	+37 46 37	16.805	2.821	2.321	1.589	0.655	0.254	0.635
103	152	1 57 10.4	+37 53 16	14.165	2.519	2.028	1.377	0.587	0.219	0.546
104	157	1 57 11.2	+37 40 26	12.652	2.290	1.843	1.270	0.563	0.181	0.569
105		1 57 11.4	+37 38 36	15.288	2.179	1.749	1.177	0.524	0.173	0.526
106		1 57 11.4	+37 38 51	16.234	2.372	1.952	1.355	0.577	0.205	0.601
107	163	1 57 12.0	+37 41 58	12.350	2.154	1.721	1.161	0.523	0.181	0.500
108		1 57 12.1	+37 54 36	16.121	2.876	2.428	1.786	0.827	0.262	0.813
109	162	1 57 12.1	+37 54 14	12.985	2.176	1.660	1.022	0.460	0.157	0.441
110		1 57 12.3	+37 39 58	16.287	2.121	1.642	1.058	0.485	0.139	0.484
111		1 57 12.6	+37 39 07	17.200	2.514	2.104	1.491	0.631		
112	164	1 57 12.6	+37 39 21	11.938	3.722	3.131	2.131	0.815	0.318	0.792
113		1 57 13.0	+37 53 45	16.999	4.286	3.690	2.625	0.929	0.618	0.957
114		1 57 13.0	+37 43 22	18.206	2.110	1.642	1.134	0.539	0.222	0.462
115		1 57 13.4	+37 42 29	17.791			2.139	0.781	0.465	0.833
116		1 57 13.4	+37 50 03	16.710				1.014	0.632	1.026
117		1 57 14.1	+37 51 42	18.102			1.597	0.737	0.156	0.722
118	166	1 57 14.3	+37 46 51	9.875	2.263	1.670	1.014	0.438	0.145	0.419
119		1 57 14.5	+37 50 02	15.849	3.065	2.574	1.749	0.700	0.311	0.691
120		1 57 14.6	+37 38 36	18.315				1.259	0.471	1.558
121	167	1 57 14.7	+37 54 11	13.441	2.639	2.192	1.494	0.616	0.235	0.604
122		1 57 14.7	+37 53 27	16.023	2.611	2.122	1.471	0.624	0.232	0.601
123		1 57 14.9	+37 36 30	18.467		9.969		1.025	0.287	
124		1 57 15.6	+37 37 46	15.023	2.325	1.870	1.304	0.568	0.213	0.593
125		1 57 15.9	+37 45 14	18.421	2.617	2.193	1.492	0.604	0.246	0.580
126		1 57 15.9	+37 54 13	14.074	2.985	2.486	1.799	0.792	0.333	0.763
127		1 57 16.0	+37 43 48	17.483			2.622	0.959	0.619	1.013
128	170	1 57 17.2	+37 40 52	13.141	2.254	1.754	1.181	0.509	0.198	0.512
129		1 57 17.3	+37 46 33	16.178	3.301	2.819	1.896	0.723	0.330	0.700
130		1 57 17.3	+37 40 20	18.239				0.677	0.276	
131		1 57 17.3	+37 54 21	15.246	3.682	3.197	2.134	0.780	0.428	0.765
132	172	1 57 17.6	+37 53 20	14.156	2.329	1.854	1.281	0.570	0.213	0.524
133		1 57 17.7	+37 50 06	14.181	2.346	1.829	1.231	0.538	0.196	0.497
134		1 57 18.1	+37 37 51	18.437				1.107		1.379
135	174	1 57 18.4	+37 52 34	14.129	2.741	2.238	1.575	0.645	0.251	0.630
136		1 57 19.0	+37 44 18	17.155		3.796	2.724	1.042	0.614	1.174
137	175	1 57 19.0	+37 39 11	12.929	3.699	3.133	2.091	0.796	0.378	0.787
138		1 57 19.5	+37 53 51	18.111			1.130	0.551	0.289	0.410
139		1 57 19.9	+37 36 15	17.821			1.864	0.691	0.343	0.720
140		1 57 19.9	+37 37 18	15.981	2.442	1.957	1.367	0.566	0.232	0.586
141		1 57 20.1	+37 40 34	18.440				0.692	0.347	
142		1 57 20.4	+37 39 17	17.606				0.939		1.077
143	177	1 57 20.7	+37 51 43	10.183	2.368	1.762	1.135	0.490	0.177	0.466
144	178	1 57 20.7	+37 42 37	13.943	2.494	2.019	1.404	0.581	0.226	0.582
145		1 57 20.7	+37 46 54	18.577	2.192	1.689	1.172	0.535	0.223	0.478
146		1 57 21.4	+37 51 10	17.242	2.200	1.657	1.144	0.522	0.182	0.494
147		1 57 21.5	+37 42 52	16.818			2.725	1.041	0.667	1.066
148		1 57 21.8	+37 42 32	15.321	2.681	2.210	1.498	0.615	0.238	0.618
149		1 57 21.8	+37 55 02	16.969	2.673	2.202	1.575	0.653	0.267	0.614
150		1 57 21.9	+37 36 50	14.563	2.883	2.441	1.678	0.656	0.286	0.656
151	182	1 57 22.3	+37 36 24	12.276	2.351	1.872	1.288	0.566	0.211	0.554
152		1 57 22.8	+37 47 04	17.945			1.948	0.788	0.294	0.684
153		1 57 22.9	+37 52 54	15.671	2.394	1.886	1.292	0.561	0.206	0.518
154	183	1 57 23.0	+37 38 22	13.165	2.746	2.262	1.585	0.627	0.270	0.660
155		1 57 23.1	+37 40 56	17.370	2.569	2.053	1.470	0.590	0.225	0.646

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	$U–V$ mag	$P–V$ mag	$X–V$ mag	$Y–V$ mag	$Z–V$ mag	$V–S$ mag
156		1 57 23.2	+37 37 46	15.999	2.603	2.123	1.472	0.598	0.234	0.589
157		1 57 23.3	+37 53 05	15.522	4.069	3.531	2.465	0.898	0.540	0.949
158		1 57 23.7	+37 49 34	17.133	2.799	2.272	1.603	0.638	0.272	0.659
159	185	1 57 23.8	+37 52 12	12.274	2.278	1.788	1.218	0.525	0.201	0.506
160		1 57 24.6	+37 47 15	17.616	3.259	2.782	1.946	0.734	0.388	0.779
161		1 57 25.1	+37 43 50	16.176	3.037	2.538	1.745	0.723	0.276	0.715
162		1 57 25.1	+37 45 10	16.532	2.817	2.371	1.664	0.664	0.292	0.679
163	186	1 57 25.9	+37 51 43	10.237	3.292	2.759	1.885	0.732	0.310	0.705
164		1 57 25.9	+37 53 17	18.129	2.874		1.615	0.678	0.263	0.731
165	187	1 57 26.0	+37 43 20	10.449	2.228	1.675	1.052	0.449	0.168	0.454
166	189	1 57 26.2	+37 39 20	11.305	2.186	1.646	1.060	0.461	0.166	0.459
167	190	1 57 26.2	+37 40 56	13.764	2.204	1.701	1.105	0.493	0.174	0.481
168		1 57 27.3	+37 38 46	17.908	2.488	2.010	1.416	0.600	0.308	0.541
169	192	1 57 27.5	+37 35 10	10.767	2.232	1.669	1.015	0.437	0.173	0.428
170		1 57 27.6	+37 55 11	17.882	3.327	2.786	1.968	0.732	0.444	0.682
171		1 57 27.6	+37 48 30	16.632	2.624	2.141	1.541	0.634	0.266	0.645
172		1 57 27.7	+37 41 06	18.383		1.540	0.981	0.458	0.112	
173		1 57 27.9	+37 34 45	17.712	2.204	1.830	1.317	0.593	0.220	0.550
174		1 57 28.0	+37 43 14	18.132		1.957	1.373	0.795		
175		1 57 28.9	+37 47 02	15.662	2.632	2.155	1.552	0.645	0.269	0.611
176		1 57 29.6	+37 51 30	17.745	2.247	1.775	1.279	0.570	0.229	0.521
177		1 57 29.7	+37 35 44	16.953	4.113	3.561	2.486	0.883	0.559	0.933
178		1 57 29.8	+37 37 02	16.899	3.037	2.547	1.684	0.661	0.265	0.667
179		1 57 30.2	+37 45 00	18.343	2.701	2.134	1.562	0.661	0.212	0.702
180		1 57 30.3	+37 53 45	17.854				0.690		
181		1 57 30.6	+37 38 17	16.718	3.330	2.874	1.930	0.730	0.345	0.757
182	196	1 57 30.9	+37 54 58	10.270	2.308	1.712	1.060	0.467	0.161	0.427
183		1 57 31.1	+37 49 56	17.375	2.276	1.822	1.255	0.583	0.215	0.527
184		1 57 31.4	+37 51 58	17.469	3.379	2.916	1.982	0.747	0.392	0.750
185		1 57 31.7	+37 41 03	14.166	3.396	2.806	1.948	0.758	0.295	0.764
186	197	1 57 31.8	+37 53 41	11.626	2.199	1.680	1.092	0.468	0.172	0.445
187		1 57 31.9	+37 38 56	17.877	2.319	1.845	1.309	0.582	0.211	0.519
188		1 57 32.0	+37 52 19	17.835				0.853		
189	199	1 57 32.6	+37 42 06	13.981	2.900	2.442	1.677	0.664	0.279	0.678
190		1 57 32.9	+37 40 15	16.486	3.127	2.680	1.859	0.712	0.375	0.658
191		1 57 33.5	+37 49 51	17.273	2.456	1.990	1.391	0.398	0.236	0.579
192		1 57 33.5	+37 50 02	13.698	3.710	3.131	2.135	0.801	0.332	0.784
193		1 57 34.0	+37 48 29	15.617	2.591	2.112	1.493	0.594	0.233	0.621
194		1 57 34.1	+37 46 30	14.677	2.223	1.764	1.237	0.564	0.198	0.555
195		1 57 34.3	+37 53 19	17.843	2.248	1.744	1.241	0.634	0.222	0.484
196		1 57 34.5	+37 37 52	18.379				0.994		
197		1 57 34.5	+37 35 44	15.756	2.202	1.746	1.240	0.558	0.206	0.559
198		1 57 34.8	+37 37 41	14.132	2.263	1.755	1.182	0.524	0.193	0.513
199		1 57 35.7	+37 35 03	16.409	2.784	2.359	1.622	0.641	0.270	0.685
200		1 57 36.1	+37 43 42	17.910				1.070	0.591	1.160
201		1 57 36.1	+37 55 44	17.440	3.430	2.995	1.978	0.727	0.374	0.754
202	205	1 57 36.2	+37 45 10	9.912	2.238	1.683	1.070	0.462	0.168	0.445
203		1 57 36.6	+37 52 50	17.730	3.183	2.669	1.870	0.722	0.376	0.706
204		1 57 36.8	+37 49 58	16.575	2.233	1.755	1.197	0.535	0.202	0.535
205		1 57 37.3	+37 35 56	18.404		1.877	1.318	0.633	0.248	
206	208	1 57 37.6	+37 39 38	8.964	3.719	3.131	2.140	0.808	0.322	0.804
207	206	1 57 37.7	+37 49 01	10.041	2.374	1.791	1.132	0.482	0.180	0.475
208		1 57 37.7	+37 52 17	16.436	2.651	2.159	1.504	0.653	0.248	0.574
209		1 57 37.8	+37 44 47	16.562	3.088	2.555	1.762	0.685	0.300	0.688
210	207	1 57 37.8	+37 49 51	13.163	2.769	2.320	1.602	0.635	0.276	0.646
211		1 57 37.9	+37 40 22	17.086		9.969		1.089		0.719
212		1 57 38.0	+37 47 30	14.131	3.134	2.586	1.813	0.715	0.282	0.724
213		1 57 38.1	+37 51 27	17.352	3.332	2.808	1.958	0.737	0.360	0.716
214		1 57 38.1	+37 37 56	17.412	2.413	1.983	1.380	0.600	0.269	0.548
215		1 57 38.2	+37 40 23	17.120				1.063		0.633
216		1 57 38.9	+37 45 44	14.097	3.696	3.206	2.201	0.794	0.436	0.825
217	213	1 57 38.9	+37 46 12	9.030	3.529	2.939	2.023	0.780	0.313	0.739
218		1 57 39.1	+37 41 12	15.457	3.351	2.854	1.896	0.711	0.309	0.735
219		1 57 39.3	+37 48 31	18.368	2.394	2.107	1.580	0.530	0.394	0.809

