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INTERSTELLAR EXTINCTION IN THE DIRECTION OF THE CAMELOPARDALIS DARK CLOUDS

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1. Zdanavičius K., Zdanavičius J., Kazlauskas A. ”Interstellar Reddening in the Camelopardalis Dark Clouds”, in ”Photometric Systems and Standard Stars”, Vilnius 1995 August 14-16.
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3. Zdanavičius J., Zdanavičius K., Straižys V. ”CCD Observations and Photometric Classification of Stars at the Molėtai Observatory”, in the ”CrAO60 Conference”, Crimea, Nauchny, Ukraine 2005 September 11-18.

1. INTRODUCTION

For better understanding the structure and evolution of our Galaxy, we need information about physical parameters of stars and interstellar matter and their distribution in space. The Galaxy contains about 300 billion stars, but only a small part of them is accessible for our investigation. Usually studies are concentrated only in the chosen directions and areas. Only a small part of the Galactic longitudes and latitudes is investigated. For investigation of distant objects, especially near the Galactic plane, we need, in addition, the value of interstellar extinction in their directions. Usually, the interstellar extinction in different sky areas is evaluated by using stars for which photometric and spectral classification data are available. This has been done only in a small number of sky areas. Therefore, in many directions new investigations of interstellar extinction are needed. Among the least investigated directions in the Milky Way are dark clouds in the Camelopardalis constellation (Galactic longitudes between 140° and 150°). In this direction our view crosses the Orion spiral arm, the Perseus arm and the Outer arm.

A discontinuity of the Milky Way brightness at the Galactic longitudes 140°–170° has been well known since the first wide-field surveys of the Galactic system. At these longitudes all the tracers of the Perseus spiral arm disappear. The Milky Way reappears only at $\ell = 170°$, near the Auriga border. We may suspect that this blocking of the light of distant stars probably is due to the crowding of dust clouds near the Galactic equator, which probably belong to the local Orion spiral arm.

The Camelopardalis dark cloud-region, which occupies a large area of the Galactic equator (ℓ =140°–150°), is still a poorly investigated area. The distances of the clouds and their extinctions are known with a low accuracy and only in some occasional directions. This section of the Galaxy remains also a poorly investigated region considering interstellar extinction and the Galactic structure. These are the main reasons why we have chosen for investigation an area at the Camelopardalis border with Perseus and Cassiopeia.

The main aim of the dissertation

The main goal of this work was a comprehensive photometric investigation of the Milky Way region at Galactic longitudes 140°–150° in the direction of the Camelopardalis dark clouds in order to get distances, absorbing properties of the clouds and evaluate the stellar distribution determining the observed luminosity and density functions.

The main tasks

1. Photoelectric photometry of stars down to V=13 mag in an area of about 10°×10° degrees near the Galactic equator at the Camelopardalis and Perseus border.

2. CCD photometry of fainter stars (V down to 15 mag) in a smaller region of the area of about 1°×1°.

3. Photometric classification of observed stars, determination of their distances and interstellar reddening, investigation of changes of interstellar extinction with distance.

4. Determination of interstellar extinction law in the investigated area.

5. Evaluation of the distribution of stars by spectral type, luminosity and distance and the determination of the observed luminosity and density functions.

Scientific novelty

1. For most of the stars in the area, multicolor photometry and two-dimensional spectral classification have been done for the first time.

2. A detailed distribution of the absorbing matter up to 5 kpc is given for the first time.

3. The presence of dense absorbing cloud at 130–400 pc distance and the increase of the extinction at a distance >3.3 kpc are found. The extinction increase may be related to the presence of O-B association in the Outer spiral arm.

4. It is shown, that in the region under consideration the extinction-to-excess ratio $R_{B-V} = A_V/E_{B-V}$ is close to 2.9, i.e., it is slightly smaller than the normal value valid for the diffuse interstellar dust (3.15).

5. For the first time the observed luminosity function was constructed using the results of two-dimensional classification of stars.

Practical importance of the dissertation

1. The determined interstellar extinction run with distance is important for the investigation of both the objects inside the Galaxy and extragalactic objects.

2. The distribution of stars obtained can be used for testing the models of the Galaxy.

3. The results can be useful in determining physical properties of the interstellar dust in the direction of the investigated area.

Statements presented for defence

1. The Camelopardalis dark clouds form a huge unique system of dust clouds extending parallel to the Galactic equator. They are among the closest dust formations in the solar vicinity.

2. In the investigated direction the largest extinction (i.e. dust cloud density) is seen between 130–400 pc, reaching 1.7 mag at a distance of 400 pc. At greater distances within the Orion spiral arm the extinction is lower, reaching 1.2–2.6 mag at a distance of about 1600 pc

3. At distances greater then 1.6 kpc there is no evidence of concentration of the absorbing matter, except for possible growth of extinction beyond ≈3.3 kpc in the north (N) part of our CCD field. At the latter distance the increase of density of O-A5 stars is noticeable. (These features may by traces of the Outer spiral arm.)

4. In the Milky Way, near the border of Camelopardalis, Perseus and Cassiopeia constellations, the interstellar extinction law in the infrared and optical spectral ranges is close to the normal one. However, a slightly reduced mean ratio of total to selective absorption, $R = A_V/E_{B-V} = 2.9$ ($R_{\mathrm{Vil}} = A_V/E_{Y-V} = 3.83$), is found for O–B type stars in the area.

Author's contribution

The author chose the optimum boundaries of the investigated areas, took part in all photoelectric observations at the Molėtai Observatory and data reductions, and was the main observer during CCD observations. The nonlinearity of CCD response was investigated and determined by the author. Also, the IRAF package has been studied and used in the CCD data reductions. The author made the photometric classification of stars and the interstellar extinction analysis, took part in the renovation of classification programs, literature analysis and preparation of all published articles.

Overview of the dissertation

The work consists of five sections, Bibliography and Appendix. The first section is the present introduction.

In the second section, earlier investigations of stars and interstellar extinction in the area are reviewed. The objects situated in the area are also discussed.

In the third section the methods of photoelectric and CCD observations, data reductions and photometric classification are described.

In the fourth section the catalogs of photoelectric and CCD photometry and the results of photometric classification of stars are described. The results of investigation of interstellar extinction are also given in this section.

The main results and conclusion are given in the fifth section.

Bibliography of the dissertation involves 121 different references.

In the Appendix the photometric data for all measured stars and their individually determined parameters are given.

2. REVIEW OF THE LITERATURE

The interstellar matter is composed from the gas and dust. The gaseous nebulae and dark clouds represent regions of the interstellar matter in which the density of gas and dust is higher than the average. The studies of the interstellar matter are vital for understanding the structure of our Galaxy and star formation. Distant stars near the Galactic plane are partly or completely obscured for our vision. Since the interstellar extinction by dust increases with decreasing wavelength, the star light becomes redder and this makes possible to detect and determine the amount of interstellar extinction.

The presence of interstellar extinction was pointed out as early as in 1847 by F. G. Wilhelm Struve. The existence of solid dust particles in interstellar space was first convincingly shown by Trumpler (1930), based on the discovery of color excesses. Since that time the, interstellar dust has become a subject of extensive study. It plays an important role in the process of star formation in molecular clouds and in the evolution of galaxies as a whole.

The mean extinction near the Galactic plane in the V passband is about 1.0–1.5 mag/kpc. However, if the line of sight meets a dense cloud, the extinction can jump suddenly by a few magnitudes. The sudden increase of the extinction makes it possible to determine the distance to a dust cloud.

The extinction difference in two spectral regions defines a color excess, e.g. E_{B-V} in the B, V system. The ratio of the total extinction in the V passband to the color excess E_{B-V} is $R = A_V/E_{B-V}$=3.15 in the general Galactic dust layer. In the dense dust clouds and in the vicinity of O-type stars the dust distribution by particle sizes is modified, and the ratio R can reach values as large as 5.0 (Straižys 1992).

2.1. Investigations of the interstellar extinction in Camelopardalis

The map of the investigated area is shown in Figure 2.1.1. The straight line denotes the Galactic equator. The studied area B includes three smaller areas, A1, A2 and C, where a more detailed investigation of interstellar extinction is done in the present work. The whole area in Fig. 2.1.1 extends by Galactic longitude from about $\ell = 140°$ to 150°. Photoelectric observations of some O–B type stars are also done at smaller longitudes.

In the Lynds (1962) catalog of dark clouds, only some small scattered cloudlets at positive Galactic latitudes ($b > +3°$) are shown in the area. Dutra & Bica (2002) in their unified catalog of dust clouds (taken from 21 sources) do not list any cloud in our area. Only the atlas of dark Galactic nebulae of Khavtassi (1960) shows five large clouds. The largest is the Kh241 cloud covering the central part of our area. On the right side of it the major part of the Kh239 cloud is located. Below it, Kh242 and a small part of Kh240 are shown. On the left side a smaller cloud Kh243 is located. Boundaries of the Khavtassi dark clouds in Figure 2.1.1 are shown as thin broken lines.

No detailed study of the interstellar extinction in our area B have been done so far. Only crude estimates of the extinction in large areas near the Galactic equator have been done by FitzGerald (1968) and Neckel & Klare (1980). According to the latter work, in the direction of $\ell = 148°$, $b = -1°$ the extinction A_V grows up to ~3.5 mag at 1 kpc and probably does not increase any more with increasing distance. The absence of additional extinction beyond 2 kpc in the direction of $\ell = 150$–$210°$ was confirmed by Moffat et al. (1979) and Fich & Blitz (1984). Rydström (1978) has investigated the interstellar extinction in a number of areas in Camelopardalis by using a spectrophotometric method. For the area at $\ell = 148°$, $b = +1°$, which is the closest to the area A1 studied in the present work, Rydström obtains zero extinction up to 100 pc and $A_V \approx 2.0$ mag at 1 kpc.

Our area A1 almost coincides with the Champ 11 of the investigation of fields along the Galactic equator, initiated many years ago by Boulon, Duflot & Fehrenbach (1958),

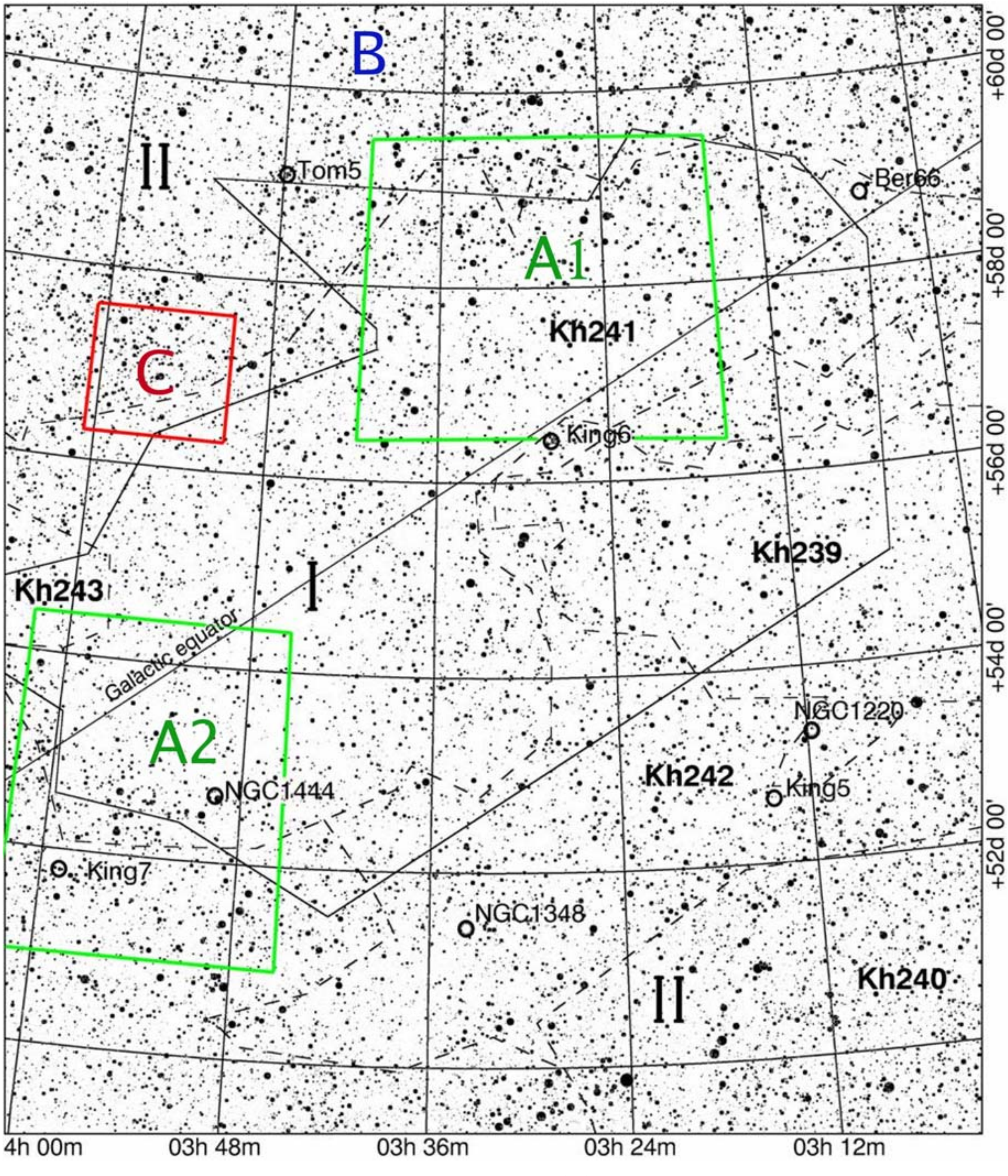

Fig. 2.1.1. Map of the our investigated area (B). The smaller areas A1, A2 and C are indicated. The solid straight line marks the Galactic equator. The zones of the area with different dependence of extinction on distance are separated by the solid angular line. Boundaries of the dark Khavtassi clouds are shown by thin broken lines. Circles denote open clusters.

Bouigue (1959) and Bouigue, Boulon & Pedoussaut (1961). These authors have determined MK spectral types, magnitudes V and color indices B–V for 70 relatively bright BD stars in the area.

A glance at the E and O copies of the Palomar Atlas shows that the large part of our area is covered by a dark cloud which extends from the area A2 in the north and west directions. In the Khavtassi (1960) catalog of dark clouds all this huge cloud is marked as number 241. The Lynds (1962) catalog of dark clouds identifies a smaller cloud, L 1391, in the area A2.

The northern central part of our CCD area C is covered by the H II region S 204 (Sharpless 1959), or LBN 689 (LBN 145.80+02.83) (Lynds 1965), which is a part of the Cam OB1 association (Lyder 2001). According to Hiltner (1956), the diameter of S 204 is $40'$, and Lynds gives a size of $30'\times10'$.

Among the later investigations, the papers by Fernie (1962), Neckel (1966), Lucke (1978), Neckel & Klare (1980), Arenou, Grenon & Gomez (1992) may be mentioned. The disagreement of different A_V data is several tenths of stellar magnitude (Burnashev 1999). The most applicable maps are those of Neckel & Klare.

2.2. Distinctive objects in the area

The area B contains several interesting localized regions and objects. Among them, the H II region S 205 (Sharpless 1959), ionized by the O8 star HD 24451. Another H II region, S 206, is located near the south-east border of the investigated area. The Lynds (1965) catalog of bright nebulae lists the following H II regions: S 205, S 206 and L 148.11-0.45. In other sources the last nebula is considered as an extension of S 205. According to Fich & Blitz (1984), the Galactic coordinates of S 205 are $\ell = 148.84°$, $b = -1.24°$ and its distance from the Sun is 900 pc. The nebula S 206 is at $\ell = 150.68°$, $b = -0.77°$, its distance is 3.3 kpc, i.e., it is located in the Perseus spiral arm.

Some open clusters are also present in the area (Table 2.2.1).

Table 2.2.1 Open clusters in the investigated area.

No.	Cluster	RA(2000)	DEC(2000)	r (kpc)	E_{B-V}	A_V	Ref.
1.	Berkeley 66	3 04 18	58 46 00	5.20	1.25	3.63	1, 2
2.	NGC 1220	3 11 40	53 20 42	1.80	0.70	2.03	1, 3
3.	King 5	3 14 36	52 43 00	1.90	0.82	2.38	4, 5, 6
4.	King 6	3 28 06	56 27 00	0.87	0.50	1.45	1, 7
5.	NGC 1348	3 34 06	51 24 30	1.82	1.02	2.96	7, 8
6.	Tombaugh 5	3 47 48	59 03 00	1.80	0.35	1.05	9
7.	NGC 1444	3 49 25	52 35 30	1.20	0.71	2.06	1, 10
8.	King 7	3 59 00	51 48 00	2.20	1.25	3.63	1, 11, 12
9.	NGC 1496	4 04 30	52 38 42	1.23	0.45	1.31	1, 13
10.	NGC 1513	4 09 00	49 31 00	1.32	0.67	1.94	1, 14

References:

1. Dias et al. (2002), 2. Phelps & Janes (1996), 3. Ortolani et al. (2002), 4. Carraro & Vallenari (2000), 5. Durgapal et al. (2001), 6. Durgapal et al. (1998), 7. Ann et al. (2002), 8. Carraro (2002), 9. Reddish (1954), 10. Mermilliod (2002), 11. Durgapal & Pandey (2001), 12. Durgapal et al. (1997), 13. del Rio & Huestamendia (1988), 14. Frolov et al. (2002).

According to Pena & Peniche (1994), the NGC 1444 cluster is at 906 pc distance and its $E_{b-y} = 0.54$. Taking $E_{B-V}/E_{b-y} = 1.25$ and $A_V/E_{B-V} = 3.2$ we obtain $A_V = 2.16$ mag.

The cluster King 7 probably belongs to the Perseus spiral arm, since its distance according to Durgapal et al. (1997) *UBVRI* photometry, is 2.2 kpc. The same source gives $E_{B-V} = 1.25$, which corresponds to $A_V = 3.63$. The cluster was also investigated by Phelps et al. (1994) in the B,V,I system, but their instrumental magnitudes and color indices were not transformed to the standard system.

Here in the area is also a rather diffuse OB association, Cam OB3, containing no known open clusters (Negueruela & Marco 2003). Its existence has sometimes been considered doubtful and it is not included in the review of the Galactic OB Associations in the Northern Milky Way between longitudes 55°and 150° by Garmany & Stencel (1992). However Haug (1970), on the basis of UBV photometry of a large number of luminous stars, considered its existence as certain. Using the data in the literature for 6 likely members, Humphreys (1978) centered it at ℓ=147°, b=+3.0°and derived a distance of 3.3 kpc. This is larger than the distance to the associations Per OB1 and Cas OB6, tracers to the Perseus arm closest in the sky. Moreover, considering that the Perseus arm is running towards its minimum distance to the Sun in this region, Cam OB3 is clearly too far away to be in the Perseus arm.

2.3. Extinction law in the investigated area

Many of the OB stars in the Cam/Per area were observed photometrically by the ANS orbiting observatory in the passbands of medium width at 155, 180, 220, 250 and 330 nm. The results of all ANS observations of point sources are published by Wesselius et al. (1982). The system has been used to investigate the interstellar extinction law in different Galactic longitudes and areas by many authors which are listed in Table 4 of the Straižys (1992) monograph. Meyer & Savage (1981) have determined the ANS color excess ratios E_{m-V}/E_{B-V} for 1367 stars. They have identified 58 stars and 8 localized regions with the peculiar extinction law. One of their peculiar areas, named R7, overlaps partly our Cam/Per area. The majority of stars in this area were found to exhibit a slightly higher ultraviolet extinction than the mean extinction law. The largest peculiarity in our area is found for the stars HD 24432 (B3 II) and HDE 237213 (B3 Ia). The anomalous extinction in the ultraviolet for HD 24432 was confirmed by Massa, Savage & Fitzpatrick (1983) from IUE spectra. The stars in their R7 area also exhibit the increased extinction bump at 220 nm.

Savage et al. (1985) have published a catalog of ultraviolet color excesses in the ANS system and investigated the extinction curves for 1415 O–B7 stars. They conclude that about 43% of the stars are affected by peculiar extinction (in the ultraviolet).

Later on, Papaj & Krelowski (1992) published a new catalog of the ANS color excesses for 423 O–B9 stars, using the revised intrinsic color indices. Their results for O–B5 stars in the same area are similar to those of Savage et al. (1985). Only in their E_{33-V} vs. E_{B-V} graph the systematic deviations from the normal law are almost absent.

Several investigators have suspected that the ultraviolet extinction is larger for the stars located in the Perseus spiral arm. The best investigated objects of the Perseus arm are the association Per OB1 around the double cluster h+χ Per (Morgan et al. 1982; Franco et al. 1985; Krelowski & Strobel 1987) and the association Cas OB6 (Hanson & Clayton 1993). For Per OB1, a slightly larger ultraviolet extinction is found, while in the Cas OB6 area the reddening law is found to be normal.

2.4. Galactic models and luminosity functions

Within the past quarter of century a number of Galactic structure models have been developed by Bahcall & Soneira (1980, 1981, 1984), Bahcall (1986), Robin & Crézé (1986a,b), Reid & Majewski (1993), Peiris (2000), Larsen & Humphreys (2003), Robin et al. (2003). For the calculation of Galaxy models the mean luminosity functions are used for the included population types. Since the disk stars are most abundant in the Galaxy, the luminosity function for the disk is most important. Although this function usually is considered to be applicable everywhere in the disk, in reality its considerable variations are expected, especially for O-B stars. It is obvious that star distributions in spectral types in spiral arms are different from the inter-arm regions. Significant variations of the luminosity function are expected in star-forming regions and clusters.

Methods for the determination of luminosity functions are described in detail by van Rhijn (1965), McCuskey (1966) and Bessell & Stringfellow (1993). The accuracy of the luminosity function depends mainly on the accuracy of absolute magnitudes of stars and interstellar extinction. In the solar vicinity up to 100 pc the interstellar extinction may be neglected, and the distances can be determined by the ground-based or the orbital *Hipparcos* trigonometric parallaxes (Jahreiss & Wielen 1997).

At larger distances the method of "spectroscopic parallaxes" may be used. This method for the determination of luminosity functions was successfully used by S. W. McCuskey in 1947–1955 (LF areas). For the determination of distances of stars, two-dimensional spectral classification was combined with two-color photographic photometry. Spectral and luminosity classes were used to estimate the absolute magnitude and color indices – interstellar reddening and extinction. The results of the investigation of nine LF areas, selected in the relatively transparent and uniform Milky Way places, were published in a series of papers with the summary in McCuskey (1956a, 1956b, 1965). The distribution of most luminous stars up to 2.5 kpc was found, while the luminosity functions for a wider sample of spectral classes were given up to 600 pc. Since for the spectral classification objective-prism spectra of low-dispersion (280 Å/mm at Hγ) were used, McCuskey was, however, not able to determine luminosity classes for B- and A-type stars, and the luminosity classes of F- and G-type stars were of low accuracy. As a result, the dispersion of absolute magnitudes, prescribed to these stars, was quite large. Also, in these works the accepted interstellar extinction was taken into account only approximately.

2.5. Spiral structure of the Galaxy in the investigated direction

The Camelopardalis section of the Galaxy remains a poorly investigated region as regards the interstellar extinction, dark cloud distribution and Galactic structure. A discontinuity of the Milky Way brightness longward of a Galactic longitude of 140° has been well known since the investigations of Reddish (1967), Bruck et al. (1968), Dodd (1976), Georgelin & Georgelin (1976), Taylor & Cordes (1993). The Milky Way reappears only at $\ell = 170°$ at the Auriga border. It was concluded that at least partly this break in the Milky Way brightness can be related to a concentration of dust clouds in the Orion spiral arm.

The interstellar matter and the most luminous stars are generally concentrated in the spiral arms. Luminous stars are relatively young objects and, in all probability, have been recently formed from clouds of interstellar gas and dust. In mapping out the spiral structure of our own Galaxy, therefore, one can use the gaseous nebulae and very luminous main-sequence O and B stars and supergiants of various spectral classes as "tracers" to identify the spiral arms.

Most recent investigations of the spiral arms were published by Russeil (2003) and Vallée (2005). The conclusion is that the arm pattern determined by different methods is quite different. Even there is no general agreement how many spiral arms are present. Most recent investigations are in favor of four spiral arms. In the direction of the anticenter, the Orion (Local), Perseus and Outer arms are confirmed.

Kimeswenger & Weinberg (1989) have demonstrated the existence of a spiral arm in the second quadrant beyond the Perseus arm, separated from it by a statistically significant gap. The radio data put the Outer arm at slightly larger distance then the optical data. It is not known whether this difference is real or spurious.

Among the most recent and comprehensive studies the Canadian Galactic plane survey may be mentioned (Taylor et al. 2003). The survey covers the Galactic plane region $74.2° < l < 147°$ and $| b | \leq 5°$, i.e. the large part of our region is included. It combines radio, millimeter and infrared surveys which have been done up to now in the Canadian survey region. Two gas-dust clouds moving with different velocities are detected in the area studied in the present work. However, their distances are not determined.

It is generally accepted that the Perseus arm is at a distance of 2 kpc and the Outer arm is located at a distance greater than 5 kpc. The schematic picture of Vallée (2005) and Straižys (2005) is shown in Fig. 2.5.1. The Sun is at the inner edge of the Orion arm.

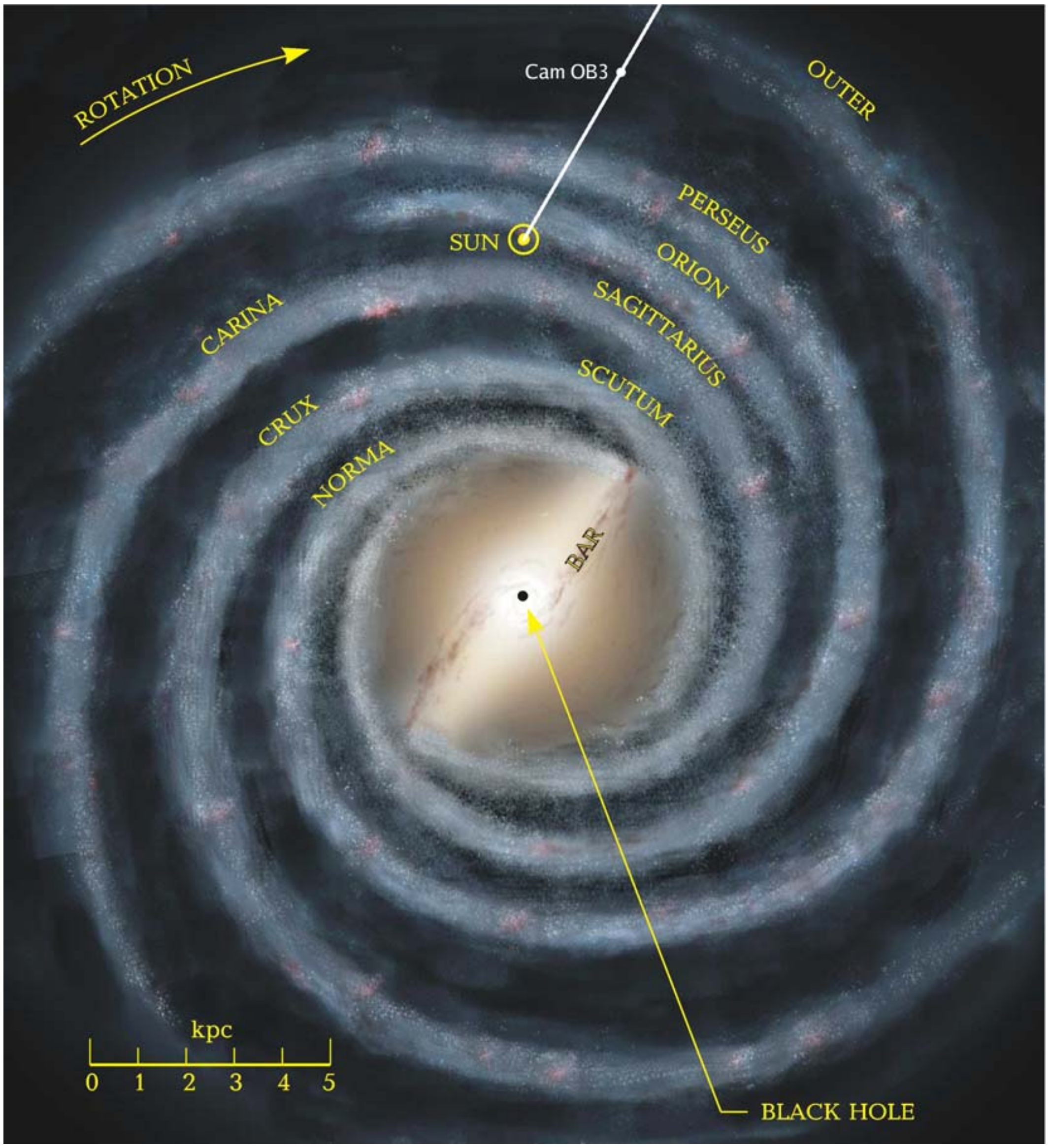

Fig. 2.5.1. Schematic picture of the Galactic plane according to Vallée (2005) and Straižys (2005).

3. METHODS

3.1. Photoelectric observations and equipment

3.1.1. Area A1

Area A1 is restricted by the coordinates: $\alpha(2000)$ from $3^{\mathrm{h}}16^{\mathrm{m}}$ to $3^{\mathrm{h}}45^{\mathrm{m}}$ and δ (2000) with $56°30'$– $59°30'$($\ell \approx 143°$, $b \approx 1.5°$). The observations in this area were done at the Molėtai Observatory in 1993–1994 and 1994–1995 winter months with the 165-cm telescope [1] (Hereinafter, the references to the papers with author's contribution (see p. 3) will be given in box brackets). A new computer-controlled photometer with a permanently rotating filter wheel was used during its test period. Seven filters of the *Vilnius* system (Table 3.1.1) and a thermoelectrically cooled photomultiplier FEU-79 were used. During the process of observation, only equal integration times with each filter were possible. The photometer worked in the photon counting mode.

Table 3.1.1. Mean wavelengths and half-widths of passbands of the *Vilnius* photometric system.

Passband	*U*	*P*	*X*	*Y*	*Z*	*V**	*S*
λ_0 (nm)	345	374	405	466	516	544	656
$\Delta\lambda$ (nm)	40	26	22	26	21	26	20

* Medium-band *V* magnitudes of the *Vilnius* system have no color equation with respect to *V* magnitudes of the broad-band *UBV* system (Straižys 1992). Therefore, we use the same *V* designation both for medium and broad band magnitudes.

To track the changes of atmospheric transparency during the night, a comparison star was observed almost after each observation of a program star. The star BD+57°730 (F6 V) was used for comparison. Its magnitude *V* and color indices in the *Vilnius* system have been deduced from observations made during the most stable nights. For obtaining the transformation equations to the standard *Vilnius* system, the stars from the standard regions SA 4 (Černis & Jasevičius 1992), SA 59 and SA 64 (Zdanavičius et al. 1978) were observed. Reductions of the magnitudes and color indices to outside the atmosphere were made both with constant and time-dependent atmospheric extinction coefficients. The latter were obtained from the observations of the comparison star. Since the comparison star and the program stars are close (the angular distance between them never exceeded 3°), their air mass differences are always small. As a result, there was no difference between the photometry obtained by both methods. In both cases the extinction corrections depending on star's spectral class and luminosity were included (Zdanavičius 1975). The instrumental color indices were transformed to the standard system using linear equations.

3.1.2. Area A2

Area A2, of similar size as Area A1, with the center at $\ell = 148.5°$, $b = -1.0°$, is located about $\sim 7°$ south-east of A1. The area A2 is limited by the coordinates RA(2000) from $3^{\mathrm{h}}45^{\mathrm{m}}$ to $4^{\mathrm{h}}03^{\mathrm{m}}$ and DEC(2000) from $+50°51'$ to $+54°24'$. Its northern half lies in the Camelopardalis and the southern half is in the Perseus constellation. The observations in Area A2 were done in 1996 and 1997 by J. Zdanavičius and K. Zdanavičius with the 1.65 m telescope at the Molėtai Observatory and in 1996 by K. Černis with the 1 m telescope at the Maidanak Observatory in Uzbekistan [2].

At the Molėtai Observatory the same single-channel photometer was used. To track the changes of atmospheric transparency during a night, BD+51 798 (G0 V) as a comparison star was observed frequently. For obtaining the transformation equations to the standard *Vilnius* system, stars from the standard regions SA 4 and SA 64 were observed. Some common stars observed at the Maidanak Observatory were used for reductions of the Molėtai observations to the standard system. Observations at the Maidanak Observatory were done with a similar photometer, but without permanent rotation of filters.

Reductions of the magnitudes and color indices to outside the atmosphere were made by the same method, as for Area A1.

3.1.3. Area B

Observations in a larger area B, which includes both A1 and A2, were carried out in 1999-2001. The 2000.0 coordinates of the area are: RA between $2^{\mathrm{h}}30^{\mathrm{m}}$ and $4^{\mathrm{h}}20^{\mathrm{m}}$ and DEC between 50°and 63° (ℓ between 134° and 151°, $b = \pm 6°$). In this area the stars down to 12.5 mag were measured selectively. They constitute the samples of two kinds: (1) O–B stars for investigation of the interstellar extinction and (2) relatively bright stars with the reliable *Hipparcos* parallaxes known [3]. Also, some stars from the previously investigated areas were remeasured. In addition, we observed the stars from the Cygnus Standard Region (Zdanavičius & Černienė 1985) and SA4 (Černis & Jasevičius 1992) for the determination of color equations between the instrumental and the standard systems. The star HD 21794 (F6 V, $V = 6.37$) was used as the standard star for the extinction measurements. Reductions to outside the atmosphere were made by the same method as for the areas A1 and A2.

The observations were obtained with the 165 cm telescope of the Molėtai Observatory, equipped with a two-channel photon counting photometer fabricated in the R. Kalytis laboratory of the Astronomical Observatory of the Vilnius University. The photometer contained two Hamamatsu R647P antimony-caesium phototubes. The filters were produced by the "Optida" laboratory of the Institute of Physics in Vilnius. The X, Y, Z, V and S filters are the interference ones and the ultraviolet filters U and P are the glass filters. The photometer measures a star and the sky background at the same time through different filters. The exposure time in different filters varies depending on brightness and spectral type of the measured star. The filters were altered each 1–3 seconds to avoid the influence of slow atmospheric extinction variations.

3.2. CCD observations and reductions

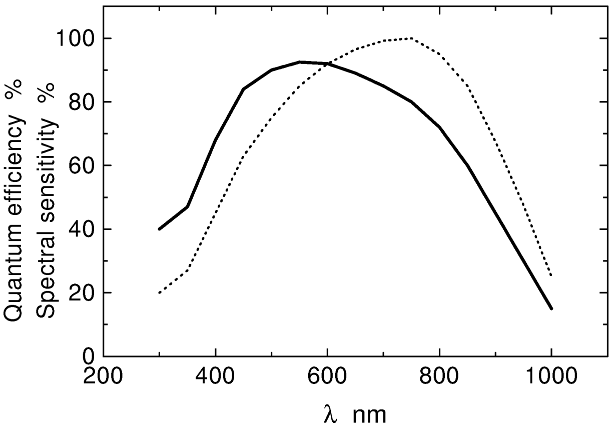

Fig. 3.2.1. Quantum efficiency (solid) and relative spectral sensitivity (dotted line) of the CCD.

In 2002 a VersArray 1300B CCD camera made by Princeton Instruments was bought for the Molėtai Observatory. Given below are the main parameters of the camera taken from the data sheet of the producer. The imaging array of the CCD chip has 1340×1300 pixels [6] of 20×20 μm size. The linear area of the chip is 26.8×26.0 mm. The detector is a scientific-grade back-illuminated CCD chip with Unichrom UV-enhancement coating and liquid nitrogen cooling. The full well (single pixel) capacity is 200 000 e^-. The quantum efficiency (QE) curve of the chip according to producer's information is shown in Figure 3.2.1. The QE at 300 nm is ∼40% and at 500–650 nm it is more than 90%. The dark current is ≤ 1 e^-/p/hr at –120°C. The system read noise is ≤ 5 e^- rms and the full frame readout time is 18 s at a scan rate of 100 kHz. The dynamic range is 16 bits.

3.2.1. CCD linearity testing

The linearity of the CCD detector was tested in the laboratory [6]. For this purpose illuminated the detector with a stable standard light source, placed in a special tube protecting the detector from outside light. Exposures of different length from a few seconds to 20 minutes to have different counts N on CCD pixels were taken. In this experiment we used only the central part of the detector to avoid the decrease of illumination intensity on the periphery. For each exposure time the numbers of counts per second n (in ADU) were calculated. A gain of 2.3 e^-/cts was used. The numbers n, as a function of the total number of the detected counts N, are plotted in Figure 3.2.2.

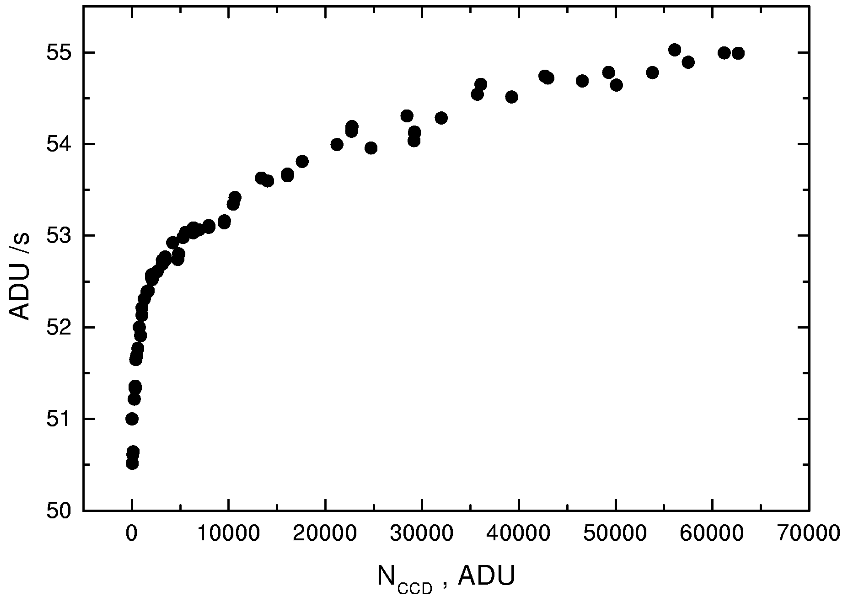

Fig. 3.2.2. Dependence of the number of counts (ADU) per second n on the total number of the registered counts N.

We see that the mean number of counts per second n grows with the increase of the total number of the registered counts N. An especially large growth exists for small counts N, up to about 2000 counts. Deviations from the mean value $n = 53$ cts/s reach ±4.5% at the extreme values of N. For the corrections for non-linearity two polynomials were used: one for the small values of counts N up to 2610 and the second for the larger values. The residuals after the non-linearity corrections are much less than 1%.

3.2.2. Observations in Area C and reductions

CCD photometry was done in Area C of about 1.5 square degrees, centered at $\alpha(2000) = 3^h55^m55^s$, $\delta(2000) = +56°57'05''(\ell = 146°, b = +2.6°)$. The camera was installed in the Newtonian focus of the 35/51 cm Maksutov telescope of the Molėtai Observatory. The telescope has a 51 cm diameter main mirror, 35 cm diameter meniscus lens, and the focal length ratio 3.5 (in the Newtonian focus). When used with the Maksutov telescope, each pixel of the CCD camera corresponds to 3.38 arcseconds. The field of view is 1.26×1.22 sq. degrees.

The observations were obtained during the moonless period in February 2003 (Table 3.2.1). Some exposures were taken with a slight (about 50 pixels) shift in x and y directions to exclude the influence of some defective pixels. The *Vilnius* system filters of 60 mm diameter were used. The filters X, Y, Z, V and S are color glasses with interference layers, and the ultraviolet filters U and P are cemented only from color glasses. The response functions of the camera are shown in Figure 3.2.3.

The half-maximum widths of stellar images were 1.5–1.7 pixels for the interference filters and slightly larger for the P (1.7–1.9 pixels) and U (2.0–2.3 pixels) filters.

Sky flats were obtained in each filter by twilight exposures. For the determination

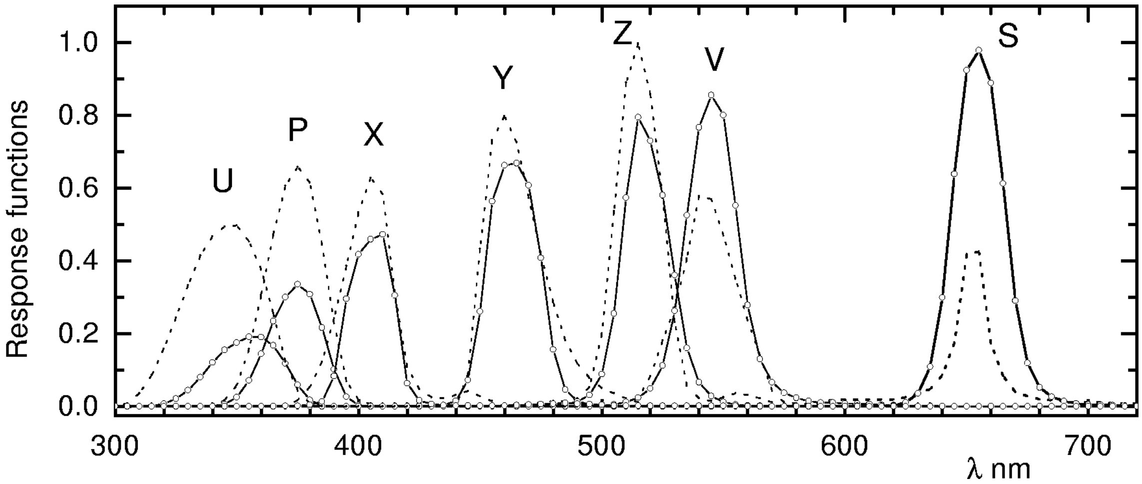

Fig. 3.2.3. Response functions of the instrumental CCD system (solid line) and the standard *Vilnius* system (dotted line). The standard functions are from Straižys (1992).

Table 3.2.1. The used CCD exposures.

Filter	min/sec	Exposure length and their number
U	min	30 (8), 10 (2), 4 (2)
P	min	15 (5), 6 (1), 5 (1), 3 (2), 2 (1), 1.5 (2), 1 (1)
X	sec	600 (2), 500 (1), 200 (3), 90 (1), 60 (1), 40 (2), 15 (2), 10 (1)
Y	sec	240 (3), 120 (3), 60 (3), 30 (1), 20 (1)
Z	sec	360 (1), 240 (3), 120 (3), 60 (2), 30 (2), 10 (2)
V	sec	240 (3), 120 (3), 60 (2), 30 (1), 10 (2), 5 (2)
S	sec	240 (2), 120 (3), 60 (2), 40 (1), 30 (2), 20 (1), 10 (2)

of large-scale field corrections we used stars in the field with exposures made with three different shifts, by applying a code written by V. Laugalys. To correct for the linear tilt, the exposures using *V* and *U* filters were obtained by rotating the telescope by 180°.

The first step of the reductions was the subtraction of bias, then small corrections for nonlinearity of the CCD response were introduced [6]. Star magnitudes were obtained by aperture photometry using the standard IRAF program package. Visual binary stars were identified using the DSS2 SkyView (ESO online DSS) and Tycho Catalogues (Schrijver 1997) and they were removed from the further analysis. For the transformation of the instrumental magnitudes and color indices to the standard *Vilnius* system we used the linear equations determined using photoelectric standards in the open cluster M 67 from Laugalys et al. (2004). The zero points of the *V* magnitude and color indices were determined by 12 stars (Table 3.2.2) observed photoelectrically in Area C and given in Table 1 of [3]. (Appendix. 3a)

The relation coefficients between the standard *Vilnius* system and the instrumental CCD system were determined mainly from observations of M67 as well as from calculated synthetic color indices for the standard and instrumental CCD systems.

For transformation to the standard system the linear equations of two types were used. They are given below. The r.m.s. errors given correspond to a single star (not to the mean).

$$U - V = 1.377 + 1.043\,(U - V)_{\mathrm{CCD}} \qquad \pm\,0.027, \tag{3.1}$$

$$P - V = 1.122 + 0.990\,(P - V)_{\mathrm{CCD}} \qquad \pm\,0.015, \tag{3.2}$$

$$X - V = 0.774 + 1.028\,(X - V)_{\mathrm{CCD}} \qquad \pm\,0.020, \tag{3.3}$$

$$Y - V = 0.084 + 0.938\,(Y - V)_{\mathrm{CCD}} \qquad \pm\,0.010, \tag{3.4}$$

Table 3.2.2. Photoelectricly observed stars in area C used for determination of the constant in transformations to standard system. (Spectral classes shown by lower-case letters (o,b,a..) are determined photometrically)

Star number	V	Sp	Notes
163	11.55	b2.5 V	
448	10.22	b1.5 V	double, sep. 0.54“
498	7.74	a9 V	
606	12.08	b1 V	
746	10.82	o8 V	
902	10.69	b5 V	double, sep. 4.7“
926	9.77	b3 V	
1081	11.16	b1.5 V	
1093	6.96	a1.5 V	too bright
1132	10.05	o6 V, O7 V	
1197	10.27	o8 V, O9.5	
1319	9.14	b0.5 V, B0.5 V	

$$Z - V = 0.079 + 1.028\,(Z - V)_{\rm CCD} \qquad \pm\,0.005, \tag{3.5}$$

$$V - S = 0.363 + 1.000\,(V - S)_{\rm CCD} \qquad \pm\,0.019, \tag{3.6}$$

$$V = -6.174 + 1.000\,(V)_{\rm CCD} \qquad \pm\,0.016, \tag{3.7}$$

$$U - V = 1.314 + (U - V)_{\rm CCD} + 0.160\,(Y - V)_{\rm CCD} \quad \pm\,0.029, \tag{3.8}$$

$$P - V = 1.131 + (P - V)_{\rm CCD} - 0.023\,(Y - V)_{\rm CCD} \quad \pm\,0.016, \tag{3.9}$$

$$X - V = 0.749 + (X - V)_{\rm CCD} + 0.060\,(Y - V)_{\rm CCD} \quad \pm\,0.020, \tag{3.10}$$

$$Y - V = 0.087 + (Y - V)_{\rm CCD} - 0.062\,(Y - V)_{\rm CCD} \quad \pm\,0.011, \tag{3.11}$$

$$Z - V = 0.075 + (Z - V)_{\rm CCD} + 0.015\,(Y - V)_{\rm CCD} \quad \pm\,0.005, \tag{3.12}$$

$$V - S = 0.363 + (V - S)_{\rm CCD} + 0.000\,(Y - V)_{\rm CCD} \quad \pm\,0.019, \tag{3.13}$$

$$V = -6.184 + V_{\rm CCD} + 0.020\,(Y - V)_{\rm CCD} \qquad \pm\,0.017. \tag{3.14}$$

Color indices determined by the equations of both types usually agree better than 0.01 mag. Larger differences usually show peculiarity or bad photometric data of the star.

3.3. The interstellar extinction law

For photometric classification of stars in spectral and luminosity classes, we use the interstellar reddening-free Q-parameters defined as

$$Q_{1234} = (m_1 - m_2) - (E_{12}/E_{34})(m_3 - m_4), \tag{3.15}$$

where $m_1 - m_2$ and $m_3 - m_4$ are color indices and E_{12}/E_{34} are ratios of the corresponding color excesses. These ratios are defined by the interstellar reddening law, valid for the dust in front of the area stars. On the other hand, for the transformation of color excesses into interstellar extinctions we must know the ratio $R = A/E$ which is defined by the form of the interstellar reddening law in the optical and infrared spectral ranges. Therefore, before applying this method for the classification of stars and their extinction determination, we must know the interstellar extinction law in the area.

In Areas A1 and A2 the normal extinction law, as it has been described in the Straižys (1992) monograph, was applied. This law was used both for the calculation of various color excess ratios in the *Vilnius* system and for the ratio $R = A_V/E_{Y-V}$ which for early-type stars is equal to 4.16. The normality of the law in these two areas was assumed on the basis of previous investigations of the law in the adjacent areas (Serkowski & Robertson 1969, Sūdžius 1974, Serkowski et al. 1975, Whittet 1977, 1979, Guetter 1977 and others) and on the analysis of color excess ratios of seven O–B2 stars observed in Area A2.

More detailed investigation was undertaken in order to verify these preliminary assumptions about the interstellar extinction law in the area. With this aim we used multicolor photometry data in the optical, ultraviolet and infrared spectral ranges. The stars used were of O and B0–B5 spectral classes, lying in the area limited by the coordinates (2000): RA between $2^{\mathrm{h}}59^{\mathrm{m}}$ and $4^{\mathrm{h}}08^{\mathrm{m}}$, DEC between $+50°$ and $+61°$. Many of them belong to the Cam OB1 association. Hereafter, this area will be called the Cam/Per area. Additionally, in some cases we used 39 stars from the right ascensions between $2^{\mathrm{h}}30^{\mathrm{m}}$ and $2^{\mathrm{h}}59^{\mathrm{m}}$, in the same range of declinations. This area contains stars which belong mostly to the Cas OB6 and Per OB1 associations, located in the Perseus spiral arm. Hereafter, this area will be called the Cas OB6 area. The stars later than B5 were not used for the investigation of the reddening law in the optical and ultraviolet ranges, since their intrinsic color indices vary too fast with the spectral class; consequently, the errors in spectral classes (±1 subclass) lead to an unacceptably low accuracy of the resulting ratios of color excesses defining the interstellar reddening law. As it was mentioned earlier, for the investigation of the reddening law in the optical range (300–700 nm) we used observations in the *Vilnius* photometric system of 58 O–B5 type stars with known MK spectral types. The majority of them are from the area B. Their spectral types in the MK system are mostly from Hiltner (1956), and some are collected from the CDS database. By our request, in the area A1 additional 14 B-type stars were classified in the MK system by C. J. Corbally [4] using the grating spectra with 2.8 Å resolution obtained with the Boller and Chivens spectrograph on the 2.3 m telescope of Steward Observatory at Kitt Peak. Here we used seven of them that belong to spectral classes B0–B4.

Color excesses $E_{U-V}, E_{P-V}, E_{X-V}, E_{Y-V}, E_{Z-V}$ and E_{V-S} for all stars were calculated by taking their intrinsic color indices from the Straižys (1992) monograph according to their MK spectral types, as described in Straižys, Corbally & Laugalys (1999).

3.4. Photometric classification

The stars in different areas were classified using slightly different photometric classification codes. Therefore we give the description of the classification methods for each area separately.

3.4.1. Classification in Area A1

Spectral classes, absolute magnitudes, extinctions A_V and distances r were determined using a special program code written by K. Zdanavičius for the classification of normal stars, as well as the program CLASS written by Vansevičius & Bridžius (1994). The first program code includes three methods: (1) finding the closest standard star by fitting parameters Q of a program star with Qs from a set of standards, (2) classification by calibrated Q, Q diagrams (Straižys et al. 1982) and (3) finding the most probable standards (usually up to five or more) from the same set of standards which is used in method (1). Method(3) is realized by calculating the "weights" of each Q-parameter.

In most cases, the different methods give spectral classes which agree within one spectral subclass. The differences of the absolute magnitudes usually are of several tenths of magnitude. However, for some stars the differences may be as great as 3 – 5 mag (bad observation or a peculiar star). These cases, as well as the cases with the largest rms errors, are marked by a colon following the values given in Table 2 from [1] (Appendix 1b). For some spectral subclasses, small systematic differences between method (2) and other methods were noticed. The main reason of this are different calibrations used in method (2).

The color excess E_{B-V} is calculated from color excesses of the *Vilnius* system, mainly from E_{Y-V}, but for the accuracy control the excesses E_{X-V}, E_{Z-V} and E_{V-S} were used, too. A_V is calculated from E_{B-V} using the value of a variable ratio R from Straižys & Jodinskienė (1981). σ_{Sp} indicates the mean difference in 0.01 mag units between the dereddened color indices of a program star and the intrinsic color indices of the standard star of the same spectral type. Its meaning is similar to σ_{dQ} described by Straižys et al. (1992).

3.4.2. Classification in Area A2

Spectral classes, absolute magnitudes, color excesses, extinctions A_V and distances r of stars observed in Area A2 [2] were determined using a classification code, slightly modified as used in the area A1, written by K. Zdanavičius for normal solar chemical composition stars. This code includes the following three methods:

(1) Classification by various Q,Q diagrams calibrated in terms of spectral classes and absolute magnitudes (Straižys et al. 1982).

(2) Finding the closest standard star by fitting Q-parameters of a program star with Qs for a set of standards. The standards are 684 imaginary stars of various MK spectral types with the intrinsic color indices taken from the Straižys (1992) monograph (Tables 66–69). The absolute magnitudes of the standards, according to their MK type, are taken from the same source, but with some corrections according to the *Hipparcos* parallaxes. The number of standards was enlarged by interpolation of the intrinsic color indices. Q-parameters are defined by the equation (3.15), where the color-excess ratios for various spectral types are taken from Straižys (1992). Spectral class and absolute magnitude of the best fitted standard were prescribed to the program star.

(3) Finding the most probable standards using the same set of standards as in method (2). This was done by calculating the "weights" for each Q-parameter and for all standards used. If the difference of Q values between the standard and the program star was smaller than the error of Q, the weight of the standard for the given Q-parameter has been set to be 1. The weights of other standards decrease with increasing difference between Q values of the standard and the program star. Then the weights of all Qs for each standard were summed, and the parameters (in our case – spectral and luminosity classes) of the standard having the largest sum of weights were taken as the parameters of the program star.

The internal rms error of the spectral class is $\sim$1 decimal subclass and that of A_V is about ±0.2 mag. The absolute magnitude scale corresponds to the newest distance modulus of the Hyades (3.3 mag, Perryman et al. 1998) and the *Hipparcos* parallaxes. The results of photometric classification in Area A2 are given in Appendix 2b.

3.4.3. Classification in Area B

Spectral and luminosity classes of the stars were determined by interstellar reddening-free parameters Q_{1234}, where color-excess ratios for various spectral types and normal reddening law were taken from Straižys (1992). This is justified in a separate investigation [5] where the interstellar reddening law in the area is found to be close to the normal. Two methods of classification by Qs were used.

The first method used ten Q-parameters (Q_{UPYV}, Q_{UPY}, Q_{UXY}, Q_{UYV}, Q_{PXY}, Q_{PYV}, Q_{XYV}, Q_{XZS}, Q_{YZV}, Q_{YVS}), calculated for 1418 “standards”, formed for 89 spectral subclasses and 17 values of absolute magnitudes derived from the mean intrinsic color indices taken from two sources: (1) Straižys (1992), but with absolute magnitudes adjusted to the modern distance scale based on the *Hipparcos* parallaxes and the Hyades distance modulus of $V{-}M_V = 3.3$ mag (Perryman et al. 1998) and linearly interpolated for missing subclasses, (2) a new set of intrinsic color indices obtained from new observations of ∼600 stars with the reliable *Hipparcos* parallaxes, made by A. Kazlauskas and others (unpublished yet). For each program star, ΔQ_i, the differences between its Q_i-parameters and the corresponding Q_i-parameters of the 1418 standards were calculated. After that, the standards for which

$$\Delta Q_i < N\sigma_{Q_i} \tag{3.16}$$

were selected, beginning with N=1. Here σ_{Q_i} are the rms errors of the parameters Q_i, evaluated from the rms of the observed color indices, and N is the size of the error box. If N=1, the probability to find the true Q_i value between $Q_i - \delta Q_i$ and $Q_i + \delta Q_i$ is 68%, if N=2 the probability is 95%, if N=3 the probability is 99%. A rough mean spectral class and M_V of the standards found in the box are accepted for the program star (on somewhat subjective grounds). If no standard have appeared in the N=1 box, the value of N was increased and the search repeated. If no standard was found in the $4\sigma_{Q_i}$ box, the program star was accepted as peculiar.

Another method used for stellar classification in Area B is based on the best fitting of 14 Q-parameters of each star with the corresponding Q-parameters of ∼7000 stars with known MK spectral types (as was described by Straižys, Černis & Bartašiūtė 2001). Mean values of spectral and luminosity classes of the three best fitted MK stars were accepted for a program star. The spectral and luminosity classes given in Table 1 (of work [3]) (Appendix. 3a) are weighted averages of the values obtained by both methods.

Color excesses E_{Y-V} were determined also by two methods. First, color excesses were determined for all six color indices, taking their intrinsic values from Straižys (1992) according to spectral and luminosity classes of stars classified in Area B. Then five color excesses were transformed to E_{Y-V} using the ratios of different color excesses from Kurilienė & Sūdžius (1974). After that the six values of E_{Y-V} obtained were averaged. This way of obtaining E_{Y-V} was used in combination with the first method of classification described above. The second method for obtaining E_{Y-V} used only one color index, $Y{-}V$, and its intrinsic value $(Y{-}V)_0$. The dispersion between the E_{Y-V} determined by the two methods, is characterized by a standard deviation of $\sigma = \pm 0.016$ mag.

Interstellar extinctions A_V were calculated from color excesses found only by the first method. These excesses should be somewhat more exact since in the first classification method a net of standards of higher density has been used. From E_{Y-V} we calculated color excesses E_{B-V} using the color excess ratio taking into account its slight dependence on the spectral type of a star. The extinctions A_V were calculated by the equation $A_V = 3.83E_{Y-V}$. Sometimes, a small negative value (down to –0.02 mag) of the color excess was obtained: in this case A_V was taken to be zero. The r.m.s. error of A_V is of the order of ±0.1 mag.

3.4.4. Classification in Area C

For the classification of stars in Area C the following two methods were used.