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	$U–V$ mag	$P–V$ mag	$X–V$ mag	$Y–V$ mag	$Z–V$ mag	$V–S$ mag
220	214	1 57 39.4	+37 52 26	10.475	2.309	1.704	0.990	0.431	0.163	0.395
221		1 57 40.1	+37 53 56	17.290	4.050	3.119	2.489	1.023	0.596	0.810
222		1 57 40.2	+37 43 13	16.985	3.603	3.200	2.111	0.780	0.428	0.802
223		1 57 40.7	+37 38 50	16.545	2.444	2.101	1.463	0.638	0.276	
224		1 57 40.9	+37 38 54	16.558	2.420	1.993	1.422	0.603	0.267	0.636
225		1 57 41.1	+37 50 48	17.387	2.986	2.529	1.695	0.675	0.303	0.711
226		1 57 41.9	+37 48 46	17.694	2.621	2.154	1.577	0.590	0.312	0.565
227		1 57 42.2	+37 47 48	15.635	2.363	1.860	1.333	0.561	0.212	0.569
228		1 57 42.5	+37 49 41	17.268	4.358	3.868	2.788	0.941	0.614	1.030
229		1 57 42.6	+37 39 06	16.340	3.211	2.724	1.834	0.699	0.302	0.691
230		1 57 43.0	+37 42 32	15.513	2.556	2.110	1.461	0.605	0.247	0.563
231		1 57 43.5	+37 55 03	15.394	2.491	2.023	1.444	0.629	0.248	0.562
232	217	1 57 43.9	+37 51 42	10.441	2.341	1.747	1.056	0.467	0.176	0.425
233		1 57 44.9	+37 43 20	14.954	4.315	3.743	2.648	0.956	0.593	1.028
234		1 57 44.9	+37 54 25	15.388	2.465	1.962	1.381	0.600	0.246	0.532
235		1 57 45.1	+37 43 17	14.997	4.335	3.752	2.653	0.957	0.593	1.042
236		1 57 45.1	+37 38 07	17.303				1.125	0.679	1.073
237		1 57 45.4	+37 42 28	15.482	2.317	1.812	1.216	0.556	0.210	0.498
238		1 57 45.4	+37 36 09	17.343			2.356	0.857	0.546	0.843
239	220	1 57 45.5	+37 39 25	9.611	3.547	3.020	1.991	0.751	0.343	0.773
240		1 57 46.0	+37 42 36	16.370	2.595	2.227	1.512	0.665	0.272	0.621
241		1 57 46.8	+37 38 13	15.998	2.902	2.452	1.656	0.655	0.289	0.620
242	222	1 57 47.1	+37 47 30	10.999	2.226	1.660	1.008	0.423	0.149	0.419
243		1 57 48.2	+37 46 28	16.198	3.343	2.840	1.931	0.733	0.343	0.743
244		1 57 48.8	+37 41 45	15.482	3.534	3.111	2.113	0.757	0.416	0.799
245		1 57 49.3	+37 52 55	16.988	2.837	2.405	1.663	0.663	0.278	0.656
246		1 57 49.3	+37 48 39	15.521	2.814	2.371	1.648	0.649	0.286	0.623
247		1 57 49.4	+37 52 41	15.100	2.225	1.723	1.154	0.517	0.184	0.511
248	225	1 57 49.5	+37 49 14	10.184	2.420	1.877	1.262	0.529	0.193	0.509
249		1 57 49.8	+37 35 55	16.355	4.100	3.618	2.520	0.918	0.594	0.984
250		1 57 50.4	+37 41 47	16.968	2.401	1.886	1.357	0.613	0.254	0.611
251		1 57 50.8	+37 48 18	17.867	2.545	2.073	1.474	0.660	0.206	0.662
252		1 57 50.9	+37 43 02	15.589	2.985	2.553	1.728	0.678	0.296	0.692
253		1 57 51.3	+37 36 50	17.567	2.249	1.803	1.227	0.520	0.182	0.578
254	226	1 57 51.4	+37 53 06	11.857	3.221	2.752	1.855	0.706	0.330	0.728
255	227	1 57 51.4	+37 39 53	14.170	2.982	2.537	1.724	0.664	0.292	0.704
256		1 57 51.8	+37 46 32	17.735	3.758	3.291	2.248	0.798	0.425	0.903
257		1 57 52.3	+37 40 05	17.434	2.368	1.868	1.286	0.567	0.205	0.476
258		1 57 52.4	+37 37 03	16.882	2.506	2.048	1.436	0.589	0.221	0.600
259		1 57 52.9	+37 44 50	18.501				0.694	0.322	
260		1 57 53.0	+37 45 26	15.533	2.787	2.336	1.619	0.646	0.261	0.636
261		1 57 53.3	+37 45 44	18.323		1.850	1.297	0.643	0.231	
262		1 57 54.4	+37 43 01	13.226	3.772	3.163	2.169	0.841	0.324	0.815
263		1 57 54.9	+37 47 54	13.234	2.277	1.726	1.151	0.495	0.173	0.490
264	232	1 57 55.2	+37 52 46	11.677	2.206	1.689	1.074	0.466	0.165	0.456
265		1 57 55.6	+37 35 18	15.735	2.451	1.994	1.363	0.584	0.226	0.569
266		1 57 55.6	+37 45 26	17.598	2.275	1.815	1.265	0.554	0.195	0.554
267		1 57 55.6	+37 52 27	16.763	2.829	2.310	1.684	0.551	0.301	0.672
268		1 57 56.1	+37 51 26	17.914	2.182	1.656	1.093	0.550	0.216	0.487
269	234	1 57 56.4	+37 50 01	10.707	2.276	1.707	1.069	0.454	0.167	0.436
270		1 57 56.8	+37 45 32	15.944	2.360	1.900	1.298	0.578	0.218	0.552
271		1 57 57.6	+37 51 04	14.864	2.959	2.449	1.652	0.667	0.281	0.619
272		1 57 57.7	+37 48 45	15.114	2.565	2.074	1.460	0.604	0.230	0.579
273	235	1 57 57.8	+37 48 23	11.354	2.207	1.733	1.162	0.465	0.243	0.346
274		1 57 58.1	+37 43 10	17.155	2.821	2.370	1.605	0.639	0.268	0.643
275	237	1 57 58.8	+37 41 27	12.352	2.378	1.903	1.315	0.557	0.209	0.544
276	238	1 57 59.3	+37 54 54	9.970	2.301	1.738	1.076	0.482	0.191	0.437
277	240	1 57 59.7	+37 40 38	9.766	2.274	1.763	1.171	0.506	0.178	0.476
278		1 58 00.4	+37 44 34	18.172	2.730	2.174	1.571	0.687	0.276	0.624
279		1 58 00.7	+37 46 34	16.115	2.126	1.631	1.092	0.483	0.172	0.489
280		1 58 01.4	+37 45 37	14.492	2.352	1.855	1.263	0.536	0.199	0.525
281	241	1 58 01.6	+37 49 54	15.070	1.993	1.503	1.000	0.476	0.167	0.436
282		1 58 01.7	+37 45 00	13.621	4.892	4.182	2.937	1.049	0.485	1.007
283		1 58 01.9	+37 36 55	18.221	2.264	1.891	1.353	0.592	0.207	0.629

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	*V* mag	*U–V* mag	*P–V* mag	*X–V* mag	*Y–V* mag	*Z–V* mag	*V–S* mag
284		1 58 02.1	+37 47 01	17.810	2.528	2.092	1.489	0.626	0.241	0.614
285		1 58 02.2	+37 34 40	17.089				0.732		
286		1 58 02.5	+37 40 19	15.165	3.742	3.260	2.223	0.777	0.442	0.803
287		1 58 02.9	+37 42 24	15.969	2.542	2.057	1.436	0.601	0.226	0.609
288		1 58 02.9	+37 34 42	16.584	2.941			0.674		
289	248	1 58 03.8	+37 47 12	12.447	4.119	3.480	2.368	0.880	0.369	0.842
290		1 58 04.0	+37 43 27	17.872	2.242	1.761	1.227	0.544	0.209	0.485
291		1 58 04.1	+37 44 54	18.091	2.190	1.716	1.212	0.541	0.184	0.496
292		1 58 04.3	+37 50 11	12.991	2.223	1.703	1.154	0.499	0.184	0.474
293		1 58 04.4	+37 36 13	15.925	3.913	3.421	2.393	0.849	0.517	0.931
294	250	1 58 04.5	+37 50 41	11.931	2.070	1.565	0.964	0.442	0.158	0.408
295		1 58 04.9	+37 36 54	15.713	2.484	2.018	1.431	0.608	0.221	0.591
296		1 58 05.6	+37 37 55	17.409	2.270	1.752	1.225	0.551	0.204	0.531
297		1 58 05.7	+37 39 25	17.194				1.108	0.636	1.200
298		1 58 06.0	+37 47 42	16.728	2.286	1.782	1.249	0.544	0.178	0.567
299		1 58 06.3	+37 37 13	17.658	2.503	1.996	1.435	0.595	0.222	0.584
300	252	1 58 06.3	+37 38 07	13.087	2.510	2.038	1.432	0.598	0.228	0.601
301	254	1 58 07.7	+37 39 57	10.928	2.219	1.657	0.995	0.438	0.157	0.391
302		1 58 06.7	+37 45 42	18.136				1.185	0.627	1.273
303		1 58 07.8	+37 36 36	15.617	2.334	1.872	1.326	0.580	0.215	0.584
304		1 58 08.2	+37 49 43	12.290	2.633	2.152	1.494	0.604	0.235	0.571
305		1 58 08.5	+37 44 53	16.059	2.267	1.831	1.253	0.563	0.201	0.524
306		1 58 08.5	+37 38 33	17.119	2.428	1.991	1.432	0.605	0.224	0.565
307		1 58 08.7	+37 55 20	15.275	2.437	1.964	1.455	0.595	0.324	0.461
308		1 58 08.9	+37 53 50	17.008	2.631	2.157	1.539	0.645	0.264	0.641
309		1 58 09.6	+37 44 13	17.320	2.276	1.804	1.269	0.576	0.223	0.518
310		1 58 09.8	+37 37 33	15.410	3.227	2.800	1.940	0.725	0.363	0.744
311		1 58 10.3	+37 35 22	14.502	4.589	3.904	2.673	0.991	0.424	0.944
312		1 58 10.8	+37 40 53	17.214	1.993	1.539	1.046	0.525	0.189	0.484
313	258	1 58 10.9	+37 42 38	12.228	2.284	1.782	1.218	0.540	0.209	0.499
314		1 58 11.2	+37 47 53	15.404	3.861	3.393	2.360	0.803	0.464	0.892
315		1 58 11.3	+37 35 01	18.148	2.091	1.587	1.024	0.483	0.141	0.589
316		1 58 11.4	+37 52 46	15.912	2.625	2.100	1.593	0.658	0.350	0.408
317	259	1 58 11.4	+37 39 34	11.403	2.183	1.656	1.058	0.472	0.165	0.426
318		1 58 12.1	+37 43 55	15.977	2.728	2.288	1.571	0.636	0.274	0.634
319		1 58 12.6	+37 46 35	18.423				0.956		
320	263	1 58 12.7	+37 34 40	10.983	2.195			0.452		
321		1 58 13.3	+37 45 30	17.326	2.328	1.865	1.266	0.566	0.192	0.572
322		1 58 13.4	+37 40 49	16.504	2.906	2.438	1.708	0.673	0.283	0.660
323	264	1 58 13.5	+37 44 25	12.092	2.301	1.767	1.138	0.496	0.195	0.442
324		1 58 13.5	+37 42 45	17.697				1.085	0.628	1.286
325		1 58 13.6	+37 39 14	17.840				0.864	0.580	0.939
326		1 58 13.8	+37 37 22	18.192	2.815	2.102	1.611	0.661	0.243	0.638
327		1 58 14.3	+37 45 24	16.440	3.726	3.336	2.265	0.792	0.476	0.808
328		1 58 14.4	+37 41 22	15.187	2.966	2.447	1.693	0.685	0.291	0.665
329		1 58 15.7	+37 35 44	16.467	4.405	3.784	2.675	0.968	0.615	1.043
330		1 58 15.8	+37 44 13	17.457	2.272	1.735	1.194	0.537	0.181	0.530
331		1 58 16.6	+37 39 40	16.100	2.465	1.961	1.407	0.599	0.234	0.574
332	266	1 58 16.9	+37 38 16	11.239	2.182	1.654	1.035	0.448	0.161	0.433
333	267	1 58 17.0	+37 38 55	13.268	2.215	1.705	1.156	0.514	0.195	0.487
334		1 58 18.1	+37 36 17	15.756	3.016	2.524	1.714	0.680	0.284	0.654
335		1 58 19.0	+37 44 04	18.118	2.380	1.889	1.362	0.579	0.193	0.650
336		1 58 19.1	+37 46 17	16.536	2.284	1.811	1.281	0.572	0.229	0.568
337		1 58 19.2	+37 40 27	17.291	2.849	2.362	1.651	0.662	0.263	0.657
338	275	1 58 19.8	+37 36 43	12.224	2.265	1.768	1.216	0.525	0.190	0.510
339		1 58 20.0	+37 46 11	17.929	2.291	1.918	1.389	0.584	0.250	0.545
340		1 58 20.3	+37 40 55	16.701	2.266	1.791	1.244	0.544	0.216	0.577
341	277	1 58 20.9	+37 41 09	13.142	2.313	1.835	1.232	0.538	0.208	0.488
342		1 58 22.0	+37 35 41	17.570	2.571	2.086	1.477	0.622	0.222	0.616
343		1 58 22.2	+37 41 34	15.934	4.549	3.980	2.828	1.096	0.662	1.112
344		1 58 22.3	+37 37 06	16.820	3.291	2.725	1.859	0.753	0.319	0.725
345		1 58 22.4	+37 43 22	14.245	3.223	2.700	1.807	0.714	0.309	0.667
346		1 58 22.8	+37 39 42	15.646	3.616	3.166	2.169	0.781	0.448	0.801
347		1 58 23.6	+37 43 46	15.362	2.587	2.088	1.454	0.619	0.252	0.584

Table 2. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	U–V mag	P–V mag	X–V mag	Y–V mag	Z–V mag	V–S mag
348		1 58 23.9	+37 40 27	17.472	2.281	1.774	1.278	0.581	0.172	0.558
349		1 58 24.5	+37 46 37	13.756	3.170	2.430	1.679	0.683	0.233	0.728
350		1 58 24.9	+37 35 30	14.367	2.656	2.262	1.550	0.614	0.249	0.567
351		1 58 25.4	+37 44 55	12.197	4.153	3.655	2.392	0.919	0.445	0.785
352		1 58 25.5	+37 45 19	15.089	2.545	1.913	1.344	0.641	0.207	0.635
353		1 58 25.9	+37 45 51	14.874	3.496	2.986	2.068	0.823	0.338	0.728
354		1 58 26.5	+37 35 51	18.313	2.662	2.223	1.629	0.694	0.287	0.565
355		1 58 26.6	+37 37 56	17.562	2.177	1.651	1.102	0.492	0.181	0.448
356		1 58 27.2	+37 44 02	18.927		1.888	1.434	0.622		0.609
357	293	1 58 27.6	+37 35 22	11.935	2.242	1.734	1.168	0.505	0.191	0.446
358		1 58 28.9	+37 43 47	15.836	2.949	2.452	1.666	0.692	0.268	0.628
359		1 58 29.3	+37 37 56	16.316	2.413	1.927	1.397	0.604	0.233	0.584
360		1 58 29.3	+37 36 47	16.783	2.277	1.776	1.256	0.553	0.129	0.522
361		1 58 29.4	+37 41 33	16.251	2.468	2.030	1.428	0.620	0.265	0.573
362		1 58 30.1	+37 36 31	16.837	2.319	1.833	1.318	0.582	0.209	0.547
363		1 58 30.9	+37 36 12	17.779	2.281	1.837	1.312	0.566	0.221	0.491
364		1 58 31.9	+37 46 58	17.393	2.524	2.105	1.475	0.644	0.241	0.565
365		1 58 32.2	+37 35 09	14.526	3.160	2.657	1.834	0.727	0.306	0.698
366		1 58 34.3	+37 37 30	17.050	2.652	2.196	1.546	0.651	0.243	0.630
367	298	1 58 34.4	+37 40 16	13.666	2.707	2.258	1.564	0.630	0.259	0.602
368		1 58 36.0	+37 46 24	17.978	2.295	1.812	1.246	0.638	0.230	0.592
369		1 58 36.0	+37 46 09	15.032	3.285	2.749	1.918	0.775	0.333	0.686
370		1 58 36.7	+37 47 04	15.339	2.451	1.978	1.371	0.611	0.250	0.530
371		1 58 36.9	+37 38 08	19.008	2.114	1.548	1.127	0.497	0.178	0.656
372		1 58 37.0	+37 41 14	16.071	2.481	2.046	1.432	0.609	0.246	0.572
373		1 58 38.6	+37 42 15	18.259		1.853	1.314	0.558	0.215	0.487
374		1 58 38.9	+37 36 20	15.700	2.358	1.884	1.342	0.574	0.218	0.551
375		1 58 39.6	+37 39 27	16.531	2.296	1.834	1.267	0.560	0.214	0.537
376	304	1 58 40.1	+37 38 05	11.918	2.224	1.725	1.134	0.484	0.173	0.468
377		1 58 41.0	+37 41 22	16.943	2.494	2.141	1.448	0.608	0.235	0.565
378		1 58 41.6	+37 40 29	17.976	2.495	2.083	1.466	0.576	0.232	0.448
379		1 58 42.2	+37 40 49	16.548	2.680	2.200	1.559	0.633	0.267	0.612
380		1 58 42.4	+37 44 46	16.551	2.353	1.858	1.311	0.592	0.235	0.557
381		1 58 43.0	+37 43 04	16.924	2.234	1.782	1.240	0.563	0.204	0.490
382		1 58 43.6	+37 45 40	16.825	2.916	2.486	1.714	0.708	0.329	0.675
383		1 58 44.4	+37 38 40	13.856	2.599	2.125	1.465	0.600	0.232	0.573
384		1 58 44.4	+37 41 31	16.111	3.148	2.652	1.856	0.725	0.308	0.659
385		1 58 44.4	+37 41 41	17.459	2.304	1.813	1.326	0.565	0.289	0.440
386		1 58 44.8	+37 45 22	16.411	2.946	2.495	1.681	0.703	0.318	0.624
387		1 58 44.9	+37 38 06	16.321	3.006	2.553	1.764	0.677	0.300	0.648
388		1 58 45.1	+37 44 34	16.126	2.342	1.877	1.324	0.585	0.256	0.489
389		1 58 45.9	+37 40 42	15.943	2.462	1.985	1.408	0.586	0.225	0.532
390		1 58 45.9	+37 40 28	17.303	2.237	1.681	1.024	0.488	0.181	0.321
391		1 58 46.5	+37 35 10	18.341	3.083	2.499	1.901	0.658	0.234	0.870
392		1 58 46.9	+37 45 12	17.030	2.294	1.802	1.254	0.596	0.270	0.531
393		1 58 47.9	+37 45 00	17.132	2.608	2.155	1.497	0.627	0.274	0.564
394		1 58 48.1	+37 44 10	18.321	2.432	2.025	1.437	0.644	0.310	0.518
395		1 58 48.2	+37 45 59	15.011	2.621	2.127	1.545	0.683	0.281	0.621
396		1 58 48.8	+37 47 02	15.539	4.037	3.495	2.433	0.875	0.558	0.881
397		1 58 49.6	+37 36 16	17.128	3.155	2.667	1.806	0.721	0.335	0.691
398		1 58 51.0	+37 46 52	18.208	2.545	2.112	1.399	0.676	0.270	0.656
399		1 58 52.0	+37 45 58	17.535	2.742	2.260	1.543	0.645	0.294	0.625
400		1 58 52.0	+37 35 10	16.293	2.686	2.285	1.435	0.630	0.216	0.660
401		1 58 55.3	+37 37 02	15.211	2.692	2.170	1.531	0.625	0.256	0.608
402		1 58 56.5	+37 36 37	15.323	2.587	2.058	1.417	0.610	0.196	0.653
403		1 58 56.8	+37 43 06	17.185	2.174	1.712	1.017	0.446	0.246	0.410
404	317	1 58 57.4	+37 39 41	13.849	3.285	2.844	1.952	0.722	0.363	0.703
405	316	1 58 57.4	+37 43 57	12.209	2.183	1.729	1.147	0.486	0.209	0.496