(1) The σQ-method of matching 14 different reddening-free Q-parameters of a program star to those of about 8000 standard stars of various spectral and luminosity

classes, metallicities and peculiarity types (the same as in the area B, but using more standard stars for comparison).

(2) Finding the closest standard star by fitting the reddening-free q-parameters of a program star with those calculated for a set of standards – 684 imaginary stars of various MK spectral types with intrinsic color indices and absolute magnitudes taken mainly from the Straižys (1992) monograph. Some absolute magnitudes were corrected using the new, mainly *Hipparcos*, data. Reddening-free q-parameter and the virtual interstellar mass x_{vir} were introduced by Zdanavičius (2005):

$$q_i = C_i - xE_i, \tag{3.17}$$

where C_i is the ith color index, x is the interstellar mass, E_i is the color excess of the ith color index for the unit mass of interstellar dust. For unreddened stars $x = x_{\mathrm{vir}}$, and for reddened stars $x = x_{\mathrm{vir}} + x_{\mathrm{interst}}$. The classification procedure is analogous to that used for the classification of stars in Area B by the first method, but instead of parameters Q_i, six parameters q_i and virtual interstellar mass x_{vir} are used. A number (from 5 to about 20) of the closest standards is found. Taking Sp and M_V values of these standards, the color excess, intrinsic color indices and virtual interstellar mass, as differences from corresponding color indices of standards, are calculated for all intrinsic color indices found. The parameters of a standard with minimal mean difference are prescribed to a program star. If mean differences coincide within the errors, the standard with minimal difference of virtual masses is taken. In many cases, definite choice of final parameters is done interactively.

The spectral classes and absolute magnitudes given in Table 2 of [7] (Appendix. 4) are average values of the results obtained by both methods. The lower-case letters are used to indicate that our spectral classes are determined from photometry using the calibration in MK spectral types. When the spectral class is somewhat different or its determination is uncertain, it is marked by a colon. When the difference of absolute magnitudes estimated by both methods is larger than 0.5 mag, the average value is marked by a colon. Color excesses E_{Y-V} were determined by taking intrinsic color indices $(Y - V)_0$ of different MK types from Straižys (1992). Interstellar extinctions were calculated as $A_V = 3.83E_{Y-V}$, the coefficient being taken from [5]. Notes to the table give identification numbers in other catalogs and MK spectral types from Hiltner (1956) and Negueruela & Marco (2003).

The classification of stars was done using standards of solar metallicity. The majority of stars in our region really belongs to Population I thin disc, since stars even at 5 kpc distance are 170–270 pc above the Galactic plane. If a star of low metallicity happened in the field, its classification with solar-metallicity standards usually are a large σ value, and such a star was rejected from farther analysis. In some cases we were able to identify the low metallicity.

3.5. Accuracy of stellar parameters

Typical errors (2σ) of stellar parameters are the following: spectral clases ±1 subclass, absolute magnitude M_V ±0.5 mag, color excess E_{Y-V} ±0.03 mag, extinction A_V ±0.1 mag. Stellar distances r were determined by the equations

$$\log r = (V - M_V + 5 - A_V)/5 \tag{3.18}$$

The distance errors due by observation error of magnitude and absorbtion determination do not exceed 5%. If the M_V error is ±0.5 mag, the mean distance error is ±20–25%.

4. RESULTS AND DISCUSSION

4.1. Interstellar reddening law

4.1.1. Reddening law in the optical range

For the investigation of the reddening law in the optical range (300–700 nm) we used observations in the *Vilnius* photometric system of 58 O–B5 type stars with known MK spectral types. The majority of them are from Area B. Their spectral types in the MK system are mostly from Hiltner (1956), and some are collected from the CDS database. In the area A1 additional 14 B-type stars were classified in the MK system by C. J. Corbally [4], using the grating spectra with 2.8 Å resolution obtained with the Boller and Chivens spectrograph on the 2.3 m telescope of Steward Observatory at Kitt Peak. Here we used seven of them which belong to spectral classes B0–B4.

Color excesses $E_{U-V}, E_{P-V}, E_{X-V}, E_{Y-V}, E_{Z-V}$ and E_{V-S} for all stars were calculated by taking their intrinsic color indices from the Straižys (1992) monograph according to their MK spectral types, as described in the paper by Straižys, Corbally & Laugalys (1999). With these values of color excesses, graphs E_{m-V} vs. E_{Y-V} are plotted in the upper panels of Figs. 4.1.1–4.1.5. The x signs are stars of the Cam/Per area, and the open circles are stars from the Cas OB6 area observed in Area B also by Sūdžius & Bobinas (1992).

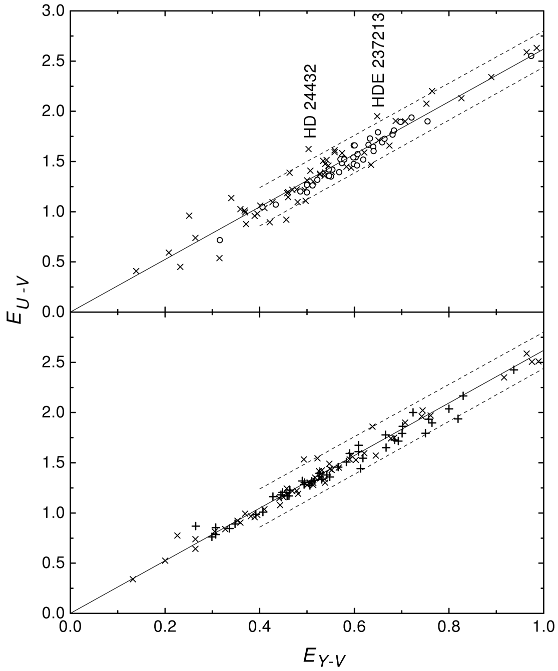

Fig. 4.1.1. The dependence of color excesses E_{U-V} on E_{Y-V}. The upper panel: color excesses are calculated with intrinsic color indices accepted from MK spectral types; the lower panel is the same but using intrinsic color indices from photometric spectral types. Symbols and lines explained in the text.

The solid line on each graph corresponds to the ratio of color excesses for the normal interstellar reddening law (Table 64 from Straižys 1992).

The lower panels of Figs. 4.1.1–4.1.5 are completely analogous to the upper panels, but here for the calculation of color excesses we used the spectral types (spectral class and luminosity class) determined in the subsubsections 4.2.1-4.2.3 from photometric Q-parameters. On these graphs, 105 stars of the Cam/Per area are plotted. The + signs are the stars for which only photometric spectral classification is available (47 stars), and x signs are the stars with the MK classification (58 stars).

The broken lines on both panels of Fig. 4.1.1 show the expected errors of color excesses if the spectral class is wrong by ±1 subclass (for example, if a B1 V star is considered as a B0 V or B2 V star). Such errors are appropriate to the precision of MK classification's.

A glance at the upper panels of Figs. 4.1.1–5 shows that, in general, the majority of the stars both in the Cam/Per area and in the Cas OB6 area are consistent with the normal interstellar reddening law. Their deflections from the solid line (normal law) are within the expected errors of spectral classification. However, in Fig. 4.1.1 (E_{U-V} vs. E_{Y-V}) there are several stars which deviate more. These stars may be suspected as having anomalous reddening in the ultraviolet. Some of them will be discussed below, when analyzing the interstellar reddening law in the ultraviolet.

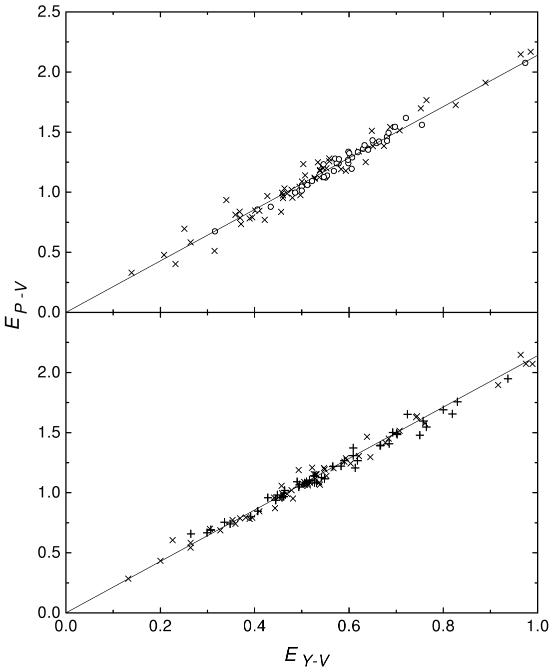

Fig. 4.1.2. The dependence of color excesses E_{P-V} on E_{Y-V}. Designations are the same as in Fig. 4.1.1.

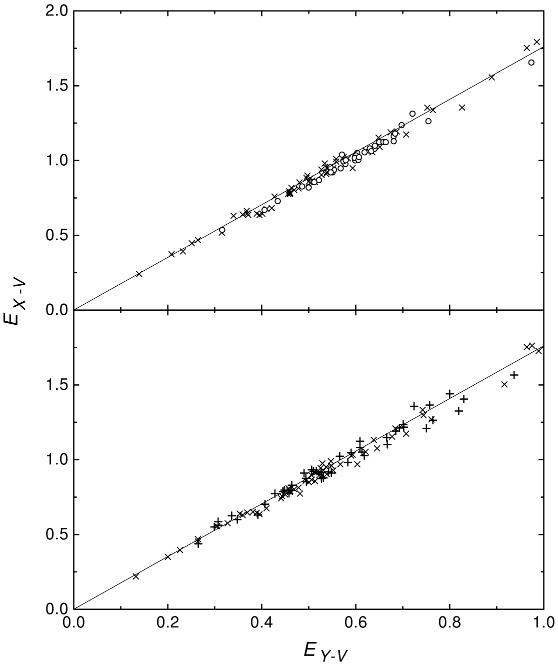

Fig. 4.1.3. The dependence of color excesses E_{X-V} on E_{Y-V}. Designations are the same as in Fig. 4.1.1.

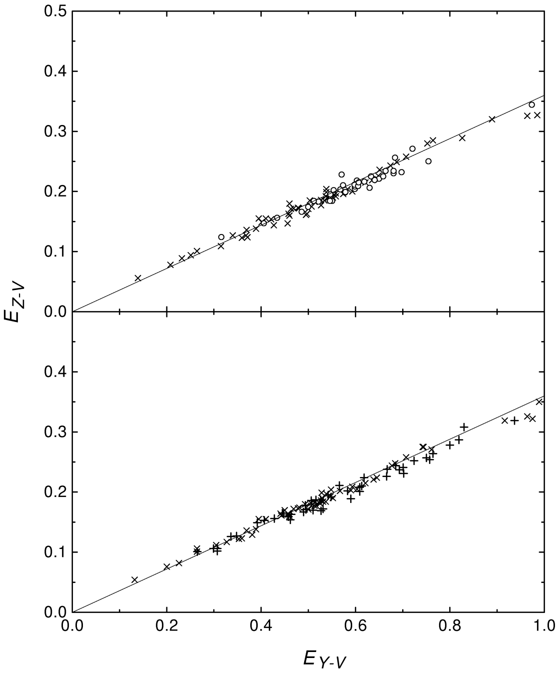

Fig. 4.1.4. The dependence of color excesses E_{Z-V} on E_{Y-V}. Designations are the same as in Fig. 4.1.1.

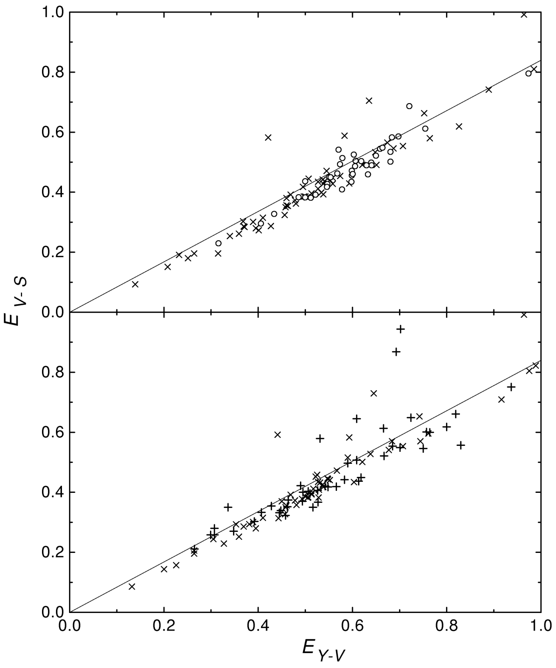

Fig. 4.1.5. The dependence of color excesses E_{V-S} on E_{Y-V}. Designations are the same as in Fig.4.1.1.

Another anomaly is observed in Fig. 4.1.5 (E_{V-S} vs. E_{Y-V}) where the majority of stars deviate systematically downward by ∼0.03 mag. This means that the extinction in the S passband (situated on Hα line) is somewhat larger than that for the normal law. This small systematic effect may be either instrumental or interstellar. A few stars, deviating from the solid line upward, exhibit increased intensity in the S passband. The latter effect may be caused by an emission component of the Hα line. Most of these stars belong either to Be or related type (HD 19243, HD 21212, HD 22298 and others). They should be excluded from the interstellar law analysis.

The lower panels of Figs. 4.1.1 and 4.1.2, include the ultraviolet color indices U–V and P–V obtained by using photometric spectral types. They show a smaller scatter of points around the normal law line than do the points in the corresponding upper panels for which MK spectral types are used. This means that photometrically determined color excesses are more precise then those determined from MK classification. In Figs. 4.1.3–4.1.5 the dispersion of stars in both panels is about the same, which reflects the fact that the intrinsic X–V, Y–V, Z–V and V–S color indices vary much less with the spectral class than the ultraviolet indices U–V and P–V. Therefore, their color excesses are less affected by the errors of spectral classes. Lower panels of Figs. 4.1.1–4.1.5 also confirm that the interstellar reddening law in the area is normal and uniform. If the law were variable, then we should expect a considerable scatter of stars around the mean line, increasing with color excess.

The general conclusion is that in the optical spectral range the majority of stars in the Cam/Per and Cas OB6 areas follow the normal interstellar reddening law with some small tendency to exhibit somewhat larger extinction in the red part of the spectrum. Also, some stars exhibit stronger extinction in the ultraviolet at 345 nm.

4.1.2. Reddening law in the ultraviolet

Many of the OB stars in the Cam/Per area were observed photometrically by the ANS orbiting observatory. The results of all ANS observations of point sources are published by Wesselius et al. (1982). The largest peculiarity in our area was found for the stars HD 24432 (B3 II) and HDE 237213 (B3 Ia). Both these stars show the largest deflection upward in our E_{U-V} vs. E_{Y-V} diagram (Fig. 4.1.1).

Savage et al. (1985) have published a catalog of ultraviolet color excesses in the ANS system and investigated the extinction curves for 1415 O–B7 stars. From their catalog we selected the stars of spectral classes O–B5 in the area limited by the 2000.0 coordinates RA from $2^{\rm h}28^{\rm m}$ to $4^{\rm h}04^{\rm m}$ and DEC from $+49^\circ$ to $+63^\circ$. After exclusion of binaries, the number of the stars used is 31. These stars are plotted in the E_{m-V} vs. E_{B-V} diagrams in Figs. 4.1.6 (a–e). It is evident that part of the most reddened stars shows a tendency of a larger than normal extinction almost in all ANS photometric passbands. However, for the passband at 330 nm (panel 4.1.6e) the tendency is only marginal.

Our investigation, as those referred to in Section 2.3, leads to the general conclusion that the reddening law in the Cam/Per area in the 155, 180, 220 and 250 nm passbands shows somewhat larger extinction than on average. For longer wavelengths the law is close to normal, typical for the diffuse dust.

4.1.3. Reddening law in the infrared

24 O–A5 stars with $E_{B-V} > 0.4$ were found in the Cam/Per area, for which the K magnitudes or V–K color indices were available (here K is the magnitude with the mean wavelength at 2.2 μm). They were taken either from the 2MASS survey (available at CDS as *The 2MASS Database*, 2000) or from Castor & Simon (1983). For each star the ratios $R = A_V/E_{B-V} = 1.1E_{V-K}/E_{B-V}$ were calculated. The observed V magnitudes and B–V color indices were taken from Nicolet (1978). MK spectral types were taken

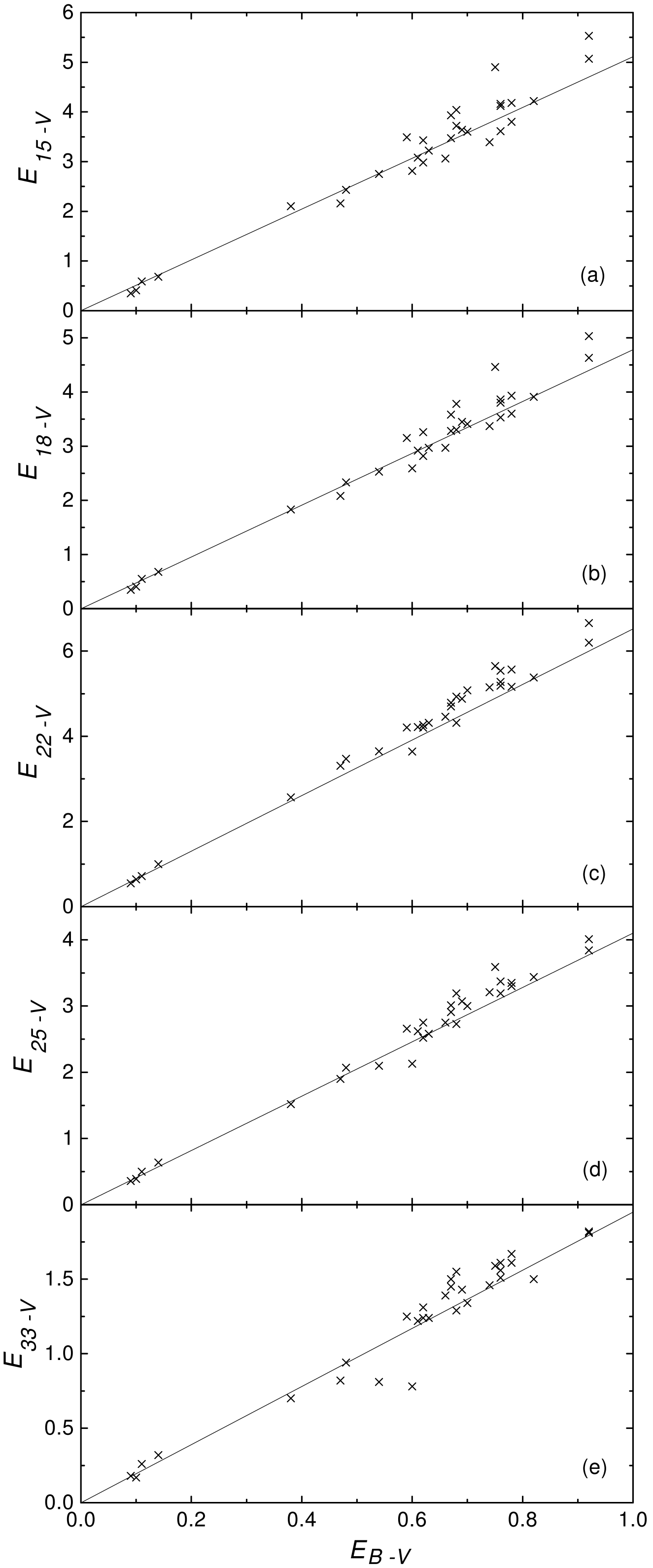

Fig. 4.1.6. The dependence of the ultraviolet color excesses in the ANS photometric system on the color excess E_{B-V} of the UBV system.

mostly from Hiltner (1956). Some spectral types are from other sources. Intrinsic color indices $(B-V)_0$ and $(V-K)_0$ were taken from Straižys (1992). The R values are found to be between 2.6 and 3.1, with the mean value $R = 2.88 \pm 0.12$ which is slightly smaller than the normal value for early-type stars in the diffuse interstellar dust ($R = 3.15$, Straižys 1992). The smaller R ratio is confirmed also by nine O–B stars in the area with their E_{V-K}/E_{B-V} ratios given by Wegner (1993). Their mean R value is 2.95.

According to Cardelli, Clayton & Mathis (1988, 1989), a good correlation exists between the ratio R and the ultraviolet extinction level, when A_λ is normalized to A_V: for large values of R the low ultraviolet extinction A_λ is observed and vice versa. A somewhat reduced R-value, which we find in the Cam/Per area, is in perfect agreement with slightly larger interstellar extinction found in the wavelengths shorter than 330 nm.

4.1.4. Wavelength dependence of polarization

One more effect, reflecting the size distribution of interstellar dust grains, is the wavelength dependence of interstellar polarization. According to Serkowski et al. (1975), $R = 5.5\lambda_{\max}$, while Whittet & van Breda (1978) find the coefficient 5.6. From the Coyne, Gehrels & Serkowski (1974) catalog of $\lambda_{\max}$ we selected 20 stars within the Galactic longitudes 140–150°. Their mean $\lambda_{\max} = (0.51 \pm 0.03)$ μm gives $R = 2.81 \pm 0.15$ for the Serkowski et al. coefficient and $R = 2.86 \pm 0.15$ for the Whittet & van Breda coefficient. These values are in close agreement with the mean R value obtained in the previous section from infrared photometry.

4.2. Interstellar extinction

4.2.1. Interstellar extinction in Area A1

The area A1 is restricted by coordinates: α(2000) from $3^{\mathrm{h}}16^{\mathrm{m}}$ to $3^{\mathrm{h}}45^{\mathrm{m}}$ and δ (2000) from $56°30'$to $59°30'$($l \approx 143°$, $b \approx 1.5°$). The results of photometry of the stars in the area are presented in Table 1 of [1] (Appendix 1a), which gives the following information: the identification number (shown on the chart in Fig. 4.2.1), BD number, Right Ascension and Declination (for 2000), V magnitude, color indices (six columns) and the number of independent observations, n. The line below the values of the magnitude and color indices gives their rms errors. A few faint and red stars have the errors of ±0.1 mag or larger: these indices are omitted in Table (Appendix 1a). The values having errors $\geq$ 0.05 mag are marked by colons. All the observed stars (126 in number) are in the area of about 3°× 3°.

In Table 2 of [1](Appendix 1b) the following information, containing the results of photometric classification, is given: the identification number, BD and HD numbers, galactic longitude l and latitude b, the adopted spectral class and M_V, color excess E_{B-V}, interstellar extinction A_V, photometric distance r (in pc rounded to the nearest number multiple of 10) and σ_{Sp} (indicator of the accuracy of spectral classification).

There is a considerable scatter of the absorption values A_V in the absorption vs. distance diagram, when all the stars in the area are plotted together. Trying to minimize this scatter and taking into account the surface density of stars on the Palomar Sky Atlas, the area was divided into three zones, as shown in Fig. 4.2.1. The A_V versus distance plots in each zone are shown in Figs. 4.2.2 – 4.2.3. The highest extinction is observed in Zone I. The extinction rise starts at 100 pc. At about 300 pc, the extinction is around 2.0 mag.

In Zone II, the extinction grows slower: it reaches 2 mag at about 500 pc distance (Fig. 4.2.2, dots). This zone occupies a narrow belt to the north and west from Zone I. It looks like an edge of the absorbing cloud of Zone I. In Zone I, there are some small areas (for instance, stars Nos. 47, 64 and 72 or stars Nos. 105, 106, 108, 116 and 119),

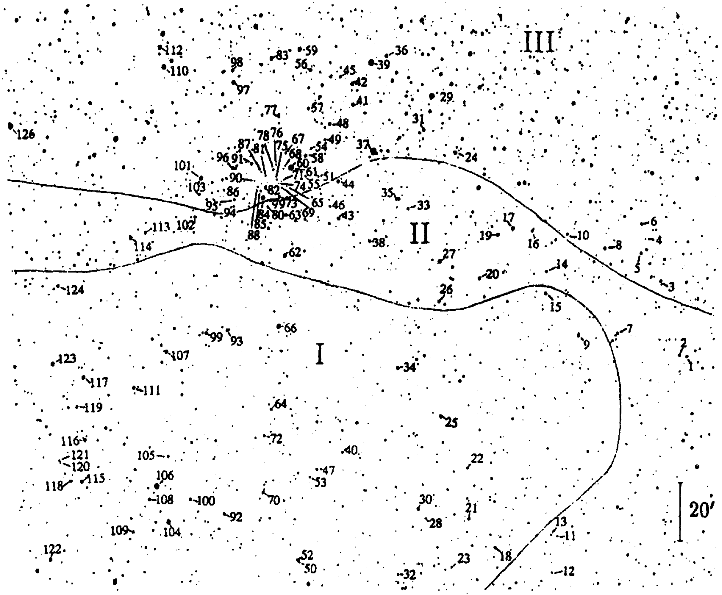

Fig. 4.2.1. The identification chart of Area A1.

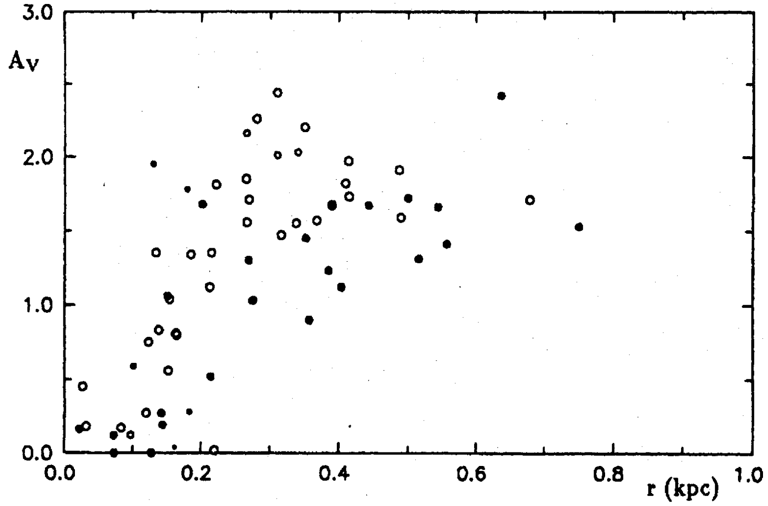

Fig. 4.2.2. Dependence of interstellar extinction on distance in Zone I (circles) and Zone II (dots). The largest symbols are for stars with $\sigma_{Sp} \leq 3$, the smallest ones are for stars with $\sigma_{Sp} > 6$.

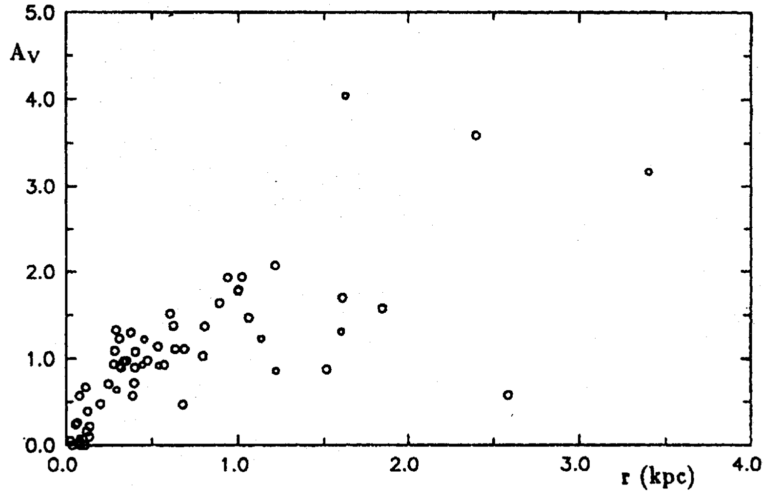

Fig. 4.2.3. Dependence of interstellar extinction on distance in Zone III.

where the interstellar extinction shows intermediate values between Zones I and II. A slower rise of extinction with increasing distance is seen in Fig. 4.2.3 for Zone III. Most of the stars are at the greater Galactic latitude ($b > 2°$). Here the mean interstellar extinction reaches 1.5 mag at $r > 1$ kpc.

It seems that in all our zones the absorbing matter appears at the distances of 100 pc, and probably a bit nearer in the areas which are closer to the Galactic plane. However, there are too few stars observed at this small distance. To fix the exact distance of the nearest absorbing clouds in the direction studied, we need observations of close, intrinsically faint stars.

4.2.2. Interstellar extinction in Area A2

The second area of similar size, with the center at $\ell = 148.5°$, $b = -1.0°$, is located about ∼7° south-east of the first area. It is limited by the coordinates RA(2000) from $3^{\rm h}45^{\rm m}$ to $4^{\rm h}03^{\rm m}$ and DEC(2000) from $+50°51'$ to $+54°24'$. Its northern half is in the Camelopardalis and the southern half is in the Perseus constellation.

The results of photometry of stars in the area A2 are presented in Table 1 of [2] (Appendix 2a), which is arranged in the same way as Appendix 1a: the identification number (shown on the chart in Fig. (4.2.4)), BD and HD (HDE) numbers, Right Ascension and Declination (2000), V magnitude, color indices (six columns) and the number of independent observations, n. For the majority of stars the limiting magnitude is close to 11.0 mag. Only a handful of fainter stars have been measured.

In Table 4 of [2] (Appendix 2b) the columns contain following information: identification number, the adopted spectral class and M_V, spectral class from other sources, color excess E_{B-V}, interstellar extinction A_V, distance r, $\sigma_{\rm Sp}$ and the quality of M_V determination. The standard deviation $\sigma_{\rm Sp}$ is calculated using the differences of all the dereddened color indices of the program star and the closest standard star. It is given in 0.01 mag units. The quality of M_V, given in the last column, has the following meanings: a is for the stars when all the classification methods used give sufficiently close absolute magnitudes, $\Delta M_V <0.4$ mag, c is for the stars with $\Delta M_V >1.4$ mag and b is for the intermediate cases.

The plot of A_V vs. distance diagram for all the investigated stars (157 in number) has shown a sharp rise of extinction at 100 pc (see Figs. 4.2.5 and 4.2.6). At larger distances the rise of extinction becomes slower, and it almost stops at about 1 kpc. In this diagram, however, an extremely large scatter of stars is observed, considerably exceeding the errors of A_V determination. For example, at a distance of 500 pc the values of A_V show the scatter between ∼0.6 mag and ∼2.2 mag. No doubt, this scatter is caused by the cloudy structure of the interstellar dust and uneven density of individual clouds. The surface density of these clouds is evidently higher in the upper part of the area where the L 1391 dark cloud is situated. Fig. 4.2.5 shows the A_V vs. r diagram for the dark area which on the identification chart (Fig. 4.2.4) is outlined by the rectangular line. The area seems to be very uniform and the scatter of stars in the diagram is relatively small. Here the extinction rises steeply and linearly from ∼100 to ∼300 pc, reaching $A_V \approx 2.0$ mag. Then the growth of extinction slows down and at 1 kpc it reaches ∼2.4 mag. However, this may be only the lower value of the extinction. More distant stars have not been observed in the area due to the limiting magnitude. The two broken curves are the dependencies of A_V on r for the limiting magnitude $V_{\rm lim} = 11.0$ mag and two absolute magnitudes, $M_V = 0.0$ and $+1.0$. These absolute magnitudes correspond to B8–A1 V and G5–K5 III stars which are well represented in the area. More luminous stars are rare. The plot areas between the two limiting curves and to the right of them are heavily affected by the limiting magnitude effect: here the stars with high values of extinction may be missing.

It is obvious that the surface density of the observed stars in the remaining part of the investigated area (i.e. outside the boundaries of the dark area in the direction of

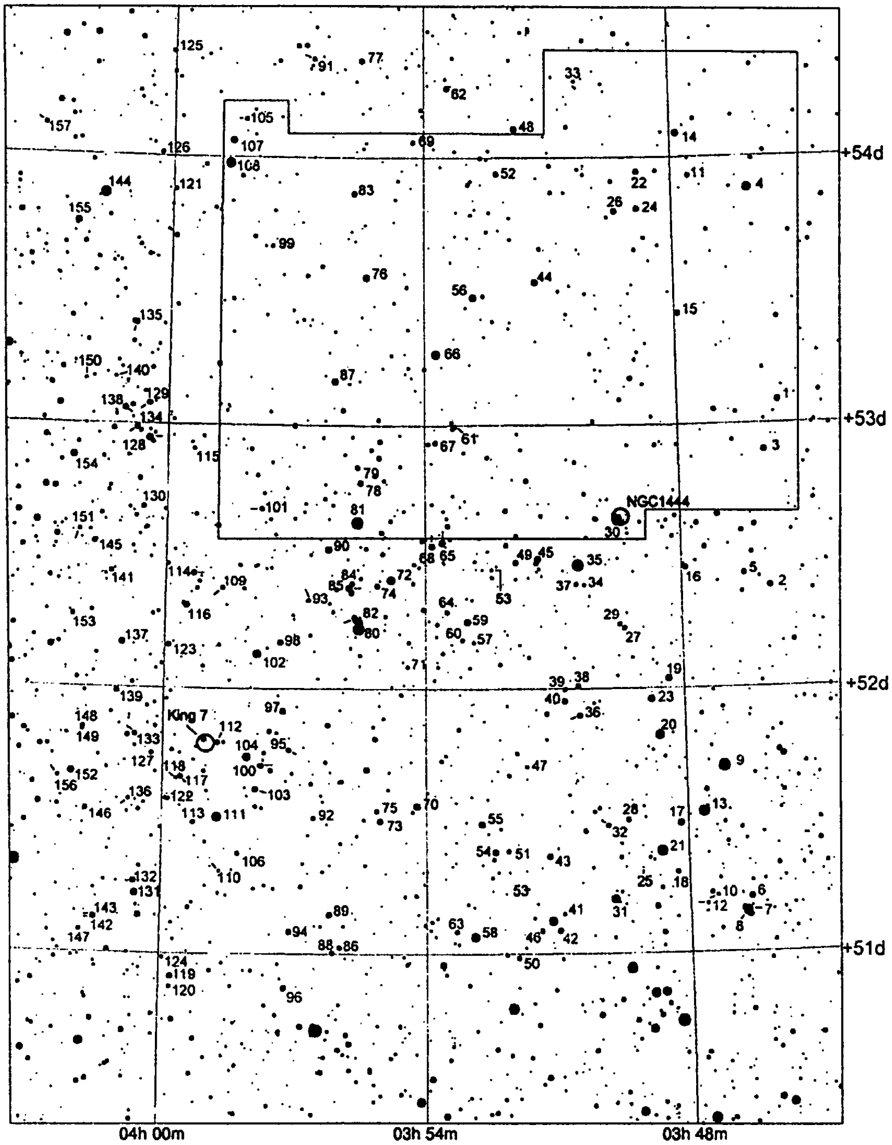

Fig. 4.2.4. The identification chart of Area A2. The coordinates are for the 2000.0 epoch. The rectangle shows the boundaries of the dark cloud area. The open clusters NGC 1444 and King 7 are marked.

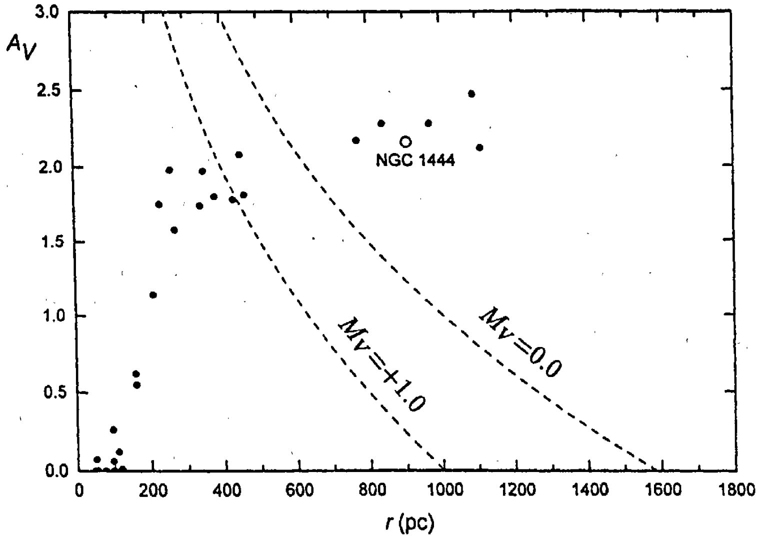

Fig. 4.2.5. The dependence of interstellar extinction on distance in the direction of the dark cloud L1391.

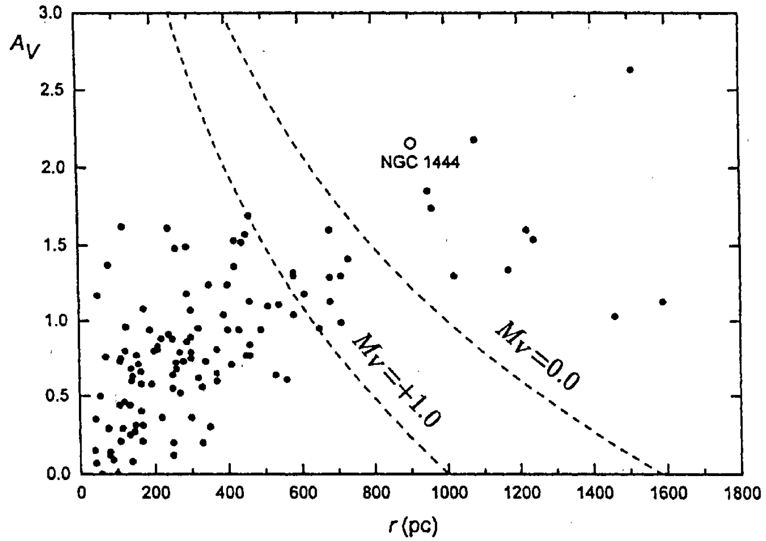

Fig. 4.2.6. The dependence of interstellar extinction on distance in the remaining part of Area A2.

L1391) is not sufficient for the separation of smaller fields with a uniform dependence of extinction on distance. Therefore, in Fig. 4.2.6 we show the A_V vs. r diagram for all stars together. It seems that everywhere in the area both the transparent and the obscured fields may be found. Even in the directions with a rich background of faint stars some heavily reddened stars are seen (Nos. 28, 46, 55, 95, 155). On the other hand, some stars exhibit very low extinction for their distance (Nos. 5, 12, 32, 97, 133, 141, 152). If we exclude stars No. 55 and No. 155, other stars in Fig. 4.2.6 with $r > 700$ pc exhibit the extinction values between 1.2 and 1.9 mag, i.e., the stars in this part of the area are much less obscured than the stars within the L 1391 cloud.

There are two exceptional stars – No. 111, classified as K3 III-IV, and No. 123, classified as G6 V. Both stars are at close distances (81 pc and 51 pc), but exhibit high extinction values (1.4 and 1.2 mag). We suspect, these stars are unresolved binaries of close spectral types, and their distances may be wrong.

As it was mentioned earlier, two open clusters are present in the area. According to Pena & Peniche (1994), the NGC 1444 cluster is at 906 pc distance and its $E_{b-y} = 0.54$. Taking $E_{B-V}/E_{b-y} = 1.25$ and $A_V/E_{B-V} = 3.2$, we obtain $A_V = 2.16$ mag. This value of A_V is plotted in both Fig. 4.2.5 and Fig. 4.2.6, since it is at the southern border of the dark cloud, and its attachment to one of these fields is somewhat problematic. Its position is near the lower edge of the extinction values for the dark cloud and at the upper edge for the extinction values in the remaining area.

4.2.3. Interstellar extinction in Area B

The magnitudes and color indices measured for 309 stars in area B are presented in Table 1 of [3] (Appendix 3a). It contains the following information: the current number, BD and HD (or HDE) numbers, the equatorial coordinates (2000), spectral type derived from the photometric data, spectral type from the literature, V magnitude, color indices and the number of independent measurements, n. An asterisk attached to the number of measurements means that the star was also observed in Area A1 or A2. Color indices given in the table are weighted average values of all observations available. The mean error of color indices is found to be ±0.015 mag, while for the V magnitude it is slightly larger. Colons mark the magnitudes and color indices of lower accuracy.

We have tried to test the reality of the Khavtassi clouds by calculating the mean total reddening within the cloud boundaries, which was deduced from the far infrared emission of dust at the 100 μm wavelength (Schlegel et al. 1998). The mean values of the total interstellar extinction A_V across the Galaxy in the directions of the Khavtassi

Table 4.2.1 Total interstellar extinction estimated from far infra-red dust emission in the direction of the Khavtassi clouds.

Cloud	A_V	σ_A	n
Kh241	6.45	±0.30	16
Kh239	5.37	±0.24	15
Kh242	4.11	±0.10	18
Backgr.[1]	3.16	±0.13	33
Kh240	2.23	±0.06	15

[1] "Backgr." means the Galactic background regions surrounding the Khavtassi dark clouds.

clouds (only in their parts lying in our area), listed in Table 4.2.1, have been calculated from the IR emission data in the following way.

- The mean values of E_{B-V} were taken from the map given by Schlegel et al. (1998) in the areas of 5×5 pixels (about $30' \times 30'$), hereafter called the "primary areas". The point sources, brighter than 0.5 mag above background, were eliminated.
- The values of $A_V = 2.9E_{B-V}$ were calculated for each primary area.
- The final average extinction A_V of each cloud was calculated by taking the mean extinction values of the corresponding primary areas.

The average extinctions A_V and their errors σ_A for each cloud are given in Table 4.2.1. The last column gives the number of primary areas used to take the average. The clouds are listed in order of decreasing average extinction. The darkest cloud is Kh241: in its direction the average extinction is almost 6.5 mag. The average extinction decreases step by step by about 1 mag when we look at the subsequent cloud. Thus, the reality of the extinction differences in the clouds seems to be real.

On the other hand, the average A_V values given in Table 4.2.1 are to be considered as the maximal average extinctions, because of possible incomplete removal of the point sources and the diffuse extragalactic background emission at low galactic latitudes (Schlegel et al. 1998)

Open circles in Figure 2.1.1 denote the best investigated open clusters. Their distances and interstellar reddenings with references are given in Table 2.2.1.

The extinction values were calculated only for 240 stars of area B. The remaining stars are visual and suspected binaries, peculiar stars, stars with low accuracy of observation and classification. The results of the determination of extinctions and distances are distributed into three tables. Tables Appendix 3b and Appendix 3c list the stars with the most reliable photometric classification; the second of them lists the stars with the trigonometric parallaxes determined by *Hipparcos*. Table Appendix 3d lists the stars with a lower accuracy of determination of absolute magnitudes. Here we describe the structure of the tables.

Table 3 from [5] (Appendix 3b) contains 186 stars. Columns 1 and 3 give the current numbers and photometric spectral types from Table 1 of Paper [3] (Appendix 3a). BD numbers are given in column 2. The next four columns contain the absolute magnitudes M_V, color excesses E_{Y-V}, interstellar extinctions A_V and photometric distances r determined in this paper. The number s, given in the last column, shows the quality of the classification: if $s = 1$, then the best fitting of Qs of the program star and the standards gives the residuals with $\sigma < 0.02$ mag, if $s = 2$, then $0.02 \leq \sigma < 0.03$, etc., and $s = 5$ means that $\sigma \geq 0.05$ mag. A large s value may indicate either a peculiarity of the star or a low observation quality. In some cases large s may appear when the color index changes rapidly with temperature or luminosity. For instance, $(Y–V)_0$ changes rapidly in the range of K0–M0 spectral classes. For increase of classification accuracy, a finer grid of standards is needed in this spectral range.

Table 4 from [5] (Table Appendix 3c) contains 100 stars closer than 120 pc with the available *Hipparcos* parallaxes (some stars with small parallax errors up to 160 pc are also included). Columns 1, 2 and 3 give the current number in the table Appendix 3c , BD and *Hipparcos* numbers. Column 4 gives spectral types from the photo-trigonometric classification described below in Subsection 4.2.3.2. Column 5 gives the absolute magnitudes determined by the equation

$$M_V = V + 5 + 5\log\pi - A_V, \tag{4.1}$$

where the apparent magnitude V is taken from [3], π is the *Hipparcos* parallax (given in column 10), A_V is the extinction given in column 8 for stars more distant than 120 pc; for closer stars $A_V = 0$ has been taken. Column 6 gives the error σ_{M_V} evaluated from the parallax error by accepting for V and A_V errors of ± 0.02 mag and ± 0.0 8 mag respectively. Columns 7 and 8 give the color excess E_{Y-V} and extinction A_V determined as described in Section 3. Column 9 gives the distance calculated from the trigonometric parallax (column 10). The parallax errors are given in column 11. The last column gives the classification accuracy, described earlier.

Table 5 from [5] (Appendix 3d) contains 54 stars with unreliable determinations of luminosity classes. Included in this table are all the stars of spectral classes O–B1.5 for which there were no possibility to estimate from photometry their luminosity classes. Some stars of other types of intermediate luminosity classes are also included. However, color excesses and extinctions for these stars usually are determined with a sufficiently good accuracy. Interstellar extinctions of some stars of this table are larger than 3 mag. Half of them are close to the open cluster King 7, for which $A_V \approx 3.6$ mag. The columns of the table in Appendix 3c are the same as for Table Appendix 3b, however, distances r are not given.

4.2.3.1. Interstellar extinction vs. distance: large scale

Figure 4.2.7 shows the A_V vs. r diagrams for two parts of the area. The upper panel is for the darker part of the area, which includes the Kh239, Kh241 and Kh243 clouds (Zone I in Figure 2.1.1). The lower panel is for the remaining, more transparent part of the area. Both panels also contain 87 stars observed and classified in Area A1 and 128 stars in Area A2 (+ and × crosses, respectively). For these stars the extinctions and distances were redetermined by the method described in Section 3.

The top diagram shows a steep growth of extinction from zero at ∼100 pc up to 1.4–2.4 mag at 1 kpc. It is likely that the extinction at larger distances grows more slowly reaching 3–4 magnitudes at our limiting distance of about 3.5 kpc. However, at these distances the extinction is strongly affected by a selection effect: the stars with the largest values of A_V are beyond our limiting magnitude. This is shown by two curves in the A_V vs. r plane for B1 V and B5 V stars of the apparent magnitude $V = 12$. Two open clusters, NGC 1444 and King 6, are seen in the direction of Zone I. Their positions in Figure 4.2.7 are plotted with distances and extinctions given in Table 2.2.1.

In the surrounding Zone II (the lower panel) the initial growth of extinction with distance up to 0.5 kpc is about the same as in Zone I. At larger distances the extinction grows more slowly: at 1 kpc most of the stars concentrate between 1.2 and 2.2 mag. At larger distances the extinction is affected by a strong selection effect, as was explained above. In Zone II, seven open clusters from Table 2 are present. The clusters King 7 and Berkeley 66 exhibit the largest A_V of 3.6 mag. This extinction is similar to the largest values observed in Zone I. Some early-type stars from Table 5 [5] (Appendix 3d) with uncertain distances also have their A_V values in the same range.

The star with the current number 212 (B7 V) in Zone I exhibits the extinction which seems to be too large for its distance of 510 pc. If the star were of luminosity III, its distance would be 900 pc. In this case its position on the diagram would be not so

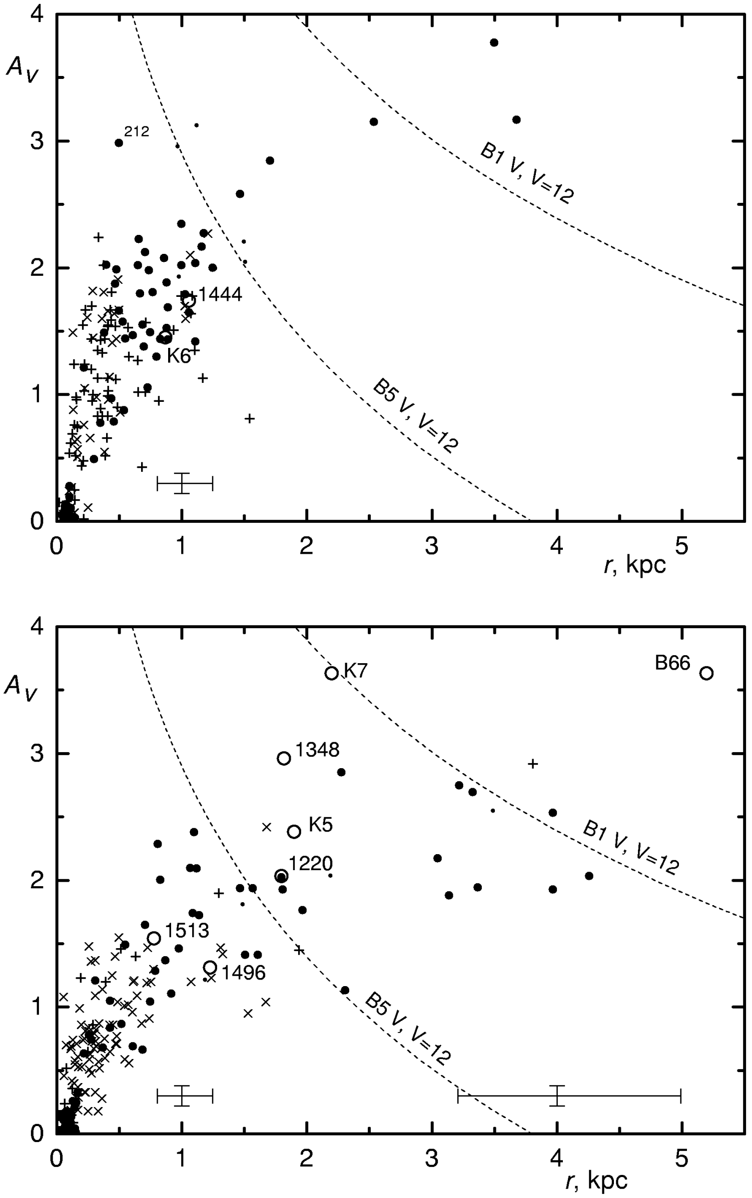

Fig. 4.2.7. The dependence of interstellar extinction on distance in Area B. The upper panel is for Zone I with the dark clouds Kh239, Kh241 and Kh 243, the lower panel is for the remaining part of the area. Open circles denote open star clusters. The four-character numbers are NGC, K is for King and B is for Berkeley. Small dots are for the B2–B3 stars with absolute magnitudes (and distances) of lower accuracy. The stars of Area A1 are plotted as + crosses, and the stars of Area A2 – as × crosses. Error bars of A_V and r are also shown.

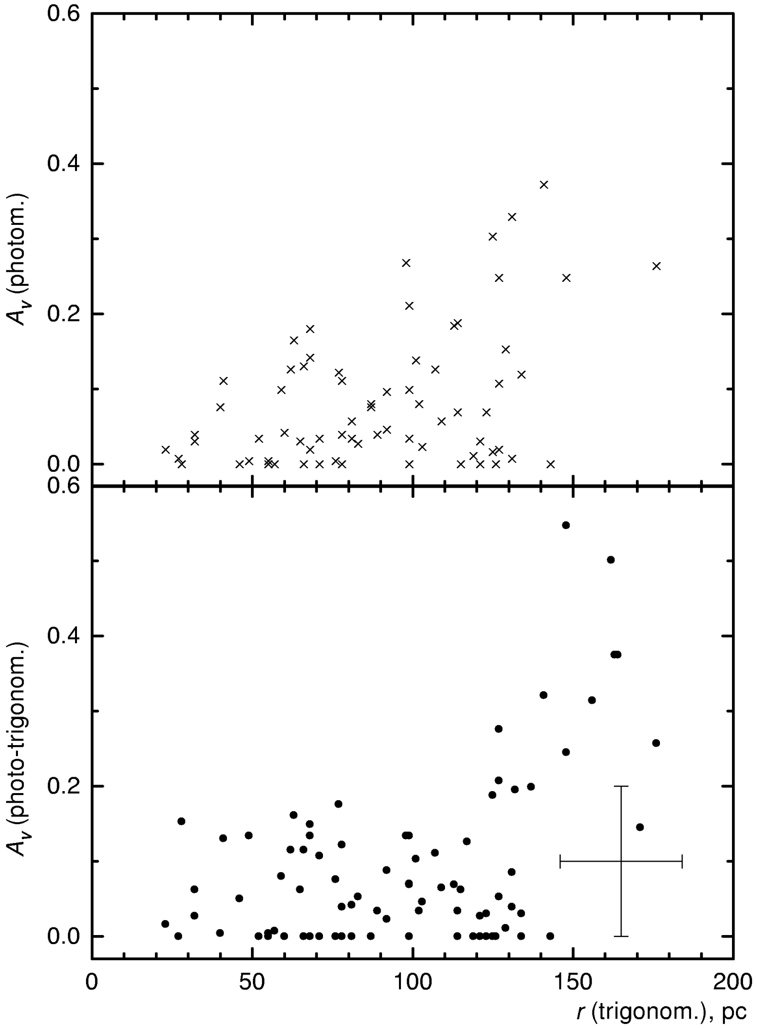

Fig. 4.2.8. Interstellar extinction in the direction of the investigated area for the stars with *Hipparcos* parallaxes. The distances are determined from trigonometric parallaxes. Extinctions in the upper panel are determined using the photometric spectral types, in the lower panel – the photo-trigonometric spectral types (see the text).

outstanding. It is also possible, the star is an unresolved binary with the components of close spectral types.

4.2.3.2. Interstellar extinction vs. distance: small scale

One of the purposes of the present investigation was to determine a distance, where interstellar extinction starts to increase. For this aim all the stars with the *Hipparcos* parallaxes greater than 0.008″ (closer to the Sun than 125 pc) and some stars with the parallaxes between 0.008″ (125 pc) and 0.005″ (200 pc) but with small parallax errors were included in the program. For these stars in Appendix 3c (Table 4 [5]), after the exclusion of stars with low classification accuracy ($s = 5$), A_V is plotted against trigonometric distances r in Figure 4.2.8.

In the top panel of Figure 4.2.8 the A_V values determined only from photometry are used. In the bottom panel the A_V values are deduced using the spectral types determined by combining photometric classification and trigonometric distances, as described in the following paragraph. Hereafter this method will be called photo-trigonometric classification.

For the determination of photo-trigonometric spectral types we have analyzed standard stars falling within the observational error box of color indices and interstellar reddening-free Q-parameters. From them we chose a standard star whose spectral

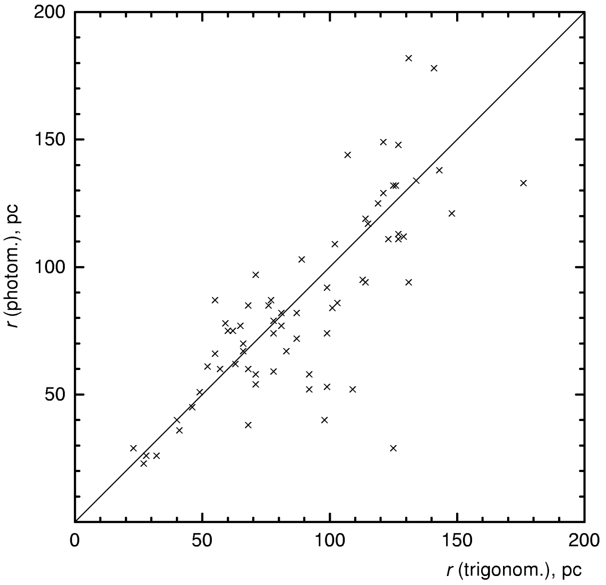

Fig. 4.2.9. A comparison of photometric and trigonometric distances.

class and absolute magnitude gives the photometric distance r, closest to the *Hipparcos* trigonometric distance of the classified star. After that these spectral types were used to determine the values of photo-trigonometric A_V which are given in Table Appendix 3c , column 8, and plotted against the distance in the lower panel of Figure 4.2.8.

It is evident that the scatter of stars of low reddening is of the same order in both panels. At the distances up to 120 pc the extinction is smaller than ∼0.2 mag, i.e., it almost does not exceed the 2σ errors. Beyond this distance, the extinction starts to grow and it reaches 0.4–0.5 mag at ∼150 pc distance.

The appearance of the reddened stars at 120 pc does not mean that the dust cloud begins at this distance. The distance determination errors from both photometric and trigonometric data at 100 pc are about 25% (1σ). This means that the apparently closest reddened stars may be at a distance of $r + 0.25r = 120 + 0.25 \times 120 = 150$ pc. On the other hand, due to the distance errors, the most distant unreddened stars may be at a distance of $r - 0.25r = 142 - 0.25 \times 142 = 106$ pc. Thus the distance of the front edge of the dust cloud is somewhere between 110 and 150 pc, the mean value being 130 pc.

Photometric and trigonometric distances are compared in Figure 4.2.9. Probably no systematic differences are present. Only three stars deviate more than the standard deviation of distances, which is about $0.25r$.

4.2.4. Interstellar extinction in Area C

The CCD picture of this aria is presented in Figure 4.2.10.

The magnitudes and color indices for 1376 stars brighter than $V = 15.5$ mag are presented in Table 2 in [7] (Appendix 4). It contains the following information: the current star number, the equatorial coordinates for 2000.0, magnitudes V, color indices, spectral types and absolute magnitudes M_V determined from the photometric data (luminosity class was designed using the MK calibration), interstellar extinctions and distances in parsecs. The values of magnitudes and color indices for which the accuracy of photometry and reductions is between ±0.05 mag and ±0.1 mag, are marked by colons, if the accuracy is lower than ±0.1 mag – by question marks.

To show the formal accuracy of our catalog, the mean square errors for all seven filters are plotted in Figure 4.2.11. The errors originate from both the measurement and the subsequent reductions. The measurement errors are given by photon statistics and sky

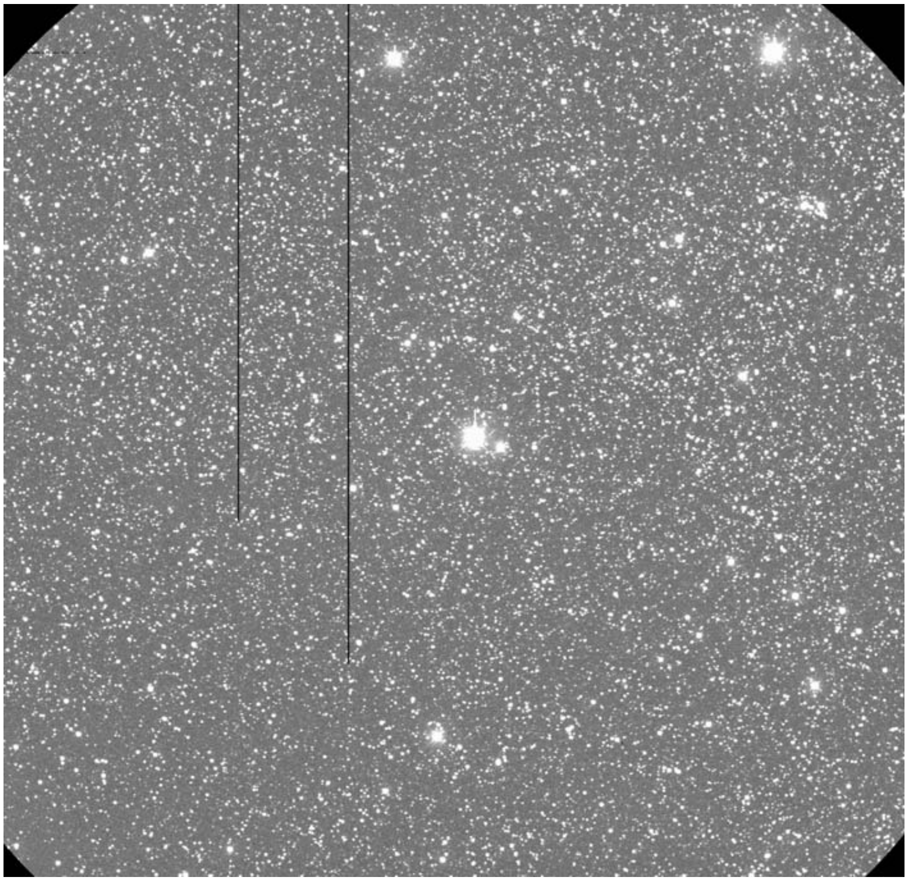

Fig. 4.2.10. CCD picture of Area C in the Z filter.

background. The reduction errors originate in flatfielding and transformation to the standard system. In the areas of high star density some problems arise in determining the sky background – here the errors depend on star brightness: for faint stars they can be as large as a few percent. However, the increase of errors for faint stars (Figure 4.2.11) is mainly the result of photon statistics. The errors of transformation to the standard system are different for various filters and can reach 3% for the U filter, 2% for the P filter and 1% for the remaining. The large-scale flatfielding errors, correlated with the x and y coordinates, should be not larger than 1%. The zero-point errors are also of the same order. They do not depend on the star brightness.

As was mentioned earlier, the spectral classes and absolute magnitudes given in Table 2 of [7] (Appendix 4) are the average values of the results obtained by two methods. The lower-case letters are used to indicate that our spectral classes are determined from photometry using the calibration in MK spectral types. When the spectral class is somewhat different or its determination is uncertain, it is marked by a colon. When the difference of absolute magnitudes estimated by both methods is larger than 0.5 mag, the average value is marked by a colon. Color excesses E_{Y-V} were determined by taking intrinsic color indices $(Y-V)_0$ of different MK types from Straižys (1992). Interstellar extinctions are calculated according to the relation $A_V = 3.83E_{Y-V}$, the coefficient being taken from [5]. Notes to Appendix 4 give identification numbers in other catalogs and MK spectral types from Hiltner (1956) and Negueruela & Marco (2003).

4.2.4.1. General view of the area

Figure 4.2.12 of [8] shows the plot of A_V against r for 1303 photometrically classified stars (given in [7]) up to the 8 kpc distance. At larger distances only a few stars, mostly G bright giants and supergiants, are situated. It is evident that the main interstellar

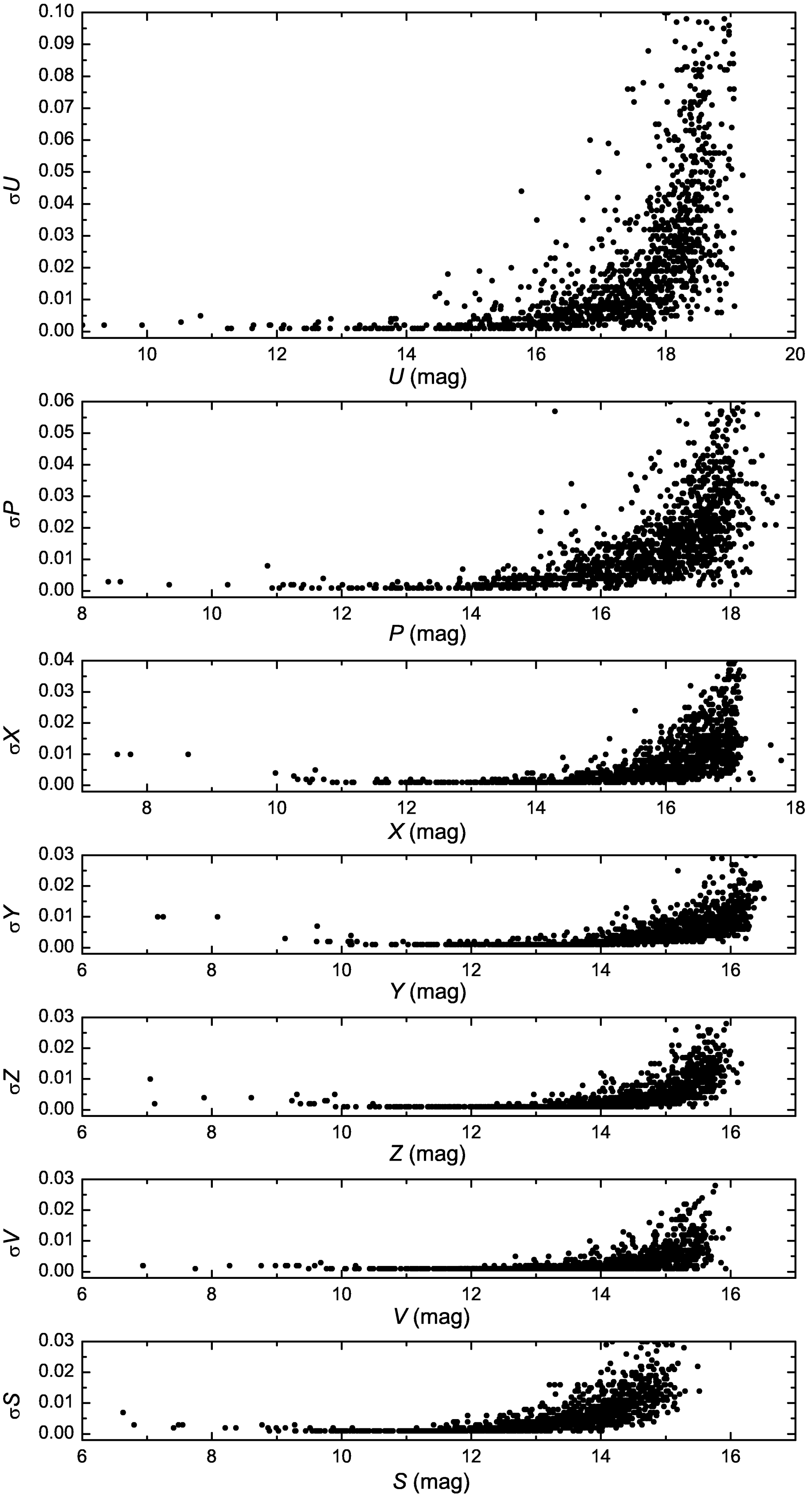

Fig. 4.2.11. The formal accuracy of the magnitudes.

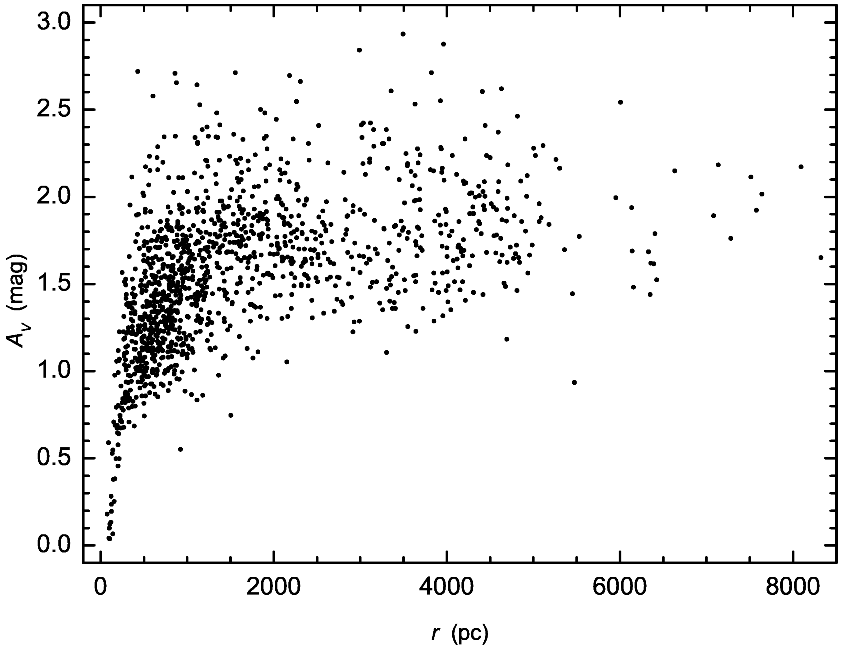

Fig. 4.2.12. The dependence of interstellar extinction A_V on distance up to 8 kpc in the whole investigated area C.

extinction takes place within the Orion arm and that, in general, the extinction does not show rise at distances larger than 1.5 kpc. At the same time, there is a considerable scatter of the extinction values between 1 mag and 2.8 mag. This distribution of stars in the A_V vs. r plot can be explained by two effects: (1) the real distribution of interstellar dust along the line of sight and (2) the effect of selection due to the limiting magnitude, which excludes stars of the large A_V values, since they appear beyond the visibility limit. We shall discuss both effects in the forthcoming sections.

4.2.4.2. The extinction at small distances

Figure 4.2.13 shows the A_V vs. r plot for the stars closer than 500 pc. In this figure, together with the stars of the investigated area C, we plotted also the stars with trigonometric distances from the whole Camelopardalis area B [4]. The run of extinction with distance up to ∼180 pc for both samples is very similar. We confirm the conclusion made in [4] that the extinction up to 120 pc is smaller than 0.2 mag. At larger distances the extinction starts to grow and it reaches 0.4–0.5 mag at 150 pc. Taking into account the distance errors, the front edge of the dust cloud should lie at about 130 pc.

After this jump, the extinction continues to grow gradually at least up to 400–500 pc, where the average value of 1.5 mag is reached. At distances >500 pc the lower value of extinction is 0.8 mag. This means that the first dust layer covers all the area and its A_V is >0.8 mag. The upper edge of the scattered points is not uniform. This may indicate that at $r > 500$ pc the variations of the extinction across the area take place. The extinction variations across the area are also well seen in the dust distribution map from Schlegel et al. (1998), based on the distribution of thermal dust emission at 100 μm taken from the SkyView site (see Figure 4.2.18).

4.2.4.3. The extinction at large distances

Trying to find the large-scale differences of extinction we divided the area into 210 squares of about 5.6′ × 5.6′ size (about 100×100 pixels). After the analysis of A_V vs. r plots in every square, they were joined into five groups of similar extinction run. Their boundaries are shown in Figure 4.2.14. The A_V vs. r plots for these smaller subareas up to 5 kpc are shown in Figure 4.2.15 by different symbols and different colors. For each

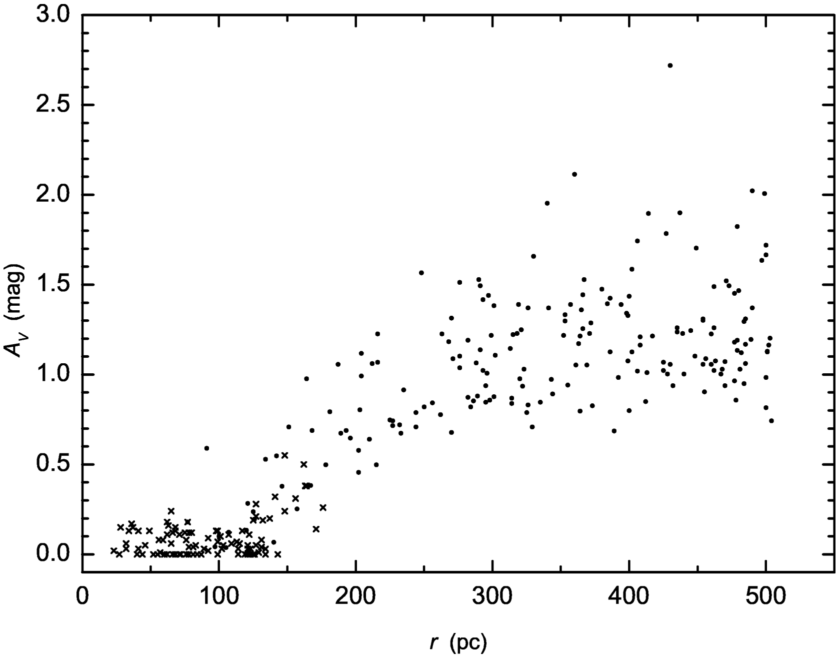

Fig. 4.2.13. The dependence of interstellar extinction A_V on distance up to 500 pc. Dots are for the area C data and crosses are for the area B data.

subarea we calculated the run of the mean extinction A_V with distance. A distance bin of $0.15r$ is taken, i.e., it increases with increasing distance. The results are shown in Figure 4.2.16. Some stars, for which the A_V values deviated from the average value by $>3\sigma$, were rejected.

The differences in the extinction value in various parts of the area are evident. The small variations in the mean extinction run with distance are caused by the multimodal distribution of stars by M_V (see Fig.4.3.3) and selection effects. These were ignored in the analysis. The largest extinction is observed in Subareas IV and V which are closest to the Galactic equator. The most transparent are Subareas I and III. Subarea II also shows a similar extinction, but only up to 3.3 kpc – at larger distances the extinction shows an increase. Area C contains a faint H II nebula LBN 689. No stars are seen in it at the distances larger than 4.2 kpc, while in other areas such stars are present.

Schematic distribution of the dust with distance is shown in Figure 4.2.17. We see that the main dust concentration coincides with the Orion spiral arm. The Perseus arm, which in this direction is expected at a distance of 2.5 kpc, shows no signs of the dust. In part, this may be explained by the increasing distance of our line-of-sight above the Galactic plane. At $b = 2°$ and $3°$ the height above the plane at a distance of 2.5 kpc is 87 and 130 pc.

In Subarea I the extinction rise occurs closest to the Sun, while in Subarea V it is most distant. In the latter subarea the dust layer is also the thickest. It is evident that stars in Subarea V are affected by the dust cloud Khavtassi 241 investigated in paper [2]. The rise of the extinction in Subarea II at $r > 3.3$ kpc may be related to the Outer spiral arm.

4.2.4.4. Limiting magnitude effects and discussion

Let us return to Figure 4.2.15 in which the limiting magnitude effects for stars of different absolute magnitudes are shown by two broken lines. They correspond to A9 V and B6 V (or B9 III) spectral types. They mean that to the right of the A9 V line all stars are of O–B–A and G5–K–M II–IV types, including some supergiants of various spectral classes. To the right of the B6 V line, only early B-type stars and some cooler bright giants and supergiants should be present.

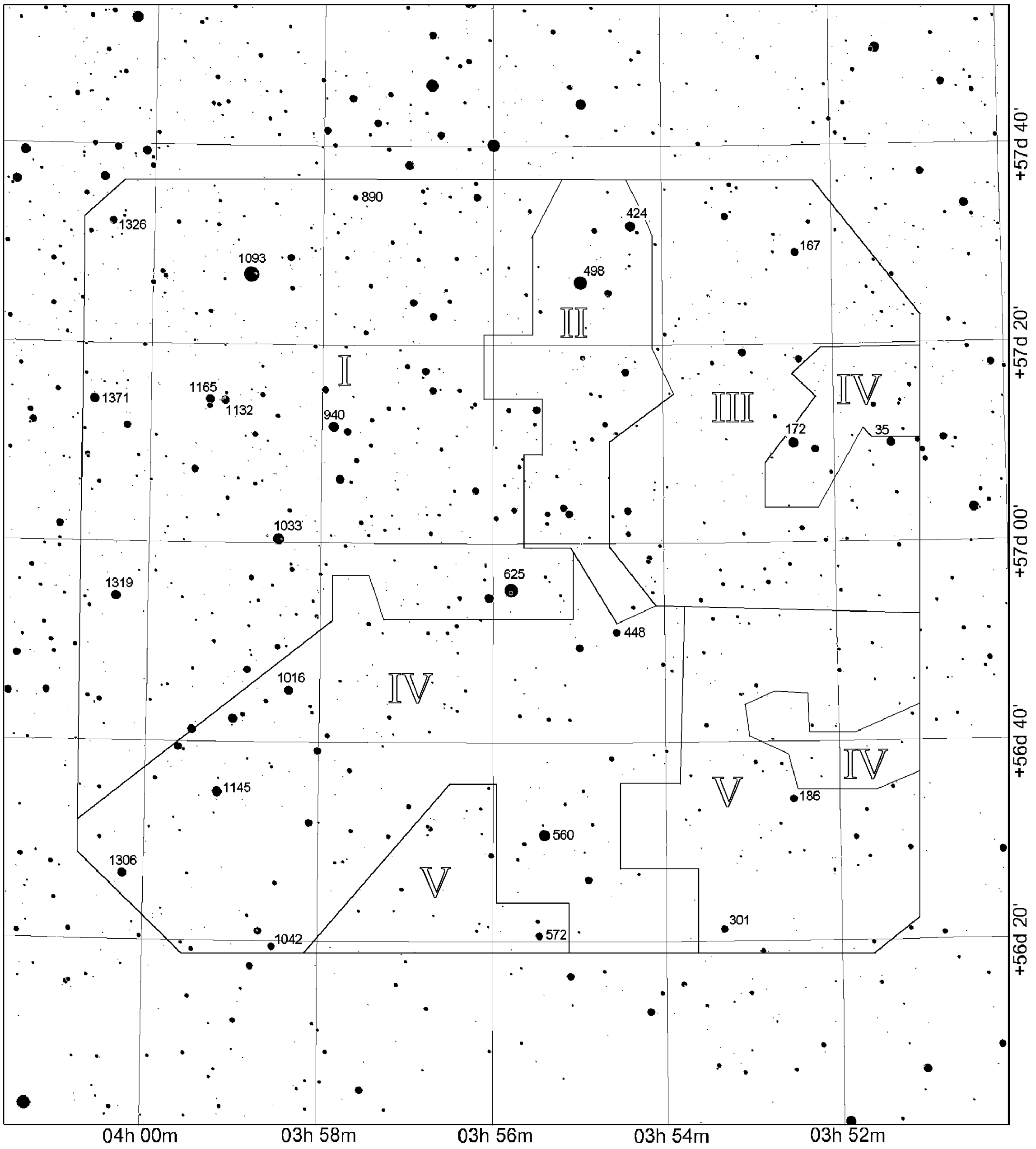

Fig. 4.2.14. Subdivision of the investigated area C into five subareas with different run of extinction with distance. The brightest stars are numerated according to Table 2 in [7](Appendix 4). The coordinate grid is for 2000.0.

The absence of stars with $A_V > 3$ mag in the 1–4 kpc range is the argument that the stars with larger values of extinction are not present in the direction of our area. At distances >2 kpc we have about 300 A–B stars and all of them show $A_V < 2.9$ mag.

Low values of extinction in the Perseus arm at ℓ >140° have been noticed also by other authors, starting from McCuskey (1952). Our catalog contains 59 stars of spectral classes O–B5, but only 7 of these are in the range of distances between 2 kpc and 3 kpc, the expected distance of the Perseus arm. Most of them are farther than 3.3 kpc. The investigation of the distribution and spatial density of stars will be the subject of the next section.

The observed maximal number of O–A stars (Fig 4.3.4) falls on the distance range between 3 and 5.5 kpc. The increase of number of observed stars we see at distance of about 4 kpc. Here are stars of spectral classes O–A0 + AIV-III. Even if the accuracy of M_V determination for O stars is very low in Vilnius system, the presence of B and A stars allows us to conclude that the accuracy of distance determination is not lower then on the average, i.e. these stars really are between 3–5 kpc, father than the Perseus arm.

4.2.5. The Cam OB3 association

Humphreys (1978) lists eight members of the Cam OB3 association, three of which are inside our area. We have determined new extinctions A_V and distances of all eight members by taking their average spectral types from Hiltner (1956) and Negueruela & Marco (2003) and V magnitudes and B–V color indices from Hiltner. Their intrinsic colors and absolute magnitudes according to MK spectral types were taken from Straižys (1992). We used the value of $R = A_V/E_{B-V} = 2.9$ which is valid for the Camelopardalis dark clouds [5]. The results are given in Table 4.2.2.

Table 4.2.2. New determination of the extinction and distance to the Cam OB3 association members.

HD, HDE	BD	LS	Hiltner	MK	V	B–V	M_V	A_V	r
	+55 837	+55 55	H 409	B2 Ib, B1 Ib	9.57	0.71	–5.9	2.57	3.80
		+57 138	H 412	O7.5, O7 V	10.08	0.27	–5.2	1.71	5.18
	+56 864	+57 139	H 413	O6nn, O6 V+	9.68	0.28	–5.4	1.74	4.66
	+56 866	+56 97	H 414	O9 V	10.28	0.36	–4.5	1.97	3.65
	+55 838	+55 58	H 417	B3 Ib	9.29	0.82	–5.9	2.76	3.06
237211	+56 873	+56 99	H 420	O9.5 I?p, O9.5 Iab	8.98	0.49	–6.6	2.35	4.42
237213	+55 845	+55 11	H 421	B3 Ia, B6 Ia	8.72	0.77	–7.2	2.54	4.76
25914	+56 884	+56 56	H 425	B6 Ia, B5 Ia	7.99	0.60	–7.2	2.00	4.34

The dispersion of the extinction values seems to be real and they probably correspond to the density of the interstellar clouds mainly in the Orion spiral arm and partly in the Perseus arm. The average value of A_V is 2.20±0.14 mag and the average distance is 4.2±0.3 kpc. The extinction of the association is consistent with the extinction run in the area. The distance found confirms that the association is an object of the Outer spiral arm of the Milky Way. The angular size of the association (1.5°×2.0°) corresponds to a linear size of 110×150 pc.

4.3. Space distribution of stars

The space distribution of stars is investigated only in Area C. This area is at the central part of the larger LF6 area investigated by McCuskey (1952, 1956a). Also it coincides with the direction towards the Cam OB3 association.

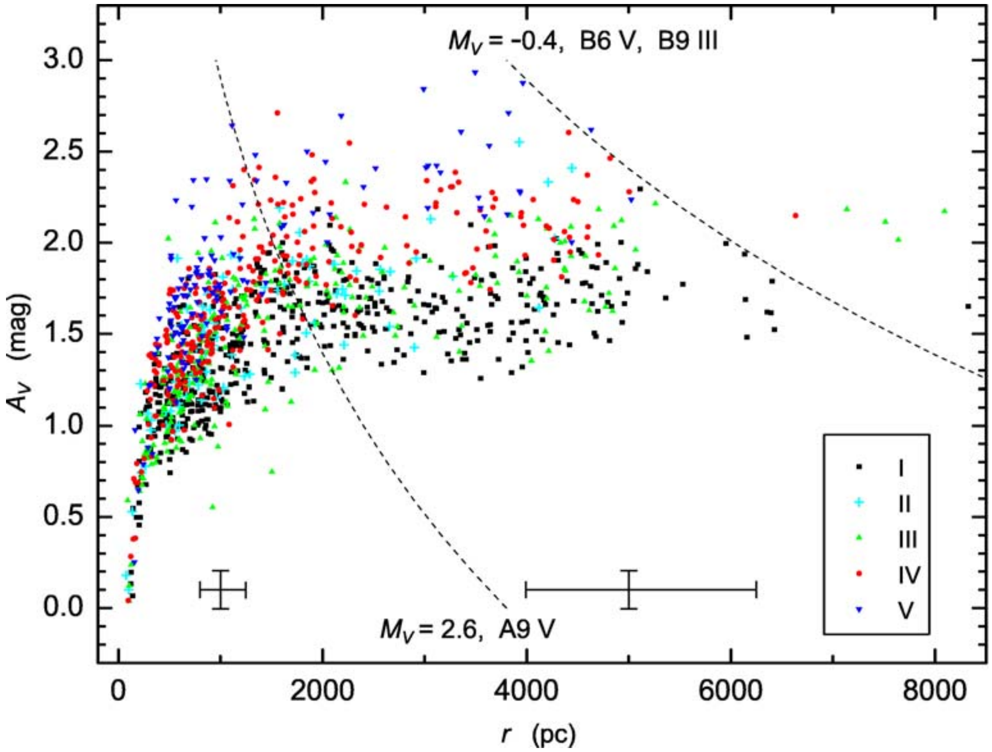

Fig. 4.2.15. A_V vs. r plot for the stars in different subareas. Limiting magnitude curves for B6 V and A9 V stars are shown.

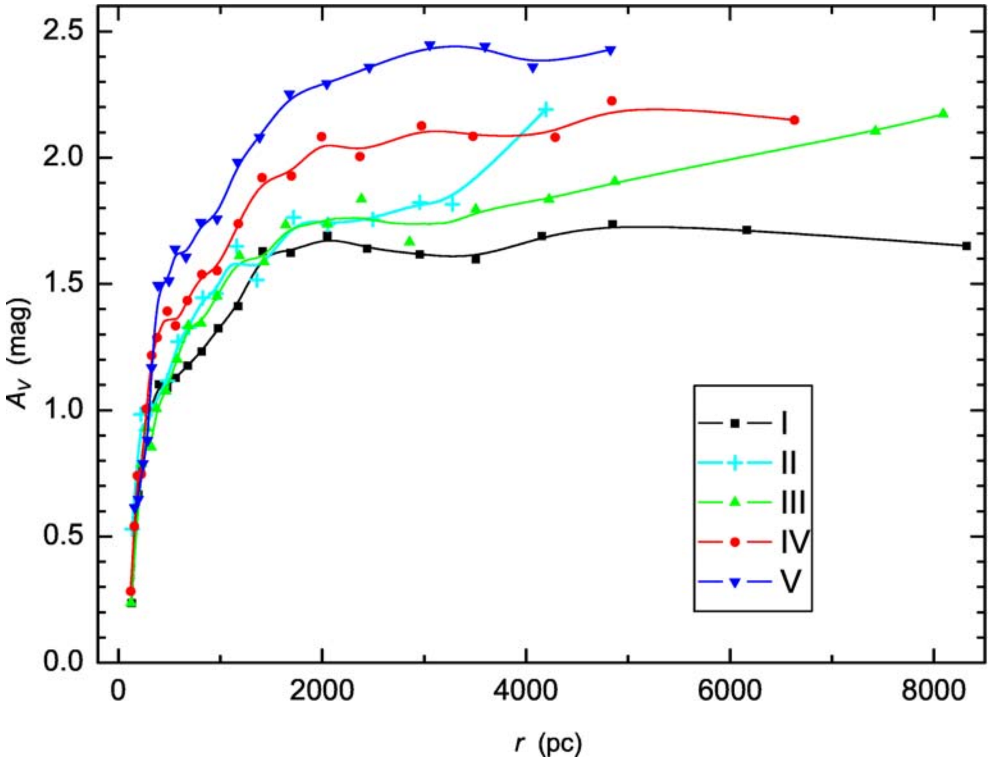

Fig. 4.2.16. The average curves of the A_V vs. r plot for the five subareas shown in Figure 4.2.14.

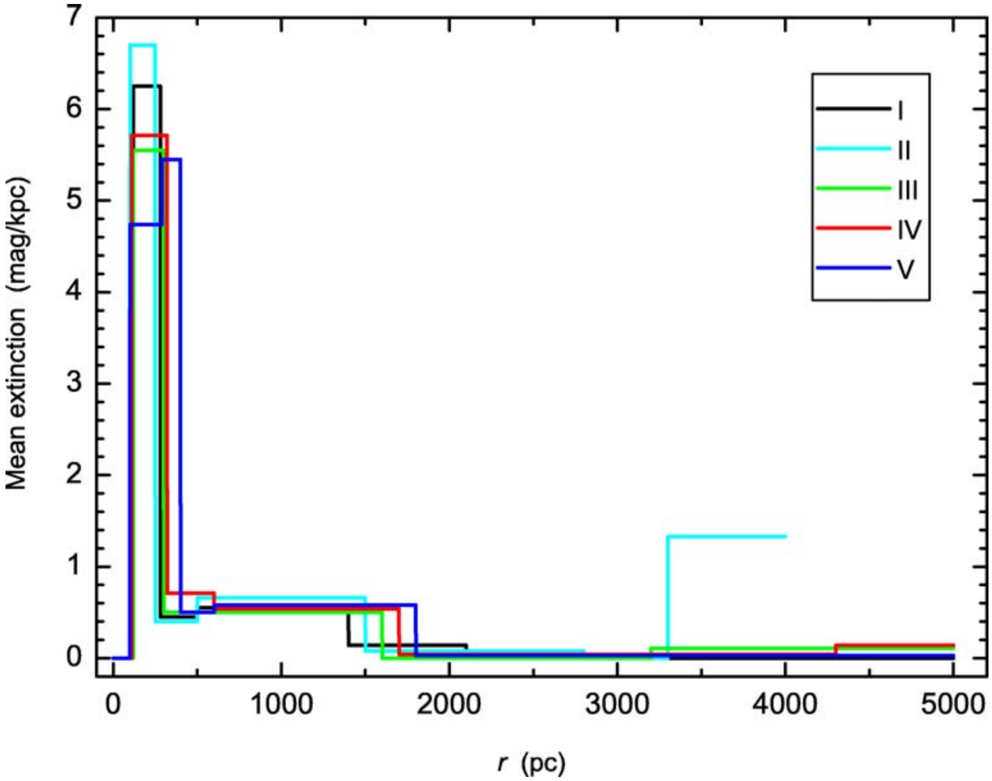

Fig. 4.2.17. Distribution of the extinction coefficient (in mag/kpc) by distance in different subareas.

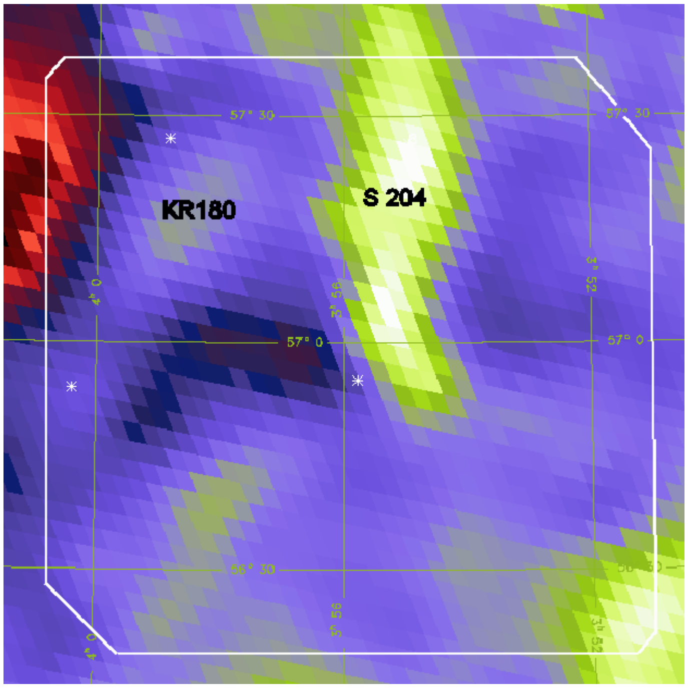

Fig. 4.2.18. Dust distribution in the investigated area from SkyView according to Schlegel et al. (1998). White areas mean the high column density (E_{B-V} about 1.3 mag) and red areas – the low column density (E_{B-V} about 0.6 mag) of dust. S 204 is a H II region, KR 180 is a distant radio source.

4.3.1. Some statistical data

The following figures give some statistical view of the observational data which we use. The numbers of stars are plotted against the apparent magnitude V, the spectral class, the absolute magnitude M_V and the distance r.

1. Figure 4.3.1 shows the distribution of stars with respect to apparent magnitudes V. Different spectral classes are shown by different colors. It is evident that the limiting magnitude is close to $V = 15$ mag. However, for B and A stars this limit is fainter at least by 0.5 mag.

2. Figure 4.3.2 shows the distribution of stars by spectral classes. The bin widths of spectral classes are 2 decimal spectral subclasses. For the cool stars starting at G4 the plot shows luminosity V and luminosity IV–III stars separately. The observed distribution pattern is the result of differences of the real number densities and the apparent density differences caused by the limiting magnitude and interstellar extinction effects. The most outstanding feature of the diagram is the deficiency of A6–F0 stars in comparison with hotter and cooler stars. This deficiency is either real or it is partly caused by some systematic errors in photometric spectral classification due to uncorrect calibration. The minimum of the number density of late A- and early F-type stars has been noted also by other authors in the star samples classified in the MK system (see, e.g., Vereshchagin & Chupina 1995).

3. Figure 4.3.3 shows the distribution of stars by absolute magnitudes M_V. The bin widths of the magnitudes are 0.5 mag. G4–M IV–III stars are shown separately. Here we see the minimum of stars between 2.0 and 3.0 mag which is the reflection of the same effect of deficiency of A5–F0 stars discussed in item 2.

4. Figure 4.3.4 shows the distribution of stars with respect to distances. The distance bin is 200 pc. The overwhelming majority of stars closer than 1 kpc are F and G main-sequence stars. The majority of B-type stars are at the distances larger than 3 kpc.

4.3.2. The observed space densities

The space density as a function of distance as calculated for the following spectral groups: O–B5 of all luminosities, B5.5–A0 V–III, A0.5–A5 V–III, A5.5–F0 V–III, F0.5–F5 V–III, F5.5–G0 V–IV, G0.5–G5 V–IV, G5.5–K0 V, K0.5–M V, G5–K0 IV–III and K0.5–K5 IV–III. Distance binning was 500 pc for O–B5 stars, 250 pc for B5.5–A0 and A0.5–A5 stars and 200 pc for the stars of the remaining spectral types. Figure 4.3.5 shows the plot of the density functions (in the log scale) for these spectral ranges. Space density of stars is given for 1000 pc^3.

To avoid the limiting magnitude effect, we rejected the bins with distances larger than $5 \log r_{\mathrm{lim}} = V_{\mathrm{lim}} - M_V + A_V$, with $V_{\mathrm{lim}} = 15.5$ for B and A stars and 15.0 for the remaining, M_V being the absolutely brightest star in the bin and A_V being the extinction close to the maximum for this distance range according to the A_V vs. r dependence from Section 4.2.4 [8]. The parts of density functions corresponding to M_V between the the absolutely brightest and the faintest star in the bin are shown by dashed lines. At these distance intervals the star numbers are slightly affected by some selection.

Up to 1 kpc the density values are more complete for all spectral classes of the main sequence belt (including luminosity V–IV–III stars in the B–A–F–G3 range and luminosity V class in the G4–K range) and for G4–K giants and subgiants (luminosity classes III and IV). At larger distances only B and A stars of the main sequence belt give realistic densities while cooler stars are affected by the limiting magnitude. On the other hand, the number of B-type stars at the distances less than 500 pc from the Sun is insufficient to get statistically meaningful densities.

It would be interesting to compare our values of space density with the values obtained many years ago by McCuskey (1952, 1956b) in his LF 6 area using a different techniques. A direct comparison is impossible since McCuskey used different bins of

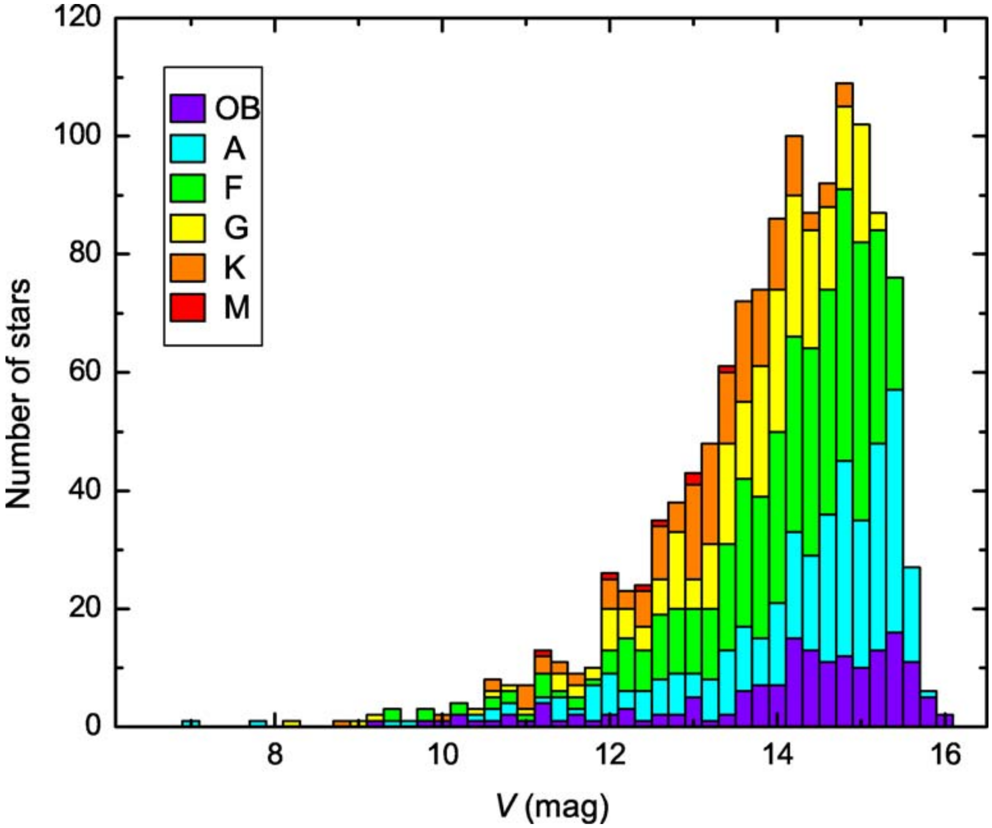

Fig. 4.3.1. Distribution of observed stars of the area by apparent magnitudes V.

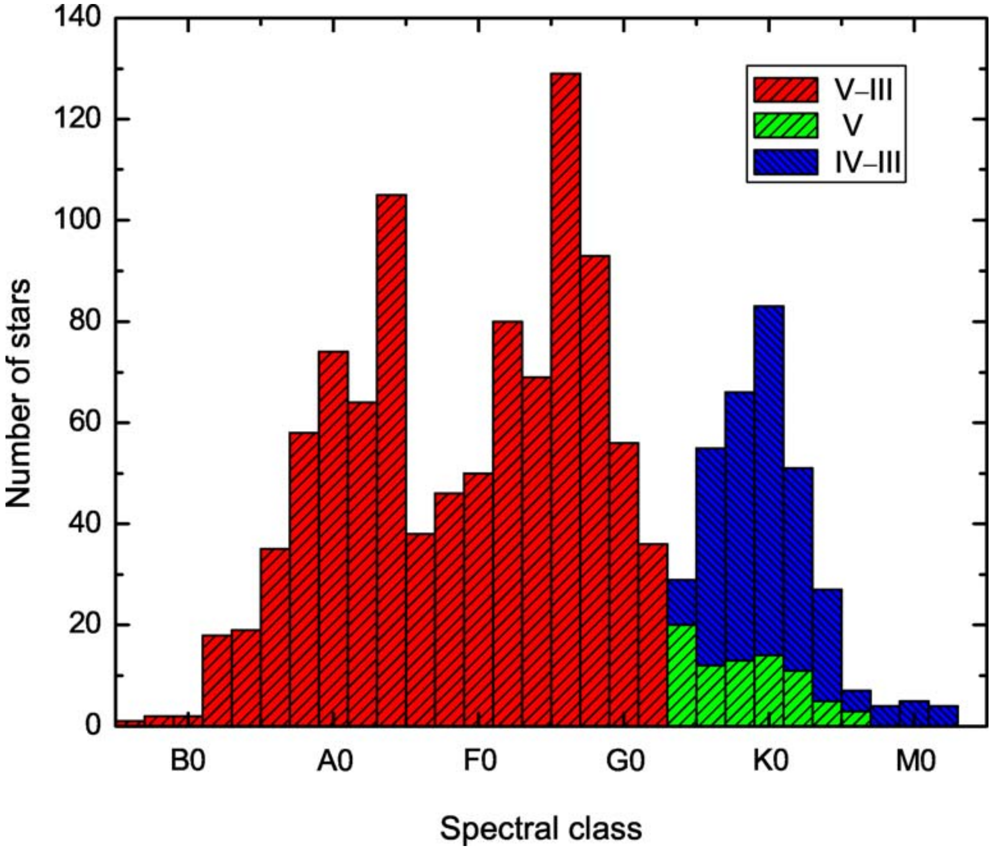

Fig. 4.3.2. Distribution of observed stars of the area by spectral classes.

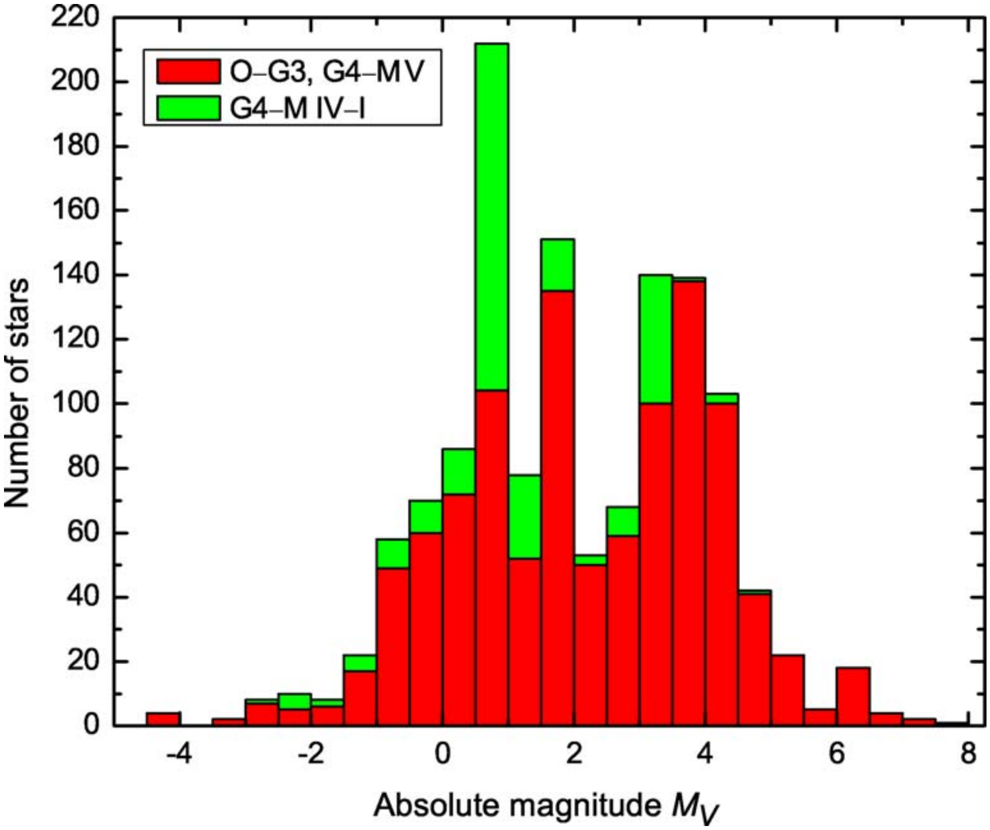

Fig. 4.3.3. Distribution of observed stars of the area by absolute magnitudes M_V.

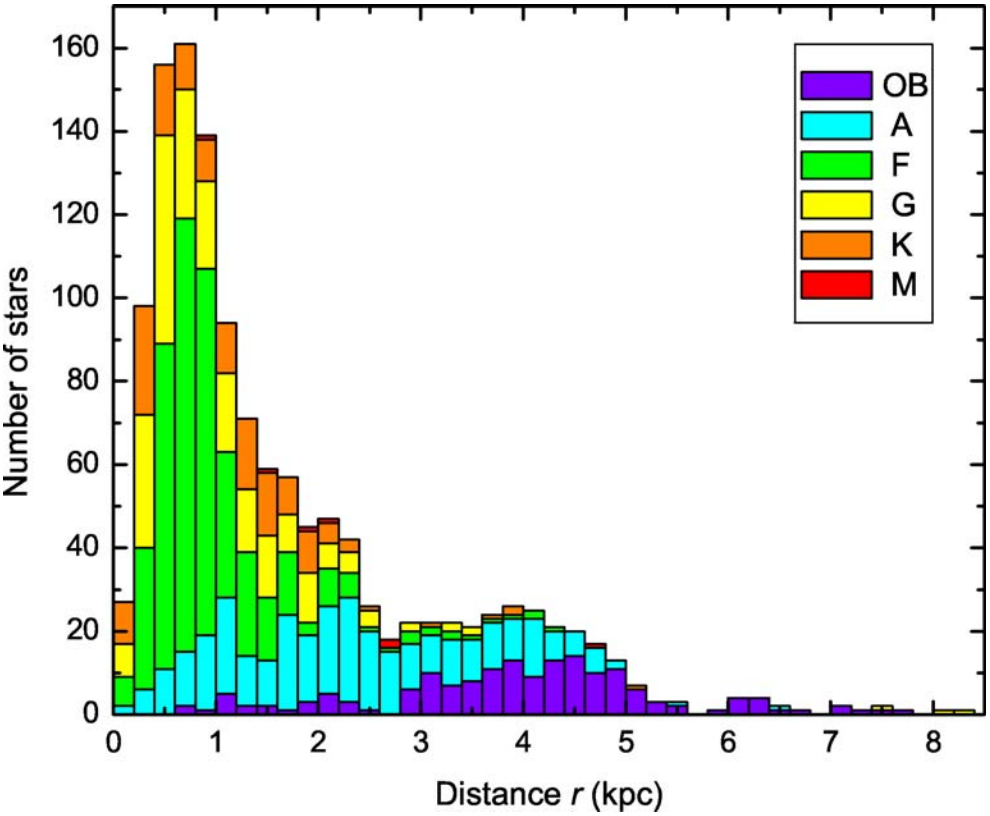

Fig. 4.3.4. Distribution of observed stars of the area by distances.

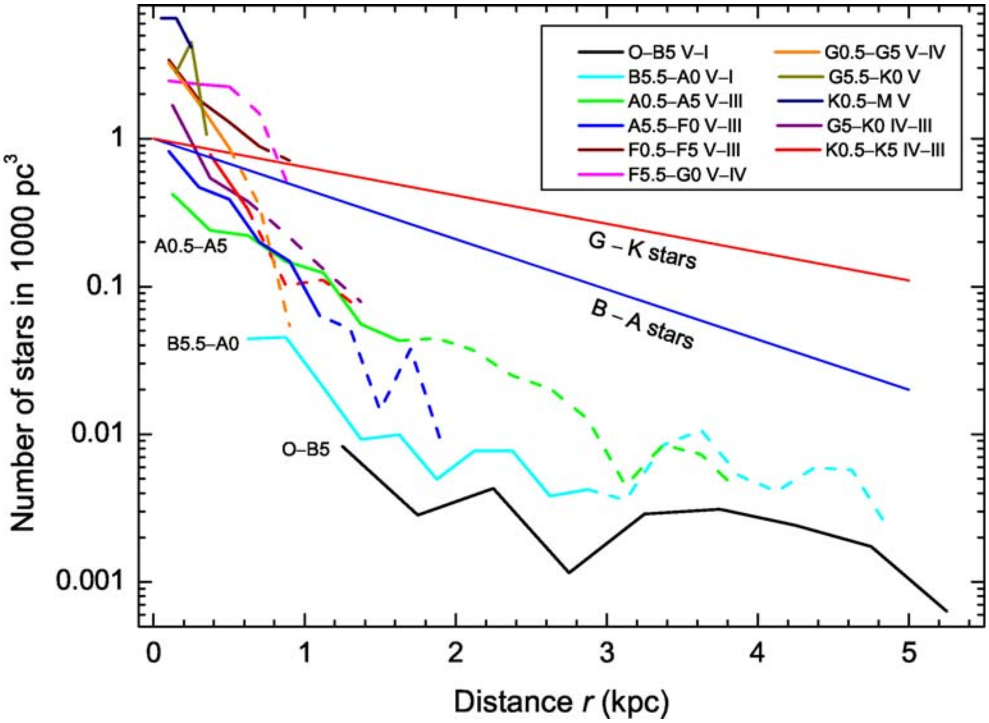

Fig. 4.3.5. Observed space densities of stars of different spectral and luminosity groups. The two straight lines show the fall of density of B–A and G–K stars due to increase of the galactocentric distance and the distance from the Galactic plane. Dashed lines represent the densities affected by the selection effect.

spectral classes. However, the results are similar at least within an order of magnitude. On the other hand, spectral classification in the LF survey is not very accurate (see Introduction). McCuskey (1952, 1956b, 1965) directs attention to rapidly diminishing density of F0–F5 stars with increasing distance. We find the same phenomenon in our star sample. A similar behavior is exhibited also by some other spectral groups, for example, by all G-type main-sequence stars.

This effect partly may be the result of the negative density gradient along the disk with increasing galactocentric distance and perpendicularly to the disk with increasing the distance from the Galactic plane. This effect can be estimated by the equation:

$$n = n(R_0)\exp(-z/H)\exp(-(x - R_0)/h), \tag{4.2}$$

where n is the star density at the galactocentric distance x, R_0 is the galactocentric distance of the Sun, z is the distance from the Galactic plane, H is the disk scale-height and h is the disk scale-length. Most authors for the Galaxy models use a value of the scale-length $h = 3.5$ kpc for all types of stars (e.g. Bahcall 1986; Larsen & Humphreys 2003). The scale-height H depends on the age of stellar population: the values of 90 pc for B–A stars, 325 pc for G–K main sequence stars and 250 pc for G–K giants are usually recommended (see the above mentioned sources).

The average Galactic latitude of our area is 2.5°. For this line-of-sight, at a distance of 5 kpc the height above the Galactic plane is 218 pc. Equation (4.2) for these distances from the Sun and from the plane gives the densities 0.02, 0.12 and 0.10 of the value around the Sun for B–A stars, G–K dwarfs and G–K giants, respectively. In Figure 4.3.5 the density gradient lines for early- and late-type stars in our area are shown as two solid lines starting from the 1.0 tick. It is evident, that the predicted density gradient can explain the decline of lines, corresponding to O–B5 and B5.5–A0 stars, up to 3 kpc, i.e., in the interarm and the Perseus arm regions. However, there is an increase of space density of B stars at the 3–5 kpc distance which may be related to the Outer spiral arm.

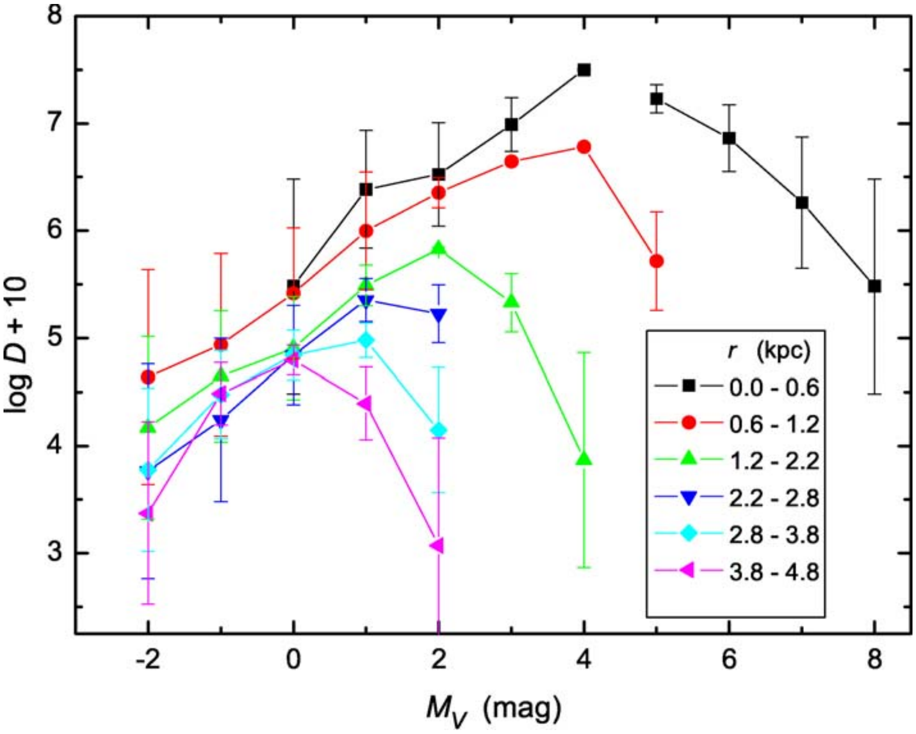

Fig. 4.3.6. The distribution of stars by absolute magnitude of all observed stars of the main-sequence belt for various distance intervals. The fall of density at a certain distance is the result of the limiting magnitude and interstellar extinction.

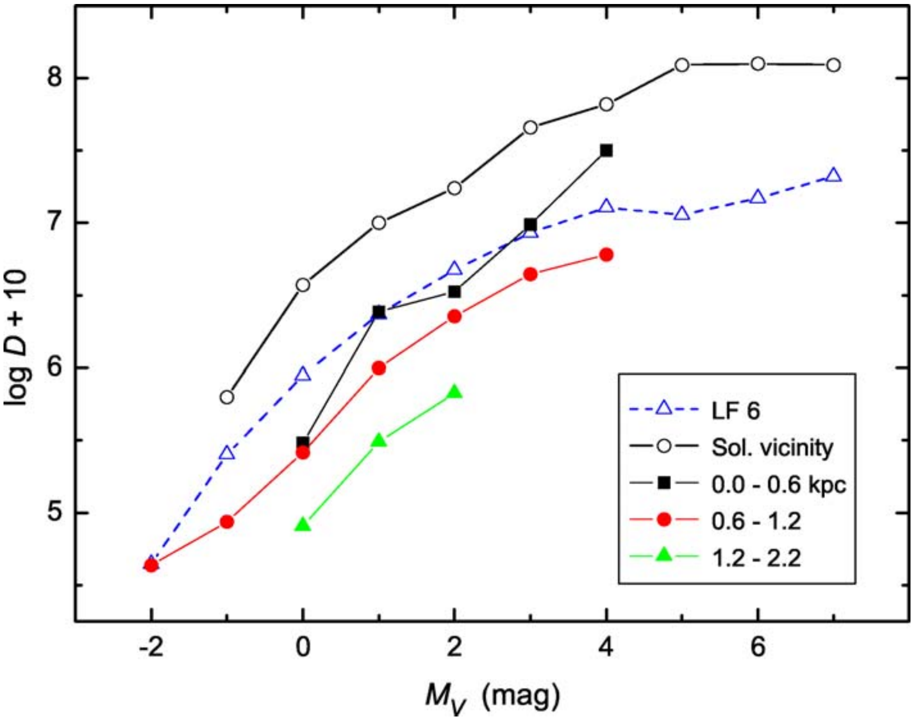

Fig. 4.3.7. Observed luminosity functions of stars of the main-sequence belt for three distance intervals, compared with the luminosity functions of McCuskey (1956b) for LF 6 and Jahreiss & Wielen (1997) for solar vicinity.

For A-type and cooler stars the slope of the model gradient line is too small to be responsible for the observed fall of the space density up to 1.5 kpc from the Sun. This fall may mean, in part, that the density of stars in the Local spiral arm is larger in comparison with the interarm region which begins at about 1 kpc.

4.3.3. The observed luminosity function

For the determination of the luminosity function the numbers of stars in the main-sequence belt were counted in the consequative 1 mag bins of absolute magnitudes for distance intervals of 1 kpc. The main-sequence belt in the B–A–F–G3 range includes the stars of luminosity classes V–IV–III, while in the G4–K–M range it includes only luminosity V stars. Space densities D of all observed stars (number of stars for 1 kpc^3) were calculated and plotted in Figure 4.3.6 in the form $\log D + 10$ vs. M_V. This form of presentation of the luminosity function was used by van Rhijn (1925, 1936) and McCuskey.

The density is the largest in the first distance interval between the Sun and 600 pc for all absolute magnitudes (between 0.0 and +5.0). The number of B-type stars in this distance range is not sufficient for the density determination. The falling parts of the curves correspond to the absolute magnitude bins which are affected by the limiting magnitude and interstellar extinction. These bins should be neglected in the luminosity function determination.

Our luminosity function using only bins on the rising part of the curve is shown in Figure 4.3.7. Only three distance intervals of 0–0.6, 0.6–1.2 and 1.2–2.2 kpc are used, since at larger distances most of the absolute magnitude bins are affected by the limiting magnitude. In the same figure we plot the luminosity function determined by McCuskey (1956b) for the LF 6 area which overlaps our area. McCuskey's function is obtained by taking the average values of space density for the distances 200, 400 and 600 pc. It is evident that both investigations are in satisfactory agreement.

Figure 4.3.7 also shows the luminosity function for the main-sequence stars in the solar vicinity according to Jahreiss & Wielen (1997). Although the slope of this function is similar to the slope of our functions, the shift of about 0.5 dex is present. We should expect that the solar vicinity luminosity function is more complete than ours, since we have rejected some number of close stars which could not be measured separately and some number of peculiar stars which could not be classified photometrically. However, it is hard to believe that we have taken into account only 1/3 of all stars in the space volume up to 600 pc distance. Probably this difference reflects the real difference of space densities of stars in both samples.