Table 3. Photometric parameters for stars in the area of NGC 752. In the last column, the designation "M" indicates a probable member known from the literature and "pm" indicates a photometric member identified from *Vilnius* photometry.

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y{-}V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
1		1 56 27.7	+37 54 08	17.11	g						
2		1 56 28.7	+37 51 44	17.39	f4, sd?	0.418	0.059	3.63	–1.91	0.030	
3		1 56 29.4	+37 53 10	17.53	k–m						
4		1 56 29.5	+37 44 02	14.76	f–g						
5		1 56 30.6	+37 51 21	16.03	k2 V	0.700	0.052	6.07	–0.16	0.018	
6		1 56 31.1	+37 55 05	18.05	k–m						
7		1 56 31.5	+37 42 57	17.44	g						
8		1 56 31.8	+37 43 30	12.68	f–g						
9		1 56 31.8	+37 44 58	16.81	m1 V	0.980	0.088	8.27	–0.15	0.044	pm
10		1 56 32.3	+37 53 57	17.85	g						
11		1 56 32.4	+37 52 51	15.90	k0 V	0.650	0.060	5.81	–0.54	0.015	
12		1 56 32.9	+37 45 41	16.74	k1, sd	0.660	0.053	6.02	–1.24	0.015	
13		1 56 32.9	+37 46 26	17.09	f8, sd	0.502	0.048	4.37	–0.67	0.017	
14		1 56 33.0	+37 50 26	14.75	k2 V	0.680	0.055	6.12	–0.13	0.019	pm
15		1 56 33.1	+37 49 18	16.92	k1 V	0.672	0.029	5.76	–0.31	0.020	
16		1 56 33.2	+37 45 41	16.78	k1, sd	0.660	0.088	6.93	–1.62	0.026	
17		1 56 33.3	+37 52 55	17.72	g2, sd	0.562	0.056	4.32	–0.83	0.009	
18		1 56 33.4	+37 49 05	17.00	m1 V	1.060	0.042	9.07		0.040	pm
19		1 56 33.5	+37 47 10	15.99	f7, sd	0.490	0.052	3.68	–0.69	0.014	
20		1 56 34.1	+37 44 54	16.93	g9, sd	0.642	0.047	5.71	–0.71	0.013	
21		1 56 34.3	+37 53 08	15.03	g4 V	0.571	0.051	4.75	0.05	0.007	
22		1 56 34.3	+37 54 18	18.14	f						
23		1 56 34.4	+37 53 44	16.86	g3 V	0.575	0.060	4.60	–0.23	0.010	
24	91	1 56 34.9	+37 44 17	11.81	k0 III–IV	0.737	0.028	1.89	–0.21	0.015	
25		1 56 35.2	+37 51 47	16.76	f8, sd	0.506	0.054	4.34	–1.45	0.016	
26		1 56 35.5	+37 43 58	13.33	g9 III	0.750	0.042	0.78	–0.41	0.008	
27		1 56 36.2	+37 47 28	14.28	g0 V	0.533	0.037	4.15	–0.07	0.013	
28		1 56 36.8	+37 50 47	16.71	g2, sd	0.557	0.058	5.01	–0.58	0.016	
29		1 56 36.9	+37 44 50	17.18	k3, sd	0.750	0.087	6.32	–0.69	0.015	
30	94	1 56 36.9	+37 45 13	13.85	g8 V	0.613	0.050	5.28	–0.11	0.012	M
31		1 56 37.2	+37 54 41	13.33	g1 V	0.543	0.033	4.89	–0.23	0.013	pm
32		1 56 38.1	+37 46 45	16.36	g1 V	0.550	0.045	4.44	–0.44	0.007	
33		1 56 38.8	+37 44 39	15.54	f6 V	0.487	0.045	3.73	–0.40	0.011	
34	96	1 56 39.2	+37 51 41	10.40	f2 IV	0.370	0.035	2.09	–0.11	0.013	M
35		1 56 39.3	+37 53 17	16.64	k4 V	0.765	0.047	6.60	–0.47	0.024	
36		1 56 39.8	+37 54 04	16.72	k2 V	0.685	0.053	5.76	–0.53	0.011	
37		1 56 40.5	+37 46 43	17.93	k2, sd	0.690	0.061	5.87	–0.85	0.023	
38		1 56 44.1	+37 50 41	18.19	k3, sd	0.725	0.050	6.48	–1.10	0.049	
39		1 56 44.3	+37 52 46	15.32	k1 V	0.665	0.040	5.77	–0.04	0.009	
40		1 56 45.1	+37 47 46	14.59	g8 III	0.743	0.049	0.89	–0.28	0.024	
41		1 56 45.4	+37 45 06	16.88	g9, sd	0.644	0.038	5.73	–0.62	0.025	
42		1 56 46.3	+37 54 08	17.04	m1 V	1.083	0.023	8.51		0.034	pm
43		1 56 46.4	+37 55 06	17.68	k–m						
44		1 56 46.5	+37 48 23	16.73	g3 V	0.570	0.049	4.90	–0.39	0.009	
45		1 56 46.8	+37 49 51	17.38	f8, sd	0.500	0.049	3.86	–0.69	0.008	
46		1 56 46.9	+37 46 39	16.21	f8, sd	0.510	0.049	3.97	–0.63	0.011	
47		1 56 49.3	+37 51 46	16.84	g5 IV–V	0.590	0.054	4.38	–0.07	0.006	
48		1 56 49.5	+37 48 05	14.59	k5 V	0.780	0.042	6.56	–0.27	0.026	
49		1 56 49.9	+37 51 13	15.73	m2 V	1.120	0.031	9.70		0.023	
50		1 56 50.2	+37 55 05	14.84	g5 IV–V	0.590	0.048	3.59	–0.53	0.014	
51		1 56 50.3	+37 54 11	17.37	f7 V	0.492	0.048	3.54	–0.51	0.010	
52		1 56 50.7	+37 53 27	17.34	k6 V	0.870	0.077	7.34		0.039	
53		1 56 51.3	+37 51 56	15.88	g0, sd	0.553	0.056	4.39	–0.73	0.015	
54		1 56 51.4	+37 43 03	17.45	m						
55		1 56 51.9	+37 50 30	16.57	g2 V	0.568	0.051	4.68	–0.50	0.015	
56		1 56 52.1	+37 44 25	16.09	k1, sd	0.650	0.047	5.97	–0.76	0.036	
57		1 56 52.2	+37 47 53	16.91	k0 V	0.653	0.046	5.46	–0.54	0.012	
58		1 56 52.2	+37 54 52	15.48	g7 III–IV	0.690	0.059	1.47	–0.49	0.010	
59		1 56 52.3	+37 48 30	17.43	g4, sd	0.550	0.052	5.46	–1.75	0.007	
60		1 56 52.7	+37 48 51	14.39	f6, sd	0.480	0.053	3.28	–0.68	0.012	