4.3.4. On the completeness of the observed star sample

In the previous section star counts were done using only photometrically classified stars. The stars, which ware not classified as having normal chemical abundance, were rejected from consideration. From 1376 observed stars in the Vilnius system, only 1303 were classified. However, part of the stars in the CCD field, which are brighter then the limiting magnitude, could not be measured because of the existence of their fainter neighbors. First, close visual binary stars, identified using the DSS2 SkyView, were rejected. Part of faint stars with larger distances between the components could not be measured because of small scale of the Maksutov telescope (about 169″ in mm, or 3.38″ in one pixel).

To evaluate the number of the lost stars, we used astrometric The Whole-Sky USNO-B1.0 Catalog (Monet et al. 2003), which is thought to by practically complete. Its B and I magnitudes were used to calculate the Vilnius X magnitudes by the linear equation

$$X = 0.379 + B + 0.48832(B - I) \qquad \sigma = \pm 0.27 \tag{4.3}$$

Table 4.3.1. The numbers of stars in 0.5 mag bins in the CCD and USNO catalogs, and their ratios.

X_1	X_2	X_{mean}	n_{CCD}	n_{USNO}	Ratio
8.0	8.5	8.25	0	0	–
8.5	9.0	8.75	0	0	–
9.0	9.5	9.25	0	0	–
9.5	10.0	9.75	0	0	–
10.0	10.5	10.25	2	3	1.500
10.5	11.0	10.75	4	4	1.000
11.0	11.5	11.25	2	5	2.500
11.5	12.0	11.75	8	8	1.000
12.0	12.5	12.25	13	17	1.308
12.5	13.0	12.75	11	15	1.364
13.0	13.5	13.25	15	19	1.267
13.5	14.0	13.75	33	29	0.879
14.0	14.5	14.25	36	43	1.194
14.5	15.0	14.75	55	109	1.982
15.0	15.5	15.25	86	174	2.023
15.5	16.0	15.75	116	290	2.500
16.0	16.5	16.25	186	529	2.844
16.5	17.0	16.75	221	746	3.376

derived using 40 common stars. Then the numbers of stars (brighter than X=17 mag) were counted in 0.5 mag bins. After that, the ratios of star numbers in the corresponding magnitude bins in the USNO and our CCD catalogs were calculated. The results are given in Table 4.3.1.

The limiting and mean X magnitudes in these bins are given in the first three columns of the table 4.3.1. The numbers of the observed CCD and USNO stars are given in col. 4 and 5. The last column shows the ratio of the numbers of USNO and CCD stars. We see that the number of missing stars is small for $X \leq 14.5$ mag. From here almost a linear growth of the ratio begins, reaching ∼3 at $X = 16.5$ mag. These ratios were used to get the corrected numbers of stars in the CCD field. Here, we assume, that the distribution of additional unclassified stars by astrophysical parameters is the same as that of the classified stars within the same bins of magnitudes.

The corrected space densities of stars for different intervals of spectral types are shown in Fig. 4.3.8. Comparison of Figures 4.3.8 and 4.3.5 shows that, after correction the density of stars falls off not so steep with increasing distance. The increase of density of early-type stars at distances greater than ∼3.5 kpc remains.

The corrected and the original (observed) mean luminosity functions for the distance $\leq$ 600 pc and the corrected luminosity functions for greater distances (0.6–1.2 kpc and 1.2–2.2 kpc) are shown in Fig. 4.3.9. All corrected luminosity functions are much closer to each other and to the observed function for <0.6 kpc shown in Fig. 4.3.6. The brighter parts of the functions are obtained from small numbers of stars and therefore have larger errors. The slope of the function within M_V interval from 0 to 4 mag can be well represented by a straight line with inclination of $(\log D{+}10)/M_V{=}0.546 \pm 0.013$.

As our luminosity functions are constructed using the distance-limited space volumes, and distances are determined using the absolute magnitudes obtained by photometric classification of stars, the Malmquist corrections are not essential and were not applied.

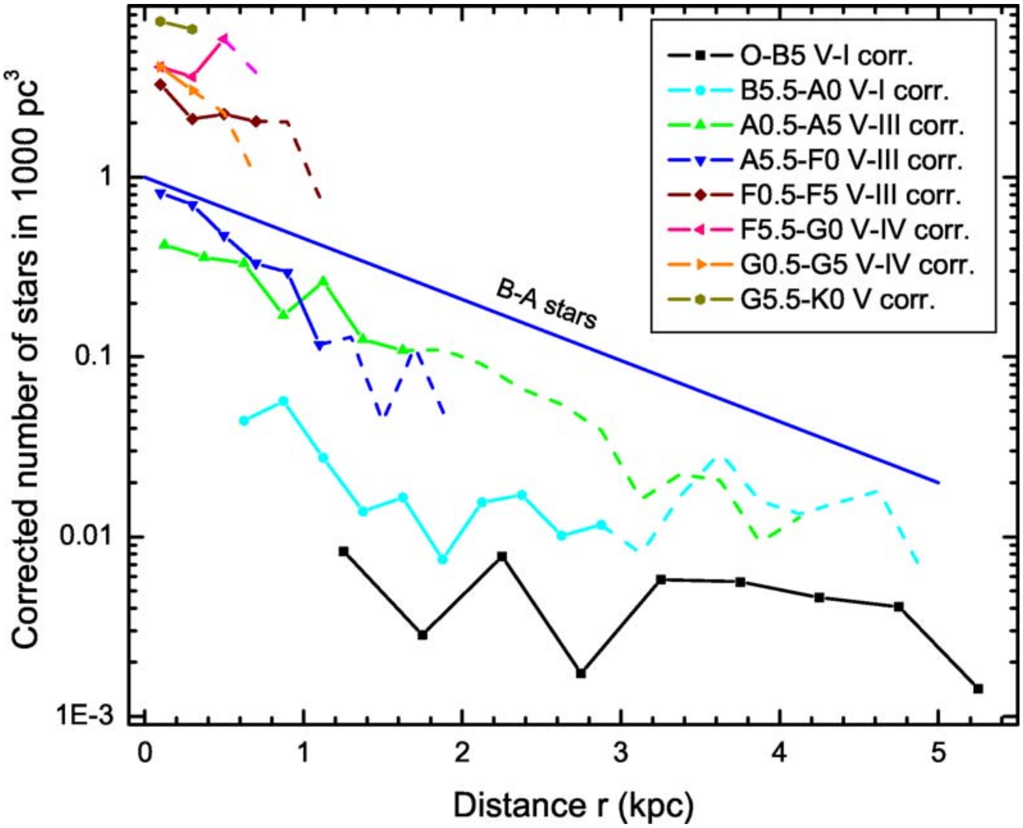

Fig. 4.3.8. Corrected space densities of stars. The observed densities were shown in Fig. 4.3.5. Notations are the same in both figures.

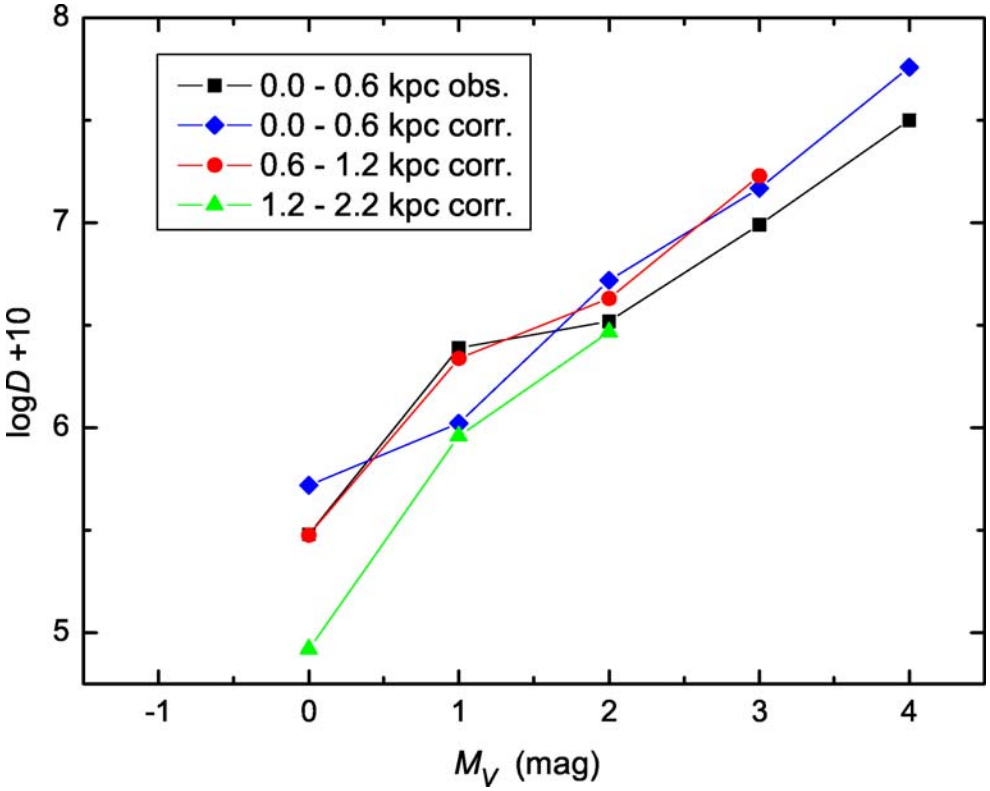

Fig. 4.3.9. Corrected luminosity functions for stars of the main-sequence belt for three distance intervals.

4.4. Comparison of the results

Our investigation of the area A1 at the Cam-Cas border [1] shows that interstellar extinction starts to grow at a distance of 100 pc and it reaches 2 mag at about 400 pc. This result is quite similar to the extinction run with distance found for the darkened part of the area A2. In a close area zero extinction up to 100 pc and $A_V \approx 2.0$ mag at 1 kpc was found by Rydström (1978). This means that the Camelopardalis dark clouds form a huge unique system of dust clouds extending parallel to the Galactic equator. This cloud system is seen very well in the Photographic Panorama of the Milky Way published by the ESO (Laustsen et al. 1987). At a distance of 100 pc, linear extension of the clouds along the Galactic longitude is about 40 pc.

We have compared our Figure 4.2.14 with the map of dust distribution in the same direction from Schlegel et al. (1998) shown in Figure 4.2.18 (Fig.7 in [8]). Both figures show some resemblance, but we must keep in mind that the dust maps of Schlegel et al. at low Galactic latitudes are not very exact due to undetected point sources and due to the emission nebula S 204 in the northern part of our area.

Photometric and trigonometric distances are compared in Figure 4.2.9. Probably no systematic differences are present. Only three stars deviate more than the standard deviation of distances which is about $0.25r$. These stars can be peculiar or close binaries with components of the same spectral class.

For verification of small values of the color excesses for the bright nearby stars, we compared E_{B-V} of 27 stars obtained from Vilnius photometry [3] with color excesses computed for the same stars in the $WBVR$ photometric system (Kornilov et al. 1991). No systematic differences were found: the standard deviation between both sets of color excesses is $\sigma = \pm 0.023$ mag, if the intrinsic $(B-V)_0$ values are taken for photometric spectral types, or ±0.040 mag if MK spectral types are taken from the literature.

According to Serkowski et al. (1975), the ratio $R = A_V/E_{B-V}$ is $R = 5.5\lambda_{\rm max}$, while Whittet & van Breda (1978) find the coefficient 5.6. From the Coyne, Gehrels & Serkowski (1974) catalog of $\lambda_{\rm max}$, the mean $\lambda_{\rm max}$ for 20 stars selected within the Galactic longitudes 140–150° is (0.51 ± 0.03) μm. This gives $R = 2.81 \pm 0.15$ for the Serkowski et al. coefficient and $R = 2.86 \pm 0.15$ for the Whittet & van Breda coefficient. These values are in close agreement with the mean R value obtained in Section 4.1.3 from infrared photometry.

A small deviation from the normal reddening law is also evident in the ANS 330 nm passband, and at shorter wavelengths the stars are affected by somewhat larger extinction than on average. The same type of deviations is observed in the extinction curves of the Perseus and Camelopardalis stars in the Wegner (2002) atlas. This is in good agreement with the predictions of Cardelli et al. (1988, 1989), explaining the variety of interstellar extinction curves found in the ultraviolet.

5. THE MAIN RESULTS AND CONCLUSIONS

5.1. SUMMARY OF THE MAIN RESULTS

A Milky Way region in the direction of the Camelopardalis dark clouds is investigated using photoelectric and CCD photometry of more than 1800 stars in the *Vilnius* system. The region is of 10°×10° size (Area B), and it contains three smaller areas A1, A2 and C in which stars have been measured to fainter limiting magnitudes. For the stars in these areas, two-dimensional spectral types (in the MK system), color excesses, interstellar extinctions and distances are determined. The data obtained are used to investigate the interstellar extinction law, the dependence of interstellar extinction on distance, the distribution of stars by apparent magnitudes, spectral classes, absolute magnitudes and distances, the space density of stars of various spectral types and the luminosity functions. The investigated stars belong to the Orion, Perseus and Outer spiral arms. Thus, this is the deepest photometric survey of stars ever done in the *Vilnius* system.

The following main results are obtained:

1. In the Milky Way near the border of Camelopardalis, Perseus and Cassiopeia constellations, the interstellar extinction law in the infrared and optical spectral ranges is close to normal. However, a slightly reduced mean ratio, $R = A_V/E_{B-V} = 2.9 \pm 0.12$ ($R_{\rm Vil}$ =3.83), is found in the area. A small deviation from the normal law is also evident in the ANS 330 nm passband and at shorter wavelengths: the stars are affected by somewhat larger extinction than that for the average extinction law. Since in the optical and near UV ranges the deviations from the normal law are small, their influence on the ratios of color excesses of the *Vilnius* system may be neglected.

2. In the area at ℓ=134–151°, b=0° (Area B) of 10°×10° size, 309 stars with known *Hipparcos* parallaxes and the stars of O–B spectral types were investigated. The extinction appears at a distance of 110–150 pc and reaches 1.2–2.4 mag at 1 kpc. Due to nonuniform distribution of absorbing clouds, the extinction at a distance of 4 kpc varies from 2 to 4 mag. Star distances determined from our photometry and from the *Hipparcos* parallaxes up to 150 pc exhibit a satisfactory agreement.

3. In the area at ℓ=142°, b=1.5° (A1) of about 3°×4° size, 126 stars brighter than 12.5 mag are investigated. Distribution of interstellar extinction up to 2 kpc shows two dust clouds, at 130–400 pc and 800–1200 pc.

4. In the area at ℓ=149°, b=–1° (A2) of about 3°×4° size, 157 stars down to 11.5 mag are investigated. Distribution of interstellar extinction up to 1 kpc shows that the dark cloud L1391 begins at 130 pc and at a distance of 400 pc the extinction reaches 2 mag.

5. CCD photometry of 1376 stars down to 15.5 mag is carried out in a 1.5 square degree area at ℓ =146° and b=+2.6° (C). Using 1303 stars, a detailed distribution of extinction in five subareas is investigated. The extinction values at 400 pc are from about 0.8 mag in the NE part up to about 1.7 mag at the SW part of the area. At larger distances the extinction grows slower and reaches 1.8 mag at 1.7 kpc. At the distances between 1.7 and 3.3 kpc the extinction does not increase, except of the NW corner.

5.2. CONCLUSIONS

1. The interstellar extinction law in the infrared and optical spectral ranges near the border of Camelopardalis, Perseus and Cassiopeia constellations is found to be close to the normal low. However, a slightly reduced ratio, $R = A_V/E_{B-V}$=2.9 ± 0.12 (or $R_{\rm Vil}$ = 3.83), is found.

2. In the investigated direction the interstellar extinction is mainly concentrated between 130–400 pc and extends up to 1.5 kpc, i.e., the dust clouds belong to the Orion

spiral arm. The Camelopardalis dark clouds form a large system extending parallel to the Galactic equator. They are among the nearest dust formations in the solar vicinity.

3. In the CCD area there is no evidence that the extinction increases in the Perseus arm. Also we do not see any concentration of O–B5 stars at the expected distance of this arm.

4. Most of O–B5 stars of the CCD area (41 from a total number of 59) are concentrated at >3.3 kpc distances. Also, an increase of interstellar extinction at these distances is observed in the northern part of our CCD area. These features may be tracers of the Outer spiral arm. The association Cam OB3 also belongs to the Outer arm: its distance is found to be 4.2±0.3 kpc, and the average extinction of its members is 2.20±0.14 mag.

5. The luminosity functions within absolute magnitudes M_V 0.0 and +4.0 for the distance ranges 0–0.6 kpc, 0.6–1.2 kpc and 1.2–2.2 kpc are determined. At large distances star density decreases due to the general density gradient in the Galactic disk.

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Table 4.2.1a. Results of photoelectric photometry in the Vilnius system. Area A1 [1]. The identification number shown on the chart in Fig. 4.2.1. The values having the errors ≥0.05 mag are marked by a colon.

No.	BD	α(2000) h m s	δ(2000) ° ′	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
1.	57°708	3 16 12	57 45.2	9.66	3.66	3.02	2.10	0.90	0.35	0.82	2
				0.03	0.04	0.02	0.01	0.01	0.02	0.01	
2.	57°709	3 16 31	57 45.7	9.94	2.03	1.58	1.11	0.60	0.20	0.50	2
				0.03	0.03	0.02	0.02	0.02	0.02	0.01	
3.	57°710	3 17 19	58 10.7	9.39	1.79	1.35	0.84	0.47	0.18	0.35	2
				0.03	0.02	0.02	0.01	0.02	0.02	0.02	
4.		3 17 58	58 29.6	10.00	2.41	1.77	0.80	0.34	0.16	0.28	1
				0.04	0.02	0.02	0.01	0.01	0.02	0.01	
5.	57°711	3 18 11	58 19.9	8.86	5.72	4.84	3.36	1.27	0.61	1.19	2
				0.03	0.02	0.03	0.04	0.01	0.02	0.02	
6.	57°712	3 18 11	58 29.8	9.62	2.69	2.15	1.46	0.65	0.26	0.57	1
				0.03	0.03	0.03	0.02	0.02	0.02	0.02	
7.	57°713	3 19 14	57 52.9	9.13	2.40	1.67	0.85	0.43	0.17	0.33	2
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
8.	57°714	3 19 46	58 21.5	9.26	1.66	1.23	0.74	0.40	0.18	0.29	2
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
9.	57°715	3 20 51	57 52.5	7.79	4.72	3.94	2.75	1.09	0.43	0.99	2
				0.03	0.02	0.04	0.02	0.02	0.02	0.02	
10.	57°716	3 21 24	58 26.3	9.33	3.87	3.24	2.28	0.92	0.34	0.86	2
				0.04	0.03	0.02	0.03	0.02	0.02	0.03	
11.	56°806	3 21 37	56 45.2	10.84?	2.60	1.88	1.03	0.52	0.19	0.41	3
				0.14	0.02	0.03	0.03	0.03	0.02	0.01	
12.	56°807	3 21 51	56 32.7	10.54	2.85	2.00	1.05	0.50	0.19	0.41	2
				0.03	0.03	0.03	0.01	0.01	0.02	0.01	
13.		3 21 53	56 45.5	11.57:			1.17:	0.54	0.21	0.45	2
				0.05			0.06	0.02	0.02	0.02	
14.	57°717	3 22 13	58 13.7	10.35	2.18	1.78	1.27	0.54	0.20	0.52	2
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
15.	57°718	3 22 17	58 06.4	8.81	4.66	3.99	2.77	1.12	0.45	1.00	2
				0.03	0.03	0.02	0.01	0.01	0.02	0.01	
16.	57°719	3 22 57	58 28.0	9.75	2.79	2.03	1.04	0.49	0.20	0.40	2
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
17.	57°720	3 23 49	58 28.1	7.82	2.19	1.68	1.07	0.46	0.16	0.44	2
				0.03	0.02	0.02	0.03	0.01	0.02	0.01	
18.	56°808	3 24 12	56 41.0	9.07	2.44	1.78	1.04	0.55	0.20	0.44	2
				0.04	0.04	0.05	0.03	0.01	0.02	0.02	
19.	57°721	3 24 27	58 25.8	9.45	2.18	1.60	0.93	0.48	0.19	0.35	2
				0.03	0.03	0.02	0.02	0.01	0.02	0.01	
20.	57°722	3 25 09	58 11.1	9.32	2.22	1.61	0.92	0.50	0.20	0.37	3
				0.03	0.03	0.02	0.02	0.01	0.03	0.02	
21.	56°809	3 25 17	56 51.7	9.42:	2.35	1.75	1.12	0.60	0.22	0.48	5
				0.12	0.03	0.02	0.03	0.02	0.02	0.02	
22.	56°810	3 25 21	57 08.2	9.78	5.06	4.29	2.94	1.20	0.48	1.08	2
				0.04	0.05	0.02	0.03	0.01	0.02	0.01	
23.	56°811	3 25 49	56 33.3	10.85	2.85	2.31	1.62	0.72	0.27	0.65	2
				0.03	0.02	0.02	0.02	0.02	0.02	0.01	
24.	58°601	3 26 20	58 53.4	8.87	2.13	1.67	1.10	0.46	0.16	0.46	1
				0.03	0.02	0.02	0.02	0.02	0.02	0.01	
25.	56°812	3 26 33	57 25.2	8.40	3.13	2.64	1.84	0.72	0.32	0.70	3
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
26.	57°723	3 26 51	58 03.0	9.46	1.94	1.48	0.90	0.50	0.19	0.40	2
				0.03	0.03	0.02	0.02	0.01	0.02	0.01	

Table 4.2.1a (continued)

No.	BD	α(2000) h m s	δ(2000) ° ′	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
27.	57°724	3 26 51	58 16.4	8.52	2.31	1.85	1.23	0.50	0.20	0.48	2
				0.03	0.02	0.02	0.01	0.01	0.02	0.02	
28.		3 27 06	56 53.7	11.60	3.27:	2.39	1.50	0.74	0.26	0.62	1
				0.03	0.06	0.04	0.03	0.03	0.04	0.02	
29.	58°602	3 27 22	59 11.8	8.02?	1.49	1.14	0.80	0.45	0.18	0.34	1
				0.14	0.02	0.02	0.01	0.01	0.02	0.01	
30.	56°813	3 27 23	56 53.7	9.47	2.19	1.63	0.95	0.49	0.18	0.39	3
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
31.	58°603	3 27 44	59 00.5	9.85	1.76	1.32	0.77	0.42	0.16	0.32	2
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
32.	56°814	3 28 08	56 31.3	10.50	2.11	1.59	1.00	0.52	0.21	0.45	2
				0.03	0.03	0.02	0.01	0.01	0.03	0.01	
33.	58°604	3 28 18	58 34.0	10.13	2.35	1.86	1.30	0.57	0.23	0.54	6
				0.04	0.02	0.02	0.01	0.01	0.02	0.01	
34.	57°725	3 28 29	57 40.3	8.69	2.16	1.71	1.15	0.50	0.19	0.48	1
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
35.	58°605	3 28 41	58 36.6	10.31	2.68	1.94	0.99	0.46	0.19	0.37	4
				0.03	0.03	0.04	0.02	0.01	0.02	0.01	
36.	58°606	3 29 30	59 24.4	9.76	2.38	1.87	1.28	0.55	0.22	0.50	1
				0.05	0.02	0.02	0.01	0.01	0.02	0.01	
37.	58°607	3 29 55	58 52.7	4.60	2.29	1.64	1.15	0.64	0.25	0.57	2
				0.03	0.04	0.02	0.02	0.02	0.02	0.01	
38.	57°726	3 30 02	58 22.5	9.98	4.70	3.93	2.76	1.12	0.46	1.00	2
				0.03	0.02	0.03	0.05	0.01	0.02	0.01	
39.	58°608	3 30 11	59 22.0	6.13	2.03	1.47	0.63	0.25	0.10	0.16	2
				0.03	0.03	0.02	0.02	0.01	0.02	0.01	
40.	56°815	3 30 38	57 12.2	10.36	2.81	2.39	1.63	0.64	0.27	0.64	3
				0.03	0.03	0.02	0.02	0.01	0.02	0.01	
41.	58°609	3 30 55	59 07.8	9.43	2.23	1.75	1.17	0.50	0.18	0.46	2
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
42.	58°610	3 30 58	59 14.6	9.60	1.60	1.27	0.89	0.50	0.20	0.42	2
				0.03	0.02	0.02	0.01	0.01	0.03	0.02	
43.	57°727	3 31 20	58 29.6	8.69	6.09	5.14	3.62	1.40	0.63	1.32	1
				0.03	0.04	0.03	0.02	0.02	0.02	0.01	
44.	58°612	3 31 25	58 42.3	9.13	4.02	3.40	2.36	0.97	0.37	0.88	4
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
45.	58°611	3 31 30	59 17.3	10.55:	3.77	2.59:	1.70:	0.96	0.30	0.80	2
				0.05	0.02	0.05	0.05	0.03	0.04	0.01	
46.		3 31 43	58 33.6	10.74:	2.35	1.71	0.86	0.40	0.17	0.31	4
				0.05	0.02	0.02	0.01	0.01	0.02	0.01	
47.	56°816	3 31 45	57 05.7	9.64	3.73	3.16	2.16	0.85	0.35	0.83	3
				0.03	0.02	0.03	0.01	0.01	0.02	0.01	
48.	58°613	3 31 49	59 00.9	9.86	2.40	1.95	1.34	0.57	0.22	0.52	2
				0.04	0.02	0.02	0.01	0.01	0.02	0.02	
49.		3 32 10	58 55.8	11.88:	2.60	1.96	1.04	0.46	0.21	0.28	2
				0.06	0.02	0.03	0.02	0.04	0.02	0.03	
50.		3 32 17	56 33.9	10.99	3.31	2.51	1.35	0.66	0.23	0.57	1
				0.03	0.03	0.02	0.02	0.02	0.02	0.01	
51.		3 32 18	58 43.3	11.89	2.04	1.60	1.00	0.53	0.21	0.42	2
				0.03	0.02	0.03	0.01	0.03	0.03	0.01	
52.	56°817	3 32 22	56 34.7	9.72	3.52	2.56	1.49	0.72	0.26	0.59	2
				0.03	0.03	0.02	0.02	0.01	0.02	0.02	
53.	56°818	3 32 30	57 03.2	10.56	2.66	2.10	1.42	0.65	0.24	0.57	2
				0.03	0.03	0.02	0.01	0.01	0.02	0.01	

Table 4.2.1a (continued)

No.	BD	α(2000) h m s	δ(2000) ° ′	*V*	*U*–*V*	*P*–*V*	*X*–*V*	*Y*–*V*	*Z*–*V*	*V*–*S*	*n*
54.		3 32 40	58 52.7	11.74	4.70	3.79:	2.63	1.07	0.42	0.95	5
				0.03	0.04	0.05	0.03	0.03	0.02	0.01	
55.		3 32 53	58 43.2	11.70	1.95	1.52	0.95	0.50	0.19	0.41	6
				0.03	0.02	0.02	0.03	0.02	0.02	0.01	
56.	58°614	3 32 53	59 19.0	10.93	2.64	1.88	0.99	0.50	0.19	0.36	2
				0.03	0.02	0.02	0.01	0.02	0.02	0.01	
57.	58°615	3 32 54	59 06.2	10.43	2.95	2.48	1.74	0.72	0.30	0.69	3
				0.04	0.02	0.02	0.02	0.02	0.03	0.02	
58.	58°616	3 32 54	58 50.1	9.48	2.45	1.89	1.21	0.54	0.20	0.48	8
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
59.	58°617	3 33 25	59 25.4	8.09	3.14	2.72	1.80	0.68	0.33	0.65	3
				0.03	0.02	0.03	0.02	0.02	0.02	0.01	
60.	58°618	3 33 30	58 45.8	7.93	2.11	1.64	1.03	0.44	0.17	0.40	6
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
61.	58°619	3 33 32	58 46.0	6.46	2.13	1.54	0.69	0.26	0.10	0.17	8
				0.04	0.02	0.02	0.02	0.01	0.02	0.02	
62.	57°729	3 33 36	58 15.8	8.39	2.20	1.63	0.82	0.32	0.10	0.31	1
				0.03	0.03	0.02	0.01	0.01	0.02	0.01	
63.	57°728	3 33 38	58 29.0	10.11	1.81	1.38	0.84	0.46	0.17	0.34	1
				0.03	0.02	0.02	0.02	0.01	0.02	0.01	
64.	56°819	3 33 39	57 22.8	11.13:	3.13	2.33	1.28	0.60	0.20	0.51	1
				0.09	0.02	0.02	0.02	0.01	0.02	0.02	
65.		3 33 40	58 39.5	13.16	2.82	2.25:	1.53	0.70	0.24	0.62	5
				0.04	0.02	0.07	0.04	0.03	0.04	0.03	
66.	57°730	3 33 40	57 51.7	6.37	2.27	1.78	1.20	0.51	0.20	0.48	1
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
67.		3 33 47	58 50.4	11.12	4.95	4.21	2.84	1.11	0.47	1.02	4
				0.03	0.04	0.03	0.03	0.02	0.02	0.02	
68.		3 33 51	58 45.2	12.63	2.79	2.24	1.54	0.65	0.24	0.65	9
				0.06	0.03	0.03	0.02	0.02	0.02	0.02	
69.		3 33 53	58 38.9	12.09	2.64	1.99	1.14	0.52	0.20	0.43	6
				0.06	0.02	0.02	0.01	0.03	0.02	0.02	
70.	56°820	3 33 54	56 57.0	9.09	5.51	4.69	3.25	1.32	0.54	1.14	5
				0.03	0.02	0.03	0.03	0.01	0.02	0.01	
71.		3 33 56	58 41.0	13.08	3.10	2.47	1.70	0.75	0.28	0.70	10
				0.03	0.03	0.04	0.03	0.02	0.02	0.02	
72.	56°821	3 33 58	57 15.2	10.05	3.07	2.13:	1.21	0.60	0.22	0.50	3
				0.04	0.04	0.06	0.01	0.01	0.02	0.01	
73.		3 33 59	58 35.9	11.15	4.47	3.87	2.72	1.01	0.64	1.14	6
				0.03	0.03	0.02	0.04	0.02	0.02	0.01	
74.		3 34 03	58 40.2	13.10	2.83	2.13	1.31	0.60	0.24	0.49	12
				0.03	0.03	0.03	0.03	0.02	0.03	0.02	
75.		3 34 08	58 41.5	12.20	2.73	2.16	1.48	0.68	0.26	0.58	7
				0.03	0.02	0.03	0.02	0.02	0.02	0.02	
76.		3 34 11	58 46.4	12.60			2.92:	1.42	0.58	1.36	9
				0.03			0.08	0.02	0.03	0.01	
77.	58°620	3 34 11	59 02.4	10.67:	2.52	1.91	1.18	0.51	0.19	0.50	3
				0.05	0.03	0.03	0.01	0.02	0.03	0.01	
78.		3 34 18	58 44.8	11.30	5.24	4.44:	3.06	1.24	0.50	1.12	5
				0.03	0.04	0.07	0.02	0.01	0.02	0.01	
79.		3 34 21	58 34.2	11.62	2.66	1.99	1.05	0.47	0.20	0.34	6
				0.03	0.02	0.03	0.01	0.01	0.02	0.02	
80.		3 34 27	58 32.0	12.00	3.57:	3.20	2.14	0.81	0.42	0.80	8
				0.04	0.08	0.05	0.02	0.02	0.03	0.02	

Table 4.2.1a (continued)

No.	BD	α(2000) h m s	δ(2000) ° ′	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
81.		3 34 37	58 42.4	12.40	3.67	2.98	2.19	0.94	0.35	0.84	6
				0.03	0.04	0.04	0.04	0.02	0.03	0.02	
82.	58°622	3 34 38	58 38.7	9.32	3.08	2.35	1.77	0.99	0.35	0.84	6
				0.03	0.03	0.02	0.02	0.01	0.02	0.01	
83.	58°621	3 34 40	59 21.6	8.90	4.83	4.10	2.81	1.08	0.46	1.02	2
				0.03	0.03	0.02	0.03	0.01	0.02	0.01	
84.	58°623	3 34 42	58 35.1	7.92	1.19	0.98	0.72	0.42	0.16	0.32	6
				0.03	0.02	0.02	0.02	0.03	0.03	0.01	
85.		3 34 46	58 39.8	13.74			1.83:	0.75	0.25	0.76	7
				0.03			0.07	0.04	0.05	0.04	
86.		3 34 48	58 39.9	13.07	2.70	2.13	1.51	0.71	0.31	0.68	6
				0.05	0.04	0.03	0.04	0.02	0.02	0.04	
87.		3 34 49	58 43.7	12.92	2.89	2.21	1.57	0.74	0.29	0.59	6
				0.03	0.02	0.03	0.05	0.04	0.03	0.03	
88.		3 34 51	58 39.9	13.69	3.18:	2.87:	1.88	0.76	0.31	0.70	3
				0.04	0.07	0.07	0.04	0.02	0.06	0.04	
89.	59°675	3 35 01	60 02.5	6.47	2.07	1.62	1.05	0.46	0.17	0.41	1
				0.03	0.02	0.02	0.02	0.02	0.02	0.01	
90.		3 35 06	58 40.7	12.84:	2.73	2.00	1.15	0.50	0.18	0.37	1
				0.05	0.04	0.03	0.02	0.02	0.03	0.02	
91.	58°624	3 35 16	58 46.3	10.42	2.71	1.97	1.05	0.46	0.18	0.37	5
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
92.	56°822	3 35 28	56 48.5	10.67	2.60	1.90	1.05	0.56	0.20	0.41	2
				0.03	0.02	0.03	0.02	0.02	0.02	0.01	
93.	57°731	3 35 51	57 49.7	9.23	2.13	1.64	1.02	0.44	0.17	0.40	3
				0.03	0.03	0.02	0.01	0.01	0.02	0.01	
94.		3 35 54	58 31.5	12.11	2.65:	2.03	1.38	0.65	0.23	0.57	3
				0.04	0.06	0.03	0.02	0.05	0.04	0.03	
95.		3 35 55	58 33.8	11.15			2.82:	1.09	0.45	0.98	3
				0.03			0.06	0.02	0.03	0.01	
96.	58°625	3 36 03	58 44.3	11.07	2.76	2.06	1.11	0.50	0.21	0.37	9
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
97.	58°626	3 36 16	59 12.7	9.21:			2.99:	1.19	0.49	1.06	2
				0.05			0.05	0.01	0.02	0.02	
98.	58°627	3 36 21	59 16.3	10.09	4.05	3.34	2.38	1.01	0.38	0.88	3
				0.03	0.02	0.04	0.02	0.02	0.02	0.01	
99.	57°732	3 36 43	57 48.5	9.84:		4.77	3.38	1.36	0.59	1.25	2
				0.08		0.02	0.01	0.01	0.03	0.03	
100.	56°823	3 36 53	56 52.5	10.25	2.84	2.22	1.44	0.69	0.25	0.61	2
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
101.	58°628	3 37 25	58 40.1	8.34	4.74	4.05	2.80	1.08	0.44	0.98	4
				0.03	0.02	0.02	0.02	0.01	0.02	0.01	
102.	57°733	3 37 29	58 27.3	10.35	2.41	1.87	1.20	0.54	0.22	0.51	1
				0.04	0.03	0.03	0.02	0.01	0.02	0.01	
103.	58°629	3 37 30	58 34.4	10.51	2.33	1.70	0.83	0.35	0.13	0.27	2
				0.03	0.03	0.02	0.01	0.01	0.02	0.01	
104.	56°824	3 37 45	56 43.1	6.47	1.37	1.09	0.83	0.49	0.19	0.36	3
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
105.	56°825	3 37 54	57 06.9	9.32	2.04	1.52	0.93	0.50	0.19	0.41	3
				0.03	0.02	0.02	0.02	0.01	0.02	0.01	
106.	56°826	3 38 19	56 57.1	6.27	1.31	0.91	0.35	0.14	0.11	0.09	3
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
107.	57°734	3 38 19	57 41.2	8.78	2.24	1.70	1.15	0.61	0.21	0.50	2
				0.04	0.02	0.03	0.01	0.02	0.03	0.01	

Table 4.2.1a (continued)

No.	BD	$\alpha(2000)$ h m s	$\delta(2000)$ ° ′	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
108.	56°827	3 38 31	56 52.5	10.04	2.15	1.68	1.15	0.52	0.19	0.45	2
				0.03	0.02	0.02	0.02	0.01	0.02	0.01	
109.	56°828	3 39 09	56 40.9	9.91:	2.67	2.11	1.43	0.65	0.22	0.66	2
				0.05	0.02	0.04	0.04	0.02	0.02	0.01	
110.	58°631	3 39 22	59 15.9	7.78	4.34	3.70	2.52	0.95	0.44	0.87	2
				0.03	0.02	0.04	0.02	0.02	0.02	0.01	
111.	56°829	3 39 32	57 28.3	9.21		5.12	3.53	1.43	0.62	1.28	3
				0.03		0.04	0.02	0.01	0.02	0.01	
112.	58°633	3 39 37	59 22.2	8.22	2.14	1.71	1.18	0.51	0.19	0.49	6
				0.03	0.02	0.02	0.01	0.01	0.02	0.01	
113.	57°735	3 39 45	58 20.1	9.96	2.71	2.05	1.28	0.59	0.21	0.52	1
				0.04	0.02	0.02	0.01	0.01	0.02	0.01	
114.	57°736	3 40 13	58 18.1	9.13	2.13	1.67	1.08	0.47	0.16	0.42	1
				0.04	0.02	0.02	0.02	0.01	0.02	0.02	
115.	56°831	3 41 23	56 56.2	9.37	2.62	1.99	1.31	0.62	0.23	0.54	2
				0.03	0.02	0.02	0.01	0.02	0.03	0.01	
116.	56°830	3 41 24	57 09.9	9.20	2.16	1.56	0.88	0.47	0.18	0.35	2
				0.03	0.02	0.03	0.01	0.01	0.02	0.01	
117.	57°737	3 41 41	57 30.4	8.40	4.64	3.95	2.70	1.10	0.43	1.01	1
				0.04	0.03	0.02	0.02	0.01	0.02	0.01	
118.	56°833	3 41 52	56 56.1	10.38:	2.81	2.07	1.15	0.54	0.19	0.42	2
				0.05	0.03	0.02	0.03	0.01	0.02	0.01	
119.	56°832	3 41 53	57 20.7	9.94	2.71	1.90	1.02	0.52	0.21	0.40	2
				0.03	0.02	0.02	0.02	0.01	0.02	0.02	
120.		3 42 12	57 00.9	11.67	3.20:	2.29	1.35	0.63	0.23	0.51	2
				0.03	0.08	0.02	0.03	0.03	0.02	0.01	
121.	56°834	3 42 15	57 01.8	11.14	3.22:	2.34	1.46	0.71	0.27	0.51	2
				0.04	0.06	0.02	0.05	0.02	0.02	0.04	
122.	56°835	3 42 26	56 28.5	8.87	2.70	1.88	1.00	0.50	0.16	0.45	1
				0.03	0.02	0.03	0.03	0.02	0.03	0.02	
123.	57°739	3 42 59	57 33.9	8.35:	1.63	1.15	0.73	0.42	0.15	0.35	1
				0.05	0.02	0.02	0.01	0.01	0.02	0.01	
124.	57°738	3 43 00	58 00.3	10.08:	2.71	2.10	1.39	0.63	0.23	0.61	1
				0.05	0.03	0.03	0.02	0.02	0.02	0.01	
125.	59°708	3 45 21	60 21.1	8.04	2.33	1.88	1.30	0.57	0.20	0.51	1
				0.03	0.02	0.02	0.02	0.02	0.02	0.01	
126.	58°646	3 45 45	58 51.5	7.71	2.13	1.68	1.14	0.50	0.19	0.45	1
				0.03	0.02	0.02	0.02	0.02	0.02	0.01	

Table 4.2.2a. Results of photometric quantification of stars. Area A1 [1].

No.	BD	HD	l °	b °	Sp	M_V	E_{B-V}	A_V	r (pc)	σ_{Sp}
1.	57°708		141.641	0.568	G5 III	1.0	0.25	0.90	360	1
2.	57°709		141.672	0.597	B3 V	–1.5	0.73	2.42	640	1
3.	57°710		141.540	1.006	B4 III	–2.0	0.50	1.64	890	2
4.			141.442	1.318	A3 V	1.5	0.17	0.57	390	3
5.	57°711		141.553	1.197	K4.2 III	0.5	0.29	1.09	280	2
6.	57°712		141.465	1.336	F7 V	3.7	0.20	0.67	110	3
7.	57°713	20353	141.913	0.892	B9 V	0.4	0.37	1.23	310	2
8.	57°714	20417	141.714	1.332	B4 V	–1.1	0.42	1.38	620	2
9.	57°715	20524	142.098	1.004	K0.7 III	0.8	0.37	1.35	130	3
10.	57°716		141.850	1.516	G8 III	0.9	0.25	0.90	320	1
11.	56°806		142.798	0.122	B9 V	0.5	0.50	1.66	540	2
12.	56°807		142.940	-0.034	A1.5 III	0.4	0.42	1.41	560	1
13.			142.827	0.147	A4 V:	1.7:	0.38:	1.01:	520	2
14.	57°717		142.055	1.399	F9 V:	4.1:	0.01:	0.04:	160:	7
15.	57°718		142.129	1.302	K1 III	0.8	0.37	1.35	220	3
16.	57°719		142.004	1.651	A2 V	1.3	0.38	1.30	270	1
17.	57°720	20787	142.097	1.716	F4 V	3.4	0.04	0.12	70	1
18.	56°808	20848	143.133	0.259	B8 V	0.1	0.56	1.85	260	1
19.	57°721	20847	142.187	1.730	B7 V	–0.2	0.51	1.68	390	2
20.	57°722		142.401	1.577	B7 IV	–0.6	0.50	1.67	440	2
21.	56°809		143.157	0.490	B6 V	–0.5	0.66	2.20	350	1
22.	56°810		143.010	0.723	K1.5 III	0.6	0.42	1.55	340	2
23.	56°811		143.388	0.277	F9.5 V	4.3	0.24	0.83	140	1
24.	58°601	21003	142.133	2.248	F6 V	3.7	0.00	0.00	110	1
25.	56°812	21059	142.986	1.049	G9.5 V	5.9	0.13	0.45	30	1
26.	57 723		142.663	1.592	B5 V	–0.8	0.52	1.72	500	1
27.	57 724	21084	142.537	1.776	F9 V	4.2	0.00	0.00	70	1
25.	56°812	21059	142.986	1.049	G9.5 V	5.9	0.13	0.45	30	1
26.	57°723		142.663	1.592	B5 V	–0.8	0.52	1.72	500	1
28.			143.343	0.658	A1.5 V	1.7:	0.72	2.44	310	2
29.	58°602	21116	142.070	2.575	B2.5 II	–4.9	0.48	1.58	1840	1
30.	56°813		143.374	0.680	B7 V	0.6	0.52	1.71	270	2
31.	58°603		142.216	2.447	B5 IV	–1.0	0.41	1.37	810	1
32.	56°814		143.672	0.431	B6 V	0.2	0.58	1.91	490	1
33.	58°604		142.528	2.125	F8 V	4.1	0.08	0.27	140	3
34.	57°725	21248	143.056	1.404	F5 V	3.6	0.04	0.12	100	4
35.	58°605		142.544	2.189	A1 V	1.1	0.36	1.23	380	1
36.	58°606		142.172	2.904	F8 V	3.8	0.06	0.22	140	1
37.	58°607	21389	142.519	2.501	B9 Ia	–7.2	0.58	1.93	90	1
38.	57°726		142.822	2.099	K0.7 III	0.8	0.40	1.45	350	1
39.	58°608	21427	142.267	2.920	A2 V	1.8	0.08	0.26	60	2
40.	56°815		143.560	1.185	G8 V	5.6	0.05	0.17	80	1
41.	58°609		142.480	2.780	F6 V	3.7	0.03	0.10	130	1
42.	58°610		142.420	2.877	B1.5 V	–2.9	0.62	2.07	1220	1
43.	57°727		142.893	2.293	K4.2 III	0.5	0.44	1.68	200	1
44.	58°612	21538	142.781	2.471	G8.5 III	0.9	0.29	1.03	280	1
45.	58°611	21538	142.449	2.953	A1 Ib:	–5.3:	0.95:	3.17:	3400:	4
46.			142.896	2.377	B9.5 V	1.6	0.33	1.12	400	1
47.	56°816		143.747	1.184	K0.5 IV	3.2	0.16	0.56	150	1
48.	58°613		142.642	2.753	F9.5 V	4.3	0.05	0.16	120	1
49.			142.728	2.710	A5 V:	2.3:	0.27:	0.92:	540:	5
50.			144.114	0.794	A2 V:	1.3:	0.60:	2.03:	340:	6
51.			142.862	2.551	B5 V	–0.1	0.59	1.94	1020	1
52.	56°817		144.115	0.812	A4 III:	0.4:	0.64:	2.16:	260:	5
53.	56°818		143.855	1.210	F5 V	3.7	0.24	0.81	160	1

Table 4.2.2a (continued)

No.	BD	HD	l °	b °	Sp	M_V	E_{B-V}	A_V	r (pc)	σ_{Sp}
54.			142.810	2.706	G9.5 II-III:	–0.7:	0.36:	1.31:	1600:	6
55.			142.925	2.594	B5 V	–0.1	0.54	1.79	1000	1
56.	58°614		142.578	3.079	B9.5 V	0.5	0.45	1.52	600	2
57.	58°615		142.704	2.906	G7 V	5.4	0.16	0.57	80	3
58.	58°616		142.860	2.688	F4 IV	2.5	0.14	0.48	200	1
59.	58°617	21742	142.570	3.205	K1 V	6.1	0.02	0.05	20	1
60.	58°618		142.965	2.676	F4 V	3.4	0.01	0.04	80	2
61.	58°619	21769	142.967	2.680	A5 V	1.9	0.00	0.00	80	2
62.	57°729	21784	143.270	2.279	A7 V	2.4	0.06	0.19	140	1
63.	57°728		143.144	2.460	B5 V	–0.8	0.46	1.53	750	1
64.	56°819		143.790	1.565	A3 V	1.5	0.49	1.67	390	3
65.			143.044	2.603	F6 V	3.8:	0.29	0.98	480	2
66.	57°730	21794	143.511	1.958	F6 V	3.7	0.05	0.18	30	2
67.			142.949	2.760	K2.2 III	1.0	0.30	1.11	640	3
68.			143.007	2.694	G1 IV	3.0	0.14	0.47	680	2
69.			143.073	2.611	A5 V	2.3	0.34	1.14	540	3
70.	56°820		144.071	1.236	K2.5 III	0.6	0.48	1.81	220	2
71.			143.057	2.644	F9 III	1.3	0.25	0.88	1520	1
72.	56°821		143.900	1.487	A0.5 III	0.0	0.58	1.97	410	1
73.			143.112	2.578	M1 V	9.4	0.05	0.16	20	3
74.			143.077	2.642	F0 V	2.8	0.33	1.11	690	3
75.			143.074	2.665	F6 V	3.8	0.27	0.92	310	2
76.			143.031	2.735	F9 II:	–2.5:	1.14:	4.04:	1620:	5
77.	58°620		142.874	2.952	F0 V	3.0	0.21	0.71	250	1
78.			143.059	2.722	K2 III	–0.3:	0.40	1.47	1060	2
79.			143.168	2.583	A5 V	1.9	0.27	0.93	570	3
80.			143.200	2.561	K2.2 V:	6.4:	0.17:	0.59:	100:	4
81.			143.115	2.715	G4 III	0.9:	0.34:	1.23:	1140:	4
82.	58°622		143.153	2.666	B7 Iab	–6.2	1.08	3.59	2400	2
83.	58°621		142.737	3.247	K2.2 III	0.7	0.25	0.94	280	1
84.	58°623	21894	143.196	2.623	B0.5 IV	–3.9	0.54	1.78	1000	1
85.			143.157	2.691	G2.5 III:	1.1:	0.16:	0.58:	2590:	2
86.			143.160	2.694	F8 V:	3.9:	0.27:	0.93:	450:	6
87.			143.124	2.747	F5 V:	3.4:	0.36:	1.22:	460:	4
88.			143.165	2.698	G9 V:	5.7:	0.18:	0.64:	300:	6
89.	59°675	21903	142.370	3.823	F5 V	3.6	0.00	0.00	40	2
90.			143.183	2.728	A7 V	2.3	0.30	1.03	800	3
91.	58°624		143.146	2.816	A4 V	1.7	0.29	0.98	350	1
92.	56°822		144.326	1.248	B8.5 V	0.8	0.55	1.82	410	3
93.	57°731	22020	143.766	2.102	F3 IV	2.5	0.01	0.02	220	1
94.			143.357	2.667	F3 V	3.2	0.27	0.90	400	1
95.			143.337	2.698	K2.2 III:	0.2:	0.23:	0.86:	1220:	1
96.	58°625		143.247	2.850	A5 V	2.0	0.32	1.08	400	3
97.	58°626		142.989	3.248	K2.2 III:	0.6:	0.36:	1.33:	290:	2
98.	58°627		142.962	3.303	G7 III	0.9	0.36	1.30	380	1
99.	57°732		143.871	2.154	K4 III-IV?					11
100.	56°823		144.444	1.416	F3 IV	2.5	0.33	1.12	210	1
101.	58°628	22191	143.432	2.900	K1.5 III	–0.3	0.26	0.97	340	1
102.	57°733		143.566	2.733	F3 V	3.2	0.16	0.52	210	1
103.	58°629		143.498	2.830	A2 V	1.8	0.21	0.72	400	1
104.	56°824	22253	144.631	1.361	B1 Iab	–6.3	0.52	1.70	1610	2
105.	56°825		144.411	1.691	B6 V	–0.5	0.52	1.73	420	1
106.	56°826	22316	144.554	1.594	B7 V	0.6	0.08	0.27	120	3

Table 4.2.2a (continued)

No.	BD	HD	l °	b °	Sp	M_V	E_{B-V}	A_V	r (pc)	σ_{Sp}
85.			143.157	2.691	G2.5 III:	1.1:	0.16:	0.58:	2590:	2
86.			143.160	2.694	F8 V:	3.9:	0.27:	0.93:	450:	6
87.			143.124	2.747	F5 V:	3.4:	0.36:	1.22:	460:	4
88.			143.165	2.698	G9 V:	5.7:	0.18:	0.64:	300:	6
89.	59°675	21903	142.370	3.823	F5 V	3.6	0.00	0.00	40	2
90.			143.183	2.728	A7 V	2.3	0.30	1.03	800	3
91.	58°624		143.146	2.816	A4 V	1.7	0.29	0.98	350	1
92.	56°822		144.326	1.248	B8.5 V	0.8	0.55	1.82	410	3
93.	57°731	22020	143.766	2.102	F3 IV	2.5	0.01	0.02	220	1
94.			143.357	2.667	F3 V	3.2	0.27	0.90	400	1
95.			143.337	2.698	K2.2 III:	0.2:	0.23:	0.86:	1220:	1
96.	58°625		143.247	2.850	A5 V	2.0	0.32	1.08	400	3
97.	58°626		142.989	3.248	K2.2 III:	0.6:	0.36:	1.33:	290:	2
98.	58°627		142.962	3.303	G7 III	0.9	0.36	1.30	380	1
99.	57°732		143.871	2.154	K4 III-IV?					11
100.	56°823		144.444	1.416	F3 IV	2.5	0.33	1.12	210	1
101.	58°628	22191	143.432	2.900	K1.5 III	–0.3	0.26	0.97	340	1
102.	57°733		143.566	2.733	F3 V	3.2	0.16	0.52	210	1
103.	58°629		143.498	2.830	A2 V	1.8	0.21	0.72	400	1
104.	56°824	22253	144.631	1.361	B1 Iab	–6.3	0.52	1.70	1610	2
105.	56°825		144.411	1.691	B6 V	–0.5	0.52	1.73	420	1
106.	56°826	22316	144.554	1.594	B7 V	0.6	0.08	0.27	120	3
107.	57°734	22297	144.115	2.183	B5 V	–0.7	0.68	2.26	280	1
108.	56°827		144.623	1.549	F5 V:	3.4:	0.08:	0.28:	180:	7
109.	56°828		144.807	1.446	F6 V	3.7	0.22	0.75	120	2
110.	58°631	22400	143.276	3.528	K2.5 III-IV	1.9	0.10	0.39	120	1
111.	56°829		144.374	2.109	K4 III-IV:	1.7:	0.51:	1.95:	130:	8
112.	58°633	22439	143.238	3.630	F8 V:	3.6:	0.02:	0.08:	80:	6
113.			143.876	2.816	F0 V	3.0	0.31	1.06	150	1
114.	57°736	22508	143.945	2.825	F5 V	3.6	–0.01	0.00	130	1
115.	56°831		144.897	1.834	F3 IV	2.5	0.24	0.80	160	1
116.	56°830	22650	144.760	2.017	B7 V	–0.2	0.47	1.57	370	2
117.	57°737	22678	144.584	2.312	K0.7 III	0.7	0.37	1.34	180	2
118.	56°833		144.951	1.872	A1.5 V	1.7	0.46	1.56	270	1
119.	56°832		144.703	2.198	A0 V	–0.1	0.47	1.59	490	2
120.			144.938	1.964	A5 III	0.8	0.51	1.71	680	1
121.	56°834		144.934	1.979	A4 V:	1.7:	0.59:	2.01:	310:	6
122.	56°835	22777	145.292	1.555	A0 III	–0.1	0.44	1.47	320	1
123.	57°739	22830	144.687	2.464	B6 Ib	–5.8	0.32	1.05	4160	1
124.	57°738		144.418	2.813	F2 V	3.1	0.31	1.04	150	1
125.	59°708		143.208	4.847	F8 V	4.1	0.07	0.24	60	3
126.	58°646	23129	144.175	3.707	F8 V:	3.5:	0.01:	0.02:	70:	6

Table 4.2.3a. Results of photometry in the Vilnius system. Area A2 [2]. The identification number shown on the chart in Fig. 4.2.4.

No.	BD	HD HDE	α(2000) h m s	δ(2000) ° ′ ″	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
1.	52 710		3 45 36.3	53 06 01	9.665	3.359	2.299	1.416	0.780	0.273	0.660	3
					0.014	0.018	0.012	0.003	0.008	0.012	0.004	
2.	51 770	232830	3 45 57.3	52 23 52	9.298	2.370	1.860	1.218	0.536	0.197	0.500	2
					0.024	0.006	0.004	0.004	0.003	0.003	0.004	
3.	52 711	23243	3 45 58.5	52 55 02	9.065	2.810	1.976	1.106	0.581	0.215	0.469	3
					0.014	0.006	0.004	0.004	0.003	0.004	0.005	
4.	53 698	232892	3 46 06.3	53 54 20	8.088	6.820	5.792	4.066	1.719	0.695	1.581	2
					0.011	0.034	0.017	0.008	0.002	0.002	0.004	
5.	51 773	232832	3 46 32.2	52 26 48	9.891	2.411	1.900	1.265	0.531	0.207	0.522	3
					0.037	0.006	0.005	0.013	0.004	0.005	0.014	
6.	50 816	232833	3 46 40.7	51 12 10	9.958	2.224	1.647	0.778	0.329	0.117	0.237	3
					0.027	0.005	0.008	0.014	0.011	0.013	0.008	
7.	50 818		3 46 46.0	51 09 15	9.360	2.379	1.831	1.190	0.544	0.192	0.504	3
					0.041	0.004	0.008	0.007	0.007	0.008	0.008	
8.	50 819		3 46 48.0	51 08 28	9.652	1.899	1.420	0.782	0.426	0.163	0.331	3
					0.051	0.007	0.011	0.006	0.009	0.011	0.009	
9.	51 774	23384	3 47 10.7	51 42 24	6.875	2.080	1.580	0.942	0.398	0.148	0.364	3
					0.016	0.004	0.003	0.003	0.001	0.001	0.003	
10.	50 820		3 47 26.3	51 12 25	11.090	2.651	2.230	1.547	0.645	0.261	0.597	3
					0.053	0.016	0.016	0.014	0.014	0.008	0.017	
11.	53 699	232834	3 47 31.5	53 57 00	10.255	3.314	2.879	1.944	0.688	0.381	0.753	2
					0.011	0.012	0.010	0.010	0.004	0.004	0.005	
12.	50 821		3 47 40.1	51 10 37	11.040	2.735	2.239	1.513	0.628	0.250	0.621	3
					0.018	0.021	0.017	0.012	0.006	0.006	0.007	
13.	51 775		3 47 40.2	51 31 46	7.306	2.116	1.532	0.676	0.291	0.110	0.217	3
					0.016	0.004	0.003	0.003	0.001	0.001	0.003	
14.	53 700	232836	3 47 47.7	54 06 43	9.086	2.229	1.778	1.231	0.517	0.195	0.521	2
					0.011	0.005	0.004	0.005	0.005	0.006	0.004	
15.	52 712	232837	3 47 52.8	53 25 35	9.359	2.439	1.954	1.312	0.555	0.225	0.536	2
					0.004	0.005	0.006	0.003	0.004	0.008	0.004	
16.	52 713	232838	3 47 54.3	52 28 09	9.828	3.502	3.055	2.045	0.711	0.410	0.760	2
					0.004	0.008	0.006	0.015	0.009	0.013	0.004	
17.	51 776	232839	3 48 13.1	51 29 07	9.593	4.038	3.409	2.349	0.930	0.381	0.883	3
					0.010	0.024	0.009	0.006	0.003	0.002	0.003	
18.	50 824		3 48 18.5	51 17 49	10.453	4.751	4.005	2.745	1.100	0.469	0.980	3
					0.017	0.053	0.055	0.027	0.004	0.004	0.006	
19.	51 777	23524	3 48 22.9	52 02 18	8.675	2.709	2.270	1.581	0.633	0.279	0.636	2
					0.010	0.005	0.004	0.005	0.002	0.002	0.003	
20.	51 778	23565	3 48 37.6	51 49 25	7.671	2.625	2.145	1.455	0.587	0.234	0.568	2
					0.010	0.004	0.003	0.004	0.002	0.002	0.003	
21.	50 828	23581	3 48 39.6	51 22 34	7.226	4.052	3.460	2.390	0.899	0.399	0.838	3
					0.366	0.015	0.022	0.016	0.011	0.021	0.014	
22.	53 701	232840	3 48 47.0	53 57 59	9.481	2.619	1.924	0.994	0.466	0.166	0.360	2
					0.012	0.006	0.005	0.004	0.007	0.004	0.005	
23.	51 779	232843	3 48 47.5	51 57 41	8.631	3.908	3.306	2.273	0.889	0.378	0.834	2
					0.011	0.009	0.007	0.005	0.002	0.002	0.003	
24.	53 702	232841	3 48 48.0	53 49 19	9.435	2.520	1.902	1.134	0.506	0.184	0.459	2
					0.011	0.006	0.005	0.004	0.005	0.004	0.004	
25.			3 49 06.1	51 18 46	12.955	2.983	2.266	1.325	0.637	0.233	0.517	11
					0.034	0.043	0.020	0.018	0.019	0.019	0.019	
26.	53 703		3 49 20.3	53 48 52	10.162	5.942	5.038	3.524	1.420	0.604	1.269	2
					0.011	0.095	0.059	0.028	0.004	0.004	0.004	
27.	51 780		3 49 21.3	52 14 08	10.394	2.615	2.067	1.424	0.640	0.239	0.603	3
					0.010	0.012	0.006	0.005	0.003	0.003	0.004	
28.	51 782		3 49 23.8	51 29 55	10.514	4.019	3.418	2.392	1.023	0.390	0.911	2
					0.011	0.040	0.029	0.026	0.006	0.005	0.004	
29.	51 781		3 49 27.2	52 14 51	10.179	2.488	1.844	1.020	0.438	0.156	0.368	3
					0.010	0.009	0.004	0.004	0.004	0.002	0.004	
30.	52 714	23675	3 49 27.6	52 39 21	6.745	1.516	1.186	0.934	0.538	0.185	0.444	2
					0.004	0.009	0.012	0.019	0.004	0.009	0.004	
31.	50 835	23727	3 49 44.8	51 11 47	8.934	2.618	1.751	0.904	0.490	0.196	0.375	2
					0.033	0.008	0.021	0.016	0.010	0.023	0.015	
32.	51 783		3 49 52.0	51 28 34	10.252	2.376	1.843	1.177	0.515	0.189	0.489	2
					0.011	0.008	0.007	0.009	0.004	0.004	0.005	
33.	53 704		3 50 15.3	54 18 42	10.928	2.461	1.836	1.050	0.542	0.201	0.425	2
					0.012	0.011	0.009	0.008	0.005	0.005	0.007	
34.	51 784	232845	3 50 16.7	52 24 03	10.733	1.723	1.387	0.898	0.497	0.184	0.357	2
					0.012	0.012	0.012	0.010	0.006	0.005	0.005	

Table 4.2.3a (continued)

No.	BD	HD HDE	$\alpha(2000)$ h m s	$\delta(2000)$ ° ′ ″	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
35.	52 715	23800	3 50 25.1	52 28 56	6.910	1.500	1.151	0.849	0.488	0.185	0.421	3
					0.007	0.006	0.009	0.009	0.006	0.004	0.007	
36.	51 787		3 50 28.1	51 53 53	9.911	4.393	3.702	2.522	1.019	0.407	0.935	3
					0.015	0.030	0.023	0.018	0.012	0.012	0.010	
37.	51 785		3 50 28.9	52 24 15	10.419	4.882	4.127	2.887	1.163	0.464	1.040	3
					0.010	0.054	0.050	0.026	0.003	0.003	0.004	
38.	51 786		3 50 29.0	52 00 33	9.682	2.417	1.837	1.109	0.501	0.187	0.457	3
					0.032	0.015	0.016	0.014	0.012	0.015	0.013	
39.	51 788		3 50 47.4	51 59 44	10.545	3.636	3.084	2.072	0.790	0.352	0.799	3
					0.015	0.021	0.014	0.010	0.005	0.007	0.007	
40.	51 789		3 50 48.5	51 57 14	9.386	2.508	1.783	0.857	0.398	0.153	0.305	3
					0.015	0.010	0.010	0.006	0.004	0.006	0.007	
41.	50 838		3 50 54.5	51 08 27	11.140	2.855	1.972	1.044	0.558	0.212	0.414	2
					0.029	0.025	0.025	0.025	0.020	0.021	0.025	
42.	50 839		3 51 01.8	51 04 43	9.963	2.360	1.784	0.908	0.384	0.148	0.302	3
					0.017	0.008	0.006	0.005	0.004	0.006	0.008	
43.	50 840	232849	3 51 13.3	51 21 32	9.638	2.339	1.702	0.852	0.382	0.138	0.259	2
					0.086	0.014	0.023	0.017	0.015	0.029	0.013	
44.	53 705	232847	3 51 18.5	53 32 40	9.006	2.697	2.282	1.552	0.604	0.257	0.623	2
					0.010	0.005	0.004	0.004	0.002	0.003	0.003	
45.	52 716	23933	3 51 22.0	52 30 17	8.691	2.456	1.814	0.979	0.430	0.154	0.340	3
					0.007	0.024	0.023	0.013	0.009	0.007	0.009	
46.	50 842		3 51 25.9	51 04 38	10.694	3.062	2.269	1.318	0.623	0.222	0.503	2
					0.012	0.014	0.010	0.008	0.006	0.006	0.005	
47.	51 790		3 51 42.6	51 42 04	11.049	3.532	2.971	2.068	0.823	0.370	0.826	3
					0.017	0.041	0.050	0.037	0.017	0.015	0.011	
48.	53 706	23945	3 51 45.7	54 07 37	8.613	2.163	1.627	0.907	0.375	0.139	0.342	2
					0.010	0.004	0.004	0.004	0.002	0.002	0.003	
49.	52 717		3 51 52.8	52 29 27	9.804	4.401	3.823	2.639	1.029	0.412	0.926	2
					0.006	0.007	0.053	0.032	0.026	0.003	0.007	
50.	50 845		3 51 58.6	50 58 26	10.410	2.491	2.034	1.376	0.601	0.235	0.554	3
					0.031	0.007	0.010	0.017	0.015	0.033	0.013	
51.	50 846		3 52 09.9	51 22 37	10.446	2.273	1.763	1.146	0.542	0.203	0.477	2
					0.203	0.008	0.025	0.017	0.010	0.024	0.017	
52.	53 707		3 52 12.6	53 57 23	9.829	3.107	2.281	1.276	0.606	0.214	0.510	2
					0.012	0.009	0.005	0.005	0.002	0.006	0.004	
53.	52 718		3 52 28.4	52 27 35	10.753	2.957	2.402	1.691	0.740	0.290	0.696	2
					0.014	0.024	0.043	0.016	0.009	0.016	0.034	
54.	50 848	232850	3 52 28.7	51 22 27	9.296	2.362	1.840	1.177	0.543	0.209	0.477	4
					0.083	0.012	0.021	0.019	0.011	0.020	0.014	
55.	51 792	232851	3 52 46.6	51 28 52	9.325	4.453	3.348	2.307	1.118	0.426	1.020	3
					0.035	0.027	0.024	0.022	0.017	0.013	0.011	
56.	53 708	24094	3 52 49.0	53 29 02	8.317	1.599	1.318	0.989	0.558	0.209	0.448	2
					0.018	0.004	0.004	0.003	0.002	0.004	0.004	
57.	51 791		3 52 54.5	52 10 37	10.907	2.535	1.795	0.920	0.453	0.157	0.377	2
					0.016	0.031	0.020	0.014	0.017	0.018	0.012	
58.	50 849	24129	3 52 58.3	51 03 04	7.857	1.637	1.169	0.604	0.333	0.127	0.252	3
					0.036	0.011	0.021	0.021	0.012	0.019	0.013	
59.	51 793	24142	3 53 02.6	52 15 20	8.407	3.647	3.032	2.091	0.869	0.337	0.813	3
					0.007	0.016	0.014	0.016	0.013	0.009	0.004	
60.	51 794		3 53 09.8	52 11 07	10.315	1.954	1.466	0.831	0.439	0.165	0.352	3
					0.008	0.012	0.010	0.008	0.006	0.007	0.008	
61.	52 719		3 53 17.9	53 00 42	10.927	2.939	2.145	1.186	0.590	0.220	0.452	3
					0.014	0.010	0.012	0.006	0.006	0.004	0.004	
62.	53 709		3 53 23.3	54 17 04	9.970	5.290	4.529	3.104	1.180	0.561	1.063	2
					0.011	0.045	0.029	0.021	0.004	0.005	0.004	
63.	50 850		3 53 23.7	51 04 20	10.428	2.258	1.795	1.197	0.547	0.206	0.472	2
					0.125	0.009	0.022	0.017	0.010	0.018	0.013	
64.	51 795		3 53 31.4	52 17 35	10.120	2.677	2.047	1.253	0.565	0.240	0.508	3
					0.008	0.013	0.016	0.011	0.012	0.017	0.007	
65.	52 720	24189	3 53 37.4	52 33 48	8.426	2.323	1.867	1.246	0.537	0.201	0.510	2
					0.004	0.047	0.013	0.020	0.011	0.010	0.009	
66.	52 722	24203	3 53 43.8	53 16 25	8.159	2.392	1.979	1.376	0.566	0.226	0.551	3
					0.008	0.011	0.006	0.017	0.009	0.011	0.009	
67.	52 721		3 53 44.8	52 56 36	10.120	3.435	3.023	2.034	0.690	0.413	0.728	1
					0.038	0.032	0.020	0.012	0.015	0.010	0.009	
68.	52 723	232852	3 53 51.8	52 33 00	9.482	2.861	2.435	1.616	0.615	0.268	0.599	2
					0.018	0.007	0.016	0.024	0.014	0.007	0.005	
69.	53 710		3 54 14.2	54 04 28	10.299	1.821	1.471	1.037	0.562	0.215	0.458	2
					0.012	0.006	0.006	0.006	0.004	0.005	0.005	

Table 4.2.3a (continued)

No.	BD	HD HDE	α(2000) h m s	δ(2000) ° ′ ″	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
70.	51 796	24275	3 54 16.6	51 32 58	8.535	2.461	1.701	0.787	0.358	0.137	0.276	2
					0.011	0.005	0.004	0.004	0.003	0.002	0.004	
71.	51 797		3 54 27.8	52 04 48	10.767	3.614	3.033	2.111	0.862	0.342	0.809	3
					0.012	0.034	0.023	0.019	0.004	0.007	0.006	
72.	51 798	24341	3 54 51.1	52 25 15	7.853	2.501	2.058	1.448	0.612	0.235	0.587	st
					0.018	0.008	0.009	0.007	0.005	0.008	0.006	
73.	51 800	232855	3 55 08.2	51 29 26	9.473	3.912	3.272	2.255	0.922	0.364	0.855	2
					0.011	0.015	0.011	0.007	0.004	0.003	0.005	
74.	51 799	24376	3 55 09.9	52 23 43	9.252	2.104	1.528	0.702	0.314	0.116	0.226	3
					0.023	0.025	0.016	0.019	0.015	0.014	0.024	
75.	51 801		3 55 11.6	51 31 42	9.982	2.695	1.999	1.163	0.501	0.195	0.455	2
					0.012	0.009	0.006	0.006	0.003	0.003	0.004	
76.	53 712	24386	3 55 23.1	53 33 28	8.471	2.193	1.738	1.190	0.499	0.190	0.495	2
					0.011	0.004	0.004	0.003	0.002	0.003	0.003	
77.	53 711		3 55 28.4	54 23 09	9.945	5.044	4.318	2.944	1.163	0.498	1.025	2
					0.014	0.038	0.025	0.019	0.006	0.005	0.007	
78.	52 724	232857	3 55 32.6	52 47 25	9.479	2.252	1.808	1.207	0.509	0.191	0.514	2
					0.015	0.010	0.008	0.003	0.008	0.006	0.007	
79.	52 725		3 55 36.9	52 50 55	10.335	2.665	2.236	1.500	0.595	0.256	0.581	3
					0.014	0.007	0.006	0.014	0.005	0.003	0.004	
80.	51 803	24421	3 55 37.1	52 13 38	6.793	2.204	1.734	1.181	0.509	0.194	0.491	2
					0.010	0.005	0.003	0.003	0.003	0.002	0.004	
81.	52 726	24431	3 55 38.5	52 38 30	6.702	1.421	1.132	0.898	0.530	0.183	0.429	4
					0.015	0.006	0.008	0.009	0.009	0.003	0.009	
82.	51 802	232858	3 55 38.8	52 15 39	8.558	2.375	1.802	1.004	0.430	0.157	0.375	4
					0.011	0.008	0.012	0.010	0.007	0.008	0.004	
83.	53 713	232856	3 55 39.6	53 52 42	9.455	2.338	1.858	1.255	0.533	0.205	0.514	2
					0.011	0.005	0.004	0.004	0.002	0.004	0.004	
84.	51 804	232859	3 55 45.6	52 24 08	9.306	1.983	1.394	0.718	0.375	0.143	0.302	3
					0.029	0.038	0.028	0.027	0.027	0.027	0.028	
85.	51 805		3 55 50.4	52 23 12	9.100	5.250	4.531	3.112	1.217	0.513	1.112	3
					0.008	0.041	0.018	0.010	0.005	0.006	0.008	
86.	50 857		3 56 04.2	51 00 30	10.309	1.957	1.449	0.860	0.482	0.179	0.383	3
					0.025	0.013	0.012	0.011	0.008	0.007	0.006	
87.	52 727		3 56 08.2	53 10 12	9.150	6.046	5.196	3.616	1.410	0.622	1.254	3
					0.014	0.036	0.030	0.007	0.003	0.004	0.002	
88.	50 858		3 56 14.8	50 59 21	10.649	2.650	1.991	1.311	0.606	0.231	0.528	3
					0.025	0.015	0.012	0.012	0.008	0.007	0.005	
89.	50 859		3 56 18.2	51 07 59	9.839	2.071	1.557	0.927	0.506	0.205	0.379	3
					0.021	0.007	0.008	0.008	0.004	0.016	0.005	
90.	52 728	24503	3 56 18.6	52 32 06	8.919	2.355	1.704	0.845	0.381	0.107	0.311	2
					0.010	0.007	0.058	0.033	0.020	0.022	0.018	
91.	53 714		3 56 37.9	54 23 32	10.232	2.737	2.075	1.232	0.533	0.196	0.436	2
					0.013	0.008	0.008	0.007	0.003	0.006	0.006	
92.	51 806		3 56 40.3	51 30 01	10.468	2.776	2.060	1.268	0.578	0.229	0.502	2
					0.012	0.010	0.009	0.009	0.005	0.005	0.005	
93.	51 807		3 56 47.0	52 20 12	10.668	2.398	1.890	1.257	0.579	0.213	0.531	3
					0.008	0.012	0.012	0.009	0.009	0.011	0.007	
94.	50 863		3 57 12.4	51 04 00	9.579	1.975	1.469	0.812	0.429	0.164	0.312	3
					0.014	0.006	0.008	0.007	0.004	0.007	0.005	
95.	51 808		3 57 13.3	51 45 39	10.223	5.651	4.874	3.429	1.366	0.601	1.266	3
					0.012	0.122	0.090	0.021	0.007	0.006	0.004	
96.	50 864	232862	3 57 19.9	50 51 21	9.571	3.095	2.708	1.875	0.695	0.349	0.728	3
					0.025	0.020	0.009	0.007	0.004	0.006	0.005	
97.	51 809		3 57 22.5	51 54 33	9.660	2.068	1.485	0.680	0.269	0.111	0.260	2
					0.013	0.008	0.007	0.008	0.005	0.004	0.006	
98.	51 810	232861	3 57 25.7	52 10 24	9.708	2.462	1.801	0.861	0.377	0.139	0.293	2
					0.011	0.009	0.005	0.005	0.003	0.003	0.004	
99.	53 715		3 57 37.0	53 40 28	10.683	2.511	1.888	1.078	0.551	0.186	0.430	2
					0.013	0.008	0.007	0.007	0.007	0.010	0.009	
100.	51 811		3 57 51.3	51 41 53	9.797	2.723	2.135	1.450	0.649	0.240	0.595	2
					0.011	0.010	0.008	0.006	0.004	0.003	0.004	
101.	52 729		3 57 51.5	52 41 26	10.102	2.756	2.229	1.738	1.012	0.362	0.847	3
					0.014	0.012	0.006	0.007	0.003	0.007	0.003	
102.	51 812	24688	3 57 58.1	52 07 42	8.011	3.504	2.919	2.003	0.802	0.310	0.743	2
					0.010	0.008	0.004	0.004	0.002	0.001	0.004	
103.	51 813		3 57 59.8	51 36 33	10.088	2.582	2.016	1.352	0.608	0.246	0.534	2
					0.011	0.009	0.007	0.006	0.004	0.004	0.005	
104.	51 814	24708	3 58 10.8	51 44 01	8.188	2.319	1.702	0.954	0.408	0.154	0.372	2
					0.010	0.004	0.004	0.003	0.002	0.002	0.004	

Table 4.2.3a (continued)

No.	BD	HD HDE	$\alpha(2000)$ h m s	$\delta(2000)$ ° ′ ″	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
105.	53 716		3 58 16.0	54 09 27	10.345	2.440	1.826	1.116	0.603	0.224	0.487	2
					0.011	0.009	0.007	0.007	0.004	0.007	0.005	
106.	50 866		3 58 22.5	51 21 40	10.828	2.595	2.092	1.434	0.605	0.240	0.564	3
					0.038	0.019	0.019	0.019	0.018	0.024	0.019	
107.	53 717	24723	3 58 35.3	54 04 31	8.301	2.463	1.813	0.889	0.374	0.137	0.289	2
					0.012	0.004	0.004	0.004	0.002	0.002	0.005	
108.	53 718	24733	3 58 38.2	53 59 21	6.928	2.454	1.729	0.819	0.343	0.126	0.283	2
					0.012	0.004	0.003	0.004	0.001	0.002	0.004	
109.	51 815		3 58 45.5	52 22 51	10.371	1.332	1.061	0.665	0.354	0.131	0.298	2
					0.012	0.009	0.004	0.009	0.009	0.009	0.004	
110.	50 868		3 58 46.8	51 17 29	11.849	3.965	3.289	2.250	0.937	0.340	0.916	3
					0.022	0.077	0.039	0.036	0.024	0.014	0.011	
111.	51 817	24775	3 58 50.9	51 29 57	7.726	5.100	4.328	3.044	1.234	0.541	1.157	2
					0.010	0.008	0.007	0.006	0.002	0.002	0.004	
112.	51 816		3 58 51.1	51 47 09	9.812	2.531	1.888	1.121	0.483	0.187	0.423	2
					0.011	0.009	0.007	0.006	0.003	0.006	0.004	
113.	51 818		3 59 23.5	51 28 43	10.361	2.908	2.091	1.098	0.520	0.187	0.420	3
					0.011	0.015	0.006	0.005	0.003	0.004	0.004	
114.	52 730	232863	3 59 24.8	52 26 13	9.862	3.750	3.112	2.157	0.887	0.347	0.829	3
					0.014	0.018	0.011	0.007	0.004	0.005	0.003	
115.	52 731		3 59 25.5	52 54 41	10.962	2.561	1.986	1.300	0.602	0.229	0.555	3
					0.015	0.009	0.011	0.007	0.005	0.004	0.005	
116.	51 819	232864	3 59 34.5	52 18 46	9.451	1.385	1.094	0.670	0.360	0.137	0.284	2
					0.012	0.005	0.005	0.004	0.002	0.002	0.004	
117.	51 820	232865	3 59 40.5	51 39 13	9.842	4.007	3.344	2.307	0.931	0.363	0.849	3
					0.010	0.012	0.008	0.011	0.002	0.002	0.004	
118.	51 821		3 59 46.1	51 38 52	11.009	2.474	1.849	1.055	0.444	0.161	0.366	1
					0.021	0.026	0.024	0.023	0.015	0.015	0.018	
119.	50 871	232866	3 59 50.8	50 53 39	9.994	2.650	2.246	1.559	0.631	0.275	0.584	2
					0.042	0.009	0.024	0.031	0.014	0.028	0.027	
120.	50 870		3 59 51.2	50 51 16	10.541	2.416	1.780	0.912	0.399	0.149	0.255	2
					0.046	0.019	0.022	0.031	0.033	0.026	0.014	
121.	53 719		3 59 56.2	53 53 15	10.609	2.759	2.013	1.087	0.544	0.185	0.447	2
					0.013	0.008	0.007	0.005	0.003	0.004	0.006	
122.	51 823		3 59 56.3	51 34 02	11.234	1.715	1.328	0.792	0.407	0.142	0.360	2
					0.014	0.010	0.009	0.010	0.008	0.008	0.010	
123.	51 822		3 59 59.3	52 09 27	9.802	3.256	2.794	1.969	0.863	0.347	0.824	1
					0.012	0.014	0.015	0.013	0.005	0.005	0.007	
124.	50 872		4 00 01.5	50 57 56	11.232	2.766	2.082	1.209	0.559	0.213	0.441	3
					0.018	0.018	0.016	0.009	0.006	0.007	0.017	
125.	53 720		4 00 01.6	54 24 49	10.106	3.853	3.219	2.269	1.001	0.384	0.954	2
					0.013	0.011	0.011	0.009	0.004	0.007	0.006	
126.	53 721		4 00 16.5	54 01 21	10.564	2.871	2.324	1.609	0.742	0.271	0.672	2
					0.012	0.011	0.009	0.008	0.004	0.005	0.006	
127.	51 824		4 00 20.2	51 44 26	10.547	3.867	3.196	2.239	0.943	0.376	0.848	2
					0.012	0.037	0.024	0.019	0.006	0.005	0.009	
128.	52 734	24942	4 00 28.7	52 56 51	8.608	2.100	1.634	1.050	0.459	0.167	0.426	8
					0.007	0.006	0.009	0.006	0.005	0.007	0.009	
129.	52 732	232867	4 00 30.0	53 04 31	9.540	2.730	2.012	1.039	0.458	0.160	0.377	3
					0.014	0.006	0.006	0.004	0.005	0.003	0.003	
130.	52 733	232869	4 00 35.3	52 41 22	10.165	2.012	1.466	0.730	0.353	0.135	0.266	3
					0.014	0.007	0.009	0.007	0.005	0.004	0.007	
131.	50 873	24993	4 00 40.8	51 12 23	8.854	2.352	1.752	0.999	0.410	0.159	0.364	3
					0.016	0.004	0.004	0.003	0.002	0.002	0.003	
132.	50 874	232870	4 00 41.9	51 15 00	9.498	2.279	1.763	1.191	0.536	0.190	0.531	3
					0.016	0.007	0.007	0.004	0.002	0.003	0.004	
133.	51 825		4 00 42.5	51 48 47	10.042	4.470	3.710	2.572	0.979	0.425	0.902	2
					0.011	0.041	0.022	0.018	0.005	0.008	0.004	
134.	52 735	24979	4 00 46.2	52 59 09	9.083	2.303	1.646	0.796	0.383	0.149	0.294	3
					0.014	0.018	0.011	0.012	0.006	0.005	0.003	
135.	52 736		4 00 49.7	53 22 38	9.915	1.939	1.487	0.932	0.507	0.193	0.413	3
					0.014	0.018	0.011	0.012	0.006	0.006	0.004	
136.	51 826		4 00 50.0	51 33 50	11.034	2.382	1.708	0.826	0.403	0.165	0.280	2
					0.014	0.014	0.012	0.019	0.006	0.009	0.018	
137.	51 827	25030	4 01 03.0	52 09 54	8.609	5.024	4.276	2.916	1.092	0.501	1.008	3
					0.010	0.012	0.012	0.007	0.002	0.002	0.003	
138.	52 737		4 01 03.2	53 03 18	9.725	2.669	2.099	1.433	0.646	0.236	0.607	3
					0.014	0.016	0.005	0.007	0.005	0.003	0.006	
139.	51 828		4 01 08.2	51 58 36	9.899	4.444	3.769	2.538	0.998	0.422	0.892	2
					0.012	0.028	0.029	0.016	0.004	0.004	0.004	

Table 4.2.3a (continued)

No.	BD	HD HDE	α(2000)	δ(2000)	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
			h m s	° ′ ″								
140.	500001		4 01 17.5	53 10 16	11.562	2.409	1.739	0.907	0.447	0.170	0.329	9
					0.008	0.011	0.010	0.011	0.008	0.011	0.011	
141.	52 738		4 01 18.8	52 26 20	10.848	5.882	4.717	3.372	1.279	0.600	1.199	4
					0.026	0.074	0.063	0.022	0.005	0.005	0.003	
142.	50 876		4 01 35.5	51 06 43	9.941	2.776	2.317	1.566	0.625	0.251	0.616	3
					0.016	0.007	0.005	0.004	0.002	0.003	0.004	
143.	50 877		4 01 35.6	51 07 10	11.377	2.507	1.838	0.930	0.441	0.126	0.334	2
					0.028	0.029	0.018	0.016	0.017	0.020	0.016	
144.	53 722	25056	4 01 37.4	53 51 58	7.042	4.038	3.125	2.208	0.964	0.359	0.875	2
					0.012	0.004	0.004	0.004	0.002	0.002	0.004	
145.	52 739		4 01 42.7	52 33 09	10.465	3.928	3.339	2.314	0.951	0.375	0.887	3
					0.014	0.022	0.013	0.009	0.004	0.005	0.003	
146.	51 829		4 01 49.1	51 31 20	10.665	3.145	2.632	1.814	0.747	0.294	0.727	2
					0.015	0.028	0.020	0.019	0.007	0.008	0.008	
147.	50 881		4 01 53.7	51 03 51	10.574	3.074	2.542	1.752	0.749	0.293	0.703	2
					0.025	0.018	0.017	0.013	0.006	0.005	0.005	
148.	51 830		4 01 54.8	51 49 58	10.419	2.178	1.628	0.911	0.467	0.168	0.371	2
					0.013	0.008	0.007	0.007	0.005	0.007	0.009	
149.	51 831		4 01 55.3	51 49 26	10.510	2.050	1.525	0.815	0.416	0.155	0.305	2
					0.013	0.009	0.007	0.007	0.006	0.004	0.007	
150.			4 01 58.1	53 09 45	11.749	2.395	1.655	0.823	0.415	0.149	0.365	1
					0.023	0.027	0.021	0.026	0.014	0.020	0.014	
151.	52 740	232872	4 02 04.0	52 35 40	10.610	1.740	1.295	0.662	0.329	0.129	0.250	2
					0.011	0.006	0.005	0.005	0.003	0.004	0.006	
152.	51 833	232875	4 02 08.8	51 39 56	9.147	4.129	3.510	2.369	0.876	0.395	0.843	3
					0.011	0.019	0.007	0.005	0.002	0.001	0.003	
153.	51 832		4 02 11.9	52 16 00	10.576	2.370	1.744	0.827	0.372	0.132	0.275	3
					0.011	0.011	0.005	0.004	0.005	0.003	0.006	
154.	52 741	25141	4 02 14.5	52 52 40	8.891	1.385	1.042	0.616	0.324	0.132	0.268	3
					0.016	0.009	0.011	0.006	0.005	0.003	0.003	
155.	53 723	232875	4 02 15.7	53 45 13	8.849	1.655	1.330	0.972	0.540	0.192	0.458	2
					0.012	0.004	0.003	0.004	0.002	0.002	0.005	
156.	51 848		4 02 27.2	51 38 41	10.782	2.676	2.183	1.528	0.627	0.242	0.619	2
					0.013	0.015	0.012	0.012	0.006	0.009	0.006	
157.	53 724		4 03 05.4	54 07 22	10.123	2.615	2.222	1.542	0.609	0.261	0.640	2
					0.012	0.007	0.006	0.006	0.003	0.004	0.006	

Table 4.2.4a. Results of photometric classification of stars. Area A2 [2].

No.	BD	Sp photom.	Sp other	M_V	E_{B-V}	A_V	r pc	σ_{Sp}	M_V qual.
1.	52 710	A0.2 II		–3.0	0.76	2.47	1090	8	c
2.	51 770	F5.0 V	F8, F0 II	3.7	0.09	0.29	115	0	b
3.	52 711	B9.5 III	A0, B9 III	–0.3	0.54	1.74	340	2	a
4.*	53 698	M2.5 III	M2, M0 III	–1.0	0.59	1.98	260	4	b
5.	51 773	F8.0 IV	F5	2.8	0.04	0.12	250	0	b
6.	50 816	A2.0 V	A0, A1 V	1.8	0.17	0.56	330	2	a
7.*	50 818	F4:							
8.	50 819	B6.0 V	B8	–0.5	0.42	1.32	580	2	b
9.*	51 774	F2.0 V	F0	3.1	0.00	0.00	57	1	a
10.	50 820	G2.3 V		4.6	0.12	0.40	165	3	b
11.*	53 699	K2.5 V	K0, K3 III	6.6	0.00	0.00	54	0	a
12.	50 821	G2.0 IV	G0	3.0	0.09	0.30	350	1	c
13.*	51 775	A1.0 V	A0, A0 V	1.7	0.14	0.44	108	1	b
14.	53 700	F8.0 V	G0, F6 V	4.1	0.02	0.06	97	3	b
15.	52 712	F8.0 V	G0, F6 V	4.2	0.08	0.26	96	1	a
16.*	52 713	K2.8 V	K5, K3 III	6.6	0.02	0.07	43	1	a
17.	51 776	K0.8 IV	K5	2.9	0.23	0.77	153	1	b
18.	50 824	K1.5 III		0.8	0.31	1.10	510	1	a
19.*	51 777		G8 IV, G5 V						
20.*	51 778	G2.0 IV	G5 V	3.0	0.04	0.14	80	1	b
21.*	50 828	K1.9 IV	K0 V	3.0	0.15	0.50	56	3	b
22.	53 701	A1.5 V	A3	1.7	0.35	1.14	210	2	b
23.	51 779	K0.7III-IV	K0 IV	2.3	0.17	0.60	140	1	b
24.*	53 702	F0.0 V	A7	2.8	0.19	0.62	160	1	a
25.*		A4.3 V		2.2	0.49	1.60	680	1	a
26.	53 703	K3.3 III		0.5	0.55	1.97	350	1	b
27.*	51 780	F6.0 V		3.7	0.22	0.71	158	1	b
28.	51 782	G7.0III-IV		2.0	0.43	1.48	260	3	c
29.*	51 781	A6.6 V	A	2.4	0.22	0.72	260	1	a
30.*	52 714	B0.2 II	B0 III, B0 Ib	–5.6	0.67	2.12	1110	1	b
31.*	50 835	A1.5 II	A0, A0 IV	–3.2	0.35	1.13	1590	2	c
32.	51 783	F4.0 IV		2.5	0.11	0.36	300	1	a
33.	53 704	B8.0 V		1.0	0.56	1.78	430	1	a
34.	51 784	B3.0 V	F5, B3 III	–1.0	0.58	1.85	950	2	b
35.*	52 715	B2.0 Ib	B2, B1 IV	–5.9	0.49	1.54	1800	1	b
36.	51 787	K0.5 III		0.8	0.27	0.94	430	1	b
37.	51 785	K1.0 III		0.8	0.44	1.53	420	1	b
38.	51 786	F0.0 V	F0, A4 III	3.0	0.18	0.58	166	1	a
39.	51 788	K0.9 IV		4.1	0.09	0.31	168	1	b
40.	51 789	A1.0 V	A0, A0 V	1.1	0.28	0.89	300	1	a
41.	50 838	A0.0 III		–0.9	0.50	1.60	1220	6	c
42.	50 839	A5.0 V		2.3	0.16	0.52	270	2	b
43.	50 840	A1.5 V	A0, A1 V	1.7	0.24	0.79	270	1	a
44.*	53 705	G7.2 V	K0, G8 IV	5.4	0.02	0.07	51	1	b
45.	52 716	A5.0 V	A2, A5 III	2.3	0.21	0.68	139	0	b
46.	50 842	A5.0 V		1.9	0.46	1.49	290	0	a
47.	51 790	K0.6 V		6.0	0.23	0.76	72	1	a
48.	53 706	F0.0 V	A3, A9 II	2.8	0.03	0.08	140	1	b
49.	52 717	K0.7 III	K2, K3 III	0.8	0.30	1.04	390	4	c
50.	50 845	F9.5 V		4.3	0.08	0.27	147	1	a
51.	50 846	F4.0 V		3.4	0.11	0.36	220	3	c
52.	53 707	A2.0 V		1.3	0.54	1.75	230	0	a
53.	52 718	G1.5 V		4.5	0.24	0.80	123	0	b
54.	50 848	F3.4 V	F5, A9 III, F0 V	3.2	0.14	0.44	135	2	b
55.	51 792	F7.0 Ib	K0	–4.2	0.79	2.63	1510	4	c
56.*	53 708	B1.0 IV	B8, B1 III	–3.9	0.72	2.28	970	1	b
57.	51 791	A0.0 V		0.8	0.37	1.18	610	1	a
58.*	50 849	B6.0 III	B9, B9 II, A0 III	–1.3	0.27	0.84	460	1	c
59.*	51 793	G5.4 III	G5, G8 III, K0 II	1.1	0.23	0.80	200	1	b
60.	51 794	B6.0 V		–0.4	0.45	1.41	730	2	b
61.	52 719	A0.0 V		0.8	0.56	1.81	460	1	b
62.	53 709	K3.5 III		0.6	0.26	0.94	490	2	b
63.	50 850	F1.3 V		3.7	0.20	0.66	164	9	c
64.	51 795	F0.0 V	A5	2.8	0.29	0.94	189	2	a
65.*	52 720	F6.0 V	F6 V	3.7	0.09	0.29	77	2	b
66.*	52 722		G0, G0 V, G2 V						
67.	52 721	K3.0 V		6.7	0.00	0.00	48	2	a
68.	52 723	G9.0 V	K0, F8 V	5.7	0.00	0.00	57	1	b
69.	53 710	B2.0 V	B	–1.6	0.72	2.28	840	1	a
70.	51 796	A1.5 IV	A2, A2 V	0.8	0.21	0.68	260	1	b

Table 4.2.4a (continued)

No.	BD	Sp photom.	Sp other	M_V	E_{B-V}	A_V	r pc	σ_{Sp}	M_V qual.
71.	51 797	G8.8III-IV		2.6	0.23	0.79	300	1	a
72.*	51 798	G0.0 V	G0, G1 V	4.4	0.11	0.35	42	2	b
73.	51 800	K0.0III-IV	K2	2.0	0.23	0.81	210	2	a
74.	51 799	A0.0 V	A0, B9 V	1.6	0.20	0.64	250	1	a
75.	51 801	A8.8 V		2.4	0.27	0.88	220	1	c
76.*	53 712	F7.8 V	F8, F8 V	4.1	0.00	0.00	75	3	b
77.	53 711	K2.2 III	K2, K2 III	0.7	0.35	1.24	400	2	a
78.	52 724	F8.0 V	G0, F5 V	4.1	0.00	0.01	119	1	b
79.	52 725	G7.0 V		5.4	0.00	0.00	97	1	a
80.*	51 803	F6.0 V	F5	3.7	0.05	0.15	39	3	b
81.*	52 726		O5, O8, O9 IV-V	–4.8	0.71	2.24	710	1	*
82.*	51 802		A5						
83.*	53 713	F8.0 V	G5, G0 III	4.1	0.04	0.12	111	0	a
84.*	51 804		A0						
85.	51 805	K3.0 III	K2	0.6	0.33	1.18	290	2	b
86.	50 857	B5.0 III		–1.7	0.49	1.54	1240	1	b
87.	52 727	K4.2 III		0.4	0.44	1.58	270	3	b
88.	50 858	F3.0 IV		2.5	0.23	0.75	300	1	a
89.*	50 859		B8						
90.	52 728	A0.8 V	A0, B9 III, A0 V	1.5	0.26	0.83	210	1	a
91.	53 714	F2.0 III		1.8	0.18	0.60	370	4	c
92.	51 806	F1.0 IV		2.3	0.27	0.86	290	2	a
93.*	51 807	F3.0 IV		2.5	0.19	0.62	320	6	c
94.*	50 863		A1 IV						
95.	51 808	K4.0III-IV		1.7	0.44	1.61	240	3	b
96.*	50 864		K0, G8 II						
97.	51 809	A3.0 V		1.9	0.06	0.20	330	2	a
98.	51 810	A3.0 IV	A0, A2 V	1.2	0.20	0.65	370	3	b
99.	53 715	B8.0 V		1.0	0.57	1.80	380	2	a
100.	51 811	F6.0 V		3.8	0.23	0.75	112	1	b
101.	52 729	B1.0 II	B2 Iab	–5.5	1.24	3.96	2130	1	a
102.	51 812	G7.0 III	G5, K0 III	0.9	0.11	0.36	220	1	b
103.	51 813	F5.0 V		3.7	0.20	0.63	142	2	b
104.	51 814	F0.0 V	F0, F0 IV	2.8	0.06	0.21	109	2	a
105.	53 716	B6.8 V		0.0	0.65	2.08	450	1	b
106.	50 866	G1.5 V		4.5	0.06	0.21	167	1	b
107.	53 717	A4.0 V	A2, A7 III	1.7	0.17	0.55	162	2	c
108.*	53 718		A0, A7 V						
109.	51 815	B2.5 V	B6 V	–1.3	0.42	1.34	1170	0	b
110.	50 868	G8.5III-IV		2.0	0.30	1.04	580	4	b
111.*	51 817	K3.0III-IV	K2, K2-3 Ib	1.8	0.38	1.37	81	3	b
112.	51 816	F0.0 V	F5	2.8	0.18	0.58	193	2	a
113.	51 818	A2.0 IV	A2	0.9	0.42	1.36	420	1	b
114.	52 730	G8.0III-IV	G5	2.0	0.26	0.88	250	1	b
115.	52 731	F0.0 V		2.5	0.33	1.07	300	10	c
116.*	51 819	B3.0 V	B9, B1 IV	–1.0	0.41	1.29	680	1	a
117.	51 820	G9.0 III	K5	0.8	0.23	0.77	450	0	a
118.	51 821	A7.5 V		2.6	0.22	0.73	340	2	a
119.*	50 871		K2						
120.	50 870	A2.5 V		1.9	0.25	0.81	370	3	b
121.	53 719	A0.0 V		0.8	0.49	1.57	450	1	b
122.	51 823	B5.0 V		–0.1	0.41	1.30	1020	1	a
123.	51 822	G6.0 V		5.1	0.35	1.17	51	4	b
124.	50 872	A5.0 V		2.3	0.38	1.24	350	2	a
125.	53 720	G6.0 IV		3.1	0.49	1.62	119	1	b
126.	53 721	F8.0 V		4.1	0.30	0.96	126	2	a
127.	51 824	G5.6 III		1.1	0.33	1.13	460	2	b
128.*	52 734	F5.0 V	F5	3.6	0.00	0.00	100	1	c
129.	52 732	A4.0 V	A2	1.7	0.28	0.91	240	2	c
130.	52 733	B8.4 V	B8	1.2	0.30	0.94	400	1	a
131.	50 873	A9.0 V	A2	3.0	0.14	0.46	120	1	a
132.	50 874	F5.0 V	G	3.6	0.08	0.25	135	3	c
133.	51 825	K1.5 III		0.8	0.18	0.64	530	2	b
134.	52 735	B9.5 V	A0, B9-A0 V	0.6	0.30	0.95	320	1	a
135.*	52 736	B5.0 V	A0	–0.1	0.54	1.69	460	0	a
136.	51 826	A0.0 V		0.8	0.31	0.99	710	2	b
137.	51 827	K3.0 III	K2, K1 Ib	0.6	0.21	0.73	280	1	b
138.	52 737	F6.0 V		3.8	0.22	0.73	110	0	a
139.	51 828	K1.0 III		0.8	0.22	0.77	460	2	b
140.*		B9.0 V		1.0	0.40	1.30	710	2	a

Table 4.2.4a (continued)

No.	BD	Sp photom.	Sp other	M_V	E_{B-V}	A_V	r pc	$\sigma_{\rm Sp}$	M_V qual.
141.	52 738	M1.7 III		1.5	0.17	0.61	560	10	c
142.	50 876	G7.0 V		5.3	0.04	0.12	80	0	b
143.	50 877	A0.5 V		1.6	0.34	1.11	540	3	b
144.*	53 722	F9.0 Ib	G5, F9-G0 Ib, G0 II	–4.6	0.52	1.74	960	1	c
145.	52 739	K0.0 IV		3.2	0.32	1.08	173	2	b
146.	51 829	G6.0 IV		3.1	0.17	0.55	250	1	b
147.*	50 881	G4:							
148.	51 830	B7.2 V		0.7	0.48	1.52	440	2	a
149.	51 831	B7.2 V		0.4	0.41	1.30	580	3	b
150.*		B9.5 III		–0.1	0.32	1.03	1460	1	a
151.	52 740	B7.0 V	A2	0.6	0.30	0.95	650	1	b
152.	51 833	K2.2III-IV	K0, K0 III	2.0	0.06	0.20	250	0	b
153.	51 832	A2.0 V		1.8	0.22	0.71	410	2	a
154.	52 741	B3.5 V	B8, B5 V	–1.4	0.36	1.13	680	1	b
155.*	53 723	B1.2 V	B3, B0,5 V, B1 III	–3.5	0.69	2.18	1080	1	b
156.	51 848	G2.5 V	G5	4.6	0.10	0.31	149	1	b
157.	53 724	G7.0 V		5.3	0.02	0.09	89	5	c

NOTES:

4. Hip 17590, π=1.45*, σ=1.18.
7. ADS 2751, $V_{\rm A}/V_{\rm B}$=10.1/10.4, Sep=2.6″.
9. Hip 17675, π=18.05, σ=0.85.
11. Hip 17706, π=17.65, σ=2.13.
13. Hip 17718, π=8.12, σ=0.92.
16. Hip 17736, π=21.70, σ=1.85.
19. Hip 17782, π=19.75, σ=2.97, $H_{\rm A}/H_{\rm B}$=9.505/9.827, Sep=0.36″, K0 V + K1 V (Christy & Walker 1969).
20. Hip 17800, π=16.24, σ=1.05.
21. Hip 17807, π=5.81, σ=0.92.
24. Hip 17822, π=4.87, σ=1.48.
25. 2GSC3333:113.
27. ADS 2781, $V_{\rm A}/V_{\rm B}$=10.3/13.3, Sep=2.7″.
29. ADS 2781B, Sep=70.2″.
30. Hip 17877, ADS 2783, π=0.33, σ=1.12, $H_{\rm A}/H_{\rm B}$=6.895/9.897, Sep=8.74″.
31. Hip 17905, π=0.55, σ=1.26.
35. Hip 17693, π=2.34, σ=0.98.
44. ADS 2802, $V_{\rm A}/V_{\rm B}$=8.8/14.2, Sep=8″.
56. Hip 18151, π=0.29, σ=1.23.
58. Hip 18160, π=3.15, σ=0.97.
59. Hip 18167, π=4.00, σ=1.17.
65. Hip 18207, π=10.08, σ=1.20.
66. Hip 18218, ADS 2828, π=15.76, σ=1.95, $H_{\rm A}/H_{\rm B}$=8.765/9.495, Sep=0.366″, G2 V + G5 V (Christy & Walker 1969).
72. Hip 18309, π=15.36, σ=1.07.
76. Hip 18351, π=12.77, σ=1.15.
80. Hip 18366, π=25.04, σ=0.86.
81. Hip 18370, π=0.48, σ=1.04, $H_{\rm A}/H_{\rm B}$=6.912/9.822, Sep=0.73″.
    Absolute magnitude is taken for the spectral type O9 IV-V.
82. Hip 18372, ADS 2896, π=2.87, σ=2.05, $H_{\rm A}/H_{\rm B}$=9.011/10.167, Sep=1.05″.
83. Hip 18375, π=4.87, σ=1.50.
84. ADS 2855, $V_{\rm A}/V_{\rm B}$=9.2/10.1, Sep=7.8″.
89. ADS 2863, $V_{\rm A}/V_{\rm B}$=10.0/10.6, Sep=2.4″.
93. BDS 1934 $V_{\rm A}/V_{\rm B}$=10.6/11.4, Sep=18.3″.
94. ADS 2877, $V_{\rm A}/V_{\rm B}$=9.6/11.5, Sep=6.4″.
96. Cou 2357, Sep=0.74″(Heintz 1998).
108. Hip 18585, π=3.31, σ=0.79, SB (Szabados 1997).
111. Hip 18604, ADS 2896, π=–0.02, σ=2.29, $H_{\rm A}/H_{\rm B}$=7.816/11.032, Sep=12.27″.
116. Hip 18653, π=–0.61, σ=1.41.
119. Hip 18668, ADS 2908, π=5.27, σ=4.85, $H_{\rm A}/H_{\rm B}$=10.332/12.121, Sep=3.45″.
     *Parallax values π and their errors given in mas.

128. Hip 18712, π=8.68, σ=1.21.
135. BDS 1965 $V_\mathrm{A}/V_\mathrm{B}$=10.2/10.4, Sep=22.8″.
140. 2GSC3718:1167.
144. Hip 18795, π=–0.62, σ=0.77.
147. ADS 2927, $V_\mathrm{A}/V_\mathrm{B}$=10.5/11.9, Sep=2.6″.
150. 2GSC3718:1636.
155. Hip 18834, π=–1.88, σ=1.10.

Table 4.2.5a. Results of photoelectric photometry in the Vilnius system. Area B [3].

No.	BD	HD	α(2000)	δ(2000)	Sp	Sp	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
		HDE	h m s	° ′ ″	photom.	other								
1.	60 493		02 30 51.3	61 10 40	O-B0	B0.5 Ia	8.433	2.138	1.753	1.406	0.830	0.275	0.686	3
2.	56 642	15450	02 31 19.5	56 53 52	B1 Ve	B1 IIIe	8.872	1.192	1.041	0.854	0.503	0.174	0.614	2
3.	62 411		02 31 47.8	63 25 03	B0.5 III	B1 Ib-II	8.427	1.334	1.084	0.837	0.496	0.177	0.385	2
4.*	57 582	15497	02 31 53.4	57 41 52	B5 I	B7 Ia, B5 Ia	7.038	2.528	1.910	1.421	0.810	0.281	0.661	2
5.	60 497		02 31 57.1	61 36 44	O-B0	O7 V	8.777	1.689	1.407	1.122	0.659	0.225	0.544	3
6.*	56 647	15548	02 32 05.0	56 39 58	B0.5 V	B1 V	9.237	1.319	1.066	0.787	0.454	0.166	0.337	1
7.			02 32 09.0	60 01 36	O-B0	B0.5 V	11.220	2.124:	1.831	1.473	0.897	0.289	0.742:	2
8.	60 498		02 32 10.9	61 33 08	B0 V	O9.5 V	9.914	1.696	1.405	1.091	0.640	0.220	0.498	2
9.	56 648	15571	02 32 24.8	57 25 44	B0	B1 II	8.351	1.817	1.466	1.145	0.668	0.228	0.499	2
10.*	60 501		02 32 36.3	61 28 26	O V	O6.5 V	9.589	1.473	1.239	0.999	0.599	0.204	0.471	3
11.*	60 502	15558	02 32 42.5	61 27 22	O V-III	O6, O5 IIIf	7.937	1.539	1.291	1.048	0.603	0.218	0.525	2
12.	60 503		02 32 43.0	60 57 13	B0.5 V	B1.5 V	9.933	2.045	1.639	1.249	0.736	0.253	0.548	2
13.	60 504	15570	02 32 49.4	61 22 42	O-B0	O5f, O4 If	8.131	1.936	1.616	1.311	0.721	0.271	0.686	2
14.	57 584	15620	02 32 52.9	57 55 46	B8 Ib	B8 Iab, B9 Ib	8.344	2.939	2.173	1.572	0.879	0.304	0.741	2
15.	54 569	15642	02 32 56.4	55 19 39	O-B0	O9.5 III, B0 III	8.516	0.789	0.673	0.535	0.316	0.124	0.229	2
16.	60 507	15629	02 33 20.6	61 31 18	O	O5 V	8.422	1.391	1.174	0.945	0.568	0.203	0.462	2
17.	57 586		02 33 27.9	58 35 55	B0.5 III	B1 II	10.056	1.948	1.564	1.196	0.689	0.238	0.545	2
18.*	56 656	15690	02 33 32.8	57 32 15	B2 II	B2 Ib, B1 Ib	7.978	2.077	1.642	1.252	0.721	0.252	0.570	2
19.	59 510		02 34 10.6	60 01 18	B0.5 V-III	B1 III	10.311	1.811	1.492	1.147	0.661	0.229	0.509	2
20.*	57 589	15752	02 34 11.4	58 24 20	O-B0	B0 III	8.748	1.616	1.332	1.053	0.619	0.216	0.503	2
21.	58 488		02 34 42.0	59 30 27	B1 V	B0.5 V	9.774	2.051	1.667	1.275	0.708	0.237	0.590	2
22.	59 513	15785	02 34 48.0	60 33 07	O-B0	B1 Iab	8.331	1.702	1.395	1.114	0.656	0.219	0.550	2
23.	62 419		02 35 11.6	63 35 03	B0 V-III	B0: V	9.704	1.385	1.151	0.887	0.522	0.183	0.391	2
24.	56 660	236971	02 35 37.8	57 29 13	B1 V-III	B1 IV	9.512	1.788	1.427	1.064	0.618	0.221	0.464	2
25.	57 593		02 35 52.0	57 47 22	B1 V-IV	B1 III	9.890	1.983	1.600	1.211	0.701	0.240	0.554	2
26.	62 424		02 36 18.2	62 56 53	O	O8	8.829	1.482	1.239	0.993	0.574	0.210	0.493	2
27.	56 676	16264	02 38 49.6	57 35 29	B1 V	B1: V:	9.253	1.667	1.326	0.996	0.574	0.212	0.459	2
28.	58 498	16310	02 39 23.0	59 03 59	B0.5 II-V	B1 II:, B1 Ib	8.072	1.954	1.589	1.249	0.720	0.236	0.579	2
29.*	60 541	16429	02 40 44.9	61 16 56	O	O9.5 I-III	7.802	1.797	1.484	1.186	0.693	0.241	0.570	2
30.	56 693	16691	02 42 52.0	56 54 16	O	O5f, SB	8.667	1.520	1.277	1.038	0.571	0.228	0.541	2
31.	57 620	16779	02 43 38.5	57 49 41	B0.5	B2 Ib	8.883	2.185	1.746	1.347	0.801	0.274	0.611	2
32.	59 535	16778	02 43 53.7	59 49 22	A2 Iab	A2 Ia, A0 Ib	7.701	3.383	2.304	1.581	0.857	0.296	0.770	2
33.	57 622	16808	02 44 06.8	58 19 35	O-B0	B0.5 Ib, O8 Ib	8.608	1.724	1.419	1.121	0.664	0.234	0.548	2
34.	56 703	16832	02 44 12.7	56 39 27	O-B0	B0p	8.860	1.425	1.184	0.939	0.547	0.195	0.427	2
35.	57 626		02 44 56.7	57 39 08	B1	B1 Ib	9.900	2.016	1.619	1.231	0.723	0.255	0.549	2
36.*	57 632	17088	02 46 51.4	57 44 02	B8 Ib	B9 Ib, B9 Ia	7.555	2.776	2.018	1.452	0.815	0.286	0.694	2
37.*	58 518	17114	02 47 22.3	59 17 11	B0.5 IV-V	B1 V	9.171	1.708	1.383	1.063	0.626	0.219	0.496	2
38.	57 634	17145	02 47 24.2	57 40 38	B5 II	B8 Ia	8.118	2.653	1.997	1.464	0.827	0.290	0.693	2
39.*	56 718	17378	02 49 30.7	57 05 04	A5 Ia	A5 Ia, A3 Ia	6.200	3.778	2.408	1.549	0.850	0.313	0.704	2
40.	59 549	237007	02 50 34.9	60 24 07	B0 V	B0 V	9.409	1.334	1.104	0.840	0.500	0.174	0.382	2
41.*	59 552	17505	02 51 08.0	60 25 04	O V	O7, O6 V	7.108	1.337	1.125	0.902	0.522	0.183	0.431	2
42.*	59 553	17520	02 51 14.5	60 23 10	O-B0	O8 V, O9 V	8.372:	1.225	1.041	0.827	0.500	0.174	0.436	3
43.*	56 728	17603	02 51 47.8	57 02 55	O-B0	O7f, O8.5 If	8.412	1.853	1.532	1.208	0.699	0.261	0.597	1
44.	59 562	237019	02 53 28.5	60 27 37	O-B0	O8 V	9.739	1.518	1.272	1.000	0.579	0.199	0.513	2
45.*	60 586		02 54 10.7	60 39 04	O	O8 III	8.431	1.201	1.011	0.798	0.469	0.171	0.389	1
46.	56 739		02 54 50.8	57 26 36	B0.5 III	O9.5 Ib	9.935	2.602	2.119	1.668	0.974	0.344	0.795	2
47.	63 367	17857	02 55 21.0	64 09 27	B6 Ib	B8 Ib, B7 Ib	7.751	2.584	1.907	1.368	0.782	0.273	0.642	1
48.	58 534	18076	02 56 52.3	59 05 20	B0 V-III	B0 II-III	9.065	1.760	1.448	1.140	0.667	0.235	0.564	2
49.	60 594		02 57 04.1	61 24 58	O-B0	O9 V	9.269	1.294	1.088	0.864	0.512	0.184	0.381	2
50.	60 596		02 57 08.0	60 39 44	B0.5 V-III	B1 V	9.612	1.449	1.184	0.885	0.506	0.176	0.393	1
51.			02 57 58.7	57 50 18	B0 IV-II	B2 III	10.043	1.985	1.644	1.273	0.790	0.288	0.632	2
52.	51 659		02 58 47.1	52 06 41	B0.5 V-III	B0 III	9.345	1.519	1.230	0.953	0.546	0.184	0.417	1
53.			02 58 50.3	58 02 49	O V	B1 III	9.889	1.925	1.617	1.279	0.778	0.284	0.632	2
54.*	59 578	18326	02 59 23.2	60 34 00	O V	O8, O7 V, SB	7.915	1.296	1.091	0.862	0.503	0.172	0.413	1
55.	60 608	18352	02 59 47.4	61 17 24	B1 V-III	B1 V	6.819	1.208	0.972	0.705	0.409	0.148	0.311	1
56.	62 504	18409	03 00 29.7	62 43 19	O	O9 Ib	8.381	1.451	1.203	0.969	0.567	0.202	0.472	1
57.	55 737	18577	03 01 44.1	56 01 34	F2 IV	A5	9.167	2.240	1.683	1.021	0.421	0.162	0.405	1
58.	53 606	18678	03 02 24.4	54 21 48	A7 V	A5	7.190	2.208	1.611	0.874	0.339	0.125	0.288	1
59.*	57 681	237056	03 02 37.9	57 36 46	B0.5 V-III	B0.5 Vpe, O8e	8.837	1.902	1.541	1.194	0.687	0.249	0.546	2
60.	51 667	232741	03 02 52.6	52 15 00	K2 V	G5	9.215	3.346	2.912	1.926	0.719	0.393	0.716	1
61.	59 588	18766	03 03 48.6	60 18 45	F6 V	F5 V	7.212	2.247	1.728	1.146	0.479	0.187	0.474	1
62.	50 689	18842	03 03 58.1	50 57 28	F6 V	F8	8.887	2.233	1.734	1.147	0.474	0.189	0.482	1
63.	49 836	18916	03 04 25.0	50 01 56	G1.5 V	G5	7.988	2.467	2.058	1.414	0.597	0.248	0.533	1
64.	56 767	18970	03 05 32.4	56 42 20	K0 III	G9 III, K1 II-III	4.776	3.625	3.050	2.067	0.782	0.321	0.746	1
65.	55 738	18991	03 05 40.2	56 04 08	K0.5 IV-III	G9 III, K0 IV	6.088	3.696	3.126	2.107	0.790	0.337	0.756	2
66.	50 701	232747	03 06 10.9	51 06 07	G9.5 V	K0	9.766	2.906	2.521	1.718	0.667	0.301	0.655	1
67.	57 687		03 06 17.4	57 50 40	B0	B1 Ib	9.998	2.419	1.955	1.523	0.916	0.319	0.709	2
68.	56 778	19256	03 08 25.7	57 00 47	G1 V-IV	G0 V	6.629	2.510	2.055	1.378	0.560	0.225	0.522	3
69.	57 696	19288	03 08 50.7	58 20 52	F0 IV	F0	7.452	2.334	1.674	0.933	0.378	0.150	0.354	1
70.*	61 525	19243	03 08 54.2	62 23 05	Oe	B1 Ve	6.633	1.145	0.959	0.741	0.441	0.164	0.592	1
71.			03 09 04.9	58 53 34	B6 IV	B5 III	10.348	2.401	1.792	1.168	0.617	0.217	0.502	1
72.	59 599	237076	03 09 43.7	60 14 19	G4 IV	F8 V	8.930	2.672	2.213	1.482	0.604	0.228	0.603	1
73.	52 663	19558	03 11 00.2	53 08 36	F0 V-III	A5	7.367	2.170	1.597	0.908	0.374	0.146	0.342	1
74.*	55 747	19537	03 11 04.5	55 43 59	F9.5 V	G0	8.664	2.320	1.883	1.300	0.536	0.209	0.525	2
75.	60 636	19536	03 11 31.7	60 38 06	A2 IV	A2 III-II	7.287	2.291	1.568	0.686	0.284	0.119	0.204	1
76.			03 12 15.1	56 31 41	B1.5 II-V		10.470	2.040	1.633	1.203	0.639	0.223	0.527	3
77.	58 574		03 13 01.2	58 56 26	B0.5 V	B1: V	10.029	1.908	1.575	1.248	0.694	0.253	0.575	2