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y–V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
61		1 56 52.8	+37 51 05	18.37	k1, sd	0.660	0.076	6.54	–1.68	0.058	
62	117	1 56 53.1	+37 52 09	10.27	f2 IV	0.416	0.052	2.31	–0.13	0.017	M
63		1 56 53.4	+37 53 50	15.30	k5 V	0.795	0.044	6.84	–0.14	0.031	pm
64		1 56 53.8	+37 48 10	17.01	g4 V	0.570	0.045	4.75	–0.16	0.004	
65		1 56 54.3	+37 46 24	17.25	k5 V	0.800	0.082	7.08	–0.20	0.028	
66		1 56 54.3	+37 49 14	17.67	g2, mdg?	0.610	0.059	0.12	–0.66	0.011	*
67	123	1 56 55.8	+37 48 00	11.22	f2 V	0.397	0.045	2.93	–0.30	0.008	M
68		1 56 58.7	+37 44 55	16.63	g6 IV	0.610	0.048	3.25	–0.53	0.024	
69		1 56 58.7	+37 54 00	17.96	g6, sd	0.575	0.053	5.18	–0.65	0.008	
70		1 56 59.0	+37 46 42	16.47	g5 V	0.575	0.056	5.30	–0.26	0.009	
71		1 56 59.1	+37 55 07	17.61	m						
72		1 56 59.3	+37 46 44	16.51	g6 V	0.593	0.053	5.45	–0.37	0.020	
73		1 56 59.4	+37 44 26	17.13	g6 IV	0.610	0.053	3.84	–0.37	0.015	
74		1 56 59.5	+37 48 07	17.50	k5 V	0.790	0.046	6.90	–0.46	0.034	
75		1 57 00.1	+37 47 50	18.12	k7 V	0.920	0.050	7.90		0.021	
76		1 57 00.6	+37 46 13	17.36	m2 V	1.127	0.035	9.40		0.022	pm
77		1 57 02.1	+37 54 22	18.28	k7 V	0.900	0.052	7.90		0.027	
78		1 57 02.4	+37 49 45	15.49	f8 V	0.505	0.055	4.15	–0.55	0.017	
79		1 57 02.4	+37 53 57	18.10	k7 V	0.900	0.073	7.60		0.032	
80		1 57 02.5	+37 46 14	18.32	g6, sd	0.615	0.060	4.75	–0.60	0.022	
81	135	1 57 02.5	+37 53 08	11.25	f4 IV	0.437	0.033	2.67	–0.14	0.007	M
82		1 57 02.7	+37 45 11	15.98	g7 IV–V	0.616	0.054	4.49	–0.11	0.019	
83		1 57 02.8	+37 48 15	15.75	k6 V	0.850	0.040	7.26		0.025	pm
84		1 57 02.9	+37 46 37	18.27	g8, sd	0.610	0.047	6.05	–1.37	0.024	
85		1 57 03.0	+37 50 15	17.67	k7 V	0.940	0.046	8.31		0.045	
86		1 57 03.8	+37 54 57	15.95	g6 IV–V	0.603	0.057	4.70	–0.09	0.013	
87		1 57 04.1	+37 52 10	18.37	f						
88		1 57 04.8	+37 52 17	17.33	m3 V	1.180	0.045	10.87	–0.15	0.051	
89		1 57 04.9	+37 45 31	17.09	k2 V	0.677	0.047	6.05	–0.12	0.023	
90	146	1 57 05.5	+37 50 43	13.06	g5 V	0.580	0.052	4.79	–0.22	0.015	M
91		1 57 06.3	+37 44 50	17.96	g1 V	0.542	0.037	4.37	–0.46	0.004	
92		1 57 06.7	+37 48 47	17.30	g5 V	0.590	0.047	5.39		0.003	
93		1 57 07.1	+37 44 57	17.73	m1 V	0.960	0.059	8.26		0.028	
94		1 57 07.8	+37 49 28	16.37	k7 V	0.942	0.043	7.79		0.037	pm
95		1 57 08.1	+37 48 57	13.73	f9 V	0.510	0.044	4.19	–0.14	0.009	
96		1 57 08.2	+37 48 08	13.94	f4 IV	0.440	0.052	2.66	–0.30	0.011	
97		1 57 09.2	+37 44 39	16.30	g8 V	0.620	0.053	5.45	–0.20	0.020	
98		1 57 09.5	+37 51 16	13.61	k1 III	0.796	0.047	0.76	–0.13	0.014	
99		1 57 09.6	+37 43 24	17.14	g9 III	0.740	0.048	0.78	–0.53	0.016	
100		1 57 09.7	+37 46 55	18.29	k4 V	0.770	0.024	7.10		0.019	
101		1 57 10.1	+37 44 28	17.14	g6 V	0.584	0.055	5.36	–0.23	0.020	
102		1 57 10.4	+37 46 37	16.80	g5 IV–V	0.590	0.065	4.51	–0.29	0.008	
103	152	1 57 10.4	+37 53 16	14.16	g0 IV–V	0.540	0.047	3.70	–0.14	0.010	
104	157	1 57 11.2	+37 40 26	12.65	g0 V	0.520	0.043	4.55	–0.51	0.011	
105		1 57 11.4	+37 38 36	15.29	f7 V	0.485	0.039	3.86	–0.49	0.020	
106		1 57 11.4	+37 38 51	16.23	g1 V	0.535	0.042	4.57	–0.33	0.019	
107	163	1 57 12.0	+37 41 58	12.35	f8, sd	0.480	0.043	3.96	–0.61	0.018	
108		1 57 12.1	+37 54 36	16.12	g8, mdg	0.770	0.057	–0.78	–2.49	0.024	
109	162	1 57 12.1	+37 54 14	12.98	f3 IV	0.413	0.047	2.67	–0.52	0.013	
110		1 57 12.3	+37 39 58	16.29	f5, sd	0.440	0.045	3.40	–0.59	0.018	
111		1 57 12.6	+37 39 07	17.20	g6 V	0.580	0.051	5.28	–0.55	0.019	
112	164	1 57 12.6	+37 39 21	11.94	k0 III	0.763	0.052	0.85	–0.16	0.011	
113		1 57 13.0	+37 53 45	17.00	k6 V	0.879	0.050	7.65		0.034	
114		1 57 13.0	+37 43 22	18.21	f7, sd	0.477	0.062	3.98	–1.36	0.028	
115		1 57 13.4	+37 42 29	17.79	k4 V	0.730	0.051	6.63	–0.35	0.007	
116		1 57 13.4	+37 50 03	16.71	k7 V	0.960	0.054	8.34		0.031	pm
117		1 57 14.1	+37 51 42	18.10	g5, mdg	0.700	0.037	–0.68	–2.05	0.018	
118	166	1 57 14.3	+37 46 51	9.88	f2 III–IV	0.410	0.028	1.87	–0.14	0.012	M
119		1 57 14.5	+37 50 02	15.85	g9 V	0.635	0.065	5.31	–0.34	0.012	
120		1 57 14.6	+37 38 36	18.32	m						
121	167	1 57 14.7	+37 54 11	13.44	g5 V	0.578	0.038	4.84	–0.13	0.014	pm
122		1 57 14.7	+37 53 27	16.02	g2 IV–V	0.560	0.064	3.98	–0.32	0.007	
123		1 57 14.9	+37 36 30	18.47	k III						
124		1 57 15.6	+37 37 46	15.02	f9 V	0.520	0.048	4.24	–0.54	0.012	

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y{-}V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
125		1 57 15.9	+37 45 14	18.42	g4 V	0.572	0.032	4.65	0.03	0.016	
126		1 57 15.9	+37 54 13	14.07	k0, mdg	0.740	0.052	–0.11	–1.74	0.032	
127		1 57 16.0	+37 43 48	17.48	k6 V	0.885	0.074	7.59		0.027	
128	170	1 57 17.2	+37 40 52	13.14	f6 V	0.470	0.039	3.55	–0.23	0.010	
129		1 57 17.3	+37 46 33	16.18	k1 V	0.670	0.053	5.78	–0.05	0.011	
130		1 57 17.3	+37 40 20	18.24	g						
131		1 57 17.3	+37 54 21	15.25	k3 V	0.740	0.040	6.38	–0.02	0.026	pm
132	172	1 57 17.6	+37 53 20	14.16	f8 V	0.510	0.060	4.03	–0.45	0.007	
133		1 57 17.7	+37 50 06	14.18	f7 IV	0.490	0.048	2.97	–0.22	0.007	
134		1 57 18.1	+37 37 51	18.44	k–m						
135	174	1 57 18.4	+37 52 34	14.13	g5 IV	0.580	0.065	3.73	–0.32	0.010	
136		1 57 19.0	+37 44 18	17.16	m1 V	1.015	0.027	8.60		0.026	pm
137	175	1 57 19.0	+37 39 11	12.93	k1 IV	0.748	0.048	2.90	–0.14	0.021	
138		1 57 19.5	+37 53 51	18.11	f9, sd	0.500	0.051	3.75	–1.97	0.031	
139		1 57 19.9	+37 36 15	17.82	k2 V	0.660	0.031	5.98	0.02	0.009	
140		1 57 19.9	+37 37 18	15.98	g1 V	0.540	0.026	4.20	–0.22	0.011	
141		1 57 20.1	+37 40 34	18.44	g–k						
142		1 57 20.4	+37 39 17	17.61	k						
143	177	1 57 20.7	+37 51 43	10.18	f5 III–IV	0.453	0.037	1.87	–0.05	0.013	M
144	178	1 57 20.7	+37 42 37	13.94	g1 V	0.545	0.036	4.31	–0.09	0.006	
145		1 57 20.7	+37 46 54	18.58	f8, sd	0.493	0.042	3.79	–0.89	0.022	
146		1 57 21.4	+37 51 10	17.24	g0, sd	0.475	0.047	3.80	–0.96	0.023	
147		1 57 21.5	+37 42 52	16.82	m1 V	0.990	0.051	8.22		0.031	pm
148		1 57 21.8	+37 42 32	15.32	g5 V	0.580	0.035	4.61	–0.12	0.010	
149		1 57 21.8	+37 55 02	16.97	g6 V	0.580	0.073	5.37	–0.38	0.013	
150		1 57 21.9	+37 36 50	14.56	g8 V	0.619	0.037	5.40	–0.09	0.009	
151	182	1 57 22.3	+37 36 24	12.28	f8 V	0.525	0.041	3.94	–0.36	0.009	M
152		1 57 22.8	+37 47 04	17.95	g9, mdg	0.745	0.043	0.60	–0.57	0.017	
153		1 57 22.9	+37 52 54	15.67	f8 IV–V	0.505	0.056	3.61	–0.27	0.007	
154	183	1 57 23.0	+37 38 22	13.16	g7 V	0.590	0.037	5.19	–0.22	0.016	M
155		1 57 23.1	+37 40 56	17.37	g2, mdsg	0.550	0.040	3.66	–0.83	0.018	
156		1 57 23.2	+37 37 46	16.00	g4 IV–V	0.562	0.036	4.29	–0.05	0.008	
157		1 57 23.3	+37 53 05	15.52	k5 V	0.840	0.058	7.08		0.033	pm
158		1 57 23.7	+37 49 34	17.13	g7 IV	0.590	0.048	2.86	–0.42	0.024	*
159	185	1 57 23.8	+37 52 12	12.27	f7 V	0.485	0.040	3.91	–0.20	0.007	M
160		1 57 24.6	+37 47 15	17.62	k2 V	0.684	0.050	6.24	–0.50	0.018	
161		1 57 25.1	+37 43 50	16.18	g8, mdsg	0.673	0.050	2.46	–0.80	0.019	
162		1 57 25.1	+37 45 10	16.53	g9 V	0.617	0.047	5.31	–0.36	0.014	
163	186	1 57 25.9	+37 51 43	10.24	g9 IV	0.679	0.053	3.50	–0.11	0.016	
164		1 57 25.9	+37 53 17	18.13	g5, mdsg?	0.620	0.058	1.82	–0.79	0.025	*
165	187	1 57 26.0	+37 43 20	10.45	f3 IV–V	0.417	0.032	2.69	–0.12	0.010	M
166	189	1 57 26.2	+37 39 20	11.30	f4 IV–V	0.445	0.016	2.78	–0.27	0.010	M
167	190	1 57 26.2	+37 40 56	13.76	f4 V	0.447	0.046	3.22	–0.40	0.011	
168		1 57 27.3	+37 38 46	17.91	g1 V	0.552	0.048	4.62	–0.18	0.017	
169	192	1 57 27.5	+37 35 10	10.77	f2 IV	0.402	0.035	2.60	–0.18	0.012	M
170		1 57 27.6	+37 55 11	17.88	k3 V	0.690	0.042	6.64	–0.25	0.034	
171		1 57 27.6	+37 48 30	16.63	g6, sd	0.583	0.051	5.07	–0.56	0.016	
172		1 57 27.7	+37 41 06	18.38	f3, sd	0.430	0.028	3.81	–1.05	0.029	
173		1 57 27.9	+37 34 45	17.71	g2, sd	0.544	0.049	5.12	–1.05	0.027	
174		1 57 28.0	+37 43 14	18.13	g–k, mdg						*
175		1 57 28.9	+37 47 02	15.66	g6 V	0.590	0.055	5.02	–0.52	0.015	
176		1 57 29.6	+37 51 30	17.75	f8, sd	0.530	0.040	4.35	–0.88	0.018	
177		1 57 29.7	+37 35 44	16.95	k6 V	0.835	0.048	7.07	–0.13	0.033	
178		1 57 29.8	+37 37 02	16.90	g8 IV–V	0.619	0.042	4.26	–0.12	0.021	
179		1 57 30.2	+37 45 00	18.34	g3, mdg	0.620	0.041	1.14	–1.66	0.014	
180		1 57 30.3	+37 53 45	17.85	g–k						
181		1 57 30.6	+37 38 17	16.72	k2 V	0.690	0.040	5.48	–0.28	0.015	
182	196	1 57 30.9	+37 54 58	10.27	f3 IV	0.430	0.037	2.12	–0.24	0.011	M
183		1 57 31.1	+37 49 56	17.38	f8, sd	0.530	0.053	4.41	–0.96	0.012	
184		1 57 31.4	+37 51 58	17.47	k2 V	0.682	0.065	6.06	–0.18	0.013	
185		1 57 31.7	+37 41 03	14.17	g8 III	0.720	0.038	1.16	–0.43	0.014	
186	197	1 57 31.8	+37 53 41	11.63	f4 V	0.432	0.036	3.17	–0.20	0.008	M
187		1 57 31.9	+37 38 56	17.88	f8, sd	0.530	0.052	4.07	–0.73	0.013	
188		1 57 32.0	+37 52 19	17.84	k						