Table 4.2.5a (continued)

No.	BD	HD HDE	α(2000) h m s	δ(2000) ° ′ ″	Sp photom.	Sp other	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
78.	49 873		03 13 08.9	50 26 51	K4 V		9.877	3.698	3.274	2.216	0.764	0.499	0.801	1
79.	52 669		03 13 47.7	53 23 06	A0.5 Ib		9.805	3.484	2.411	1.696	0.923	0.341	0.767	1
80.	51 696	19864	03 13 50.1	51 47 05	F4 V	F5	7.867	2.149	1.649	1.052	0.451	0.178	0.415	1
81.	59 608		03 13 57.7	59 50 28	B1.5 V	B2.5 V, B2 III	9.916	1.665	1.349	0.977	0.535	0.197	0.402	2
82.*	59 609	19820	03 14 05.3	59 33 49	B0 V	O9 III-V	7.132	1.607	1.335	1.043	0.613	0.219	0.487	2
83.	51 697		03 14 34.1	52 20 57	K8 V		10.156	4.318:	3.743	2.669	0.879	0.614	1.024	1
84.	58 578		03 14 54.0	59 06 13	B1 V	B3 III	9.753	1.550	1.256	0.926	0.526	0.187	0.394	2
85.	55 757	19961	03 14 55.0	56 18 17	G4 IV	G5	8.556	2.654	2.185	1.455	0.585	0.233	0.546	2
86.*	59 611	237090	03 15 10.9	59 54 43	B0.5	B1 V, O9 III	8.897	1.754	1.429	1.092	0.631	0.220	0.506	1
87.*	59 612	237091	03 15 16.7	59 54 49	B1 V-III	B1.5 V	8.840	1.826	1.469	1.100	0.626	0.221	0.511	1
88.	51 703	20112	03 16 07.7	51 34 01	F8 V	F8	8.170	2.210	1.792	1.230	0.530	0.203	0.499	1
89.	51 704		03 16 19.1	51 59 41	B1.5 V	B1 V	10.298	1.725	1.375	0.980	0.558	0.214	0.403	1
90.	57 709	237105	03 16 30.8	57 45 43	B3.5 V	B2 V	9.903	2.064	1.591	1.123	0.614	0.216	0.484	2*
91.	59 625	20134	03 16 59.7	60 04 03	B3 V	B3 V	7.460	1.399	1.042	0.618	0.334	0.131	0.246	3
92.	49 895	20282	03 17 43.2	50 21 40	A1 V	A0	7.511	2.117	1.511	0.671	0.280	0.108	0.174	1
93.	49 899	20365	03 18 37.7	50 13 20	B3.5 V	B3 V, B3 IV	5.164	1.068	0.789	0.391	0.209	0.086	0.143	1
94.	59 630	20295	03 18 46.5	59 38 04	B3 IV-V	B5 III	8.374	1.566	1.191	0.747	0.405	0.149	0.286	2
95.			03 18 47.6	59 07 05	B2 V		10.486	1.937	1.548	1.123	0.606	0.231	0.449	1
96.	51 710		03 18 52.4	52 01 48	B3.5 II-I	B5 Ib	9.699	2.148	1.620	1.165	0.667	0.235	0.585	2
97.	53 643	20436	03 19 38.5	53 42 38	G0 V	F8	8.457	2.343	1.898	1.316	0.539	0.216	0.509	1
98.	50 738	20510	03 20 06.2	50 58 08	B8.5 V	B9 V	7.065	1.721	1.188	0.512	0.228	0.091	0.139	1
99.	51 713	232774	03 20 11.4	52 04 06	B1.5 V	B	8.799	1.807	1.466	1.131	0.643	0.225	0.457	1
100.	58 587	237121	03 20 44.8	58 51 20	B0 V-IV	B0.5 V	8.930	1.597	1.302	0.988	0.603	0.205	0.434	1
101.	54 667		03 20 49.1	54 37 39	O-B0		10.11::	1.862	1.554	1.254	0.701	0.241	0.549	2
102.*	59 634	20508	03 20 54.0	60 01 49	B1 V-III	B3 III, B1.5 IV	8.247	1.739	1.395	1.049	0.567	0.203	0.456	1
103.*	58 588	20547	03 21 11.5	59 10 04	B1 V	B1 V, B3 III	8.222:	1.560	1.254	0.905	0.511	0.187	0.392	2
104.	52 683	20661	03 21 54.1	53 29 16	G5.5 V	K0	8.811	2.563	2.164	1.502	0.591	0.246	0.579	2
105.	51 722	232781	03 21 55.0	52 19 55	K3.5 V	K5	8.995	3.517	3.087	2.127	0.734	0.451	0.802	2
106.	52 685	20670	03 21 56.7	52 37 19	G2.5 IV	G5	7.671	2.718	2.237	1.509	0.609	0.237	0.573	1
107.			03 22 06.8	57 14 48	B2.5 V		11.184:	2.606	2.085	1.565	0.855	0.303	0.658	2
108.	54 672	20750	03 23 05.6	55 13 48	F1 V	A5 (V)	7.619	2.238	1.663	0.981	0.392	0.160	0.350	1
109.	55 774	237131	03 23 11.2	56 16 45	B6 V	B5	10.023	1.954	1.451	0.879	0.459	0.163	0.342	1
110.			03 23 29.5	55 12 24	O-B0	O9 V	11.194	2.665	2.198	1.802	0.985	0.327	0.810	2
111.	57 720	20787	03 23 47.1	58 28 10	F4 V-III	F0	7.808	2.203	1.669	1.069	0.455	0.177	0.431	1*
112.	49 916		03 24 17.3	49 40 00	B3.5	B2p, She	9.448	1.379	1.016	0.666	0.371	0.134	0.290	1
113.	52 687	232787	03 24 42.4	53 10 22	F7 V	F8	9.291	2.155	1.700	1.152	0.483	0.186	0.473	1
114.			03 25 10.5	56 41 11	B2.5 V		10.698	2.503	1.991	1.490	0.812	0.279	0.641	4
115.*	59 648	20898	03 25 16.3	60 29 01	B1 V	B2 III	7.953	1.666	1.345	1.003	0.545	0.191	0.468	1
116.	58 599	20930	03 25 18.2	58 41 40	K1 IV-III	K1 III	6.849	3.717	3.140	2.124	0.812	0.358	0.769	1
117.	53 657	21004	03 25 47.9	53 55 18	F0 V-IV	A9 III-IV	6.495	2.224	1.615	0.913	0.375	0.148	0.344	2
118.	58 600	20959	03 25 48.0	59 25 57	B2.5 III	B3 III	8.019	1.506	1.154	0.786	0.441	0.164	0.354	1
119.	52 691	21028	03 25 55.6	53 19 22	B9.5 IV	A0	7.452	2.075	1.386	0.647	0.298	0.128	0.219	1
120.	56 812	21059	03 26 35.9	57 24 36	K0 V	G5	8.389	3.129	2.647	1.826	0.711	0.318	0.695	1*
121.	51 733	21107	03 26 44.1	51 42 39	F5 V	F5	8.383	2.168	1.681	1.090	0.462	0.164	0.454	1
122.	57 723	237140	03 26 51.3	58 02 59	B5 III	B8 III Si	9.458	1.956	1.456	0.914	0.498	0.195	0.397	1*
123.			03 27 12.6	56 31 41	B9.5 V-III		11.528:	2.811	1.991	1.154	0.609	0.211	0.390	2
124.			03 27 13.8	56 21 20	B9 V-III		11.659	2.509	1.793	1.010	0.520	0.201	0.389	4
125.			03 27 19.4	56 34 48	A0.5 V		11.045	3.205	2.256	1.286	0.649	0.235	0.455	2
126.	56 813	237141	03 27 24.5	56 53 12	B7 V-III	B5	9.456	2.203	1.619	0.947	0.486	0.175	0.386	1*
127.			03 27 28.6	56 25 27	A1 V		12.046	2.824	2.042	1.148	0.555	0.206	0.362:	2
128.	58 603		03 27 44.3	59 00 25	B7 II-III	B7 IV	9.829	1.783	1.313	0.772	0.418	0.165	0.310	1*
129.	55 786		03 27 57.6	56 26 24	B6 V-III	A0	9.907	2.395	1.765	1.100	0.594	0.218	0.443	5
130.			03 28 07.6	56 18 12	B6 V-IV		10.267	2.119	1.580	0.957	0.489	0.204	0.400	5
131.			03 28 09.4	56 28 11	B8.5 IV-V		11.125	3.012	2.262	1.401	0.711	0.276	0.672	2
132.	56 814		03 28 09.9	56 30 56	B5 III-V	B6 V	10.483	2.125	1.579	0.999	0.530	0.219	0.432	3*
133.			03 28 17.5	56 23 50	B7 IV		10.070	2.191	1.594	0.962	0.515	0.195	0.393	5
134.*	61 587	21212	03 28 39.2	62 29 35	B1p	B2 Ve, B1.5 IVe	8.053	1.820	1.485	1.135	0.665	0.234	0.740	1
135.*	59 661	237146	03 29 45.2	59 55 05	B3 Ve	B3	9.047	1.753	1.413	0.987	0.523	0.193	0.600	1
136.*	54 684	21447	03 30 00.2	55 27 07	A1 V-III	A2 V, A2.5 V	5.102	1.963	1.359	0.541	0.211	0.090	0.137	2
137.	53 666	21494	03 30 28.2	54 17 38	G2 V	G8 III	8.891	2.535	2.076	1.437	0.590	0.237	0.567	2
138.	49 952	21584	03 31 06.6	50 28 53	A5 V	A2, Am	7.372	2.370	1.676	0.816	0.304	0.131	0.236	1
139.	53 669		03 31 22.3	53 39 20	B2.5 V	B2 III	10.150	1.955	1.548	1.100	0.584	0.215	0.449	2
140.	55 794	21599	03 31 53.3	56 26 25	F0 V-III	F2	7.966	2.223	1.654	0.972	0.399	0.159	0.364	1
141.	53 672	232799	03 32 22.9	54 29 28	B7 III	B5 V	9.074	2.318	1.671	1.056	0.563	0.211	0.434	1
142.	58 617	21742	03 33 26.7	59 25 03	K0.8 V	K1 IV	8.040	3.133	2.689	1.786	0.673	0.315	0.660	2*
143.	57 728		03 33 39.0	58 29 46	B4 V	B4 V	9.980	1.787	1.336	0.841	0.454	0.171	0.351	4*
144.	54 693	21819	03 33 39.1	54 58 30	A2 V	A3 V, A1 V	5.964	2.097	1.472	0.652	0.251	0.098	0.189	2
145.*	57 730	21794	03 33 41.2	57 52 07	F7 V	F7 V, SB	6.362	2.274	1.781	1.204	0.507	0.197	0.486	st
146.	51 751	21863	03 33 47.6	52 17 17	G0 V	G0	8.755	2.422	1.975	1.342	0.550	0.220	0.491	1
147.			03 33 54.3	58 39 01	A8 V		11.965	2.636	1.952	1.141	0.508	0.199	0.441	4*
148.			03 34 09.2	58 41 36	F6 V		12.148	2.701	2.121	1.464	0.672	0.257	0.619	2*
149.			03 34 17.1	59 50 23	B2.5 V	B2 V	10.113	1.491	1.168	0.763	0.408	0.147	0.333	1
150.	59 672	21843	03 34 19.1	59 44 06	A:	B3 III, A0 Ib	7.779	3.677	2.271	1.398	0.738	0.271	0.643	3
151.			03 34 21.4	58 34 18	A2 V		11.594	2.653	1.950	1.050	0.465	0.186	0.338	2*
152.			03 34 21.9	58 34 54	G1 V		12.421:	2.763	2.296	1.604	0.668	0.280	0.696	1
153.	58 622	237153	03 34 37.6	58 38 43	B6 Ib	B8 Ib	9.278	3.108	2.348	1.746	0.992	0.347	0.834	2*
154.	53 679	232809	03 34 54.0	53 56 15	B4 V	B2 V	9.215	2.072	1.610	1.110	0.598	0.212	0.458	1

Table 4.2.5a (continued)

No.	BD	HD HDE	α(2000) h m s	δ(2000) ° ′ ″	Sp photom.	Sp other	*V*	*U–V*	*P–V*	*X–V*	*Y–V*	*Z–V*	*V–S*	*n*
155.	58 624		03 35 16.7	58 46 21	A5 IV-V	A4 V	10.400	2.728	1.945	1.042	0.455	0.179	0.362	4*
156.	53 683	232813	03 37 07.0	53 46 20	G8 IV	G8 III	9.324	2.963	2.507	1.655	0.648	0.273	0.616	2
157.	56 824	22253	03 37 44.1	56 44 22	B0.5	B0.5 III	6.458	1.349	1.076	0.813	0.491	0.179	0.363	2*
158.			03 37 52.6	59 32 20	B1.5 V		9.792	1.593	1.278	0.909	0.494	0.178	0.394	1
159.	54 698	22298	03 38 01.0	55 10 15	B1.5	B2 Vne	7.619	1.927	1.521	1.113	0.623	0.224	0.618	3
160.	52 705	232816	03 38 19.4	52 35 57	F6 V	G0: V:	9.000	2.312	1.803	1.252	0.549	0.210	0.529	1
161.	56 826	22316	03 38 19.7	56 55 58	B8 V	B9p, B8 V	6.281	1.308	0.896	0.343	0.138	0.102	0.096	1*
162.	57 734	22297	03 38 20.0	57 41 12	B5 IV-V	B5, B3 V	8.745	2.270	1.716	1.142	0.628	0.227	0.498	2*
163.			03 38 43.4	60 30 56	Op		12.385	1.715	1.501	1.212	0.693	0.237	0.868	2
164.	52 706	22451	03 39 06.5	52 49 09	F9 V	F7 V, F5 II	7.767	2.377	1.879	1.257	0.518	0.207	0.503	1
165.	58 633	22439	03 39 37.2	59 22 12	F7 V	G0	8.191	2.151	1.709	1.179	0.507	0.193	0.476	2*
166.	55 803	22489	03 39 45.2	56 22 59	A1.5 V	A2	6.522	2.076	1.427	0.574	0.223	0.085	0.147	1
167.	57 736	22508	03 40 13.1	58 18 03	F5 V-III	F2 V	9.093	2.150	1.666	1.082	0.464	0.181	0.411	1*
168.			03 40 32.1	57 54 47	B6 V-III	B5	11.347	2.652	1.985	1.313	0.712	0.262	0.570	2
169.	58 637	22601	03 41 11.9	58 50 42	A9 V	F0	6.829	2.214	1.622	0.910	0.361	0.144	0.334	2
170.			03 41 18.8	58 24 44	A4 V	B5	12.436	3.024	2.244	1.262	0.579	0.215	0.515	1
171.	50 800	22718	03 41 25.7	50 49 17	G0 V	G0	8.199	2.434	1.963	1.345	0.553	0.212	0.531	1
172.			03 41 30.0	56 50 00	A1 III	B5	11.956	3.155	2.183	1.228	0.637	0.250	0.444	1
173.			03 41 37.2	55 13 07	K8 V		11.112	4.319:	3.758:	2.781:	0.991	0.651	1.108	2
174.			03 41 41.3	58 29 17	B7 V-III	B5	11.797	2.517	1.900	1.233	0.632	0.249	0.539	1
175.			03 41 54.1	56 31 47	A8 V	B5	11.819	3.052	2.305	1.424	0.668	0.259	0.574	2
176.	50 802	22872	03 42 41.6	51 10 25	F9.5 V	F9 V	7.913	2.369	1.903	1.305	0.538	0.209	0.508	2
177.	55 815	22844	03 42 54.8	56 24 19	G9 IV	K0 III-IV	8.128	3.128	2.638	1.770	0.693	0.293	0.666	1
178.	491001	22902	03 42 55.6	50 11 10	F5 V	F0	9.048	2.128	1.649	1.070	0.457	0.179	0.413	1
179.	57 739	22830	03 42 57.0	57 33 42	B5 II	B5, B8	8.252	1.609	1.137	0.738	0.425	0.161	0.351	2*
180.			03 43 04.0	56 08 00	A9 III:	B5	11.701	3.136	2.299	1.445	0.693	0.266	0.591	2
181.			03 43 39.6	57 20 14	B2 IV-II		11.465	2.187	1.717	1.301	0.725	0.264	0.594	2
182.			03 44 23.0	57 19 29	B7 II-III	B5	11.237	2.470	1.843	1.214	0.676	0.253	0.532	2
183.			03 44 57.0	55 49 21	A5 V-III	B5	11.929	3.054	2.215	1.290	0.609	0.236	0.475:	1
184.	59 708	23074	03 45 21.1	60 21 03	F9 V	G0	7.993	2.327	1.859	1.267	0.525	0.203	0.495	2*
185.	58 646	23129	03 45 44.5	58 51 21	F6 V	F5 V	7.707	2.123	1.672	1.134	0.484	0.186	0.460	2*
186.	57 740	23152	03 45 46.6	57 52 14	F5 V	F5 V	8.444	2.088	1.629	1.086	0.470	0.180	0.457	2
187.	54 707	23190	03 45 50.6	55 03 50	A7 V	A5	6.823	2.142	1.559	0.794	0.303	0.126	0.264	2
188.		237170	03 45 54.5	58 17 45	B3 V	B5	10.092	1.943	1.507	1.025	0.564	0.208	0.420	2
189.	58 648	237173	03 46 15.0	58 50 26	B3.5 V	B5, B8	9.613	2.042	1.596	1.095	0.587	0.203	0.454	2
190.	57 744	237174	03 46 17.7	57 31 12	B2.5 V	B5:, B3e	9.426	1.461	1.135	0.725	0.403	0.152	0.310	3
191.	55 822	237177	03 46 38.5	56 17 54	B8 III-V	B5, A0, B8	9.828	2.396	1.696	0.991	0.541	0.203	0.402	2
192.	59 712		03 46 54.2	60 27 55	G8 V		9.964	2.787	2.359	1.617	0.640	0.282	0.613	2
193.	58 650	23278	03 46 57.3	58 57 39	G8.5 II-IV	K0, G8 II	8.781	4.452	3.737	2.588	1.046	0.413	0.906	5
194.	51 774	23384	03 47 10.6	51 42 23	F1 V-III	F0	6.889	2.084	1.579	0.957	0.401	0.153	0.357	3*
195.	53 699	232834	03 47 31.6	53 56 57	K2.5 V	K3 III	10.299	3.309	2.876	1.950	0.692	0.387	0.734	4*
196.	55 824	23383	03 47 32.1	55 55 19	B9 IV-V	B9 V	6.091	1.672	1.108	0.439	0.201	0.075	0.140	1
197.			03 47 36.1	59 05 34	A5 V-III		11.182	2.533	1.842	1.015	0.423	0.165	0.318	6
198.	51 775	23452	03 47 40.1	51 31 44	A1 V	A0 V, A1 V	7.333	2.125	1.516	0.683	0.288	0.110	0.216	1*
199.*			03 47 42.9	59 06 18	B4		11.226	2.387	1.817	1.241	0.675	0.224	0.562:	1
200.			03 47 50.0	58 56 21	K5 III		9.393	5.521	4.657	3.361	1.323	0.619	1.189	5
201.			03 47 50.8	59 04 00	B2.5 Ve	O	11.335	2.180	1.704	1.206	0.664	0.226	0.685	6
202.	52 713	232838	03 47 54.4	52 28 04	K3 V	K3 III	9.875	3.472	3.030	2.045	0.713	0.406	0.750	2*
203.			03 48 05.7	59 15 32	F9.5 V		11.554	2.745	2.253	1.566	0.695	0.269	0.611	1
204.			03 48 12.2	59 11 09	A5 V-III		10.920	2.647	1.893	1.028	0.430	0.177	0.334	5
205.			03 48 27.9	59 04 58	B8.5 V		11.654	3.820	2.921	1.975	1.024	0.374	0.921	1
206.	57 747	23476	03 48 30.0	57 46 03	G1.5 V-III	G5 V	8.465	2.431	2.014	1.411	0.579	0.235	0.558	3
207.			03 48 32.5	59 01 48	F5 V		11.368	2.610	2.048	1.407	0.663	0.251	0.592	2
208.	51 778	23565	03 48 37.5	51 49 24	G2 V-IV	G5 V	7.676	2.616	2.141	1.455	0.592	0.236	0.570	3*
209.			03 48 53.7	59 04 18	F3 V		11.642	2.531:	1.915	1.266	0.597	0.230	0.519:	1
210.	50 831	23623	03 48 54.2	50 50 25	F5 V	F2 V	7.319	2.171	1.677	1.085	0.448	0.172	0.429	2
211.			03 49 01.5	59 04 59	F9 V		12.141	2.702:	2.229:	1.567:	0.704	0.271	0.588?	1
212.			03 49 03.5	55 07 39	B7 V		11.216	3.174	2.390	1.640	0.879	0.302	0.750	1
213.*	56 846	23594	03 49 19.8	57 07 07	B9.5 V	A0 V, B9 V	6.449	1.983	1.349	0.579	0.253	0.097	0.167	3
214.			03 49 25.4	58 29 15	B2 V	B2	10.076	1.649	1.298	0.894	0.502	0.174	0.382	2
215.	56 847	23603	03 49 26.7	57 07 20	A0.5 V	A0	7.164	2.072	1.410	0.598	0.262	0.103	0.173	1
216.*	52 714	23675	03 49 27.6	52 39 19	B0	B0.5 III	6.767	1.498	1.199	0.948	0.552	0.190	0.441	1*
217.	58 657	23650	03 49 34.9	58 46 05	F9.5 V	G2 V	8.980	2.316	1.890	1.319	0.542	0.213	0.528	2
218.	54 713	23674	03 49 43.6	54 42 56	F5 V	F2 III	8.198	2.205	1.716	1.121	0.472	0.187	0.440	2
219.*	52 715	23800	03 50 25.1	52 28 55	B1 IV-III	B1 IV	6.936	1.467	1.148	0.852	0.489	0.182	0.422	1*
220.*	59 720A		03 50 39.2	60 07 22	B5 V		8.557	1.554	1.154	0.637	0.326	0.119	0.228	1
221.			03 50 41.0	57 10 43	B1.5 V	B5	10.563	1.534	1.220	0.856	0.488	0.174	0.343	2
222.	54 714	23820	03 50 42.5	54 47 03	F5 V	F8 V	8.324	2.163	1.686	1.105	0.464	0.180	0.447	1
223.	54 715	23837	03 50 55.6	55 20 55	F6 V	F8 V	8.244	2.173	1.711	1.153	0.485	0.186	0.471	2
224.			03 50 56.2	57 09 24	A8 V	B5	11.116	2.856	2.139	1.357	0.595	0.231	0.481	2
225.	56 850		03 50 59.2	57 10 26	B2p	B3p	11.124	1.813	1.411	0.978	0.571	0.192	0.609	2
226.	55 828	237184	03 51 04.0	56 06 27	F6 V	F8 IV	9.491:	2.203	1.702	1.146	0.484	0.185	0.445	1
227.	57 749	237185	03 51 22.5	57 50 18	F5 V	F2 V	9.223	2.200	1.711	1.127	0.485	0.196	0.469	1
228.			03 52 21.6	57 01 31	B2.5 V	B3p	11.543	1.895	1.500	1.048	0.571	0.212	0.390	1
229.			03 53 24.2	55 55 10	B6 V-III	B5	11.488	2.482	1.876	1.249	0.665	0.231	0.506	2
230.	52 720	24189	03 53 37.4	52 33 46	F8 V	F6 V	8.437	2.308	1.854	1.248	0.528	0.202	0.510	2*
231.	57 752	24141	03 53 43.2	57 58 31	A5 V	A5m	5.772	2.148	1.572	0.766	0.269	0.123	0.204	3
232.			03 53 59.4	53 12 57	B1.5 V	B1 V	11.008	2.325	1.888	1.412	0.772	0.290	0.673	2

Table 4.2.5a (continued)

No.	BD	HD	α(2000)	δ(2000)	Sp	Sp	V	U–V	P–V	X–V	Y–V	Z–V	V–S	n
		HDE	h m s	° ′ ″	photom.	other								
233.	54 718		03 54 07.0	55 25 03	B0.5 V-IV	B0, B5	11.005	2.057	1.672	1.304	0.774	0.269	0.605	2
234.	53 710		03 54 14.2	54 04 28	B2.5 V		10.325	1.843	1.475	1.057	0.561	0.211	0.443	1*
235.			03 54 32.9	56 50 51	B3 II-III	O8, B6 Ia	10.231:	2.407	1.810	1.297	0.736	0.266	0.683	2
236.	51 798	24341	03 54 51.1	52 25 12	G1.5 V	G1 V	7.865	2.503	2.055	1.457	0.609	0.234	0.587	2*
237.	56 855	24298	03 54 56.1	57 26 28	A9 V-IV	A3	7.732	2.179	1.598	0.890	0.349	0.141	0.315	1
238.	57 755	237193	03 55 05.5	58 12 33	K1 V	G8 V	9.225	3.228	2.765	1.850	0.713	0.329	0.728	2
239.	53 712	24386	03 55 23.0	53 33 27	F8 V	F8 V	8.483	2.201	1.750	1.206	0.505	0.191	0.486	2*
240.			03 55 23.5	55 41 32	B9.5 V	B5	11.951	2.710	1.945	1.151	0.590	0.244	0.381	1
241.	481019	24432	03 55 24.9	49 02 26	B4 II	B3 II	6.806	2.183	1.623	1.139	0.643	0.235	0.513	2
242.	51 803	24421	03 55 37.1	52 13 36	F7 V	F5	6.834	2.202	1.736	1.192	0.511	0.198	0.496	4*
243.*	52 726	24431	03 55 38.5	52 38 29	O-B0	O9 V	6.729	1.413	1.150	0.913	0.527	0.186	0.435:	2*
244.			03 55 40.5	56 42 23	B1	B5	12.073	1.609	1.306	0.971	0.568	0.202	0.428:	1
245.	56 857	24395	03 55 46.3	56 55 09	A8 III	A7 II	6.891	2.436	1.668	0.854	0.357	0.140	0.311	1
246.*	50 860	24546	03 56 36.5	50 41 44	F4 V	F5 IV-V	5.284	2.166	1.672	1.072	0.449	0.181	0.426	3
247.			03 56 41.0	57 15 30	B0 V	B0p, B0 V	10.823	1.368	1.134	0.876	0.513	0.183	0.396	2
248.*			03 57 41.2	57 11 10	B4 V	B5	10.810:	1.976	1.487	0.982	0.530	0.200	0.397	2
249.			03 57 46.8	57 06 15	B3 V	B5	9.801	1.514	1.153	0.735	0.377	0.136	0.308	2
250.	52 729		03 57 51.5	52 41 26	B1 III	B1 Vp, B2 Iab	10.113	2.759	2.231	1.775	1.009	0.360	0.852	1*
251.	55 837		03 58 01.7	55 54 56	B0.5	B2 Ib	9.530	2.130	1.702	1.309	0.771	0.276	0.601	3
252.			03 58 15.4	54 59 14	B1 V:		11.616	2.455	1.987	1.575	0.920	0.338	0.647	1
253.	58 672	24678	03 58 29.5	58 37 10	F9 IV	F8 IV	8.309	2.429	1.930	1.254	0.510	0.203	0.465	1
254.			03 58 46.5	57 10 44	B1 V-III		11.165	1.454	1.171	0.857	0.468	0.175	0.349	1
255.			03 58 48.7	56 56 11	B6 V-III	B5	11.453	2.122	1.561	0.952	0.468	0.188	0.345	1
256.	57 760	24717	03 58 49.8	57 27 03	A1.5 V	A0	6.958	2.045	1.431	0.585	0.216	0.092	0.143	1
257.			03 58 59.4	56 11 14	B2.5e	Be	11.185	2.433	1.880	1.343	0.757	0.256	0.984	2
258.			03 59 00.0	55 45 32	A2 V	B5	12.116	3.029:	2.212	1.305	0.620	0.229	0.480:	1
259.			03 59 07.6	57 14 14	O		10.033	1.221	1.021	0.812	0.478	0.173	0.373	1
260.	56 864		03 59 18.3	57 14 15	O-B0	O8p	9.652	1.185	0.994	0.793	0.458	0.163	0.350	3
261.	56 866		03 59 28.9	57 07 06	B0 V	B1, O9 V	10.267	1.346	1.118	0.869	0.500	0.171	0.386	2
262.			03 59 33.8	55 57 52	B1 V	B5	11.220	1.796	1.457	1.086	0.638	0.234	0.459	2
263.			03 59 41.6	55 18 51	B2 III-I	O5	11.349	2.243	1.778	1.329	0.800	0.287	0.596	2
264.			04 00 00.5	57 37 55	B0 V-III	B0	11.015	1.373	1.126	0.872	0.495	0.171	0.400	3
265.	56 868	237204	04 00 23.3	56 54 06	B0 V-III	B0.5 V	9.140	1.353	1.099	0.823	0.470	0.165	0.361	3
266.	52 734	24942	04 00 28.7	52 56 51	F4 V	F5	8.632	2.091	1.617	1.050	0.456	0.169	0.420	1*
267.			04 00 41.3	54 47 12	K4 V		10.436	3.757	3.311:	2.261	0.765	0.485	0.841	2
268.	55 838		04 00 42.6	55 29 03	B3 Ib	B3 Ib	9.290	2.459	1.905	1.433	0.847	0.308	0.684	3
269.	54 728		04 00 54.4	55 13 41	B0.5	Oep	10.306	2.585	2.073	1.606	0.947	0.324	0.756	2
270.			04 01 19.7	55 51 17	B9 IV-V	B5	11.937	2.804	1.998	1.173	0.604	0.223	0.471	1
271.	55 839	25021	04 01 21.1	56 02 23	A4 V	A3 V	7.292	2.105	1.487	0.672	0.239	0.085	0.167	1
272.	55 841		04 01 56.2	55 46 16	B6 II-V	B5	10.078	1.811	1.362	0.838	0.457	0.180	0.337	2
273.	52 741	25141	04 02 14.5	52 52 39	B3.5 IV-V	B5 V	8.922	1.380	1.042	0.632	0.332	0.129	0.271	2*
274.	53 723	232874	04 02 15.7	53 45 12	B1 V	B0.5 V	8.873	1.674	1.342	0.987	0.551	0.194	0.442	3*
275.			04 02 20.0	53 23 35	B2.5 III-V		10.469:	1.386	1.114	0.760	0.396	0.161	0.410:	1
276.			04 02 30.8	52 51 19	O V	B1:p?	10.328	1.938	1.655	1.325	0.819	0.287	0.661	2
277.			04 02 32.3	55 25 54	B5	B5	11.769	2.327	1.722	1.113	0.627	0.209	0.447:	2
278.			04 02 41.9	55 10 05	B1 V	B0 V	11.239	2.270	1.826	1.356	0.764	0.285	0.580	2
279.	58 685	25132	04 02 43.7	58 56 58	B3.5 V	B3 V	7.533	1.252	0.938	0.522	0.278	0.108	0.201	5
280.	50 885	25256	04 03 08.2	50 36 17	A4 V	A2	8.962	2.206	1.604	0.758	0.289	0.118	0.190	1
281.	56 873	237211	04 03 15.7	56 32 26	O-B0	O9.5 Ib	8.977	1.602	1.318	1.047	0.590	0.203	0.516	2
282.	57 766		04 03 17.1	58 17 57	O-B0		11.208	2.001	1.652	1.357	0.724	0.252	0.649	1
283.	50 886		04 03 20.8	51 18 53	Op	O6, O5	11.180	2.586	2.146	1.752	0.964	0.326	0.992	3
284.	54 732		04 03 21.4	55 02 05	B1.5 V:	B5	10.181	1.760	1.401	0.993	0.556	0.202	0.426	2
285.	52 750	25292	04 03 51.2	53 16 39	F9.5 V	F8 V	7.803	2.431	1.953	1.311	0.539	0.216	0.529	1
286.			04 04 03.3	60 16 59	B1.5 V		10.060	1.528	1.218	0.853	0.458	0.171	0.374	2
287.	55 845	237213	04 04 21.1	56 00 04	B4 III-I	B3 Ia	8.68::	2.510	1.900	1.412	0.788	0.276	0.663	3
288.*	54 734	25362	04 04 37.0	55 03 59	F6 V	F5	6.527	2.190	1.707	1.135	0.479	0.188	0.457	2
289.	54 735	232881	04 04 47.4	54 58 52	F4 V	F5	8.922	2.097	1.646	1.073	0.450	0.174	0.412	1
290.			04 04 58.7	55 54 35	O-B0	B0	10.887	1.731	1.415	1.101	0.667	0.238	0.521	2
291.	54 737		04 06 13.9	54 27 56	B2.5 V		10.578	1.888	1.487	1.035	0.545	0.192	0.462	1
292.	53 732	25602	04 06 36.6	54 00 32	K0 IV	K0	6.300	3.452	2.916	1.978	0.755	0.317	0.745	2
293.	53 733		04 07 03.4	54 11 04	F7 V		9.606	2.090	1.693	1.181	0.524	0.197	0.524	1
294.			04 07 06.3	56 14 33	A1.5 Ib		10.739	2.883	1.884	1.205	0.643	0.232	0.557	1
295.	56 879	25641	04 07 12.1	56 44 17	K0 IV	K0 IV	7.124	3.353	2.845	1.921	0.730	0.317	0.719	2
296.			04 07 25.3	56 04 42	B1 V	B0	11.298	1.629	1.316	0.979	0.562	0.205	0.431	2
297.	56 880	25666	04 07 28.4	57 20 33	F8 V	G0 V	9.093	2.229	1.788	1.238	0.519	0.200	0.495	2
298.	58 708	25906	04 09 24.4	58 33 36	F1 V	F0	7.045	2.099	1.581	0.947	0.391	0.152	0.366	2
299.			04 09 56.8	56 01 37	B1 V-III	B	11.387	1.757	1.412	1.042	0.603	0.212	0.452	2
300.	58 724	26581	04 15 32.3	58 31 21	K3 V	K0	8.665	3.537	3.088	2.073	0.740	0.419	0.763	1
301.			04 18 40.1	58 17 37	G1 V-III		11.381:	2.506	2.046	1.436	0.594	0.236	0.547	3
302.			04 19 07.5	58 23 16	F8 V		11.354	2.844	2.255	1.602	0.722	0.270	0.653	3
303.			04 19 07.6	58 24 51	F3 V-III		12.346	3.193	2.455	1.671	0.796	0.296	0.727:	3
304.			04 19 13.8	58 15 50	A6 III-V		12.468	3.438	2.508	1.512	0.708	0.261	0.606	1
305.			04 19 16.0	58 15 35	K3 V		11.365	4.243:	3.965:	2.854:	1.180	0.563	1.137	2
306.			04 19 25.0	58 03 38	B8.5 V-III		10.373	2.312	1.605	0.863	0.412	0.155	0.318	1
307.			04 19 28.2	58 13 58	G2 V		11.123	2.699	2.204	1.541	0.651	0.265	0.603	4
308.			04 19 32.1	58 10 32	G4 III-IV		12.144	3.997:	3.300:	2.336	1.057	0.396	0.966	1
309.			04 20 16.4	58 04 44	F8 V		10.846	2.415	1.921	1.338	0.581	0.217	0.546	1

NOTES

4\. ADS 1911, $V_\mathrm{A}/V_\mathrm{B}/V_\mathrm{C} = 7.2/12.9/11.6$, $\mathrm{Sep}_\mathrm{AB} = 3.6''$, $\mathrm{Sep}_\mathrm{AC} = 13.4''$; var. V425 Per, $P = 16.1$ d, $V_\mathrm{max}/V_\mathrm{min} = 7.0/7.1$ (CGCVS).

6\. IDS 02249N5613A, $V_\mathrm{A}/V_\mathrm{B} = 8.9/12.3$, Sep $= 11.0''$.

10\. Var. TYC 4046 118 1, $P = 0.1$ d, $\Delta V_T = 0.2$. Member IC 1805.

11\. ADS 1920, $V_\mathrm{A}/V_\mathrm{B} = 7.8/11.5$, Sep $= 10.2''$.

18\. ADS 1937, $V_\mathrm{A}/V_\mathrm{B} = 8.2/8.8$, Sep $= 23.4''$.

20\. Var. V362 Per, $P = 0.26$ d., $V_\mathrm{max}/V_\mathrm{min} = 8.22/8.24$, β Cep type (CGCVS).

29\. ADS 2018, $V_\mathrm{A}/V_\mathrm{B} = 8.0/10.0$, Sep $= 5.5''$. Var. V482 Cas, $P = 0.38$ d, $V_\mathrm{max}/V_\mathrm{min} = 8.27/8.31$, β Cep type (CGCVS).

36\. Binary HIP 12972, TDSC 6126, $V_\mathrm{A}/V_\mathrm{B} = 7.8/10.7$, Sep $= 0.2''$.

37\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 9.16/9.31$ (NCSVS).

39\. Var. V480 Per, $V_\mathrm{max}/V_\mathrm{min} = 6.23/6.30$, α Cyg type (CGCVS).

41\. ADS 2161, $V_\mathrm{A}/V_\mathrm{B} = 7.3/9.2$, Sep $= 2.1''$.

42\. TDSC 6296, Sep $= 0.3''$.

43\. IDS 02444N5638A, $V_\mathrm{A}/V_\mathrm{B} = 8.4/12$, Sep $= 32.6''$.

45\. ADS 2194, $V_\mathrm{A}/V_\mathrm{B} = 8.6/10.3$, Sep $= 7.2''$.

54\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 7.82/7.93$ (NCSVS).

59\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 8.27/8.70$ (NCSVS).

70\. Binary HIP 14626, TDSC 6841, $V_\mathrm{A}/V_\mathrm{B} = 6.6/9.7$, Sep $= 0.2''$; suspected var., $V_\mathrm{max}/V_\mathrm{min} = 6.41/6.72$ (NCSVS).

74\. IDS 03036N5521A, $V_\mathrm{A}/V_\mathrm{B} = 8.4/9.5$, Sep $= 22.3''$.

82\. Eclipsing binary CC Cas of the Algol type, $P = 3.3$ d, HIP 15063, $P = 3.37$ d, $V_\mathrm{max}/V_\mathrm{min} = 7.06/7.30$ (CGCVS).

86\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 8.81/9.01$ (NCSVS).

87\. ADS 2412, $V_\mathrm{A}/V_\mathrm{B} = 9.6/10.6$, Sep $= 0.6''$.

102\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 8.14/8.35$ (NCSVS).

103\. IDS 03133N5848A, $V_\mathrm{A}/V_\mathrm{B} = 8.6/10.7$, Sep $= 5.2''$,

115\. ADS 2510, TDSC 7358, $V_\mathrm{A}/V_\mathrm{B} = 7.9/13.5$, Sep $= 2.1''$.

134\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 8.13/8.33$ (NCSVS).

135\. ADS 2557, $V_\mathrm{A}/V_\mathrm{B} = 9.5/10.9$, Sep $= 5.2''$.

136\. ADS 2565, $V_\mathrm{A}/V_\mathrm{B} = 5.2/9.4$, Sep $= 14.8''$.

145\. HR 1071, TDSC 7614, Sep $= 0.14''$.

199\. TDSC 8089, $V_\mathrm{A}/V_\mathrm{B} = 12.3/13.9$, Sep $= 4.5''$.

213\. BDS 1865, $V_\mathrm{A}/V_\mathrm{B} = 6.5/7.3$, Sep $= 58.3''$.

216\. ADS 2783, $V_\mathrm{A}/V_\mathrm{B} = 6.895/9.897$, Sep $= 8.74''$.

219\. Suspected var., $V_\mathrm{max}/V_\mathrm{min} = 6.84/6.94$ (NCSVS).

220\. ADS 2791, HIP 17986, $V_\mathrm{A}/V_\mathrm{B} = 9.0/10.0$, Sep $= 3.1''$.

243\. HIP 18370, TDSC 8337, $V_\mathrm{A}/V_\mathrm{B} = 6.912/9.822$, Sep $= 0.73''$.

246\. SB, BDS 1933, $V_\mathrm{A}/V_\mathrm{B} = 5.5/10.3$, Sep $= 75.3''$.

248\. ADS 2878, $V_\mathrm{A}/V_\mathrm{B} = 10.0/11.1$, Sep $= 4.5''$.

288\. ADS 2957, $V_\mathrm{A}/V_\mathrm{B} = 6.6/11.3$, Sep $= 4.8''$.

Table 4.2.6a. Interstellar extinction and photometric distances. Area B [5]. Star numbers are the same as in Appendix 3a.

No.	BD	Sp	M_V	E_{Y-V}	A_V	*r (kpc)*	*s*
54.	+59 578	O V	–5.3	0.50	1.93	1.81	1
55.	+60 608	B1 V	–3.4	0.39	1.49	0.56	1
56.	+62 504	B0 Ib	–6.2	0.51	1.94	3.37	1
58.	+53 606	A7 V	2.2	0.05	0.19	0.09	2
60.	+51 667	K2 V	6.4	0.03	0.11	0.04	2
61.	+59 588	F6 V	3.6	0.01	0.05	0.05	2
62.	+50 689	F6 V	3.6	0.00	0.02	0.11	1
63.	+49 836	G1.5 V	4.5	0.05	0.18	0.05	3
64.	+56 767	K0 III	0.7	0.04	0.16	0.06	1
66.	+50 701	G9.5 V	5.8	0.04	0.14	0.06	2
67.	+57 687	B1 Ib	–6.0	0.83	3.16	3.69	2
68.	+56 778	G1 IV-V	4.5	0.01	0.03	0.03	1
69.	+57 696	F0 IV	2.1	0.04	0.15	0.11	1
71.		B6 IV	–1.0	0.52	1.98	0.75	1
72.	+59 599	G4 IV	3.0	0.03	0.11	0.15	1
73.	+52 663	F0 III-V	2.1	–0.02	0.07	0.11	1
74.	+55 747	F9.5 V	4.2	0.01	0.03	0.08	1
75.	+60 636	A2 IV	0.8	0.10	0.37	0.18	2
77.	+58 574	B1 V	–3.4	0.67	2.58	1.48	1
78.	+49 873	K4 V	6.8	0.04	0.14	0.04	2
79.	+52 669	A0.5 Ib	–5.5	0.70	2.69	3.33	1
80.	+51 696	F4 V	3.3	0.01	0.03	0.08	1
81.	+59 608	B1.5 V	–3.0	0.50	1.93	1.57	1
83.	+51 697	K8 V	8.3	0.00	0.01	0.02	3
85.	+55 757	G4 IV	4.4	0.03	0.13	0.06	3
86.	+59 611	B0.5 V	–3.7	0.62	2.38	1.11	1
87.	+59 612	B1.5 V	–3.0	0.60	2.28	0.82	1
88.	+51 703	F8 V	4.0	0.02	0.08	0.07	2
89.	+51 704	B1.5 V	–3.0	0.53	2.02	1.80	2
90.	+57 709	B3.5 V	–1.5	0.55	2.12	0.72	1
91.	+59 625	B3 V	–1.8	0.27	1.05	0.44	1
92.	+49 895	A1 V	1.0	0.09	0.33	0.18	1
94.	+59 630	B3 IV	–2.4	0.33	1.28	0.79	1
95.		B2 V	–2.6	0.58	2.21	1.50	2
96.	+51 710	B3.5 II	–4.9	0.57	2.17	3.06	1
97.	+53 643	G0 V	4.3	0.01	0.03	0.07	1
100.	+58 587	B0.5 V	–3.7	0.59	2.27	1.18	2
102.	+59 634	B1 IV	–4.0	0.55	2.10	1.07	1
103.	+58 588	B1 V	–3.4	0.49	1.88	0.89	1
104.	+52 683	G5.5 V	5.3	0.00	0.00	0.05	2
105.	+51 722	K3.5 V	6.7	0.00	0.02	0.03	3
106.	+52 685	G2.5 IV	2.9	0.03	0.12	0.09	2
107.		B2.5 V	–2.2	0.81	3.12	1.13	1
108.	+54 672	F1 V	2.9	0.04	0.14	0.08	1
109.	+55 774	B6 V	–0.6	0.36	1.38	0.71	1
110.		O V	–5.3	0.98	3.77	3.50	2
111.	+57 720	F4 III-V	2.4	–0.02	0.07	0.12	1
113.	+52 687	F7 V	3.8	0.00	0.01	0.12	1
114.		B2.5 V	–2.2	0.77	2.96	0.97	2
117.	+53 657	F0 IV-V	2.1	0.03	0.11	0.07	1
118.	+58 600	B2.5 III	–3.4	0.38	1.46	0.98	1
120.	+56 812	K0 V	5.9	0.08	0.30	0.03	2
121.	+51 733	F5 V	3.5	0.00	0.01	0.09	1
122.	+57 723	B5 III	–1.8	0.40	1.52	0.88	1
124.		B9 V	0.4	0.38	1.46	0.91	1

Table 4.2.6a (continued)

No.	BD	Sp	M_V	E_{Y-V}	A_V	*r (kpc)*	*s*
125.		A0.5 IV	0.4	0.49	1.87	0.57	2
126.	+56 813	B7 V	–0.3	0.39	1.48	0.45	1
127.		A1 V	1.0	0.37	1.44	0.84	2
128.	+58 603	B7 III	–1.1	0.29	1.10	0.92	2
130.		B6 V	–0.6	0.39	1.49	0.75	2
131.		B8.5 V	0.2	0.58	2.22	0.55	2
132.	+56 814	B5 IV	–1.3	0.43	1.65	1.07	2
133.		B7 IV	–0.7	0.40	1.55	0.70	1
136.	+54 684	A1 III-V	0.6	0.03	0.10	0.08	1
137.	+53 666	G2 V	4.6	0.03	0.13	0.07	1
138.	+49 952	A5 V	1.8	0.06	0.25	0.12	2
139.	+53 669	B2.5 IV	–2.8	0.53	2.05	1.52	1
140.	+55 794	F0 III-V	2.1	0.03	0.13	0.14	1
141.	+53 672	B7 III	–1.1	0.43	1.66	0.50	1
142.	+58 617	K0 V	6.0	0.01	0.04	0.02	2
143.	+57 728	B4 V	–1.2	0.37	1.43	0.89	1
144.	+54 693	A2 V	1.2	0.05	0.18	0.08	1
145.	+57 730	F7 V	1.5	0.00	0.00	0.09	4
146.	+51 751	G0 V	4.3	0.01	0.06	0.08	1
147.		A8 V	2.4	0.23	0.87	0.55	1
148.		F6 V	3.6	0.20	0.77	0.36	1
149.		B2.5 V	–2.2	0.37	1.41	1.52	1
151.		A2 V	1.2	0.28	1.05	0.74	2
152.		G1 V	4.5	0.13	0.49	0.31	2
153.	+58 622	B6 Ib	–5.9	0.82	3.15	2.55	1
154.	+53 679	B4 V	–1.2	0.52	1.98	0.49	1
155.	+58 624	A5 IV	1.3	0.20	0.79	0.46	1
156.	+53 683	G8 IV	3.1	0.00	0.00	0.17	2
157.	+56 824	B0.5 III	–4.8	0.47	1.80	0.78	1
160.	+52 705	F6 V	3.6	0.06	0.25	0.11	2
162.	+57 734	B5 IV	–1.3	0.53	2.02	0.40	1
164.	+52 706	F9 V	4.1	0.01	0.03	0.05	1
165.	+58 633	F7 V	3.8	0.01	0.04	0.08	2
168.		B6 IV	–1.0	0.61	2.34	1.00	1
169.	+58 637	A9 V	2.5	0.02	0.08	0.07	1
170.		A4 V	1.6	0.34	1.30	0.81	1
171.	+50 800	G0 V	4.3	0.02	0.10	0.06	1
172.		A1 III	0.1	0.47	1.79	1.03	3
173.		K8 V	8.5	0.07	0.27	0.03	6
174.		B7 IV	–0.7	0.52	2.00	1.26	2
175.		A8 V	2.4	0.39	1.49	0.39	1
176.	+50 802	F9.5 V	4.2	0.01	0.03	0.05	1
177.	+55 815	G9 IV	3.1	0.05	0.18	0.09	1
178.	+491001	F5 V	3.5	0.00	0.00	0.13	1
179.	+57 739	B5 II	–4.7	0.29	1.13	2.31	1
180.		A9 III	1.3	0.38	1.47	0.61	1
181.		B2 III	–3.8	0.66	2.55	3.50	1
182.		B7 III	–1.1	0.55	2.09	1.12	1
183.		A5 IV	1.3	0.36	1.38	0.71	1
184.	+59 708	F9 V	4.1	0.01	0.04	0.06	1
185.	+58 646	F6 V	3.6	0.00	0.00	0.06	2
186.	+57 740	F5 V	3.5	0.00	0.00	0.10	1
187.	+54 707	A7 V	2.2	0.02	0.08	0.08	1
188.		B3 V	–1.8	0.50	1.93	0.98	1
189.	+58 648	B3.5 V	–1.5	0.53	2.02	0.66	1
191.	+55 822	B8 IV	–0.4	0.41	1.57	0.54	1

Table 4.2.6a (continued)

No.	BD	Sp	M_V	E_{Y-V}	A_V	*r (kpc)*	*s*
192.	+59 712	G8 V	5.5	0.03	0.13	0.07	1
193.	+58 650	G8.5 III	0.8	0.32	1.21	0.23	1
194.	+51 774	F1 III-V	2.2	0.00	0.00	0.09	2
195.	+53 699	K2.5 V	6.4	0.00	0.00	0.06	1
197.		A5 IV	1.3	0.17	0.66	0.70	1
200.		K5 III	0.2	0.25	0.97	0.44	4
202.	+52 713	K3 V	6.6	0.00	0.00	0.04	1
203.		F9.5 V	4.2	0.16	0.63	0.22	1
204.		A5 IV	1.3	0.18	0.69	0.61	2
206.	+57 747	G1.5 III-V	4.5	0.04	0.14	0.06	2
207.		F5 V	3.5	0.20	0.78	0.26	1
208.	+51 778	G2 IV-V	2.9	0.05	0.20	0.08	3
209.		F3 V	3.1	0.18	0.68	0.37	2
210.	+50 831	F5 V	3.5	0.00	0.00	0.06	1
211.		F9 V	4.1	0.19	0.74	0.29	2
212.		B7 V	–0.3	0.78	2.98	0.51	1
214.		B2 V	–2.6	0.47	1.81	1.49	1
216.	+52 714	B0 III	–5.0	0.54	2.08	0.87	1
217.	+58 657	F9.5 V	4.3	0.01	0.04	0.08	2
218.	+54 713	F5 V	3.5	0.01	0.02	0.09	1
219.	+52 715	B1 IV	–4.0	0.47	1.80	0.67	1
220.	+59 720	B5 V	–0.9	0.23	0.87	0.52	1
222.	+54 714	F5 V	3.5	0.00	0.00	0.09	1
223.	+54 715	F6 V	3.6	0.00	0.00	0.08	1
224.		A8 V	2.4	0.31	1.21	0.32	2
226.	+55 828	F6 V	3.6	0.01	0.03	0.15	1
227.	+57 749	F5 V	3.5	0.03	0.12	0.13	1
228.		B2.5 V	–2.2	0.53	2.03	2.20	2
229.		B6 IV	–1.0	0.56	2.16	1.16	1
230.	+52 720	F8 V	4.0	0.03	0.10	0.07	1
231.	+57 752	A5 V	1.8	0.01	0.03	0.06	2
232.		B1.5 V	–3.0	0.74	2.84	1.71	1
234.	+53 710	B2.5 V	–2.2	0.52	2.00	1.28	1
236.	+51 798	G1.5 V	4.5	0.07	0.27	0.04	2
237.	+56 855	F0 V	2.5	0.02	0.08	0.11	1
238.	+57 755	K1 V	6.0	0.05	0.21	0.04	4
239.	+53 712	F8 V	4.0	0.00	0.00	0.08	1
240.		B9.5 V	0.5	0.44	1.68	0.90	4
241.	+481019	B4 II	–4.8	0.52	2.00	0.83	1
242.	+51 803	F7 V	3.8	0.02	0.08	0.04	2
243.	+52 726	O V	–5.3	0.53	2.02	1.00	1
245.	+56 857	A8 III	1.1	0.07	0.26	0.13	1
246.	+50 860	F4 V	2.4	0.01	0.04	0.04	3
247.		B0 V	–4.1	0.50	1.93	3.97	1
248.		B4 V	–1.2	0.45	1.72	1.14	1
249.		B3 V	–1.8	0.33	1.21	1.20	1
251.	+55 837	B1.5 Ib	–6.0	0.66	2.53	3.98	1
253.	+58 672	F9 IV	2.7	0.00	0.00	0.13	1
255.		B6 IV	–1.0	0.37	1.41	1.62	2
258.		A2 V	1.2	0.43	1.65	0.71	1
261.	+56 866	B0 V	–4.1	0.49	1.88	3.15	1
265.	+56 868	B0 V	–4.1	0.46	1.76	1.98	1
266.	+52 734	F4 V	3.3	0.00	0.00	0.12	2
267.		K4 V	6.9	0.00	0.00	0.05	1
268.	+55 838	B3 Ib	–6.0	0.72	2.75	3.23	1
270.		B9 IV	0.0	0.45	1.74	1.10	1

Table 4.2.6a (continued)

No.	BD	Sp	M_V	E_{Y-V}	A_V	*r (kpc)*	*s*
271.	+55 839	A4 V	1.6	0.00	0.00	0.14	1
272.	+55 841	B6 IV	–1.0	0.36	1.37	0.88	1
273.	+52 741	B3.5 V	–1.5	0.27	1.04	0.75	1
274.	+53 723	B1 V	–3.4	0.53	2.03	1.12	1
278.		B1 V	–3.4	0.74	2.85	2.28	1
279.	+58 685	B3.5 V	–1.5	0.22	2.84	0.44	1
280.	+50 885	A4 V	1.6	0.05	0.19	0.27	6
281.	+56 873	B0 Ib	–6.2	0.53	2.03	4.26	1
285.	+52 750	F9.5 V	4.2	0.02	0.06	0.05	1
288.	+54 734	F6 V	3.6	0.01	0.02	0.04	1
289.	+54 735	F4 V	3.3	0.00	0.01	0.13	1
291.	+54 737	B2.5 V	–2.2	0.50	1.93	1.48	1
292.	+53 732	K0 IV	3.1	0.07	0.27	0.04	3
293.	+53 733	F7 V	4.0	0.01	0.05	0.13	4
294.		A1.5 Ib	–5.4	0.42	1.62	8.01	1
295.	+56 879	K0 IV	3.1	0.03	0.11	0.06	3
297.	+56 880	F8 V	4.0	0.01	0.04	0.10	1
298.	+58 708	F1 V	2.9	0.00	0.00	0.07	1
300.	+58 724	K3 V	6.6	0.00	0.00	0.03	2

Table 4.2.7a. Interstellar extinction and distances for stars observed by *Hipparcos*. Area B [5]. Star numbers are the same as in Appendix 3a.

No.	BD	HIP	Sp	M_V	$\sigma(M_V)$	E_{Y-V}	A_V	*r (pc)*	π	σ_π	*s*
58.	+53 606	14147	F0 IV	1.91	0.24	0.01	0.03	114	8.78	0.86	2
60.	+51 667	14182	K2.2 V	6.17	0.18	0.03	0.13	41	24.60	1.72	1
61.	+59 588	14254	F6 IV	2.40	0.20	0.01	0.02	92	10.89	0.88	2
62.	+50 689	14268	F5 V	3.32	0.40	0.01	0.05	127	7.90	1.29	1
63.	+49 836	14300	G1.5 V	5.23	0.12	0.04	0.17	36	28.04	1.04	5
64.	+56 767	14382	G9 III	0.79	0.14	0.04	0.16	63	15.95	0.76	1
65.	+55 738	14392	K1 III-IV	1.70	0.16	0.02	0.08	76	13.24	0.81	2
66.	+50 701	14420	G9.5 V	5.59	0.29	0.03	0.13	68	14.64	1.79	2
68.	+56 778	14592	G1.5 V	4.13	0.10	0.01	0.03	32	31.60	0.83	4
69.	+57 696	14620	F1 III	1.89	0.29	0.00	0.01	129	7.76	0.93	1
72.	+59 599	14687	G2 IV	3.20	0.39	0.05	0.21	127	7.85	1.25	1
73.	+52 663	14790	F2 IV	1.91	0.29	–0.03	0.00	123	8.11	0.97	2
74.	+55 747	14796	F9 V	4.60	0.19	0.02	0.06	65	15.40	1.19	2
75.	+60 636	14833	A2 IV	1.21	0.30	0.08	0.32	141	7.07	0.89	1
78.	+49 873	14985	K3.7 V	7.22	0.15	0.03	0.13	34	29.36	1.59	5
80.	+51 696	15037	F4 V	3.31	0.21	0.01	0.04	81	12.28	1.02	1
83.	+51 697	15087	K7 V	7.96	0.15	–0.04	0.00	27	36.41	1.92	1
85.	+55 757	15111	G1.5 V	4.03	0.24	0.03	0.12	80	12.44	1.27	5
88.	+51 703	15215	F8 V	4.43	0.16	0.02	0.08	56	17.90	1.14	5
92.	+49 895	15327	A4 V	1.89	0.26	0.01	0.04	131	7.65	0.83	1
93.	+49 899	15404	B3.5 V	–1.39	0.26	0.13	0.50	162	6.18	0.66	1
97.	+53 643	15492	F9.5 V	3.87	0.25	0.01	0.05	83	12.07	1.25	1
98.	+50 738	15531	B8.5 V	0.62	0.32	0.10	0.38	164	6.11	0.82	2
104.	+52 683	15672	G7 V	5.59	0.15	–0.01	0.00	44	22.71	1.28	5
105.	+51 722	15673	K3.7 V	7.21	0.10	0.00	0.02	23	44.03	1.24	3
106.	+52 685	15675	G3 IV	3.23	0.17	0.05	0.18	77	12.92	0.89	1
108.	+54 672	15763	F1 IV	2.61	0.25	0.03	0.10	101	9.95	1.04	2
111.	+57 720	15818	F5 IV	2.53	0.27	0.00	0.00	114	8.78	0.98	1
113.	+52 687	15892	F8 V	3.90	0.38	–0.03	0.00	119	8.37	1.30	1
116.	+58 599	15943	K0 III	0.98	0.28	0.05	0.20	137	7.32	0.87	1
117.	+53 657	15979	F1 IV	2.04	0.16	0.01	0.04	78	12.84	0.80	2
119.	+52 691	15986	B9.5 V	1.05	0.31	0.14	0.55	148	6.74	0.87	2
120.	+56 812	16043	G8.5 IV	2.72	0.33	0.05	0.19	125	8.00	1.10	1
121.	+51 733	16052	F4 V	2.71	0.33	0.02	0.08	131	7.62	1.04	1
136.	+54 684	16292	A1 V	1.26	0.12	0.02	0.08	59	17.07	0.69	1
137.	+53 666	16327	G2 V	4.79	0.21	0.03	0.12	66	15.13	1.27	1
138.	+49 952	16394	A4 IV	1.27	0.30	0.06	0.24	148	6.74	0.85	1
140.	+55 794	16448	F1 V	2.83	0.29	0.03	0.11	107	9.38	1.12	1
142.	+58 617	16581	K1 IV-V	5.51	0.12	0.02	0.06	32	31.12	1.11	2
144.	+54 693	16599	A4 V	1.80	0.15	–0.02	0.00	68	14.71	0.78	1
145.	+57 730	16602	F8 III	2.08	0.16	–0.01	0.00	72	13.91	0.88	5
146.	+51 751	16612	G1.5 V	4.20	0.24	0.00	0.00	81	12.28	1.18	1
156.	+53 683	16871	G8 IV-V	4.71	0.31	0.00	0.00	84	11.95	1.56	5
160.	+52 705	16973	F6 V	3.20	0.42	0.07	0.28	127	7.86	1.36	3
161.	+56 826	16974	B7 V	–0.03	0.28	0.04	0.14	171	5.85	0.69	1
164.	+52 706	17033	F8 IV	2.80	0.25	0.02	0.07	99	10.14	1.05	1
165.	+58 633	17083	F8 V	4.31	0.18	0.00	0.00	60	16.72	1.18	4
166.	+55 803	17098	A1 V	1.19	0.24	0.03	0.13	117	8.57	0.82	1
167.	+57 736	17139	F6 V	3.68	0.37	–0.01	0.00	121	8.26	1.25	2
169.	+58 637	17211	F1 IV	2.14	0.18	0.00	0.00	87	11.54	0.80	1
171.	+50 800	17231	G0 IV	3.39	0.25	0.02	0.09	92	10.91	1.15	2
173.		17248	K8 V	8.26	0.19	0.05	0.15	37	26.84	2.06	5
176.	+50 802	17341	F8 V	3.67	0.19	0.03	0.11	71	14.18	1.07	2
173.		17248	K8 V	8.26	0.19	0.05	0.15	37	26.84	2.06	5
176.	+50 802	17341	F8 V	3.67	0.19	0.03	0.11	71	14.18	1.07	2
177.	+55 815	17356	G9 IV	2.86	0.27	0.02	0.07	113	8.83	1.01	1
178.	+491001	17359	F6 V	3.64	0.37	–0.02	0.00	121	8.28	1.25	2
184.	+59 708	17540	F7 V	3.54	0.21	0.03	0.12	78	12.87	1.09	2
185.	+58 646	17568	F8 V	4.02	0.15	–0.03	0.00	55	18.32	0.95	3
186.	+57 740	17570	F7 V	4.18	0.18	–0.02	0.00	71	14.01	0.98	4
187.	+54 707	17575	A9 V	2.11	0.17	–0.01	0.00	87	11.43	0.75	1
192.	+59 712	17656	G8 V	6.01	0.27	0.03	0.11	62	16.18	1.80	1
194.	+51 774	17675	F2 V	3.17	0.13	0.00	0.00	55	18.05	0.85	1
195.	+53 699	17706	K2.5 V	6.53	0.29	0.00	0.01	57	17.65	2.13	1
196.	+55 824	17707	B9 V	0.29	0.25	0.05	0.19	132	7.56	0.80	1
198.	+51 775	17718	A3 V	1.85	0.27	0.01	0.03	123	8.12	0.92	1
202.	+52 713	17736	K3 V	6.56	0.18	0.01	0.05	46	21.70	1.50	1
206.	+57 747	17790	G1 V	5.00	0.14	0.03	0.13	49	20.32	1.04	5
208.	+51 778	17800	G2 IV-V	3.73	0.17	0.05	0.18	62	16.24	1.05	5
210.	+50 831	17827	F3 V	3.06	0.16	0.03	0.11	71	14.04	0.86	1

Table 4.1.7a (continued)

No.	BD	HIP	Sp	M_V	$\sigma(M_V)$	E_{Y-V}	A_V	r (*pc*)	π	σ_π	s
213.	+56 846	17858	B9.5 V	0.01	0.27	0.10	0.38	163	6.14	0.70	1
215.	+56 847	17872	A0.5 V	0.89	0.28	0.08	0.31	156	6.43	0.75	1
217.	+58 657	17887	G1 V	5.02	0.19	0.00	0.00	62	16.13	1.23	5
218.	+54 713	17901	F5 V	3.13	0.27	0.01	0.05	103	9.70	1.08	1
222.	+54 714	17989	F6 V	3.35	0.25	–0.01	0.00	99	10.10	1.06	1
223.	+54 715	18002	F8 V	3.85	0.22	–0.02	0.00	76	13.20	1.14	1
226.	+55 828	18023	F6 V	4.05	0.47	0.01	0.03	121	8.29	1.58	1
227.	+57 749	18042	F6 V	3.56	0.37	0.01	0.03	134	7.47	1.15	1
230.	+52 720	18207	F7 V	3.45	0.29	0.03	0.13	99	10.08	1.20	1
231.	+57 752	18217	A7 V	2.18	0.12	0.00	0.00	52	19.14	0.69	2
236.	+51 798	18309	G1 IV-V	3.80	0.18	0.06	0.24	65	15.36	1.07	5
237.	+56 855	18314	F0 V	2.69	0.24	0.01	0.03	102	9.83	0.94	1
238.	+57 755	18325	K0.5 IV-V	4.25	0.30	0.02	0.07	99	10.10	1.25	3
239.	+53 712	18351	F8 V	4.01	0.22	0.00	0.00	78	12.77	1.15	2
242.	+51 803	18366	F8 V	3.83	0.12	0.00	0.00	40	25.04	0.86	3
245.	+56 857	18383	A7 III	0.40	0.37	0.07	0.26	176	5.68	0.86	1
246.	+50 860	18453	F4 IV	2.23	0.12	0.01	0.03	41	24.51	0.85	5
253.	+58 672	18567	G0 IV	2.81	0.32	–0.02	0.00	126	7.95	1.05	3
256.	+57 760	18602	A4 IV	1.33	0.27	–0.02	0.00	134	7.49	0.83	1
266.	+52 734	18712	F4 V	3.32	0.34	0.02	0.06	115	8.68	1.21	3
267.		18725	K3.7 V	6.98	0.24	0.03	0.13	49	20.39	1.97	1
271.	+55 839	18777	A5 V	1.52	0.34	–0.02	0.00	143	7.00	0.98	1
280.	+50 885	18904	A5 V	3.41	0.41	0.03	0.11	122	8.17	1.36	5
285.	+52 750	18966	F9.5 IV	2.62	0.24	0.02	0.06	109	9.19	0.93	1
288.	+54 734	19030	F4 IV	2.37	0.15	0.04	0.15	68	14.71	0.85	3
289.	+54 735	19043	F6 V	3.44	0.40	–0.03	0.00	125	8.01	1.32	1
292.	+53 732	19172	G8 III-IV	1.35	0.20	0.03	0.13	98	10.21	0.82	3
293.	+53 733	19208	F8 V	4.13	0.50	0.01	0.05	121	8.26	1.66	5
295.	+56 879	19224	K0 III-IV	2.75	0.16	0.03	0.12	75	13.36	0.83	5
297.	+56 880	19247	F8 V	4.34	0.24	0.01	0.03	89	11.20	1.13	2
298.	+58 708	19408	F2 V	2.95	0.15	–0.01	0.00	66	15.19	0.80	1
300.	+58 724	19861	K3 V	6.44	0.12	0.04	0.15	28	35.81	1.28	3

Table 4.2.8a. Interstellar extinction for stars with unreliable determinations of luminosity classes, i.e. without exact distances. Area B [5]. Star numbers are the same as in Appendix 3a.

No.	BD	Sp	E_{Y-V}	A_V	s
59.	+57 681	B0.5 IV	0.68	2.59	1
65.	+55 738	K0.5 III-IV	0.05	0.19	1
76.		B1.5	0.59	2.27	1
82.	+59 609	B0 V	0.59	2.27	1
84.	+58 578	B1 V	0.49	1.88	1
93.	+49 899	B3.5 V	0.12	0.47	1
98.	+50 738	B8.5 V	0.08	0.30	1
99.	+51 713	B1.5 V	0.61	2.35	1
101.	+54 667	O-B0	0.67	2.57	1
112.	+49 916	B3.5	0.27	1.03	1
115.	+59 648	B1 V	0.51	1.96	1
116.	+58 599	K1 III-IV	0.08	0.30	2
119.	+52 691	B9.5 IV	0.14	0.54	1
123.		B9.5 III-V	0.43	1.65	3
129.	+55 786	B6 III-V	0.47	1.80	1
158.		B1.5 V	0.47	1.79	1
159.	+54 698	B1.5	0.58	2.24	2
161.	+56 826	B8 V	0.02	0.08	4
166.	+55 803	A1.5 V	0.04	0.13	1
167.	+57 736	F5 III-V	0.00	0.00	1
190.	+57 744	B2.5 V	0.33	1.28	1
196.	+55 824	B9 IV-V	0.05	0.20	1
198.	+51 775	A1 V	0.09	0.36	1
199.		B4	0.59	2.26	1
201.		B2.5 Ve	0.51	1.96	3
213.	+56 846	B9.5 V	0.08	0.32	1
215.	+56 847	A0.5 V	0.09	0.33	1
221.		B1.5 V	0.46	1.75	1
225.	+56 850	B2p	0.53	2.01	3
233.	+54 718	B0.5 IV-V	0.73	2.80	1
235.		B3 II-III	0.62	2.38	1
244.		B1	0.53	2.03	1
250.	+52 729	B1 III	0.95	3.63	1
252.		B1 V	0.90	3.45	3
254.		B1 IV	0.45	1.72	1
256.	+57 760	A1.5 V	0.03	0.10	1
259.		O	0.47	1.78	1
260.	+56 864	O-B0	0.44	1.68	1
262.		B1 V	0.62	2.37	2
263.		B2 III-I	0.70	2.68	2
264.		BO III-V	0.47	1.80	1
269.	+54 728	B0.5	0.90	3.46	2
275.		B2.5 II	0.34	1.29	2
276.		O V	0.79	3.02	3
277.		B5	0.50	1.91	2
282.	+57 766	O-B0	0.69	2.63	2
284.	+54 732	B1.5 V	0.53	2.02	1
286.		B1.5 V	0.43	1.64	1
287.	+55 845	B4 II	0.67	2.56	1
290.		O-B0	0.63	2.43	2
296.		B1 V	0.54	2.08	1
299.		B1 IV	0.58	2.23	1
304.		A6 III-V	0.46	1.77	1
306.		B8.5 V-III	0.26	1.01	1

Table 4.2.9a. Results of CCD photometry and classification. Area C [7].

ID	$\alpha\,(2000)$	$\delta\,(2000)$	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
1.	3 50 58.9	57 24 19	13.83	3.01:	–	1.25	0.56	0.22	0.62	f2 V	3.45	0.55	920:
2.	3 50 59.2	57 10 25	11.02	1.82	1.41	1.04	0.59	0.21	0.67	b0 IV	–4.30	2.09	4430
3.	3 50 59.5	57 17 42	13.50	–	4.47?	3.32	1.38	0.56	1.26	k0.5 III	0.00	2.24	1790
4.	3 51 00.7	57 23 06	13.29	2.83	2.26	1.59	0.73	0.27	0.70	f7 V	3.93	0.96	480
5.	3 51 03.8	57 21 39	15.01	3.13	2.45	1.68	0.78	0.27	0.77	f5 III	2.10	1.30	2100:
6.	3 51 04.0	57 09 04	14.87	3.43:	2.55	1.57	0.77	0.28	0.69	a8: III	0.97	1.84	2580:
7.	3 51 04.4	57 15 60	12.25	3.10	2.16	1.28	0.63	0.23	0.53	a0.5 III	–0.05	1.74	1300
8.	3 51 05.4	56 37 00	13.87	3.35	2.64	1.89	0.91	0.35	0.83	f5 V	3.60	1.74	510
9.	3 51 05.8	56 46 11	13.06	–	4.83	3.44	1.46	0.58	1.33	k1.8 III	0.52	2.34	1090:
10.	3 51 05.8	57 18 06	14.49	3.27	2.43	1.65	0.76	0.29	0.68	f4 III	1.50	1.31	2160:
11.	3 51 06.3	57 02 20	14.61	3.25	2.55	1.80	0.83	0.31	0.81	g0 V	4.60	1.16	590
12.	3 51 06.9	57 24 05	13.37	2.94	2.37	1.68	0.74	0.29	0.74	f9.5 V	4.18	0.90	460
13.	3 51 07.7	57 14 38	13.76	3.29	2.76	2.00	0.85	0.36	0.83	g5 V	5.40	1.01	296
14.	3 51 08.0	56 42 31	12.68	4.57:	3.78	2.66	1.17	0.46	1.06	g8 III	1.30	1.82	820:
15.	3 51 09.2	56 42 05	14.49	3.02:	2.43	1.74	0.83	0.30	0.76	f7 V	3.93	1.38	690
16.	3 51 09.4	57 11 28	12.36	2.77	2.06	1.32	0.64	0.23	0.57	f2 V	3.10	0.86	480
17.	3 51 10.9	56 36 03	14.58	2.38	1.87	1.30	0.70	0.25	0.61	b3 V	–1.10	2.37	4590
18.	3 51 11.2	57 14 28	12.75	4.69	3.96	2.78	1.19	0.47	1.10	g9.5 III	0.73	1.74	1140
19.	3 51 11.5	56 38 33	14.99	3.31:	2.74?	1.93	0.96	0.36	0.84	f7 V	3.93	1.86	690
20.	3 51 11.5	57 07 26	14.80	–	2.58	1.87	0.83	0.34	0.78	g2 V	4.80	1.08	610
21.	3 51 11.6	57 23 37	14.86	–	2.45	1.69	0.82	0.28	0.80	f3 V	3.62	1.49	890
22.	3 51 11.7	57 14 06	12.57	4.22	3.56	2.47	1.04	0.42	0.96	k0.5 IV	2.55	1.21	580
23.	3 51 13.0	56 20 47	11.94	2.69	1.92	1.10	0.56	0.20	0.46	b9 V	0.35	1.58	1010
24.	3 51 13.7	57 17 20	14.34	–	2.40	1.48	0.72	0.26	0.62	a7 V	2.30	1.60	1220:
25.	3 51 14.3	56 59 42	11.60	3.02	2.35	1.67	0.77	0.29	0.72	f7 V	3.93	1.12	204
26.	3 51 14.4	57 20 28	15.51	2.86?	2.14	1.28:	0.65	0.24:	0.50	b9 V	0.35	1.93	4440
27.	3 51 14.5	56 27 22	14.82	2.60	2.07	1.53	0.82	0.28	0.73	b2.5 V	–1.05	2.88	3960
28.	3 51 14.5	56 55 21	14.90	2.11	1.70	1.17	0.64	0.26	0.48	b2.5 V	–0.65	2.18	4700
29.	3 51 14.6	57 05 01	12.45	3.56	2.52	1.50	0.72	0.27	0.60	a3 IV	0.70	1.95	910
30.	3 51 15.3	57 21 53	13.75	4.40:	3.76	2.69	1.18	0.45	1.10	g9 IV	3.28	2.02	490
31.	3 51 15.7	56 39 35	13.09	3.00	2.33	1.62	0.78	0.30	0.70	f5 V	3.60	1.25	440
32.	3 51 16.5	56 30 44	13.88	4.31:	3.82:	2.65	0.92	0.60	1.06	k6 V	7.65	0.25	157
33.	3 51 17.2	57 00 38	13.85	4.93?	4.16	3.02:	1.30	0.51	1.16	k0 III	0.75	2.11	1580:
34.	3 51 17.5	57 04 20	13.55	4.83	4.08	2.73	1.12	0.48	1.03	k1.8 III	1.27	1.13	1690
35*	3 51 18.1	57 10 13	10.07	4.75	4.00	2.79	1.15	0.46	1.04	k0.8 III	0.75	1.39	380
36.	3 51 18.8	56 48 30	15.06	3.58:	2.77	1.98:	0.95	0.37	0.85	f6 V	3.77	1.87	770
37.	3 51 18.8	57 08 43	13.71	4.66	3.80:	2.74	1.24	0.46	1.08	g2 II	–3.00	2.17	8090:
38.	3 51 19.3	56 57 17	13.93	2.47	1.82	1.20	0.64	0.24	0.63	b6 III	–2.50	2.02	7640
39.	3 51 20.5	56 35 34	13.60	2.94	2.34	1.63	0.78	0.29	0.73	f4 V	3.78	1.27	510
40.	3 51 21.1	56 54 57	15.31	3.07:	2.14:	1.31	0.68	0.26	0.58	b9.5 IV	0.10	2.01	4380:
41.	3 51 21.1	57 11 32	15.22	2.51	1.87	1.27	0.68	0.23	0.58	b6 V	–0.60	2.21	5260
42.	3 51 22.7	57 23 26	12.73	2.78	2.03	1.24	0.55	0.21	0.51	f1 III	1.10	0.75	1500
43.	3 51 22.9	56 35 11	12.17	–	5.39	3.75	1.60	0.63	1.41	k2.5 III	–0.65	2.53	1150:
44.	3 51 23.5	56 52 39	14.82	2.35	1.79	1.20	0.64	0.23	0.65	b5 V	–0.70	2.09	4850
45.	3 51 23.9	56 53 20	15.57	–	2.42	1.37	0.67	0.24	0.62	a3 IV	0.70	1.75	4190:
46.	3 51 24.3	57 05 49	15.40	2.97:	2.14	1.30	0.65	0.23	0.52	b9.5 V	0.55	1.90	3910
47.	3 51 24.7	57 16 44	14.14	3.37	2.46	1.52	0.70	0.26	0.58	a4 V	1.75	1.78	1320
48.	3 51 25.8	57 22 29	14.53	3.29	2.60	1.86	0.87	0.33	0.80	f8 V	3.55	1.49	790
49.	3 51 26.5	56 26 06	13.04	3.27	2.53	1.77	0.85	0.31	0.80	f4 V	3.43	1.59	400
50.	3 51 26.5	56 58 54	15.02	3.25:	2.62:	1.90	0.83	0.31	0.86	g1 V	4.70	1.14	690
51.	3 51 26.6	56 48 20	14.21	3.07	2.35	1.65	0.80	0.30	0.73	f4 V	3.78	1.33	660
52.	3 51 26.8	57 03 49	14.07	2.99	2.40	1.72	0.80	0.28	0.73	f8 V	4.10	1.20	570
53.	3 51 28.3	57 25 22	12.59	3.62	3.04	2.08	0.86	0.35	0.84	k0 V	4.50	0.82	284
54.	3 51 28.7	57 23 02	14.10	2.80	2.21	1.60	0.73	0.29	0.68	f7 V	4.32	0.93	590
55.	3 51 29.5	56 34 06	14.19	3.35	2.48	1.52	0.70	0.25	0.60	a3 V	1.90	1.78	1260
56.	3 51 30.1	57 13 60	11.42	–	4.99	3.62	1.57	0.59	1.38	k0 II	–2.25	2.71	1560:
57.	3 51 32.0	57 17 52	15.43	–	2.65:	1.62	0.77	0.27	0.68	a5 V	1.90	1.99	2030:
58.	3 51 32.6	57 09 15	13.22	3.40	2.42	1.42	0.69	0.24	0.57	a3 IV	1.15	1.81	1130
59.	3 51 32.9	56 58 46	14.97	3.37	2.46	1.60	0.77	0.27	0.65	a8 IV	1.77	1.77	1940
60.	3 51 32.9	57 25 58	12.65	3.07	2.10	1.24	0.62	0.22	0.53	a0 III	–0.10	1.72	1610
61.	3 51 33.7	56 46 03	13.14	2.93	2.29	1.58	0.75	0.28	0.67	f4 V	3.43	1.20	500
62.	3 51 34.6	57 22 02	14.35	3.05	2.29	1.58	0.76	0.27	0.71	f4 V	3.43	1.24	860
63.	3 51 34.9	56 49 47	12.88	4.47	3.69	2.64	1.18	0.44	1.07	g6 III	0.58	1.91	1190
64.	3 51 35.1	56 50 09	15.17	3.21:	2.41	1.74	0.82	0.28	0.80	f8 V	4.50	1.25	760
65.	3 51 37.0	57 07 60	14.72	3.49	2.64	1.79	0.85	0.33	0.74	f2 III	1.30	1.77	2130:
66.	3 51 37.8	57 00 42	13.63	3.00	2.34	1.64	0.76	0.28	0.68	f6 V	3.25	1.16	700
67.	3 51 38.1	56 19 24	12.13	3.23	2.37	1.38	0.63	0.23	0.54	a4 V	1.75	1.50	600
68.	3 51 39.0	56 54 38	14.41	3.37	2.37	1.37	0.69	0.26	0.59	a1.5 III	–0.35	1.93	3690
69.	3 51 39.1	56 38 12	14.00	3.11	2.48	1.76	0.83	0.31	0.77	f7 V	3.93	1.38	550
70.	3 51 39.4	56 28 06	12.60	4.39	3.62	2.58	1.19	0.45	1.08	g5 IV	1.85	2.17	520
71.	3 51 39.6	56 22 45	15.01	3.89:	3.01	2.14	1.04	0.38	0.99	f5 III	1.60	2.33	1640
72.	3 51 39.7	56 27 43	13.77	3.45	2.59	1.63	0.79	0.29	0.68	a7 V	2.00	1.90	940
73.	3 51 39.8	56 37 17	14.79	3.03	2.21	1.29	0.68	0.25	0.52	b9.5 V	0.55	1.98	2830
74.	3 51 40.2	56 39 12	13.73	4.50:	3.71	2.68	1.24	0.47	1.09	g5 III	0.55	2.21	1560:
75.	3 51 40.5	57 09 50	14.63	2.91	2.10	1.36	0.67	0.26	0.58	b8.5 IV	–0.25	2.05	3680
76.	3 51 41.0	57 19 30	14.31	2.39	1.78	1.11	0.58	0.21	0.48	b7 V	–0.20	1.76	3540
77.	3 51 41.3	56 32 52	11.84	3.14	2.34	1.49	0.71	0.26	0.61	a8 V	2.47	1.48	380
78.	3 51 41.4	57 24 22	13.58	2.84	2.25	1.62	0.74	0.29	0.72	f8 V	4.10	0.98	500

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U{-}V$	$P{-}V$	$X{-}V$	$Y{-}V$	$Z{-}V$	$V{-}S$	Sp	M_V	A_V	r
79.	3 51 42.3	56 48 20	14.82	3.49	2.98	2.00	0.93	0.35	0.82	g2-5 V			
80.	3 51 42.3	56 18 12	14.84	–	2.75:	1.86	0.92	0.33	0.85	f1 V	2.80	2.03	1000:
81.	3 51 42.7	57 22 38	14.59	2.50	1.83	1.22	0.65	0.23	0.59	b6 V	−0.60	2.08	4200
82.	3 51 43.0	57 17 52	14.59	3.07	2.40	1.73	0.81	0.29	0.76	f7 V	3.93	1.27	750
83.	3 51 43.2	57 03 26	13.17	4.37	3.59	2.56	1.14	0.43	1.02	g5 III	0.55	1.83	1440
84.	3 51 43.3	57 01 20	14.30	4.20	3.78:	2.56	1.00	0.55	1.02	k3.2 V	6.60	1.06	212
85.	3 51 44.3	56 30 33	13.95	4.68:	3.85	2.68	1.16	0.48	1.05	k0.8 IV	3.34	1.75	590
86.	3 51 45.3	56 58 59	13.85	2.91	2.30	1.62	0.77	0.27	0.71	f6 V	3.77	1.18	600
87.	3 51 46.1	57 04 12	12.39	4.48	3.74	2.62	1.13	0.43	1.03	g8.5 III	0.68	1.57	1070
88.	3 51 46.8	57 23 48	13.70	3.47	2.89	2.05	0.88	0.37	0.86	g8 V	5.45	1.04	280
89.	3 51 47.4	57 05 39	13.78	2.90	2.35	1.70	0.77	0.29	0.71	f9 V	4.15	1.05	520
90.	3 51 47.6	57 25 07	15.59	3.24:	2.34	1.42	0.69	0.25	0.63	a8: III	0.97	1.51	4180:
91.	3 51 48.0	56 27 09	13.21	3.32	2.45	1.51	0.73	0.26	0.63	a7 IV	1.60	1.68	970
92.	3 51 48.4	57 00 55	15.45	3.17:	2.30	1.36	0.65	0.23	0.55	a6 IV	1.50	1.48	3120
93.	3 51 48.7	56 18 57	14.93	3.37?	2.87:	1.98:	0.96:	0.33	0.92	g0: V			
94.	3 51 48.9	57 30 30	14.13	4.60:	3.80:	2.72	1.19	0.44	1.10	g8 III	0.65	1.84	2120:
95.	3 51 49.0	56 30 09	11.10	5.22	4.24:	2.83	1.18	0.50	1.10	k1.8 III	1.27	1.37	490:
96.	3 51 49.9	57 09 57	14.81	3.33:	2.77	1.93	0.86	0.33	0.77	g4 IV	2.93	1.09	1440:
97.	3 51 50.0	57 11 14	15.18	3.07	2.42	1.78	0.84	0.31	0.76	f8 V	4.10	1.34	890
98.	3 51 51.7	57 14 47	14.89	4.17?	3.45	2.41	0.99	0.47	0.96	k1.8 V	6.45	1.19	282
99.	3 51 52.3	57 23 24	14.20	3.45	2.87	2.02	0.86	0.39	0.83	k0 V	6.00	0.85	295
100.	3 51 52.4	56 18 47	13.74	3.52	2.80	1.96	0.90	0.33	0.87	f9 V	3.62	1.54	520
101.	3 51 53.4	57 13 13	13.89	3.91	3.31	2.26	0.90	0.45	0.90	k2.8 V	6.39	0.75	225
102.	3 51 53.8	57 14 59	14.93	3.26	2.65	1.88	0.89	0.33	0.81	f9.5 V	4.18	1.46	720
103.	3 51 54.0	57 31 44	12.88	3.58	2.97	2.11	0.89	0.37	0.90	g8.5 V	5.46	1.06	187
104.	3 51 55.3	57 08 45	13.69	4.76	4.06	2.88	1.25	0.49	1.11	g9.5 III	0.73	1.98	1580
105.	3 51 55.4	56 55 10	12.81	4.73	3.89	2.76	1.20	0.45	1.09	g9 III	0.70	1.80	1150
106.	3 51 55.7	56 46 51	13.45	3.42	2.45	1.42	0.69	0.25	0.58	a4 III	0.35	1.78	1830
107.	3 51 56.2	56 45 43	14.18	2.51	1.96	1.34	0.72	0.25	0.61	b5 V	−0.70	2.39	3150
108.	3 51 56.9	56 56 50	15.45	3.63?	2.67	1.60	0.76	0.28	0.60	a3 V	1.60	2.07	2270
109.	3 51 57.1	56 57 35	13.12	4.58	3.90	2.74	1.19	0.45	1.11	g9 III	0.70	1.77	1350
110.	3 51 57.2	56 40 40	14.45	3.30	2.72	1.91	0.91	0.35	0.80	g0 V	4.20	1.51	560
111.	3 51 57.4	57 23 48	15.36	2.85	2.33	1.68	0.76	0.29	0.74	f8 V	4.50	1.00	940
112.	3 51 57.6	57 22 24	14.34	3.39	2.44	1.45	0.70	0.25	0.59	a4 III	0.80	1.84	2190
113.	3 51 57.8	57 18 18	15.03	–	2.44	1.47	0.75	0.29	0.59	a0.5 IV	0.35	2.22	3110:
114.	3 51 58.0	56 47 01	12.23	3.05	2.53	1.74	0.77	0.30	0.71	g4 V	4.50	0.79	244
115.	3 51 59.0	57 05 34	13.78	–	4.61:	3.24	1.38	0.54	1.24	k1 III	0.00	2.14	2130:
116.	3 51 59.3	57 09 28	13.62	5.17:	4.32	3.07	1.31	0.52	1.19	k0.8 III	0.75	2.00	1490
117.	3 51 60.0	57 06 10	15.28	2.19	1.77	1.18	0.61	0.20	0.53	b5 V	0.10	2.00	4330
118.	3 52 00.3	56 27 57	13.39	3.20	2.50	1.73	0.85	0.31	0.76	f3 V	3.27	1.63	500
119.	3 52 00.8	57 07 11	11.75	2.99	2.49	1.73	0.75	0.32	0.71	g4 V	4.93	0.69	168
120.	3 52 01.0	56 56 09	14.36	3.37	2.38	1.42	0.71	0.25	0.59	a1.5 IV	0.50	1.98	2380
121.	3 52 01.7	57 29 14	13.95	3.29	2.32	1.40	0.67	0.24	0.59	a8 III	0.57	1.49	2400
122.	3 52 03.0	57 18 02	14.38	3.03	2.39	1.72	0.80	0.31	0.71	f8 V	4.10	1.20	650
123.	3 52 03.3	56 51 07	13.41	4.96	4.02	2.88	1.29	0.48	1.15	g6 II	−1.53	2.19	3550:
124.	3 52 03.6	56 27 58	14.20	3.10	2.46	1.70	0.85	0.31	0.72	f3 V	3.27	1.61	730
125.	3 52 04.3	56 26 43	12.26	3.10	2.38	1.62	0.78	0.28	0.71	f2 V	3.10	1.39	360
126.	3 52 04.7	56 45 28	14.44	3.53	2.93	2.03	0.93	0.35	0.87	g4 V	3.97	1.40	650
127.	3 52 04.9	57 28 42	14.06	3.11	2.40	1.64	0.75	0.28	0.72	f4: III	1.98	1.24	1470:
128.	3 52 05.0	56 46 35	14.28	3.69	2.52	1.60	0.81	0.29	0.69	a0-7			
129.	3 52 05.2	56 53 30	14.05	3.55	2.86	2.01	0.90	0.35	0.86	g5 V	4.60	1.26	440
130.	3 52 05.5	56 39 39	13.50	3.16	2.32	1.34	0.64	0.23	0.48	a2 V	1.50	1.65	1180
131.	3 52 05.6	56 27 55	14.07	3.31	2.68	1.87	0.89	0.33	0.80	f9.5 IV	2.64	1.48	980
132.	3 52 05.9	56 43 22	14.24	2.89	2.08	1.33	0.72	0.25	0.69	b8 III	−0.75	2.25	3530
133.	3 52 07.2	57 02 27	14.68	2.90	2.23	1.54	0.73	0.26	0.66	f4 V	3.43	1.11	1070
134.	3 52 07.5	56 49 14	14.81	3.09:	2.35	1.55	0.72	0.26	0.65	f0 V	2.50	1.39	1520
135.	3 52 09.2	56 56 35	13.00	3.12	2.35	1.50	0.70	0.27	0.62	a8 V	2.47	1.44	660
136.	3 52 09.2	57 05 43	15.09	3.72:	2.70	1.91:	0.92	0.33	0.88	f4 V	3.43	1.82	930
137.	3 52 10.4	57 15 26	14.03	3.45	2.68	1.95	0.92	0.34	0.82	f7 IV	2.87	1.75	760
138.	3 52 11.3	56 54 47	13.89	3.88	3.19	2.29	1.04	0.40	0.97	g5 IV	3.00	1.71	680
139.	3 52 11.5	57 10 44	14.56	3.66	2.57	1.58	0.77	0.28	0.69	a6: III	−0.70	2.03	4420:
140.	3 52 11.6	56 24 32	14.08	3.55	2.80	1.95	0.93	0.34	0.85	f5 III	1.05	1.90	1680:
141*	3 52 11.6	57 09 32	10.43	2.03	1.41	0.75	0.39	0.15	0.30	b8 III	−0.75	1.01	1080
142.	3 52 12.1	56 36 13	13.17	2.38	1.80	1.22	0.67	0.23	0.53	b5 V	−0.70	2.19	2160
143.	3 52 12.4	56 59 32	15.47	3.14:	2.34:	1.32	0.64	0.25	0.52	a2 V	1.50	1.65	2900
144.	3 52 12.6	57 00 07	14.11	4.23	3.38	2.42	1.11	0.41	1.02	g2.5 III	0.51	1.89	2200
145.	3 52 13.2	57 32 34	12.22	2.85	2.16	1.43	0.66	0.24	0.63	f2 V	3.10	0.94	430
146.	3 52 13.5	57 22 05	14.95	3.21	2.64	1.90	0.87	0.33	0.83	g0 V	4.20	1.34	760
147.	3 52 13.7	57 03 57	15.11	3.18	2.41	1.49	0.69	0.26	0.64	a6 V	2.25	1.58	1800
148.	3 52 14.3	56 18 51	14.64	2.77:	2.26:	1.49	0.79	0.29	0.68	b6 V	−0.60	2.61	3360:
149.	3 52 14.6	57 27 53	14.42	3.38	2.42	1.46	0.71	0.25	0.63	a7 III	0.80	1.70	2430
150.	3 52 15.0	56 41 04	14.78	3.61	2.68	1.61	0.82	0.30	0.68	a1 IV	0.80	2.44	2030
151.	3 52 16.0	57 02 39	15.35	3.58:	2.49	1.63	0.78	0.32	0.61	a-f			
152.	3 52 16.0	57 17 59	15.30	3.45:	2.48:	1.44	0.69	0.26	0.52	a3 III	0.25	1.85	4380
153.	3 52 17.5	56 41 23	12.64	–	5.07	3.62	1.54	0.61	1.36	k1 II	−2.25	2.42	3120:
154.	3 52 17.6	57 22 41	14.89	3.54	2.64	1.86	0.88	0.32	0.79	f3 III	1.40	1.85	2120
155.	3 52 17.9	56 42 60	14.45	3.61	2.74	1.84	0.88	0.32	0.78	f0 III	1.30	2.10	1620
156.	3 52 18.5	56 39 28	14.48	3.41:	2.67	2.27:	1.31	0.39	0.76				

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
157.	3 52 18.7	57 23 44	14.40	2.62	1.88	1.12	0.57	0.20	0.51	b9 III	–0.55	1.63	4610
158.	3 52 19.0	56 24 15	15.20	3.06	2.24	1.51	0.81	0.28	0.72	b8 III	–0.75	2.62	4630
159.	3 52 19.4	57 17 25	14.64	3.16	2.47	1.74	0.83	0.31	0.75	f5 V	3.60	1.46	820
160.	3 52 20.5	56 59 13	14.49	3.09	2.41	1.69	0.80	0.30	0.75	f5 V	3.60	1.35	810
161.	3 52 20.9	57 04 49	15.04	3.32	2.52	1.69	0.79	0.30	0.67	a9 V	2.63	1.71	1380
162.	3 52 21.3	57 16 08	14.72	3.07	2.42	1.72	0.82	0.29	0.73	f5 V	3.60	1.40	880
163.*	3 52 21.6	57 01 30	11.55	1.92	1.50	1.04	0.57	0.20	0.46	b2.5 V	–1.73	1.90	1880
164.	3 52 21.7	57 24 33	15.25	3.15	2.50	1.72	0.84	0.30	0.76	f4 V	3.43	1.52	1140
165.	3 52 22.0	57 14 25	14.99	3.52	2.66	1.90	0.92	0.33	0.84	f6 IV	2.22	1.78	1580
166.	3 52 22.2	57 18 42	11.15	2.69	2.06	1.38	0.65	0.24	0.58	f3 V	3.27	0.84	256
167.	3 52 23.2	57 29 32	10.76	2.96	2.09	1.23	0.56	0.22	0.52	f0 III	0.90	0.91	620
168.	3 52 24.8	56 28 44	13.19	–	4.89	3.61	1.69	0.66	1.52	k0 IV	3.30	3.87	160
169.	3 52 25.8	57 19 44	13.94	3.66	2.68	1.77	0.80	0.32	0.70	f0: III	0.90	1.84	1740:
170.	3 52 26.8	56 39 36	15.12	3.49:	2.57	1.71	0.83	0.31	0.71	f1 III	1.52	1.81	2270
171.	3 52 26.8	57 09 08	14.83	3.08	2.36	1.61	0.80	0.28	0.74	f3 V	3.62	1.40	920
172.*	3 52 27.1	57 10 09	9.31	2.34	1.79	1.15	0.51	0.19	0.44	f2 V	3.10	0.38	146
173.	3 52 27.7	56 55 23	14.94	3.32	2.55	1.82	0.87	0.33	0.76	f3 V	3.27	1.72	980
174.	3 52 28.5	57 22 54	15.08	3.31	2.41	1.55	0.72	0.26	0.63	f0 III	0.90	1.54	3360
175.	3 52 28.6	57 26 17	15.07	3.30	2.51	1.80	0.87	0.31	0.80	f5 V	3.60	1.61	940
176.	3 52 29.0	57 21 22	14.85	3.05	2.23	1.37	0.65	0.28	0.58	f0: III	1.30	1.23	2920:
177.	3 52 29.7	56 22 01	14.43	3.51	2.84:	2.01	0.98	0.36	0.90	f7 V	3.93	1.93	520
178.	3 52 30.3	57 03 47	13.16	–	4.99	3.45	1.41	0.59	1.28	k3.5 III	0.75	1.87	1280:
179.	3 52 30.9	56 39 02	15.43	3.04	2.23	1.39	0.73	0.26	0.59	b9 V	0.35	2.24	3690
180.	3 52 30.9	56 57 51	11.79	3.06	2.07	1.21	0.63	0.23	0.51	a0 III	–1.00	1.74	1620
181.	3 52 31.2	57 01 06	13.04	3.07	2.08	1.21	0.63	0.23	0.51	a0 III	–0.50	1.77	2270
182.	3 52 31.3	57 19 06	13.44	4.38	3.62	2.58	1.16	0.44	1.05	g5.5 III	0.57	1.87	1590
183.	3 52 31.8	57 01 52	15.01	3.31	2.52	1.73	0.83	0.30	0.75	f2 IV	2.20	1.65	1710
184.	3 52 31.8	57 10 43	13.46	2.99	2.41	1.68	0.77	0.28	0.74	f8 V	4.10	1.10	450
185.	3 52 31.8	56 20 40	13.58	–	2.90	1.77	0.90	0.31	0.77	a3 IV	0.70	2.64	1110:
186.	3 52 31.8	56 34 00	10.67	2.61	1.85	0.95	0.47	0.17	0.34	a0.5 V	0.77	1.13	570
187.	3 52 33.0	56 42 14	14.12	3.71	3.10	2.14	0.98	0.37	0.87	g7 IV	3.83	1.43	590
188.	3 52 33.1	56 53 10	15.43	3.46:	2.43	1.43	0.69	0.24	0.58	a4 III	0.80	1.78	3710
189.	3 52 33.3	56 38 50	14.09	3.32	2.56	1.79	0.87	0.32	0.77	f2 V	3.10	1.74	710
190.	3 52 33.7	56 48 40	14.27	3.21	2.51	1.79	0.85	0.32	0.75	f6 V	3.77	1.47	640
191.	3 52 33.7	56 55 59	13.23	2.87	2.23	1.56	0.75	0.28	0.65	f5 V	3.60	1.13	500
192.	3 52 35.0	57 11 14	14.50	3.30	2.44	1.44	0.67	0.26	0.56	a4 V	1.75	1.65	1660
193.	3 52 35.1	56 24 57	13.94	3.64	2.95	2.09	0.99	0.37	0.91	g0 IV	2.70	1.83	760
194.	3 52 35.1	56 50 36	13.69	3.52	2.78	1.98	0.93	0.35	0.85	f9 IV	2.58	1.67	770
195.	3 52 35.3	56 28 32	12.36	3.41	2.53	1.58	0.75	0.26	0.68	a8 III	0.97	1.74	850
196.	3 52 35.4	56 59 00	13.98	2.92	2.30	1.60	0.76	0.29	0.66	f4 V	3.43	1.23	730
197.	3 52 35.5	56 39 28	14.90	3.65:	3.09	2.11	0.92	0.36	0.85	g8 IV	3.25	1.12	1270
198.	3 52 35.8	57 24 50	14.64	3.25	2.62	1.93	0.91	0.32	0.87	f8 V	4.10	1.62	610
199.	3 52 36.3	56 36 50	13.90	4.36	3.59	2.56	1.22	0.44	1.09	g4 IV	1.87	2.35	860
200.	3 52 36.6	56 51 50	15.28	3.10	2.51:	1.72	0.85	0.32	0.76	f5 V	3.60	1.54	1070
201.	3 52 36.9	56 18 35	13.89	–	3.74:	2.79	1.30	0.49	1.17	g5 IV	3.00	2.72	430:
202.	3 52 37.2	56 39 17	14.82	–	4.07?	2.96:	1.28	0.53	1.16	k0.8 IV	3.34	2.20	720:
203.	3 52 37.3	57 22 46	15.15	3.09	2.23	1.31	0.64	0.25	0.50	a1: IV	0.80	1.74	3340:
204.	3 52 38.2	57 31 20	12.80	3.30	2.40	1.46	0.70	0.24	0.63	a7 III	0.80	1.63	1180
205.	3 52 39.2	56 52 38	13.19	2.87	2.21	1.49	0.70	0.26	0.62	f2 V	3.10	1.09	630
206.	3 52 39.2	57 29 33	13.54	3.45	2.92	2.01	0.82	0.37	0.82	k0 V	6.00	0.72	232
207.	3 52 39.4	56 37 31	12.54	2.89	2.26	1.59	0.78	0.29	0.70	f5 V	3.95	1.22	299
208.	3 52 39.4	56 57 11	13.88	2.92	2.25	1.58	0.74	0.28	0.66	f4 V	3.43	1.16	720
209.	3 52 39.8	56 59 46	14.76	3.38	2.60	1.85	0.88	0.32	0.79	f5 IV	2.60	1.68	1240
210.	3 52 40.0	57 15 37	14.12	3.64	3.23	2.21	0.91	0.44	0.89	k1.2 V	6.35	0.92	235
211.	3 52 40.6	56 31 33	12.31	2.98	2.35	1.63	0.77	0.28	0.69	f5 V	3.60	1.22	320
212.	3 52 41.9	56 50 21	14.98	3.85:	2.78	1.73	0.87	0.32	0.70	a3 IV	1.15	2.50	1850:
213.	3 52 42.0	57 08 39	13.04	2.37	1.80	1.22	0.65	0.23	0.54	b5 V	–0.70	2.13	2090
214.	3 52 43.0	57 15 06	14.13	2.32	1.72	1.13	0.61	0.22	0.49	b6 IV	–1.10	1.93	4580
215.	3 52 43.2	57 09 08	13.98	4.57	3.84	2.71	1.21	0.46	1.11	g8 III	0.65	1.91	1920
216.	3 52 43.3	57 27 46	13.40	3.43	2.92	2.01	0.81	0.37	0.84	k0.5 V	6.15	0.64	210
217.	3 52 43.7	57 00 45	13.44	3.09	2.18	1.26	0.62	0.22	0.50	a1.5 III	0.08	1.65	2210
218.	3 52 44.1	57 29 27	15.53	2.75	2.05	1.31	0.68	0.23	0.61:	b8 V	–0.05	2.12	4930
219.	3 52 44.3	56 53 60	14.94	3.18	2.29	1.33	0.67	0.24	0.55	a0.5 V	0.77	1.89	2860
220.	3 52 45.1	56 40 06	12.92	3.39	2.28	1.40	0.73	0.26	0.60	a0 III	–1.00	2.16	2260:
221.	3 52 46.3	56 56 02	11.28	2.48	1.97	1.37	0.64	0.24	0.59	f6 V	3.77	0.67	233
222.	3 52 46.6	56 52 58	14.06	3.07	2.40	1.65	0.77	0.29	0.69	f4 IV	2.47	1.31	1140
223.	3 52 46.9	57 22 51	15.00	3.08	2.09	1.19	0.60	0.22	0.49	a0.5 III	–0.05	1.62	4840
224.	3 52 47.4	56 30 45	14.31	3.28	2.68	1.90	0.90	0.34	0.81	f9.5 V	4.18	1.49	540
225.	3 52 47.9	57 05 24	13.90	2.26	1.66	1.07	0.58	0.20	0.56	b6 IV	–1.10	1.81	4340
226.	3 52 48.4	56 44 25	13.65	4.58	3.70	2.67	1.21	0.46	1.08	g5 III	0.55	2.08	1600
227.	3 52 48.5	56 57 23	12.17	2.74	2.15	1.47	0.68	0.26	0.63	f5 V	3.60	0.89	340
228.	3 52 49.3	57 07 04	13.72	–	4.42	3.10	1.38	0.52	1.24	k0 III	0.00	2.34	1890:
229.	3 52 50.8	56 52 42	15.05	3.36	2.71	1.93	0.90	0.34	0.81	g0 IV	3.20	1.48	1190
230.	3 52 51.5	56 59 29	15.19	3.38	2.54:	1.48	0.73	0.25	0.59	a3 V	1.60	1.93	2140
231.	3 52 51.7	56 23 40	15.00	3.45	2.49	1.67	0.90	0.33	0.73	b8.5 III	–0.65	2.93	3500
232.	3 52 52.1	57 20 04	14.99	3.19	2.30	1.40	0.66	0.25	0.58	a8 III	0.97	1.40	3340
233.	3 52 52.3	57 32 42	14.50	3.48	2.46	1.68	0.85	0.28	0.83	a9			
234.	3 52 52.9	56 34 18	14.86	3.88:	2.90	2.05	1.02	0.36	0.88	f3 III	1.87	2.34	1350

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U-V$	$P-V$	$X-V$	$Y-V$	$Z-V$	$V-S$	Sp	M_V	A_V	r
235.	3 52 53.4	56 57 52	15.54	3.42:	2.42:	1.45	0.69	0.28	0.56	a3 IV	1.15	1.82	3270
236.	3 52 53.5	56 32 08	13.94	3.87	3.18	2.26	1.02	0.40	0.92	g5.5 IV	3.04	1.61	720
237.	3 52 54.4	56 18 36	11.15	2.66	1.87	1.03	0.54	0.19	0.43	b9.5 IV	0.10	1.49	820
238.	3 52 55.4	57 28 56	14.20	3.14	2.47	1.79	0.83	0.31	0.76	f8 V	4.10	1.31	570
239.	3 52 55.5	57 17 21	13.31	3.94	3.26	2.32	1.01	0.40	0.94	g8 IV	3.25	1.46	520
240.	3 52 55.7	57 27 12	15.32	3.13:	2.44	1.78	0.87	0.34	0.77	f5 V	3.95	1.58	910
241.	3 52 56.0	56 43 16	14.00	3.10	2.29	1.30	0.60	0.21	0.47	a2 V	1.50	1.50	1580
242*	3 52 56.0	56 45 31	11.91	3.52	2.97	1.96	0.83	0.34	0.77	g9 IV	3.28	0.69	390
243.	3 52 56.4	56 40 22	15.06	2.72	2.04	1.30	0.71	0.24	0.57	b7 V	–0.20	2.28	3930
244.	3 52 56.8	56 37 01	13.85	3.05	2.40	1.67	0.82	0.30	0.72	f4 V	3.43	1.45	620
245.	3 52 56.9	56 46 48	14.54	3.30	2.46	1.64	0.84	0.30	0.73	b8.5 V	0.15	2.70	2180
246.	3 52 57.5	56 37 44	11.90	2.90	2.07	1.17	0.59	0.21	0.46	a0 V	0.75	1.60	810
247.	3 52 57.7	56 36 05	14.24	3.28	2.55	1.79	0.87	0.30	0.79	f5 IV	2.60	1.62	1010
248.	3 52 58.6	57 24 20	12.29	2.69	2.09	1.44	0.67	0.25	0.60	f5 V	3.60	0.83	370
249.	3 53 00.4	56 51 46	13.19	3.14	2.63	1.85	0.81	0.32	0.76	g5 V	5.00	0.88	289
250.	3 53 00.6	57 35 10	15.27	–	2.56	1.56	0.80	0.26	0.65	a1 V	1.20	2.33	2220:
251.	3 53 01.5	56 53 51	15.42	2.99	2.15	1.37	0.71	0.26	0.56	b9 V	0.35	2.15	3850
252.	3 53 01.5	56 55 31	15.13	3.23	2.55	1.87	0.86	0.37	0.80	f8: V	4.50	1.40	700:
253.	3 53 01.7	56 33 34	15.05	3.32	2.73	2.00	0.93	0.38	0.86	g0 V	4.60	1.54	610
254.	3 53 02.0	57 19 21	11.45	3.13	2.70	1.80	0.67	0.34	0.71	k1 V	6.30	0.04	105
255.	3 53 02.7	56 21 16	15.48	–	2.40	1.55	0.80	0.29	0.67	b8.5 V	0.15	2.53	3630
256.	3 53 02.8	57 00 54	13.01	4.57	3.85	2.66	1.13	0.46	1.03	k0.5 IV	2.03	1.50	790
257.	3 53 04.5	57 21 16	15.15	3.28	2.38	1.50	0.71	0.26	0.65	f1 III	0.62	1.41	4210
258.	3 53 04.6	57 29 35	14.48	3.28	2.55	1.83	0.88	0.31	0.83	f5 V	3.60	1.64	700
259.	3 53 04.7	56 54 57	15.13	3.36	2.51	1.60	0.71	0.22	0.59	f?			
260.	3 53 04.8	57 04 60	14.97	3.11	2.39	1.72	0.83	0.31	0.74	f4 V	3.78	1.46	880
261.	3 53 05.4	56 26 26	14.42	3.35	2.49	1.67	0.81	0.29	0.73	f0 V	2.80	1.71	960
262.	3 53 06.0	56 38 26	14.38	3.48	2.64	1.86	0.89	0.34	0.81	f2 V	3.10	1.84	770
263.	3 53 06.1	57 09 13	14.94	3.04	2.37	1.70	0.80	0.31	0.73	f6 V	4.13	1.26	810
264.	3 53 06.3	57 01 27	14.39	2.95	2.36	1.71	0.81	0.32	0.70	f6 V	4.13	1.29	620
265.	3 53 06.7	56 25 17	14.41	3.35	2.55	1.68	0.86	0.30	0.75	f1 V	2.80	1.82	910
266.	3 53 06.7	56 51 49	13.56	3.39	1.97	1.23	0.68	0.25	0.65	b7: III	–1.50	2.16	3810:
267.	3 53 07.5	57 35 42	13.52	3.35	2.43	1.48	0.70	0.24	0.60	a5 IV	1.40	1.77	1180
268.	3 53 07.7	56 28 50	14.35	3.32	2.67	1.90	0.92	0.34	0.82	f7 V	3.93	1.69	560
269.	3 53 08.4	56 52 27	12.83	3.05	2.32	1.54	0.73	0.27	0.64	f0 V	2.80	1.40	530
270.	3 53 08.4	57 00 43	15.59	3.21:	2.44	1.40	0.68	0.23	0.54	a3 V	1.60	1.75	2800
271.	3 53 08.8	56 32 58	14.85	3.54	2.52	1.54	0.79	0.26	0.63	a3 III	0.25	2.19	3030
272.	3 53 08.8	57 33 38	13.82	–	–	3.18	1.40	0.52	1.32	k0 III	0.75	2.52	1290:
273.	3 53 09.2	57 26 60	14.14	2.98	2.34	1.67	0.79	0.31	0.73	f6 V	3.77	1.27	660
274.	3 53 09.3	56 28 06	13.13	–	4.72	3.31	1.48	0.56	1.30	k0.5 III	0.75	2.71	860
275.	3 53 09.5	57 06 54	13.54	–	4.62	3.22	1.32	0.55	1.21	k2 III	0.45	1.76	1850
276.	3 53 09.8	56 40 58	14.43	3.41	2.69	1.93	0.92	0.33	0.85	f7 V	3.93	1.70	570
277.	3 53 10.2	57 13 32	14.24	4.19:	3.68:	2.50	1.05	0.47	0.96	k2.8 IV	4.65	1.30	450
278.	3 53 10.3	56 36 60	15.27	3.09	2.32	1.59	0.77	0.25	0.72	f3 V	3.27	1.33	1360
279.	3 53 10.4	57 23 02	14.87	3.20	2.29	1.30	0.64	0.24	0.53	a2 III	0.15	1.71	4000
280.	3 53 11.5	56 27 29	13.66	3.17	2.50	1.73	0.84	0.30	0.73	f4 V	2.95	1.57	670
281.	3 53 12.7	57 33 12	10.99	4.23	3.54	2.50	1.07	0.40	1.00	g8 III	0.65	1.37	620
282.	3 53 13.0	57 02 47	15.37	3.14:	2.33	1.36	0.64	0.24	0.52	a3 V	1.60	1.62	2700
283.	3 53 13.8	57 04 37	14.98	3.14	2.18	1.27	0.62	0.23	0.52	a1 III	0.00	1.68	4570
284.	3 53 14.1	57 10 40	12.80	3.13	2.63	1.82	0.77	0.33	0.75	g6 V	5.15	0.71	240
285.	3 53 14.1	57 16 25	14.65	2.86	2.35	1.66	0.76	0.30	0.69	g0 V	4.20	0.93	800
286.	3 53 14.3	57 21 32	12.72	2.85	1.98	1.07	0.52	0.20	0.42	a1 III	0.00	1.30	1920
287.	3 53 14.5	57 18 05	14.17	4.83:	4.01	2.80	1.18	0.48	1.10	k0.8 IV	2.01	1.66	1260:
288.	3 53 14.5	57 24 26	13.64	2.96	2.33	1.66	0.77	0.30	0.73	f6 V	3.77	1.19	550
289.	3 53 14.6	57 20 40	14.12	3.59	2.98	2.03	0.86	0.37	0.83	k0 V	6.00	0.87	282
290.	3 53 15.0	56 23 22	15.15	3.28	2.62	1.87	0.93	0.32	0.79	f5 V	3.60	1.83	880
291.	3 53 16.6	56 34 22	13.72	3.57	2.54	1.51	0.76	0.29	0.61	a2 III	0.15	2.16	1910
292.	3 53 18.1	56 55 46	11.97	3.61	3.18	2.14	0.77	0.47	0.84	k3.5 V	6.70	0.12	107
293.	3 53 18.2	57 12 17	14.25	3.39	2.73	1.95	0.90	0.34	0.85	g0 V	4.20	1.49	520
294.	3 53 18.3	57 02 42	15.57	3.41?	2.35	1.43	0.69	0.28	0.54	a			
295.	3 53 18.4	56 24 31	14.87	3.72:	3.18	2.17	1.03	0.38	0.90	g4: IV	2.93	1.73	1100:
296.	3 53 18.4	57 16 13	14.51	3.23	2.35	1.42	0.65	0.25	0.54	a3 V	1.60	1.65	1780
297.	3 53 18.9	57 27 44	14.81	3.16	2.28	1.39	0.69	0.25	0.58	a0 V	0.75	1.97	2610
298.	3 53 19.6	56 57 17	12.21	1.55	1.26	0.94	0.53	0.19	0.41	b1 V	–2.85	1.86	4370
299.	3 53 20.2	57 12 56	14.71	3.04	2.16	1.30	0.65	0.23	0.58	a0 III	–0.10	1.84	3920
300.	3 53 20.7	57 09 01	15.47	2.78:	1.97	1.23	0.59	0.22	0.61	a			
301.	3 53 20.8	56 20 46	10.62	2.74	1.91	1.07	0.55	0.19	0.44	b9.5 IV	0.10	1.53	630
302.	3 53 21.1	56 56 33	14.69	2.97	2.31	1.55	0.75	0.28	0.66	f2 V	3.10	1.28	1150
303.	3 53 21.7	57 27 18	14.78	3.31	2.56	1.85	0.89	0.31	0.79	f5 IV	2.60	1.71	1240
304.	3 53 21.9	57 22 16	14.69	3.35	2.26	1.29	0.64	0.23	0.58	a3: III			
305.	3 53 22.3	56 48 08	15.49	3.56?	2.48	1.48	0.74	0.27	0.60:	a3 III	0.25	2.00	4440
306.	3 53 22.8	57 18 17	12.37	2.67	2.11	1.47	0.67	0.26	0.62	f6 V	3.77	0.80	360
307.	3 53 23.0	57 12 29	15.22	–	2.52	1.48	0.69	0.26	0.55	a3 V	1.60	1.79	2330
308.	3 53 23.3	57 19 54	14.37	3.07	2.56	1.81	0.81	0.32	0.72	g2 V	4.80	1.02	510
309.	3 53 24.5	56 46 02	14.26	4.51:	3.76	2.67	1.22	0.47	1.10	g8.5 IV	3.26	2.23	560
310.	3 53 25.4	56 52 15	12.07	2.58	2.06	1.43	0.67	0.25	0.61	f5 V	3.60	0.85	340
311.	3 53 25.9	56 22 05	15.41	3.41:	2.62	1.50	0.79	0.25	0.67	a1 V	1.20	2.31	2400
312.	3 53 26.3	57 13 35	14.22	4.16	3.42:	2.35	1.06	0.41	0.98	g5.5 III	1.22	1.55	1950