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y–V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
189	199	1 57 32.6	+37 42 06	13.98	g8 V	0.620	0.044	5.26	–0.20	0.012	M
190		1 57 32.9	+37 40 15	16.49	k1 V	0.663	0.049	6.06	–0.34	0.035	
191		1 57 33.5	+37 49 51	17.27	g1 V	0.550	0.049	4.42	–0.40	0.005	*
192		1 57 33.5	+37 50 02	13.70	k0 III	0.773	0.028	1.10	–0.24	0.011	
193		1 57 34.0	+37 48 29	15.62	g5 V	0.560	0.034	4.60	–0.24	0.014	
194		1 57 34.1	+37 46 30	14.68	f8, sd	0.530	0.034	4.50	–1.05	0.010	
195		1 57 34.3	+37 53 19	17.84	g0, mdsg	0.570	0.064	2.07	–2.14	0.027	*
196		1 57 34.5	+37 37 52	18.38	k–m						
197		1 57 34.5	+37 35 44	15.76	g0, sd	0.525	0.033	4.49	–1.05	0.012	
198		1 57 34.8	+37 37 41	14.13	f6 V	0.480	0.044	3.35	–0.41	0.007	
199		1 57 35.7	+37 35 03	16.41	g8 V	0.602	0.039	5.43	–0.26	0.014	
200		1 57 36.1	+37 43 42	17.91	m1 V	1.047	0.023	9.29		0.031	pm
201		1 57 36.1	+37 55 44	17.44	k2 V	0.688	0.039	5.83	–0.09	0.017	
202	205	1 57 36.2	+37 45 10	9.91	f3 IV	0.425	0.037	2.59	–0.17	0.007	M
203		1 57 36.6	+37 52 50	17.73	k2 V	0.673	0.049	6.38	–0.49	0.033	
204		1 57 36.8	+37 49 58	16.57	f8, sd	0.495	0.040	3.88	–0.61	0.012	
205		1 57 37.3	+37 35 56	18.40	g2, mdg(sg)	0.570	0.063	1.75	–1.87	0.021	
206	208	1 57 37.6	+37 39 38	8.96	k0 III	0.774	0.034	0.68	–0.14	0.014	M
207	206	1 57 37.7	+37 49 01	10.04	f4 III	0.441	0.041	1.80	–0.09	0.012	M
208		1 57 37.7	+37 52 17	16.44	g5, mdsg?	0.590	0.063	3.92	–0.61	0.013	
209		1 57 37.8	+37 44 47	16.56	g8 IV	0.655	0.030	2.93	–0.24	0.017	
210	207	1 57 37.8	+37 49 51	13.16	g7 V	0.600	0.035	4.98	–0.12	0.011	M
211		1 57 37.9	+37 40 22	17.09	k–m						
212		1 57 38.0	+37 47 30	14.13	g7, mdg(sg)	0.677	0.038	1.57	–0.57	0.015	
213		1 57 38.1	+37 51 27	17.35	k2 V	0.682	0.055	6.01	–0.25	0.034	
214		1 57 38.1	+37 37 56	17.41	g1 V	0.555	0.045	4.24	–0.40	0.024	
215		1 57 38.2	+37 40 23	17.12	k–m						
216		1 57 38.9	+37 45 44	14.10	k4 V	0.748	0.046	6.70	–0.36	0.024	
217	213	1 57 38.9	+37 46 12	9.03	g9 III	0.743	0.037	0.64	–0.19	0.006	M
218		1 57 39.1	+37 41 12	15.46	k1 IV–V	0.667	0.044	5.11	0.09	0.018	
219		1 57 39.3	+37 48 31	18.37	k						*
220	214	1 57 39.4	+37 52 26	10.47	f1 IV	0.380	0.051	2.46	–0.19	0.008	M
221		1 57 40.1	+37 53 56	17.29	k–m						
222		1 57 40.2	+37 43 13	16.98	k3 V	0.730	0.050	6.48	0.00	0.034	
223		1 57 40.7	+37 38 50	16.55	g5, sd	0.584	0.054	5.68	–0.77	0.025	
224		1 57 40.9	+37 38 54	16.56	g2, sd	0.556	0.047	4.99	–0.64	0.023	
225		1 57 41.1	+37 50 48	17.39	g9 V	0.622	0.053	5.40	–0.29	0.022	
226		1 57 41.9	+37 48 46	17.69	g4, sd	0.560	0.030	4.74	–0.67	0.037	
227		1 57 42.2	+37 47 48	15.63	g0, sd	0.540	0.021	4.46	–0.55	0.013	
228		1 57 42.5	+37 49 41	17.27	k7 V	0.900	0.041	7.87		0.055	
229		1 57 42.6	+37 39 06	16.34	k1 V	0.652	0.047	5.59	–0.03	0.019	
230		1 57 43.0	+37 42 32	15.51	g3 V	0.564	0.041	4.70	–0.03	0.011	
231		1 57 43.5	+37 55 03	15.39	g1 V	0.550	0.079	4.62	–0.38	0.015	
232	217	1 57 43.9	+37 51 42	10.44	f3 IV	0.420	0.047	2.27	–0.18	0.010	M
233		1 57 44.9	+37 43 20	14.95	k7 V	0.905	0.051	7.34		0.013	
234		1 57 44.9	+37 54 25	15.39	g0 IV–V	0.544	0.056	3.65	–0.37	0.016	
235		1 57 45.1	+37 43 17	15.00	k7 V	0.905	0.052	7.34		0.012	
236		1 57 45.1	+37 38 07	17.30	m1 V	1.020	0.105	8.52	–0.10	0.044	pm
237		1 57 45.4	+37 42 28	15.48	f6 V	0.480	0.076	3.50	–0.46	0.009	
238		1 57 45.4	+37 36 09	17.34	k5 V	0.805	0.052	6.85	–0.37	0.034	
239	220	1 57 45.5	+37 39 25	9.61	k1 IV	0.740	0.011	3.19	–0.05	0.024	
240		1 57 46.0	+37 42 36	16.37	g6, sd	0.590	0.075	4.73	–0.56	0.028	
241		1 57 46.8	+37 38 13	16.00	g8 V	0.608	0.047	5.20	–0.06	0.015	
242	222	1 57 47.1	+37 47 30	11.00	f2 IV	0.398	0.025	2.56	–0.07	0.008	M
243		1 57 48.2	+37 46 28	16.20	k2 V	0.675	0.058	5.87	–0.13	0.014	
244		1 57 48.8	+37 41 45	15.48	k3 V	0.720	0.037	6.93	–0.04	0.012	pm
245		1 57 49.3	+37 52 55	16.99	g8 V	0.613	0.050	5.46	–0.18	0.008	
246		1 57 49.3	+37 48 39	15.52	g8 V	0.610	0.039	5.41	–0.08	0.014	
247		1 57 49.4	+37 52 41	15.10	f6 V	0.472	0.045	3.38	–0.54	0.009	
248	225	1 57 49.5	+37 49 14	10.18	f7 IV	0.491	0.038	2.55	0.14	0.010	
249		1 57 49.8	+37 35 55	16.36	k6 V	0.880	0.038	7.45	–0.19	0.032	pm
250		1 57 50.4	+37 41 47	16.97	g0, sd	0.545	0.068	4.38	–1.07	0.027	
251		1 57 50.8	+37 48 18	17.87	g3, mdg(sg)	0.600	0.060	1.47	–1.44	0.031	
252		1 57 50.9	+37 43 02	15.59	g9 V	0.625	0.053	5.51	–0.07	0.014	

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y-V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
253		1 57 51.3	+37 36 50	17.57	f9 V	0.513	0.007	4.08	–0.37	0.018	
254	226	1 57 51.4	+37 53 06	11.86	k1 V	0.658	0.048	5.76	0.01	0.009	
255	227	1 57 51.4	+37 39 53	14.17	k0 V	0.632	0.032	5.79	–0.12	0.013	M
256		1 57 51.8	+37 46 32	17.73	k4 V	0.746	0.052	6.73	–0.26	0.033	
257		1 57 52.3	+37 40 05	17.43	f8 IV–V	0.504	0.063	3.41	–0.48	0.018	
258		1 57 52.4	+37 37 03	16.88	g2 V	0.550	0.039	5.11	–0.29	0.011	
259		1 57 52.9	+37 44 50	18.50	g–k						
260		1 57 53.0	+37 45 26	15.53	g7 V	0.597	0.049	4.91	–0.07	0.009	
261		1 57 53.3	+37 45 44	18.32	g0, mdg	0.573	0.070	1.27	–2.22	0.025	*
262		1 57 54.4	+37 43 01	13.23	k0 III	0.757	0.084	0.61	–0.28	0.009	
263		1 57 54.9	+37 47 54	13.23	f5 IV	0.467	0.028	2.65	–0.25	0.013	
264	232	1 57 55.2	+37 52 46	11.68	f4 IV–V	0.437	0.029	2.93	–0.17	0.007	M
265		1 57 55.6	+37 35 18	15.73	g2 IV–V	0.545	0.039	4.00	–0.23	0.011	
266		1 57 55.6	+37 45 26	17.60	f8, sd	0.523	0.031	4.28	–0.62	0.010	
267		1 57 55.6	+37 52 27	16.76	g8, sd	0.640	0.055	6.83	–1.26	0.030	*
268		1 57 56.1	+37 51 26	17.91	f7, sd	0.488	0.062	3.86	–1.34	0.024	
269	234	1 57 56.4	+37 50 01	10.71	f2 IV	0.413	0.041	2.56	0.01	0.010	M
270		1 57 56.8	+37 45 32	15.94	f9 V	0.530	0.048	4.10	–0.50	0.011	
271		1 57 57.6	+37 51 04	14.86	g7 IV–V	0.615	0.052	4.15	–0.24	0.015	
272		1 57 57.7	+37 48 45	15.11	g3 V	0.562	0.042	4.31	–0.20	0.010	
273	235	1 57 57.8	+37 48 23	11.35	f5 IV–V	0.440	0.025	3.12	–0.12	0.052	M*
274		1 57 58.1	+37 43 10	17.16	g7 V	0.597	0.042	4.99	0.06	0.011	
275	237	1 57 58.8	+37 41 27	12.35	f9 V	0.522	0.035	4.12	–0.11	0.007	M
276	238	1 57 59.3	+37 54 54	9.97	f3 IV	0.430	0.052	2.45	–0.31	0.012	M
277	240	1 57 59.7	+37 40 38	9.77	f5 V	0.467	0.039	3.30	–0.10	0.007	
278		1 58 00.4	+37 44 34	18.17	g3, mdg(sg)	0.620	0.067	0.95	–1.35	0.026	
279		1 58 00.7	+37 46 34	16.11	f6, sd	0.465	0.018	3.34	–0.65	0.012	
280		1 58 01.4	+37 45 37	14.49	f7 V	0.494	0.042	3.72	0.00	0.005	
281	241	1 58 01.6	+37 49 54	15.07	f5, sd	0.450	0.026	3.97	–1.77	0.019	
282		1 58 01.7	+37 45 00	13.62	k4 III	1.000	0.049	–1.17	–0.55	0.030	
283		1 58 01.9	+37 36 55	18.22	g3, sd	0.585	0.007	5.53	–1.09	0.033	
284		1 58 02.1	+37 47 01	17.81	g5 V	0.580	0.046	5.34	–0.54	0.025	
285		1 58 02.2	+37 34 40	17.09	g–k						
286		1 58 02.5	+37 40 19	15.16	k3 V	0.743	0.034	6.47	–0.13	0.030	pm*
287		1 58 02.9	+37 42 24	15.97	g1 V	0.548	0.053	4.55	–0.24	0.007	
288		1 58 02.9	+37 34 42	16.58	g						
289	248	1 58 03.8	+37 47 12	12.45	k2 III	0.840	0.040	–0.16	–0.19	0.012	
290		1 58 04.0	+37 43 27	17.87	f8 V	0.498	0.046	3.95	–0.53	0.014	
291		1 58 04.1	+37 44 54	18.09	f8, sd	0.529	0.012	4.21	–0.85	0.016	
292		1 58 04.3	+37 50 11	12.99	f5 V	0.460	0.039	3.37	–0.34	0.010	
293		1 58 04.4	+37 36 13	15.93	k5 V	0.795	0.054	7.08	–0.27	0.029	pm
294	250	1 58 04.5	+37 50 41	11.93	f3, sd	0.395	0.047	2.40	–1.31	0.018	
295		1 58 04.9	+37 36 54	15.71	g2 V	0.557	0.051	4.68	–0.42	0.009	
296		1 58 05.6	+37 37 55	17.41	f8, sd	0.505	0.046	3.90	–0.79	0.016	
297		1 58 05.7	+37 39 25	17.19	m1 V	1.067	0.041	9.09		0.011	pm
298		1 58 06.0	+37 47 42	16.73	g0, sd	0.512	0.032	4.11	–0.59	0.017	
299		1 58 06.3	+37 37 13	17.66	g1 V	0.555	0.040	4.62	–0.33	0.016	
300	252	1 58 06.3	+37 38 07	13.09	g1 V	0.544	0.054	4.59	–0.21	0.007	M
301	254	1 58 07.7	+37 39 57	10.93	f1 V	0.388	0.050	2.71	–0.32	0.010	M
302		1 58 06.7	+37 45 42	18.14	m2 V	1.148	0.037	9.76	–0.20	0.019	pm
303		1 58 07.8	+37 36 36	15.62	g0, sd	0.535	0.045	4.53	–0.65	0.010	
304		1 58 08.2	+37 49 43	12.29	g5 V	0.568	0.036	4.40	0.08	0.011	pm
305		1 58 08.5	+37 44 53	16.06	f8 V	0.515	0.048	4.16	–0.53	0.018	
306		1 58 08.5	+37 38 33	17.12	g2 V	0.561	0.044	4.91	–0.42	0.015	
307		1 58 08.7	+37 55 20	15.28	g0, mdsg	0.530	0.065	3.20	–0.60	0.057	
308		1 58 08.9	+37 53 50	17.01	g6, sd	0.583	0.062	4.81	–0.59	0.007	
309		1 58 09.6	+37 44 13	17.32	f8, sd	0.526	0.050	4.20	–0.73	0.012	
310		1 58 09.8	+37 37 33	15.41	k2 V	0.677	0.048	6.32	–0.17	0.023	
311		1 58 10.3	+37 35 22	14.50	k3 III	0.910	0.081	–0.30	–0.39	0.018	
312		1 58 10.8	+37 40 53	17.21	f7, sd	0.475	0.050	4.28	–1.96	0.012	
313	258	1 58 10.9	+37 42 38	12.23	f6 V	0.487	0.053	3.75	–0.38	0.009	
314		1 58 11.2	+37 47 53	15.40	k4 V	0.764	0.039	7.06	–0.17	0.035	pm
315		1 58 11.3	+37 35 01	18.15	f3, sd	0.432	0.051	3.72	–1.35	0.024	
316		1 58 11.4	+37 52 46	15.91	g9 V	0.620	0.038	6.03	–0.39	0.039	

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y{-}V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
317	259	1 58 11.4	+37 39 34	11.40	f3 V	0.435	0.037	3.14	–0.27	0.011	M
318		1 58 12.1	+37 43 55	15.98	g7 V	0.585	0.051	5.31	–0.09	0.015	
319		1 58 12.6	+37 46 35	18.42	k–m						
320	263	1 58 12.7	+37 34 40	10.98	f						M
321		1 58 13.3	+37 45 30	17.33	f9, sd	0.523	0.043	4.12	–0.57	0.030	
322		1 58 13.4	+37 40 49	16.50	g9 V	0.624	0.049	5.40	–0.23	0.016	
323	264	1 58 13.5	+37 44 25	12.09	f3 V	0.438	0.058	2.96	–0.04	0.010	
324		1 58 13.5	+37 42 45	17.70	m1 V	1.040	0.045	9.16		0.036	pm
325		1 58 13.6	+37 39 14	17.84	k5 V	0.810	0.054	7.11		0.014	
326		1 58 13.8	+37 37 22	18.19	g3, mdg	0.608	0.053	1.43	–1.98	0.038	
327		1 58 14.3	+37 45 24	16.44	k4 V	0.750	0.042	6.76	–0.06	0.037	
328		1 58 14.4	+37 41 22	15.19	g7 III–IV	0.645	0.040	2.19	–0.35	0.018	
329		1 58 15.7	+37 35 44	16.47	k7–m0 V	0.917	0.051	7.84	–0.10	0.030	pm
330		1 58 15.8	+37 44 13	17.46	f7, sd	0.490	0.047	3.47	–0.70	0.018	
331		1 58 16.6	+37 39 40	16.10	g0 V	0.550	0.049	4.52	–0.46	0.012	
332	266	1 58 16.9	+37 38 16	11.24	f3 IV–V	0.418	0.030	2.86	–0.20	0.008	M
333	267	1 58 17.0	+37 38 55	13.27	f6 V	0.474	0.040	3.45	–0.55	0.010	
334		1 58 18.1	+37 36 17	15.76	g8 IV–V	0.630	0.050	4.58	–0.15	0.012	
335		1 58 19.0	+37 44 04	18.12	g0, sd	0.530	0.049	4.87	–1.11	0.028	
336		1 58 19.1	+37 46 17	16.54	g0, sd	0.523	0.049	4.18	–0.85	0.013	
337		1 58 19.2	+37 40 27	17.29	g7 V	0.606	0.056	5.05	–0.30	0.017	
338	275	1 58 19.8	+37 36 43	12.22	f7 IV–V	0.492	0.033	3.54	–0.28	0.008	pm*
339		1 58 20.0	+37 46 11	17.93	g2 V	0.546	0.038	4.73	–0.40	0.029	
340		1 58 20.3	+37 40 55	16.70	f9, sd	0.512	0.032	4.15	–0.63	0.016	
341	277	1 58 20.9	+37 41 09	13.14	f7 IV–V	0.485	0.053	3.22	–0.09	0.010	
342		1 58 22.0	+37 35 41	17.57	g1 V	0.546	0.076	4.55	–0.40	0.010	
343		1 58 22.2	+37 41 34	15.93	m1 V	1.030	0.066	8.22	–0.10	0.041	
344		1 58 22.3	+37 37 06	16.82	g8 III–IV	0.703	0.050	1.49	–0.47	0.021	
345		1 58 22.4	+37 43 22	14.24	g9 IV	0.665	0.049	3.47	–0.20	0.024	
346		1 58 22.8	+37 39 42	15.65	k3 V	0.733	0.048	6.88	–0.13	0.021	pm
347		1 58 23.6	+37 43 46	15.36	g2 IV–V	0.559	0.060	3.92	–0.34	0.011	
348		1 58 23.9	+37 40 27	17.47	g0, sd	0.526	0.055	4.28	–1.18	0.024	
349		1 58 24.5	+37 46 37	13.76	g7 III–IV	0.670	0.013	2.04	–0.40	0.040	
350		1 58 24.9	+37 35 30	14.37	g7 V	0.580	0.034	5.00	0.08	0.025	
351		1 58 25.4	+37 44 55	12.20	k2 III	0.843	0.076	–0.02	–0.35	0.061	
352		1 58 25.5	+37 45 19	15.09	g3, mdg(sg)	0.595	0.046	1.21	–1.93	0.030	
353		1 58 25.9	+37 45 51	14.87	g9 III	0.760	0.063	0.80	–0.40	0.023	
354		1 58 26.5	+37 35 51	18.31	g8, sd	0.620	0.074	6.48	–1.33	0.021	
355		1 58 26.6	+37 37 56	17.56	f5, sd	0.457	0.035	3.48	–0.65	0.017	
356		1 58 27.2	+37 44 02	18.93	g2, sd	0.575	0.047	6.13	–1.44	0.011	
357	293	1 58 27.6	+37 35 22	11.94	f6 V	0.470	0.035	3.39	–0.20	0.015	M
358		1 58 28.9	+37 43 47	15.84	g7 IV–V	0.630	0.062	4.25	–0.46	0.016	
359		1 58 29.3	+37 37 56	16.32	g3, sd	0.548	0.056	4.82	–0.71	0.011	
360		1 58 29.3	+37 36 47	16.78	f8, sd	0.510	0.043	4.14	–0.62	0.041	
361		1 58 29.4	+37 41 33	16.25	g2 V	0.557	0.063	4.57	–0.49	0.017	
362		1 58 30.1	+37 36 31	16.84	g0, sd	0.536	0.046	4.44	–0.82	0.013	
363		1 58 30.9	+37 36 12	17.78	g0 V	0.527	0.039	4.37	–0.41	0.022	
364		1 58 31.9	+37 46 58	17.39	g5 V	0.580	0.064	5.07	–0.50	0.019	
365		1 58 32.2	+37 35 09	14.53	g9 IV	0.678	0.049	3.03	–0.44	0.011	
366		1 58 34.3	+37 37 30	17.05	g6, sd	0.595	0.056	4.99	–0.69	0.011	
367	298	1 58 34.4	+37 40 16	13.67	g5 V	0.585	0.045	4.80	–0.04	0.011	M
368		1 58 36.0	+37 46 24	17.98	g0, mdsg	0.580	0.058	2.78	–2.14	0.027	*
369		1 58 36.0	+37 46 09	15.03	g9 IV	0.690	0.085	3.06	–0.47	0.022	
370		1 58 36.7	+37 47 04	15.34	g0 IV–V	0.534	0.077	3.94	–0.48	0.016	
371		1 58 36.9	+37 38 08	19.01	g5, mdg(sg)	0.597	0.057	1.91	–2.57	0.042	*
372		1 58 37.0	+37 41 14	16.07	g2 IV–V	0.563	0.046	3.95	–0.30	0.011	
373		1 58 38.6	+37 42 15	18.26	f8 IV–V	0.510	0.048	3.77	–0.43	0.020	
374		1 58 38.9	+37 36 20	15.70	g0 V	0.543	0.031	4.75	–0.47	0.006	
375		1 58 39.6	+37 39 27	16.53	f8 V	0.513	0.047	4.14	–0.46	0.009	
376	304	1 58 40.1	+37 38 05	11.92	f5 V	0.462	0.022	3.39	–0.08	0.007	M
377		1 58 41.0	+37 41 22	16.94	g2 V	0.570	0.038	4.81	–0.23	0.028	
378		1 58 41.6	+37 40 29	17.98	g3 V	0.543	0.033	4.96	–0.17	0.023	
379		1 58 42.2	+37 40 49	16.55	g5 V	0.582	0.051	4.97	–0.20	0.014	
380		1 58 42.4	+37 44 46	16.55	f9, sd	0.525	0.067	4.23	–0.69	0.010	

Table 3. Continued

Run. No.	HEIN No.	RA(2000) h m s	DEC(2000) ° ′ ″	V mag	Photom. sp. type	$(Y–V)_0$ mag	E_{Y-V} mag	M_V mag	[Fe/H] dex	ΔCI mag	Rem.
381		1 58 43.0	+37 43 04	16.92	f8, sd	0.510	0.053	4.25	–0.72	0.017	
382		1 58 43.6	+37 45 40	16.82	g8, sd	0.630	0.078	5.44	–0.58	0.019	
383		1 58 44.4	+37 38 40	13.86	g2 V	0.559	0.041	4.48	0.08	0.006	
384		1 58 44.4	+37 41 31	16.11	g9 IV	0.680	0.045	2.87	–0.36	0.022	
385		1 58 44.4	+37 41 41	17.46	f8, sd	0.520	0.045	3.69	–0.63	0.044	
386		1 58 44.8	+37 45 22	16.41	g7 IV–V	0.610	0.093	4.70	–0.41	0.029	
387		1 58 44.9	+37 38 06	16.32	k0 V	0.635	0.042	5.48	–0.01	0.018	
388		1 58 45.1	+37 44 34	16.13	g0 V	0.532	0.053	4.32	–0.47	0.025	
389		1 58 45.9	+37 40 42	15.94	g1 V	0.541	0.045	4.48	–0.07	0.018	
390		1 58 45.9	+37 40 28	17.30	f4, mdsg	0.431	0.057	2.60	–0.94	0.035	
391		1 58 46.5	+37 35 10	18.34	g3, mdg	0.605	0.053	–0.42	–1.14	0.050	
392		1 58 46.9	+37 45 12	17.03	f8, sd	0.526	0.070	3.91	–1.17	0.028	
393		1 58 47.9	+37 45 00	17.13	g3 V	0.568	0.059	4.67	–0.17	0.018	
394		1 58 48.1	+37 44 10	18.32	g0, mdg	0.580	0.064		–1.32	0.042	
395		1 58 48.2	+37 45 59	15.01	g2, sd	0.565	0.118	4.53	–0.61	0.016	
396		1 58 48.8	+37 47 02	15.54	k5 V	0.785	0.090	7.01	–0.31	0.030	pm
397		1 58 49.6	+37 36 16	17.13	k0 V	0.644	0.077	5.32	–0.34	0.013	
398		1 58 51.0	+37 46 52	18.21	g, sd	0.623	0.053	5.85	–1.70	0.026	
399		1 58 52.0	+37 45 58	17.54	g5 IV–V	0.590	0.055	4.38	–0.37	0.019	
400		1 58 52.0	+37 35 10	16.29	g6 V	0.585	0.045	4.92	–0.40	0.039	
401		1 58 55.3	+37 37 02	15.21	g5 IV–V	0.571	0.054	4.11	–0.27	0.017	
402		1 58 56.5	+37 36 37	15.32	g3, sd	0.560	0.050	4.79	–0.59	0.030	
403		1 58 56.8	+37 43 06	17.18	f4, sd	0.398	0.048	2.66	–0.61	0.052	
404	317	1 58 57.4	+37 39 41	13.85	k2 V	0.680	0.042	6.20	–0.04	0.018	M
405	316	1 58 57.4	+37 43 57	12.21	f6 V	0.473	0.013	3.59	–0.12	0.017	pm

Notes:

66. Alternative classification: G5, sd; $(Y–V)_0$=0.59, M_V=4.5, [Fe/H]=–0.9.
158. Alternative classification: G8 V; $(Y–V)_0$=0.58, M_V=5.1, [Fe/H]=–0.5.
164. Alternative classification: G8, sd; $(Y–V)_0$=0.62, M_V=6.3, [Fe/H]=–1.1.
174. Assuming the reddening E_{Y-V}=0.048, the indices $(P–X)_0$ and $(X–Y)_0$ give [Fe/H]<–3.0.
191. Error in $Y–V$ too large (σ_{Y-V}=0.094). Parameters obtained using the remaining color indices.
195. Alternative classification: F7, sd; $(Y–V)_0$=0.53, M_V=4.0, [Fe/H]=–2.2.
219. Classification impossible due to large errors of color indices.
261. Alternative classification: F8, sd; $(Y–V)_0$=0.60, M_V=4.1, [Fe/H]=–1.9.
267. Large error in $Y–V$. Parameters obtained using the remaining color indices.
273. The eclipsing binary QX And. Hence the large classification error.
286. Nonmember by radial-velocity analysis (Daniel et al. 1994).
338. Nonmember by proper-motion analysis (Platais 1991).
368. Alternative classification: F8, sd; $(Y–V)_0$=0.53, M_V=4.4, [Fe/H]=–1.8.
371. Large error in $Y–V$. Parameters obtained using the remaining color indices.