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
313.	3 53 26.6	57 19 39	14.65	3.01	2.35	1.67	0.78	0.29	0.72	f5 V	3.60	1.25	910
314.	3 53 27.5	57 06 33	14.71	2.98	2.38	1.73	0.85	0.31	0.79	f8: V	4.50	1.34	590:
315.	3 53 28.1	56 45 44	13.85	3.21	2.51	1.74	0.83	0.31	0.73	f3 V	3.27	1.54	640
316.	3 53 28.3	56 31 26	15.42	3.16:	2.26	1.37	0.74	0.25	0.57	b9.5 III	–0.32	2.24	5020
317.	3 53 29.3	56 37 54	13.26	3.14	2.31	1.31	0.62	0.23	0.50	a3 V	1.60	1.52	1060
318.	3 53 29.5	56 45 05	13.87	3.43	2.65	1.85	0.88	0.33	0.79	f2 V	3.10	1.80	620
319.	3 53 30.0	57 00 17	14.10	4.22:	3.57	2.56	1.18	0.45	1.06	g7 IV	3.17	2.15	570:
320.	3 53 30.2	57 02 05	12.90	4.27	3.34	2.28	1.09	0.44	1.02	f2: II			
321.	3 53 32.8	57 17 15	12.72	2.73	1.95	1.07	0.49	0.19	0.40	a6 IV	1.50	0.86	1180:
322.	3 53 33.1	57 33 56	15.02	–	2.69	1.69	0.82	0.31	0.71	a7: IV	1.60	2.06	1870:
323.	3 53 33.6	56 54 11	11.58	2.87	2.07	1.19	0.55	0.21	0.45	a5 V	2.20	1.09	460
324.	3 53 33.6	57 22 44	13.83	2.99	2.19	1.39	0.64	0.24	0.58	f1 III	1.52	1.08	1760
325.	3 53 34.1	56 18 41	15.22	–	2.63:	1.54:	0.85	0.30	0.63	a1.5 V	1.35	2.48	1900
326.	3 53 35.1	57 18 10	15.28	3.74:	2.70	1.68	0.77	0.30	0.67	a5 III	0.90	2.05	2920:
327.	3 53 35.2	57 00 18	14.29	2.81	1.99	1.19	0.64	0.25	0.49	b9 III	–1.00	1.86	4860
328.	3 53 35.7	56 28 59	13.99	3.42	2.56	1.68	0.81	0.28	0.72	f1 III	1.52	1.72	1410
329.	3 53 35.8	57 24 17	14.84	3.00	2.37	1.74	0.81	0.30	0.75	f8 V	4.10	1.25	790
330.	3 53 36.1	57 05 47	13.76	2.60	1.83	1.11	0.58	0.21	0.46	b8.5 III	–1.05	1.69	4200
331.	3 53 36.4	57 02 16	15.26	3.16	2.34	1.34	0.61	0.21	0.50	a3 V	1.60	1.49	2710
332.	3 53 36.5	56 46 04	14.01	3.79	2.88	1.93	0.95	0.35	0.82	a9 V	2.33	2.34	740
333.	3 53 36.6	56 35 55	15.22	3.16	2.38	1.58	0.84	0.32	0.74	b8 IV	–0.40	2.71	3820
334.	3 53 36.6	57 12 48	13.63	2.72	2.07	1.33	0.62	0.24	0.55	f1 V	2.80	0.88	980
335.	3 53 36.9	56 32 51	12.95	–	–	4.22	1.73	0.74	1.57	k9: III	–1.47	2.41	2520:
336.	3 53 37.2	56 57 37	15.10	3.42:	2.84	1.93	0.84	0.34	0.80	g8 V	5.45	0.88	570
337.	3 53 38.2	57 21 29	15.34	3.10:	2.30	1.43	0.65	0.25	0.59	f0 III	1.30	1.23	3640
338.	3 53 39.4	57 30 30	14.73	3.41	2.66	1.89	0.89	0.32	0.83	f8 IV	2.45	1.59	1370
339.	3 53 39.6	57 05 10	14.80	3.42:	2.48	1.59	0.77	0.29	0.65	f0 III	1.30	1.70	2290
340.	3 53 39.8	56 32 20	15.03	3.28	2.70	1.93	0.89	0.35	0.80	g1 V	4.70	1.35	620
341.	3 53 39.8	56 37 46	14.87	2.77	2.07	1.29	0.69	0.24	0.56	b8 V	–0.05	2.14	3590
342.	3 53 40.5	56 51 17	14.33	3.02	2.44	1.74	0.83	0.30	0.73	f7 V	3.93	1.34	650
343.	3 53 40.6	56 50 16	14.13	2.41	1.84	1.26	0.68	0.25	0.54	b5 IV	–1.15	2.24	4060
344.	3 53 40.7	56 34 35	13.87	–	4.70:	3.29	1.45	0.56	1.28	k1 III	0.75	2.48	1340
345.	3 53 41.1	56 23 43	13.31	3.23	2.56	1.78	0.86	0.32	0.76	f2 V	3.10	1.72	500
346.	3 53 41.4	57 27 49	15.18	3.20:	2.55	1.85	0.89	0.32	0.80	f8 V	4.10	1.54	810
347.	3 53 42.3	56 20 24	14.14	4.50?	3.96	2.59	1.16	0.49	1.07	k1 IV	4.20	1.80	420:
348.	3 53 42.4	57 22 32	14.50	2.80	2.21	1.58	0.74	0.29	0.68	f6 V	4.13	1.00	750
349.	3 53 42.5	56 36 23	12.62	3.20	2.51	1.74	0.81	0.29	0.73	f7 III	1.80	1.35	780:
350.	3 53 42.5	56 56 11	14.48	3.04	2.38	1.68	0.79	0.30	0.73	f6 V	3.77	1.25	780
351.	3 53 43.1	57 15 19	14.09	2.95	2.09	1.20	0.59	0.23	0.46	a0 V	0.75	1.62	2210
352.	3 53 43.2	57 08 53	13.50	4.40	3.70	2.60	1.14	0.44	1.03	g8.5 IV	1.35	1.69	1240
353.	3 53 43.8	57 07 16	13.70	3.18	2.34	1.37	0.64	0.24	0.53	a4 V	1.75	1.55	1200
354.	3 53 44.0	56 31 22	13.47	3.59	2.80	1.98	0.94	0.34	0.84	f7 III	1.25	1.80	1220:
355.	3 53 44.0	57 00 06	14.73	4.11:	3.56	2.38	0.94	0.50	0.97	k3 V	6.50	0.86	298
356.	3 53 44.0	57 05 30	14.86	3.17	2.54	1.84	0.89	0.33	0.80	f8 V	4.10	1.54	700
357.	3 53 44.1	56 19 50	14.29	4.31?	3.62	2.43	0.99	0.49	0.95	k3 V	5.40	1.05	370
358.	3 53 44.3	56 48 26	13.51	3.18	2.35	1.35	0.62	0.23	0.51	a3 V	1.60	1.53	1190
359.	3 53 44.6	56 47 16	14.73	3.16	2.52	1.74	0.84	0.32	0.72	f3 V	3.27	1.58	950
360.	3 53 46.1	56 31 56	12.92	3.22	2.56	1.79	0.84	0.30	0.76	f9 IV	2.58	1.31	640
361.	3 53 46.4	57 22 47	13.27	2.98	2.27	1.43	0.61	0.23	0.50	a4: V	1.75	1.42	1050:
362.	3 53 46.7	56 55 59	14.45	2.94	2.32	1.60	0.76	0.29	0.67	f4 V	3.43	1.22	910
363.	3 53 47.8	57 29 15	15.00	2.66	1.99	1.29	0.67	0.24	0.57	b7 V	–0.20	2.13	4110
364.	3 53 47.9	57 13 20	15.48	2.70	1.98	1.14	0.60	0.22	0.51	b9 V	0.35	1.72	4800
365.	3 53 48.1	56 50 44	15.23	3.31:	2.58	1.59	0.78	0.28	0.68	a7 V	2.30	1.83	1660
366.	3 53 48.3	57 22 03	13.21	3.01	2.49	1.76	0.76	0.31	0.73	g3 V	4.87	0.79	320
367.	3 53 48.5	56 40 12	15.04	3.46:	2.64	1.79	0.88	0.30	0.79	f2 IV	2.20	1.84	1580:
368.	3 53 48.6	57 12 17	14.49	2.55	1.79	1.01	0.51	0.19	0.39	b9.5 IV	0.10	1.35	4050
369.	3 53 49.0	57 03 11	14.43	1.96	1.55	1.10	0.58	0.22	0.44	b2.5 V	–1.05	1.96	5070
370.	3 53 49.0	57 06 08	13.59	3.06	2.51	1.78	0.82	0.33	0.76	f9 V	4.15	1.23	440
371.	3 53 49.1	57 10 50	14.84	3.17	2.48	1.74	0.83	0.31	0.73	f4 V	3.43	1.51	950
372.	3 53 49.6	57 20 34	14.14	3.36	2.29	1.34	0.65	0.24	0.56	a5: III	–0.90	1.65	4770:
373.	3 53 49.9	57 01 26	13.51	4.66	3.80	2.75	1.24	0.46	1.10	g2.5 II	–2.98	2.11	7510:
374.	3 53 50.4	56 45 01	14.47	3.44	2.63	1.89	0.91	0.34	0.81	f5 IV	2.60	1.78	1040
375.	3 53 51.0	57 24 42	14.47	4.33:	3.62:	2.61	1.20	0.45	1.10	g7 IV	3.17	2.22	650
376.	3 53 51.1	57 07 30	14.45	4.25:	3.53	2.54	1.14	0.45	1.03	g8 IV	2.50	1.91	1020
377.	3 53 51.5	56 58 54	15.35	3.08	2.35	1.67	0.78	0.30	0.76	f8 V	4.10	1.13	1060
378.	3 53 51.6	57 27 03	14.22	2.36	1.80	1.22	0.65	0.22	0.56	b5 V	–0.70	2.12	3630
379.	3 53 51.7	56 57 27	15.17	3.18	2.57:	1.81	0.88	0.32	0.78	f6 V	3.77	1.59	920
380.	3 53 51.9	56 56 08	14.08	3.06	2.46	1.78	0.83	0.33	0.77	f8 V	4.50	1.26	460
381.	3 53 52.5	57 18 45	13.67	–	4.84:	3.41	1.39	0.63	1.29	k3.5 III	0.75	1.80	1680
382.	3 53 52.5	56 20 07	14.54	3.39:	2.74:	1.92	0.93	0.36	0.85	f6 V	3.25	1.81	790
383.	3 53 52.8	56 54 34	15.05	3.38	2.41	1.55	0.76	0.28	0.65	a8 IV	1.77	1.74	2040
384.	3 53 53.3	57 32 33	15.07	3.11	2.22	1.35	0.67	0.24	0.56	a0 V	0.75	1.90	3050
385.	3 53 53.6	57 15 14	13.22	3.76	3.13	2.16	0.92	0.38	0.86	g8.5 IV	3.26	1.07	600
386.	3 53 53.8	57 03 31	13.34	3.07	2.20	1.24	0.61	0.22	0.47	a1.5 V	0.93	1.59	1460
387.	3 53 54.9	57 10 58	14.76	3.58	2.70	1.74	0.83	0.34	0.78	f1: III	1.52	1.80	1940:
388.	3 53 56.1	57 05 40	13.23	5.06:	4.18	2.89	1.23	0.50	1.10	k1.2 IV	1.42	1.67	1060
389.	3 53 56.5	57 07 05	13.81	4.61	3.85	2.67	1.18	0.46	1.05	g8.5 III	0.68	1.78	1860
390.	3 53 56.6	57 21 13	12.22	2.73	2.13	1.46	0.69	0.27	0.63	f5 V	3.95	0.88	300

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U–V$	$P–V$	$X–V$	$Y–V$	$Z–V$	$V–S$	Sp	M_V	A_V	r
391.	3 53 58.9	56 38 48	13.01	–	4.92	3.45	1.47	0.59	1.29	k2 III	0.45	2.31	1120
392.	3 53 59.1	56 59 18	13.57	2.89	2.10	1.17	0.57	0.21	0.42	a1.5 V	1.35	1.43	1440
393.	3 54 00.4	56 37 37	13.62	2.67	2.03	1.41	0.76	0.26	0.63	b5 V	–0.70	2.55	2260
394.	3 54 00.6	56 47 36	12.02	2.89	2.15	1.24	0.57	0.20	0.45	a4 V	1.75	1.27	630
395.	3 54 01.2	57 19 43	13.14	4.70	3.92	2.75	1.18	0.47	1.08	k0 IV	1.50	1.74	960
396.	3 54 01.5	56 25 50	14.12	3.37	2.56	1.63	0.80	0.28	0.69	a9 V	2.63	1.75	880
397.	3 54 02.5	57 30 24	12.75	5.31	4.42	3.13	1.35	0.52	1.21	k0.5 III	0.00	2.13	1330
398.	3 54 03.0	57 27 54	13.86	2.96	2.30	1.70	0.80	0.28	0.74	f6 V	3.77	1.27	580
399.	3 54 04.2	57 06 11	13.14	2.95	2.24	1.47	0.68	0.26	0.60	f0 V	2.80	1.22	670
400.	3 54 05.1	57 04 23	13.46	2.45	1.80	1.07	0.56	0.21	0.44	b8 V	–0.05	1.64	2360
401.	3 54 05.2	57 05 24	13.34	4.25	3.54	2.50	1.11	0.43	0.99	g6 III	1.23	1.70	1200
402.	3 54 05.7	56 56 06	12.84	2.64	1.88	1.09	0.54	0.22	0.46	b8.5 V	0.55	1.52	1430
403.	3 54 06.1	57 08 28	14.84	3.04	2.16	1.26	0.64	0.24	0.52	a0 IV	0.30	1.82	3500
404.	3 54 06.4	56 37 30	13.03	3.10	2.48	1.75	0.84	0.31	0.76	f6 V	3.77	1.44	370
405.	3 54 06.5	56 46 08	14.52	3.20	2.49	1.80	0.85	0.31	0.76	f5 V	3.60	1.54	750
406.	3 54 06.7	57 10 14	14.80	3.41	2.55	1.70	0.81	0.32	0.71	f1 III	1.52	1.70	2060
407.	3 54 06.8	56 53 03	15.55	2.26	1.79	1.24	0.66	0.23	0.51	b4 V	–0.90	2.18	7140
408.	3 54 07.2	57 27 07	14.52	3.48	2.65	1.83	0.87	0.30	0.79	f3 III	1.87	1.78	1490
409.	3 54 07.4	56 54 56	12.26	2.88	2.10	1.19	0.55	0.21	0.43	a2 V	1.50	1.31	780
410.	3 54 07.7	56 56 25	13.74	3.04	2.34	1.59	0.75	0.27	0.70	f2 V	3.10	1.29	740
411.	3 54 08.1	56 38 27	13.27	5.34:	4.47	3.06	1.32	0.53	1.16	k1.2 III	0.68	1.91	1370
412.	3 54 09.2	56 58 26	11.65	4.18	3.52	2.40	1.02	0.43	0.94	k0.5 IV	3.33	1.23	263
413.	3 54 10.2	56 58 02	12.51	–	5.59	3.93	1.60	0.71	1.44	k6 III	–0.20	2.08	1340
414.	3 54 11.4	57 26 16	14.50	4.21:	3.54	2.52	1.16	0.44	1.06	g6 IV	2.50	2.11	950
415.	3 54 11.8	56 47 16	13.33	2.99	2.57	1.79	0.78	0.33	0.74	g4 V	4.93	0.83	330
416.	3 54 15.1	57 31 36	13.27	–	4.67	3.25	1.38	0.58	1.27	k2 IV	1.69	2.11	790
417.	3 54 15.2	56 25 01	13.33	3.63	2.80	1.84	0.87	0.31	0.74	a6 V	1.95	2.29	660
418.	3 54 16.9	57 30 18	13.32	2.89	2.28	1.65	0.76	0.29	0.71	f8 V	4.10	1.06	430
419.	3 54 17.1	56 28 32	14.18	3.34	2.46	1.46	0.69	0.26	0.53	a3 V	1.60	1.78	1440
420.	3 54 17.1	56 51 29	14.86	3.20	2.42	1.77	0.83	0.31	0.74	f5 V	3.60	1.44	920
421.	3 54 17.5	57 18 30	13.17	3.49	2.94	1.97	0.84	0.36	0.78	k0.5 V	5.65	0.74	227
422.	3 54 17.6	57 17 50	14.04	2.51	1.89	1.19	0.62	0.25	0.50	b7 V	–0.20	1.91	2920
423.	3 54 18.4	57 21 29	14.22	3.16	2.43	1.62	0.79	0.28	0.71	f1 V	2.80	1.56	940
424*	3 54 20.0	57 32 14	9.49	2.60	2.05	1.44	0.64	0.25	0.61	f8 V	4.10	0.59	91
425.	3 54 20.5	57 29 23	13.93	–	4.51:	3.19	1.38	0.55	1.25	k1 III	0.75	2.19	1580
426.	3 54 20.7	56 53 23	12.26	–	4.88	3.39	1.39	0.60	1.22	k3.5 III	0.75	1.78	880
427.	3 54 21.2	57 28 13	13.12	–	5.52:	3.95	1.66	0.68	1.49	k2.5 II	–2.40	2.55	3930:
428.	3 54 21.9	56 36 60	13.86	–	4.44	3.13	1.38	0.53	1.26	k0 III	0.75	2.41	1380
429.	3 54 22.7	57 07 25	14.40	3.98	3.31	2.37	1.10	0.41	0.99	g5 IV	3.00	1.94	780
430.	3 54 23.0	56 34 12	14.27	3.66	3.12	2.09	0.94	0.37	0.84	g5-k0 III			
431.	3 54 23.7	57 27 53	14.26	3.77	3.18	2.25	1.00	0.40	0.93	g8 V	5.45	1.49	291
432.	3 54 23.9	57 03 17	10.22	2.34	1.90	1.31	0.56	0.22	0.54	f8 V	4.50	0.24	125
433.	3 54 24.3	57 18 53	14.29	–	3.60	2.57	1.16	0.44	1.09	g6 III	1.23	1.90	1710
434.	3 54 24.4	56 51 31	15.24	3.42:	2.59	1.72	0.85	0.33	0.77	f0 V	2.80	1.85	1320
435.	3 54 24.6	57 17 22	11.02	3.29	2.86	1.92	0.72	0.38	0.77	k1.5 V	6.40	0.18	77
436.	3 54 25.4	57 01 44	14.51	3.09	2.21	1.28	0.64	0.25	0.49	a0.5 V	0.77	1.76	2490
437.	3 54 25.6	57 15 33	14.65	3.11	2.54	1.83	0.84	0.33	0.77	g0 V	4.20	1.23	700
438.	3 54 26.0	57 26 53	14.83	3.36	2.49	1.49	0.72	0.25	0.58	a3 V	1.60	1.91	1840
439.	3 54 26.4	56 34 58	14.48	3.81	3.16	2.24	1.06	0.40	0.94	g4 V	4.50	1.90	410
440.	3 54 26.8	57 30 12	14.96	3.43:	2.58	1.83	0.89	0.33	0.82	f2 V	3.10	1.81	1020
441.	3 54 26.9	57 01 07	14.26	3.23	2.62	1.86	0.84	0.34	0.75	g1 V	4.25	1.19	580
442.	3 54 27.1	56 47 02	14.65	3.61:	2.79:	1.75	0.81	0.31	0.69	a5: V	2.20	2.11	1170:
443.	3 54 27.2	57 18 47	14.82	3.19	2.33	1.58	0.75	0.27	0.69	f2 V	3.10	1.27	1230
444.	3 54 28.5	57 18 15	14.84	3.00	2.41	1.74	0.80	0.34	0.72	f9 V	4.15	1.14	810
445.	3 54 30.1	57 27 44	14.14	3.08	2.40	1.64	0.78	0.28	0.70	f2 V	3.10	1.39	850
446.	3 54 30.8	56 19 54	14.72	3.89?	3.39?	2.32	1.03	0.45	0.97	k0 V	6.00	1.51	276
447.	3 54 31.9	56 25 26	14.15	3.27	2.56	1.80	0.89	0.31	0.78	f3 V	3.27	1.77	660
448*	3 54 32.8	56 50 50	10.22	2.38	1.80	1.33	0.73	0.27	0.70	b1.5 V			
449.	3 54 33.0	56 45 14	13.86	3.06	2.45	1.71	0.82	0.31	0.72	f6 V	3.77	1.38	560
450.	3 54 33.2	57 25 19	14.84	2.96	2.46	1.77	0.82	0.32	0.76	f9 V	4.15	1.22	780
451.	3 54 33.6	56 40 23	15.02	3.04	2.21	1.40	0.74	0.25	0.57	b8.5 V	0.15	2.31	3260
452.	3 54 33.8	56 36 31	14.78	3.20	2.45	1.74	0.87	0.31	0.75	f3 V	3.62	1.67	790
453.	3 54 34.3	57 02 38	12.25	2.73	2.04	1.28	0.60	0.23	0.51	f0 V	2.80	0.92	510
454.	3 54 35.5	57 21 17	15.12	–	2.41	1.46	0.69	0.26	0.57	a4 V	1.75	1.72	2140
455.	3 54 35.8	56 22 32	14.84	3.44	2.45	1.45	0.75	0.26	0.57	a1.5 III	0.08	2.16	3320
456.	3 54 35.9	56 44 14	14.71	3.40	2.55	1.56	0.76	0.25	0.66	a6 IV	1.50	1.88	1840
457.	3 54 36.0	57 25 24	11.33	4.32	3.57	2.54	1.12	0.42	1.00	g6 III	–0.07	1.63	900
458.	3 54 36.4	57 25 04	13.90	3.27	2.43	1.47	0.71	0.26	0.61	a5 V	1.90	1.75	1120
459.	3 54 36.5	56 51 44	14.84	3.47	2.53	1.47	0.71	0.29	0.55	a2: III	0.15	1.97	3510:
460.	3 54 36.6	56 57 53	15.49	3.25:	2.40	1.48	0.71	0.27	0.62	a8 IV	1.77	1.54	2740:
461.	3 54 36.6	56 58 35	13.98	4.22	3.50	2.51	1.13	0.42	1.03	g5 III	1.20	1.85	1540
462.	3 54 37.2	57 03 04	14.69	3.02	2.40	1.71	0.82	0.31	0.72	f6 V	3.77	1.37	810
463.	3 54 37.5	56 50 58	14.96	3.27	2.52	1.60	0.82	0.35	0.54	a			
464.	3 54 38.6	56 24 09	14.66	3.57	2.76	1.92	0.93	0.32	0.84	f2 IV	2.20	2.03	1220
465.	3 54 39.0	57 12 04	11.28	2.61	1.83	0.92	0.43	0.17	0.32	a1.5 V	0.93	0.89	780
466.	3 54 39.0	57 23 55	14.74	3.07	2.17	1.29	0.65	0.23	0.49	a0.5 IV	0.35	1.82	3280
467.	3 54 39.7	56 29 38	14.43	2.49	1.96	1.37	0.73	0.26	0.66	b4 IV	–1.45	2.46	4820
468.	3 54 39.7	56 23 16	13.49	3.29	2.56	1.79	0.87	0.32	0.78	f2 V	3.10	1.74	540

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
469.	3 54 40.7	56 23 54	14.90	3.67	3.11	2.16	0.98	0.39	0.90	g8 V	5.45	1.44	400
470.	3 54 40.8	56 41 28	15.66	2.49	1.96	1.31	0.67	0.25	0.58	b6 V	–0.60	2.15	6630
471.	3 54 41.2	57 30 12	14.69	3.25	2.40	1.57	0.74	0.28	0.65	f1 III	1.52	1.44	2210
472.	3 54 41.3	57 29 06	13.70	3.28	2.34	1.37	0.66	0.24	0.55	a3 III	0.25	1.71	2220
473.	3 54 42.1	56 39 09	15.34	3.32:	2.51:	1.76	0.87	0.32	0.75	f2 V	3.10	1.74	1260
474.	3 54 42.4	57 14 55	12.95	–	5.52:	3.87	1.52	0.71	1.42	k6 III	–0.20	1.79	1870
475.	3 54 43.3	56 25 18	15.45	3.60?	2.58	1.57	0.80	0.29	0.64	a1.5 IV	0.50	2.33	3330
476.	3 54 44.0	57 28 54	13.67	2.81	2.24	1.61	0.75	0.28	0.69	f7 V	4.32	1.00	470
477.	3 54 45.7	56 46 48	14.06	4.91:	4.13:	2.93	1.30	0.50	1.17	g9 III	0.70	2.21	1700
478.	3 54 45.8	57 23 39	14.92	3.27	2.49	1.81	0.86	0.31	0.80	f6 V	3.77	1.54	840
479.	3 54 45.8	57 31 48	11.17	2.59	1.84	1.00	0.49	0.17	0.39	b9.5 V	0.55	1.28	740
480.	3 54 46.3	56 50 14	15.28	3.54:	2.58	1.63	0.75	0.26	0.68	a7 III	0.80	1.83	3390
481.	3 54 46.8	56 59 12	15.31	3.30:	2.46	1.64	0.82	0.31	0.68	f1 V	2.80	1.68	1460:
482.	3 54 47.8	57 33 32	15.45	3.53:	2.51:	1.52:	0.79	0.27	0.68:	a1 III	0.00	2.33	4210:
483.	3 54 48.3	57 10 36	11.93	4.34	3.65	2.54	1.09	0.43	0.98	g8.5 III	0.68	1.41	930
484.	3 54 48.4	56 34 53	14.68	2.73	2.08	1.48	0.77	0.30	0.68	b5 IV	–1.15	2.60	4410
485.	3 54 48.5	57 22 21	14.28	3.31	2.49	1.67	0.79	0.29	0.71	f2 III	1.30	1.56	1920
486.	3 54 48.6	56 53 41	14.96	3.56:	2.52	1.49	0.73	0.28	0.60	a3 IV	1.15	1.95	2350:
487.	3 54 48.8	57 15 09	12.46	2.87	2.30	1.65	0.76	0.30	0.70	f8 V	4.10	1.07	290
488.	3 54 49.2	57 19 01	13.80	3.06	2.17	1.26	0.63	0.23	0.51	a0.5 IV	0.35	1.75	2200
489.	3 54 49.3	56 24 03	13.91	3.79	3.13	2.16	1.01	0.38	0.91	g5.5 V	4.67	1.66	330
490.	3 54 49.9	56 49 26	15.00	3.13	2.49	1.77	0.88	0.36	0.65	f5: V	3.95	1.60	780:
491.	3 54 50.0	56 55 30	14.87	3.15	2.46	1.74	0.83	0.31	0.74	f5 V	3.60	1.44	930
492.	3 54 51.0	56 31 24	12.71	3.20	2.39	1.42	0.67	0.25	0.55	a3 V	1.60	1.72	760
493.	3 54 52.0	57 21 51	13.58	–	3.82	2.69	1.20	0.47	1.09	g8 III	1.30	1.92	1180:
494.	3 54 53.1	57 05 31	14.56	2.94	2.35	1.66	0.79	0.31	0.71	f5 V	3.60	1.29	860
495.	3 54 53.8	57 18 03	13.87	3.34	2.89	2.01	0.84	0.38	0.81	k0 V	6.00	0.78	262
496.	3 54 53.8	56 25 44	10.80	2.75	2.07	1.26	0.58	0.21	0.52	a9 V	2.33	0.94	320
497.	3 54 54.1	56 34 11	13.82	3.27	2.57	1.79	0.86	0.31	0.78	f5 IV	2.60	1.61	840
498*	3 54 55.9	57 26 29	7.74	2.18	1.60	0.89:	0.34	0.14	0.33	a9 V	2.63	0.00	105
499.	3 54 56.6	56 28 34	12.91	3.49	2.62	1.71	0.82	0.29	0.74	f0 III	1.30	1.86	890
500.	3 54 56.7	56 59 50	14.25	–	4.26:	2.98	1.28	0.53	1.15	k0.8 III	0.75	1.88	2100:
501.	3 54 56.9	56 50 11	13.14	2.89	2.31	1.60	0.73	0.27	0.67	f8 V	3.55	0.97	530
502.	3 54 57.3	56 34 47	12.71	3.79	3.04	2.17	1.01	0.38	0.92	g1.5 IV	2.78	1.78	430
503.	3 54 58.6	56 57 18	14.58	3.47	2.77	2.02	0.95	0.35	0.86	f9.5 IV	3.15	1.72	880
504.	3 54 58.8	56 49 16	10.70	2.55	1.83	0.93	0.43	0.16	0.32	a1 V	1.20	0.92	520
505.	3 54 58.9	56 53 12	14.10	4.58:	3.99:	2.77	1.24	0.48	1.12	g9.5 IV:			
506.	3 54 59.4	57 11 09	13.77	3.19	2.22	1.28	0.63	0.23	0.54	a1 III	0.00	1.74	2550
507.	3 54 59.5	56 59 29	14.53	3.16	2.59	1.81	0.83	0.34	0.74	g1 V	4.25	1.16	670
508.	3 54 59.5	57 09 30	13.29	4.34	3.59	2.54	1.13	0.43	1.00	g6 III	0.58	1.74	1560
509.	3 54 59.7	56 58 22	15.15	3.64:	2.77	1.94	0.93	0.34	0.81	f0: V	2.50	2.21	1230:
510.	3 55 01.2	57 17 37	13.45	2.82	2.22	1.56	0.72	0.28	0.67	f6 V	3.77	0.97	550
511.	3 55 01.3	57 10 16	12.45	2.83	2.20	1.52	0.72	0.29	0.65	f5 V	3.95	0.98	320
512.	3 55 02.7	56 45 41	15.38	3.55:	2.60:	1.68	0.83	0.31	0.68	a7 IV	1.60	2.09	2180
513.	3 55 03.5	56 58 15	14.37	2.96	2.26	1.54	0.73	0.27	0.63	f2 V	3.10	1.21	1030
514.	3 55 03.7	56 28 51	14.14	3.38	2.78	1.98	0.93	0.35	0.83	g1 V	4.25	1.52	470
515.	3 55 04.1	56 42 08	14.19	3.09	2.54	1.81	0.85	0.32	0.78	f9.5 V	4.18	1.29	560
516.	3 55 04.2	57 34 05	15.56	3.14?	2.32:	1.41:	0.65	0.22	0.53:	a5 V	1.90	1.54	2660
517.	3 55 05.1	57 02 56	10.47	2.81	2.31	1.57	0.68	0.28	0.63	g2 V	4.30	0.53	134
518.	3 55 05.5	56 56 17	15.59	2.64	2.00	1.28	0.68	0.27	0.58	b7 V	–0.20	2.16	5300
519.	3 55 06.0	56 41 58	12.83	5.31	4.57	3.10	1.29	0.55	1.15	k2.5 III	1.10	1.65	1040
520.	3 55 06.0	56 59 53	13.54	–	4.52:	3.11	1.29	0.57	1.15	k3			
521.	3 55 06.1	57 16 16	14.21	3.20	2.46	1.63	0.75	0.30	0.67	f0 V	2.80	1.48	970
522.	3 55 06.5	56 48 12	14.87	3.57:	2.95	1.99	0.89	0.36	0.83	g8 V	5.00	1.12	560
523.	3 55 08.8	56 45 32	13.12	4.75	4.06	2.78	1.17	0.48	1.05	k1.2 IV	1.94	1.49	870
524.	3 55 08.9	57 19 21	14.29	2.96	2.34	1.70	0.78	0.32	0.72	f7 V	4.32	1.12	590
525.	3 55 09.0	57 03 29	11.27	2.70	1.98	1.04	0.49	0.19	0.35	a1.5 V	1.35	1.11	580
526.	3 55 09.2	56 54 08	14.26	2.97	2.33	1.65	0.79	0.29	0.72	f5 V	3.95	1.25	650
527.	3 55 09.8	56 33 23	12.33	4.28	3.56	2.49	1.12	0.42	1.02	g5.5 III	0.57	1.72	1020
528.	3 55 09.8	56 35 44	14.09	2.40	1.85	1.32	0.69	0.24	0.55	b5 V	–0.70	2.29	3160
529.	3 55 10.0	56 20 40	15.03	3.74?	2.82	2.01:	1.01	0.37	0.93	f4 V	3.78	2.16	660
530.	3 55 11.3	57 00 53	14.13	3.46	2.50	1.53	0.74	0.28	0.61	a6 III	0.62	1.88	2120
531.	3 55 11.9	56 53 00	13.82	3.50	2.98	2.04	0.88	0.37	0.85	g8.5 V	5.46	1.02	293
532.	3 55 12.0	56 54 39	12.56	2.97	2.13	1.17	0.53	0.21	0.44	a3 V	1.60	1.18	900
533.	3 55 12.5	57 26 57	14.87	3.21	2.53	1.80	0.86	0.30	0.80	f6 V	3.77	1.51	830
534.	3 55 12.5	56 46 06	13.66	2.29	1.78	1.23	0.66	0.23	0.55	b3.5 V	–1.00	2.20	3110
535.	3 55 12.8	56 27 39	14.82	3.49	2.50	1.46	0.72	0.24	0.61	a2 V	1.05	1.98	2290
536.	3 55 13.7	57 06 41	12.90	5.03	4.21	2.99	1.28	0.52	1.15	k0.5 III	0.75	1.93	1100
537.	3 55 14.7	57 09 47	13.93	5.13?	4.27:	3.00	1.28	0.52	1.16	k0.8 III	0.75	1.89	1810
538.	3 55 15.6	56 59 55	14.56	3.25	2.73	1.89	0.85	0.34	0.78	g4 V	4.93	1.08	510
539.	3 55 16.3	57 33 22	14.84	3.30	2.48	1.59	0.76	0.27	0.64	a7 V	2.30	1.75	1430
540.	3 55 16.5	56 55 59	15.10	2.93	2.29	1.62	0.77	0.30	0.70	f5 V	3.95	1.18	990
541.	3 55 17.2	57 10 06	14.58	3.29	2.62	1.86	0.88	0.35	0.81	f7 V	3.40	1.57	830
542.	3 55 17.6	57 13 02	14.72	3.05	2.25	1.34	0.65	0.26	0.54	a0: V	0.75	1.84	2660:
543.	3 55 18.3	57 01 26	13.88	3.07	2.19	1.23	0.60	0.23	0.45	a2 V	1.05	1.50	1840
544.	3 55 18.5	57 19 35	14.05	3.27	2.62	1.87	0.88	0.34	0.79	f8 V	3.55	1.55	620
545.	3 55 18.6	57 28 02	15.63	2.89	2.06	1.35	0.65	0.25	0.61	a			
546.	3 55 19.5	56 56 03	12.99	4.73	3.95	2.80	1.23	0.47	1.10	g9 III	0.70	1.92	1180

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
547.	3 55 19.7	56 44 23	13.68	3.02	2.39	1.65	0.78	0.31	0.70	f5 V	3.60	1.25	580
548.	3 55 20.1	57 06 56	14.84	3.22	2.52	1.82	0.88	0.32	0.78	f5 V	3.60	1.65	830
549.	3 55 20.3	57 02 52	11.23	1.99	1.45	0.85	0.45	0.17	0.34	b7 IV	–0.60	1.28	1290
550.	3 55 20.5	57 11 19	15.25	3.20	2.40	1.37	0.68	0.26	0.52	a1.5 V	1.35	1.85	2560
551.	3 55 20.7	56 42 01	12.33	–	5.91:	4.14	1.70	0.73	1.53	k8 III	–0.97	2.36	1540:
552.	3 55 20.8	57 24 34	14.60	2.86	2.05	1.39	0.75	0.27	0.62	b7 III	–1.05	2.41	4440
553.	3 55 21.0	57 01 56	12.82	3.06	2.49	1.76	0.80	0.32	0.74	g1 V	4.25	1.03	320
554.	3 55 21.4	57 15 06	15.38	3.03	2.42	1.55	0.72	0.28	0.65	f0 V	2.80	1.38	1730
555.	3 55 21.5	56 58 46	14.92	3.34	2.80	1.95	0.89	0.35	0.80	g4 V	4.93	1.24	560
556.	3 55 22.3	56 59 56	15.21	3.01	2.38	1.68	0.81	0.32	0.71	f5 V	3.60	1.39	1110
557.	3 55 22.5	56 45 28	14.30	2.95	2.07	1.25	0.69	0.23	0.54	b9 III	–0.55	2.06	3600
558.	3 55 22.5	56 56 33	12.67	2.97	2.27	1.53	0.72	0.27	0.64	f2 V	3.10	1.18	480
559.	3 55 24.2	56 28 20	14.21	3.06	2.41	1.65	0.80	0.28	0.73	f5 V	3.60	1.35	710
560.*	3 55 24.4	56 30 17	8.27	3.62	2.95	1.99	0.86	0.34	0.79				
561.	3 55 24.6	57 23 35	12.08	4.05	3.37	2.37	1.03	0.40	0.95	g6 III	1.23	1.42	760
562.	3 55 25.0	56 31 16	13.15	4.10	3.45	2.35	1.04	0.40	0.97	g9 IV	3.28	1.49	470
563.	3 55 25.7	57 28 06	13.39	5.32:	4.55	3.19	1.37	0.55	1.27	k1 III	0.75	2.17	1240
564.	3 55 25.9	57 24 49	14.54	3.28	2.61	1.86	0.89	0.34	0.82	f6 V	3.77	1.64	670
565.	3 55 27.2	57 15 22	14.24	3.08	2.60	1.84	0.82	0.35	0.80	g1: V	4.25	1.10	600:
566.	3 55 27.3	57 13 30	10.77	2.69	2.07	1.41	0.65	0.25	0.59	f4 V	3.43	0.80	200
567.	3 55 27.5	56 59 24	13.48	2.80	2.15	1.48	0.71	0.27	0.62	f5 V	3.60	1.00	600
568.	3 55 27.7	57 07 10	13.50	3.02	2.40	1.71	0.81	0.31	0.72	f6 V	3.77	1.31	480
569.	3 55 27.8	56 43 11	13.73	4.81	4.08	2.86	1.24	0.48	1.10	k0 III	0.75	1.88	1670
570.	3 55 27.8	57 10 35	14.07	2.92	2.40	1.71	0.80	0.31	0.73	f7 V	3.93	1.24	600
571.	3 55 28.0	56 32 02	14.80	3.24	2.51	1.76	0.87	0.30	0.77	f2 V	3.10	1.74	980
572.*	3 55 28.3	56 20 04	10.65	2.79	2.21	1.51	0.71	0.27	0.66	f5 V	3.60	0.98	164
573.	3 55 28.6	57 12 05	12.52	–	5.71	4.02	1.65	0.70	1.55	m2 III	–1.05	1.95	2100
574.	3 55 29.4	56 21 30	12.15	–	5.42	3.83	1.65	0.65	1.43	k1.8 II	–2.33	2.66	2310:
575.	3 55 29.7	57 23 34	14.20	4.38:	3.79:	2.64	1.17	0.48	1.04	k0.5 IV	4.10	1.90	440:
576.	3 55 30.1	56 57 06	14.05	4.66:	3.86	2.70:	1.20	0.49	1.04	k0.5 IV	3.33	1.91	580:
577.	3 55 30.1	57 03 22	14.44	3.05	2.18	1.29	0.65	0.24	0.51	a0 V	0.75	1.85	2330
578.	3 55 30.2	56 55 24	14.89	3.38	2.45	1.39	0.67	0.27	0.56	a3 III	–0.20	1.76	4620
579.	3 55 30.2	57 19 42	15.04	3.29	2.41	1.53	0.70	0.28	0.64	f0 III	1.30	1.42	2900
580.	3 55 30.2	56 20 32	14.49	3.25:	2.61	1.75	0.87	0.30	0.82	f2 V	3.10	1.75	850
581.	3 55 30.5	57 17 54	15.49	2.94:	2.17	1.26	0.61	0.24	0.48	a0.5 V	0.77	1.64	4120
582.	3 55 31.3	57 33 42	11.90	2.70	1.93	1.06	0.51	0.19	0.40	a0.5 V	0.77	1.29	920
583.	3 55 31.4	57 06 04	13.56	2.28	1.78	1.21	0.64	0.24	0.53	b3.5 V	–1.00	2.13	3060
584.	3 55 32.5	57 05 39	13.56	2.90	2.38	1.68	0.78	0.30	0.71	f9 V	4.15	1.08	460
585.	3 55 33.1	57 09 29	14.62	3.35	2.46	1.52	0.72	0.28	0.64	a8 III	0.97	1.65	2510
586.	3 55 33.4	57 03 55	14.99	2.84	2.27	1.63	0.78	0.29	0.69	f7 V	3.93	1.15	960
587.	3 55 33.5	56 44 46	14.90	2.93	2.35	1.65	0.76	0.28	0.72	f7 V	3.93	1.10	940
588.	3 55 34.0	56 35 09	13.38	3.23	2.50	1.74	0.84	0.31	0.77	f2 V	3.10	1.63	540
589.	3 55 34.7	57 07 36	14.88	2.33	1.73	1.17	0.62	0.25	0.58	b5: V	–0.30	2.02	4270:
590.	3 55 34.7	57 25 12	12.60	3.08	2.30	1.40	0.63	0.24	0.53	a5 V	1.90	1.44	710
591.	3 55 35.4	57 09 08	15.31	3.60:	2.54	1.48	0.71	0.28	0.60	a3 III	0.25	1.90	4270
592.	3 55 35.8	57 06 14	13.50	4.51	3.86	2.69	1.18	0.45	1.07	g8.5 III	0.68	1.77	1630
593.	3 55 37.0	56 33 48	14.42	4.24:	3.58	2.50	1.14	0.43	1.03	g6 IV	1.87	1.91	1340
594.	3 55 37.2	56 44 41	14.06	3.42	2.53	1.65	0.78	0.30	0.67	f0 III	1.30	1.72	1620
595.	3 55 37.4	57 29 00	14.24	4.62:	3.76	2.69	1.19	0.45	1.09	g6 III	–0.07	1.93	3000
596.	3 55 37.5	57 08 26	13.13	4.47	3.74	2.67	1.17	0.45	1.05	g8 III	0.65	1.78	1380
597.	3 55 37.6	56 39 10	15.15	3.30:	2.36	1.45	0.71	0.25	0.55	a4 V	2.05	1.78	1840
598.	3 55 38.4	57 34 56	13.18	2.98	2.38	1.74	0.81	0.30	0.77	f8 V	4.10	1.26	370
599.	3 55 38.6	56 24 15	15.06	3.46	2.79:	1.93	0.93	0.35	0.82	f8 IV	2.45	1.74	1490
600.	3 55 39.3	57 34 12	14.33	3.98:	3.37	2.36	1.02	0.41	1.00	g9.5 V	5.49	1.53	290
601.	3 55 39.5	56 28 31	14.44	3.11	2.54	1.74	0.83	0.30	0.76	f6: V	4.13	1.38	610:
602.	3 55 39.7	56 49 11	15.06	3.45	2.58	1.76	0.85	0.32	0.72	f2 III	1.75	1.77	2040
603.	3 55 39.9	57 26 07	14.05	4.37	3.61	2.58	1.17	0.45	1.07	g8 IV	3.25	2.07	560
604.	3 55 40.0	57 07 38	12.09	3.17	2.57	1.86	0.83	0.35	0.79	g0 V	4.20	1.23	216
605.	3 55 40.0	57 22 53	14.74	2.96	2.31	1.63	0.77	0.28	0.67	f5 V	3.60	1.22	960
606.	3 55 40.4	56 42 21	12.08	1.61	1.31	0.99	0.55	0.20	0.44	b1 V	–2.85	1.93	3980
607.	3 55 40.5	56 53 32	13.02	2.99	2.17	1.26	0.58	0.23	0.47	a7 III	0.80	1.20	1600
608.	3 55 40.8	57 05 29	13.79	4.32	3.56	2.58	1.15	0.43	1.04	g5 III	0.55	1.87	1870
609.	3 55 40.8	57 16 01	13.87	4.57	3.74	2.67	1.21	0.47	1.08	g5.5 III	0.57	2.06	1780
610.	3 55 41.5	56 38 47	14.45	3.63	2.80	1.74	0.85	0.31	0.67	a3 V	1.60	2.40	1230
611.	3 55 42.4	57 15 09	14.00	3.10	2.32	1.51	0.70	0.27	0.62	f1 III	1.52	1.29	1730
612.	3 55 42.8	56 27 48	12.55	–	4.72	3.22	1.32	0.57	1.20	k3.2 III	0.88	1.60	1040
613.	3 55 42.9	56 45 16	14.19	3.15	2.46	1.75	0.83	0.32	0.73	f5 V	3.60	1.44	680
614.	3 55 43.1	56 20 41	15.18	3.31?	2.60:	1.87:	0.88	0.32	0.83	f7 V	3.93	1.56	870
615.	3 55 43.4	57 03 13	11.70	3.91	3.25	2.30	1.02	0.40	0.93	g7 IV	3.17	1.57	248
616.	3 55 44.0	56 46 02	12.82	3.23	2.62	1.81	0.81	0.32	0.76	g2 IV	2.80	0.98	640
617.	3 55 44.1	56 43 54	14.27	2.86	2.23	1.50	0.73	0.26	0.64	f3 V	3.27	1.15	930
618.	3 55 44.2	57 06 02	14.29	2.97	2.34	2.00	0.78	0.35	0.66				
619.	3 55 44.3	57 06 32	13.48	2.80	2.16	1.50	0.71	0.26	0.64	f4 V	3.43	1.06	630
620.	3 55 45.0	56 39 55	15.14	3.73:	2.71:	1.85:	0.95	0.42	0.77	a			
621.	3 55 45.1	57 20 26	14.29	3.06	2.43	1.68	0.76	0.30	0.69	f9.5 IV	2.64	0.98	1360
622.	3 55 45.2	57 29 56	14.79	2.82	2.03	1.35	0.72	0.27	0.66	b7 III	–1.05	2.29	5110
623.	3 55 46.1	57 11 16	14.13	2.88	2.00	1.14	0.57	0.21	0.47	a0 III	–0.10	1.56	3410
624.	3 55 46.2	56 52 59	13.39	3.05	2.51	1.76	0.81	0.31	0.75	f9.5 V	4.18	1.16	410

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
625*	3 55 46.2	56 55 08	6.89	2.44	1.67	0.85:	0.36	0.14	0.31	a8 III			
626.	3 55 46.3	57 26 43	14.34	3.11	2.65	1.92	0.84	0.33	0.82	g2 V	4.80	1.12	480
627.	3 55 47.1	57 13 30	11.68	2.88	2.40	1.64	0.70	0.29	0.68	g4 V	4.93	0.50	178
628.	3 55 47.6	56 58 25	13.48	4.90	4.21	2.89	1.18	0.53	1.04	k3.2 IV	3.39	1.56	510
629.	3 55 47.8	57 18 21	15.06	3.18:	2.68:	1.88	0.86	0.35	0.77	g2 V	4.80	1.17	660
630.	3 55 47.9	56 33 07	15.44	3.68?	2.74:	1.64	0.79	0.27	0.68	a3 IV	1.15	2.19	2630
631.	3 55 48.0	57 12 21	15.55	–	2.13	1.18	0.57	0.21	0.47:	a1.5 V	0.93	1.45	4310
632.	3 55 48.4	56 42 03	14.70	3.25	2.29	1.31	0.65	0.23	0.54	a2 III	0.15	1.74	3640
633.	3 55 51.4	56 19 05	15.74	2.51:	1.96	1.33:	0.76:	0.22:	0.60:	b5 V	–0.70	2.54	6010
634.	3 55 52.5	56 56 12	13.89	3.26	2.30	1.36	0.67	0.25	0.56	a1 III	0.00	1.88	2520
635.	3 55 52.7	57 21 29	14.93	–	3.48:	2.50:	1.15	0.44	1.07	g5.5 IV	3.04	2.11	900
636.	3 55 53.5	56 40 15	14.85	3.16	2.47	1.73	0.84	0.31	0.74	f4 V	3.43	1.53	950
637.	3 55 53.8	56 42 51	15.73	2.78	2.06	1.24:	0.65	0.27	0.45	b8.5 V	0.55	1.95	4420
638.	3 55 53.8	57 04 39	13.93	2.81	2.17	1.52	0.71	0.27	0.64	f5 V	3.60	0.99	740
639.	3 55 53.8	56 21 06	14.98	3.52:	2.82	1.97	0.96	0.40	0.88	f6 V	3.25	1.93	910
640.	3 55 54.7	56 38 09	14.85	3.30	2.55	1.75	0.86	0.32	0.77	f2 V	3.10	1.69	1030
641.	3 55 54.9	56 20 29	13.76	2.26	1.80	1.29	0.70	0.24	0.57	b2.5 V	–1.05	2.41	3010
642.	3 55 56.2	56 59 22	14.84	2.99	2.25	1.54	0.73	0.26	0.69	f2 V	3.10	1.21	1280
643.	3 55 57.0	57 02 26	11.49	2.40	1.69	0.87	0.42	0.16	0.32	a0 V	0.75	0.95	910
644.	3 55 57.1	57 09 37	13.04	5.44	4.63	3.21	1.32	0.53	1.20	k1.8 III	–0.22	1.70	2060
645.	3 55 58.1	57 26 48	15.02	–	2.52	1.52	0.72	0.26	0.62	a4 V	1.75	1.84	1930
646.	3 55 58.8	56 19 51	15.36	3.21?	2.59	1.74:	0.83	0.33	0.75	f4 V	3.43	1.48	1230:
647.	3 55 59.1	57 13 11	15.85	2.82:	2.07	1.16	0.55	0.19	0.50:	a1 V	1.55	1.32	3960
648.	3 56 01.3	56 28 09	10.79	3.34	2.40	1.44	0.69	0.25	0.60	a6 III	0.62	1.67	500
649.	3 56 01.8	57 27 47	13.51	3.15	2.61	1.86	0.81	0.33	0.79	g3 V	4.87	0.97	340
650*	3 56 02.2	56 54 18	9.34	2.77	1.92	0.99	0.45	0.18	0.35	a2 V	1.05	0.94	295
651.	3 56 02.4	57 20 31	15.16	3.25	2.58	1.86	0.88	0.33	0.81	f8 V	4.10	1.49	820
652.	3 56 02.6	56 35 03	12.46	4.90	4.09	2.83	1.22	0.47	1.11	k0.5 III	0.75	1.68	1020
653.	3 56 02.7	56 37 14	14.73	3.14	2.53	1.79	0.86	0.31	0.76	f5 V	3.60	1.58	810
654.	3 56 03.0	57 11 57	13.79	3.98	3.27	2.32	1.01	0.41	0.93	g5 III	1.20	1.38	1740
655.	3 56 03.2	57 30 10	14.72	3.14	2.16	1.30	0.64	0.25	0.58	a0.5: III	–0.05	1.79	3930:
656.	3 56 03.6	56 20 59	13.07	3.37	2.57	1.72	0.81	0.29	0.73	f1 III	1.52	1.73	920
657.	3 56 03.7	57 13 55	14.61	3.83:	3.33	2.31	0.95	0.45	0.88	k1.2 V	6.35	1.09	270
658.	3 56 05.5	56 28 19	13.94	3.19	2.49	1.70	0.85	0.30	0.70	f1 V	2.80	1.77	750
659.	3 56 05.5	56 56 11	12.81	4.10	3.43	2.38	1.04	0.43	0.96	k0 IV	4.00	1.44	297
660.	3 56 05.9	56 33 25	14.44	3.42:	2.80	1.97	0.97	0.33	0.86	f8 IV	3.00	1.91	810
661.	3 56 06.1	57 24 36	15.59	2.87:	2.07	1.20	0.54	0.23	0.52	a8: III	0.97	0.94	5470:
662.	3 56 07.4	56 46 52	14.94	3.47	2.45	1.43	0.72	0.28	0.55	a2 III	0.15	1.98	3640
663.	3 56 07.9	56 30 21	13.40	5.17:	4.41	3.05	1.28	0.54	1.17	k2 IV	1.75	1.75	950:
664.	3 56 07.9	56 32 35	15.01	3.23	2.58	1.76	0.89	0.31	0.76	f3 V	3.27	1.77	980
665.	3 56 08.2	56 52 01	13.09	4.70	3.89	2.72	1.19	0.46	1.07	g9.5 III	0.73	1.73	1340
666.	3 56 08.4	56 32 56	12.82	4.55	3.81	2.67	1.20	0.45	1.09	g7 III	0.62	1.94	1130
667.	3 56 08.4	57 08 54	13.99	4.55	3.98	2.75	1.17	0.47	1.05	k0 III	0.75	1.63	2100
668.	3 56 08.5	57 11 25	14.85	3.13	2.20	1.27	0.62	0.22	0.48	a1.5 III	0.08	1.66	4180
669.	3 56 08.6	56 33 31	15.34	3.50:	2.67	1.58	0.79	0.28	0.62	a3 V	1.60	2.16	2070
670.	3 56 09.4	56 21 17	12.73	3.54	2.90	2.04	0.93	0.35	0.88	g3 IV	3.37	1.42	390
671.	3 56 09.6	57 35 08	11.11	–	5.60	4.00	1.61	0.70	1.50	m1 III	–0.70	1.94	940
672.	3 56 10.3	57 00 41	14.74	3.09	2.51	1.79	0.82	0.29	0.76	g0 V	4.20	1.18	740
673.	3 56 10.3	57 29 08	14.64	3.35	2.79	1.93	0.88	0.33	0.84	g3 V	4.87	1.24	510
674.	3 56 10.6	56 22 06	15.02	3.57?	2.85	1.88	0.92	0.32	0.81	a8 V	2.47	2.31	1120
675.	3 56 11.3	57 14 04	11.81	2.69	1.95	1.04	0.46	0.17	0.36	a3 V	1.60	0.92	720
676.	3 56 11.6	57 05 13	10.49	2.72	2.01	1.19	0.53	0.21	0.44	a8 V	2.17	0.84	310
677.	3 56 12.3	57 26 57	13.99	4.91:	4.13:	2.83	1.20	0.49	1.11	k1 IV	1.50	1.59	1510
678.	3 56 13.1	57 19 27	15.37	3.02	2.02	1.19	0.63	0.25	0.55	b8.5 V	0.15	1.86	4690
679.	3 56 14.0	57 13 50	12.68	3.53	2.95	2.08	0.91	0.36	0.85	g7 V	4.35	1.18	268
680.	3 56 14.9	57 21 00	15.03	3.10	2.33	1.65	0.80	0.29	0.71	f4 V	3.43	1.38	1110
681.	3 56 15.2	57 00 27	14.62	3.35	2.51	1.50	0.71	0.27	0.59	a4 V	1.75	1.82	1630
682.	3 56 15.4	56 48 55	15.26	3.03	2.44	1.71	0.80	0.29	0.72	f8 V	4.10	1.20	980
683.	3 56 15.9	56 43 57	14.61	3.26	2.63	1.85	0.83	0.32	0.77	g1.5 IV	2.78	1.08	1420
684.	3 56 16.4	56 29 17	14.36	3.77	3.07	2.19	1.04	0.38	0.95	g0 IV	2.70	2.03	840
685.	3 56 16.6	57 16 25	15.04	3.41	2.43	1.55	0.72	0.28	0.62	f0 III	0.90	1.52	3340
686.	3 56 17.0	57 03 22	14.34	3.28	2.75	1.90	0.85	0.33	0.77	g5 V	5.00	1.06	450
687.	3 56 17.2	57 05 49	15.61	2.79	2.07	1.25	0.66	0.27	0.40	b8.5 V	0.15	2.00	4920
688.	3 56 18.3	56 32 44	13.36	4.98	4.19	2.93	1.32	0.50	1.19	g9.5 III	0.73	2.21	1220
689.	3 56 18.4	57 11 28	15.31	3.22	2.35	1.41	0.66	0.24	0.54	a4 V	1.75	1.62	2440
690.	3 56 18.7	57 25 31	13.84	2.86	2.27	1.60	0.75	0.28	0.68	f6 V	3.77	1.09	620
691.	3 56 19.0	56 44 55	12.65	2.79	2.20	1.50	0.70	0.27	0.64	f4 V	3.43	1.00	440
692.	3 56 20.4	57 06 57	14.62	3.68:	2.70	1.89	0.83	0.34	0.76	f6: III			
693.	3 56 21.6	57 33 36	13.47	2.93	2.32	1.67	0.76	0.28	0.72	f8 V	4.10	1.06	460
694.	3 56 21.7	57 21 47	14.69	3.25	2.36	1.40	0.63	0.23	0.57	a5 III	0.90	1.50	2870
695.	3 56 22.2	57 01 53	14.74	3.29	2.50	1.75	0.82	0.30	0.76	f4 III	1.98	1.53	1760
696*	3 56 22.4	57 15 26	12.13	3.93	3.16:	2.03	0.96	0.37	0.90	f1 III	0.15	2.42	820:
697.	3 56 22.8	56 54 17	11.48	2.73	2.01	1.09	0.48	0.19	0.38	a3 V	1.60	0.99	600
698.	3 56 23.8	57 28 53	12.12	4.28	3.55	2.54	1.10	0.41	0.99	g7 III	0.62	1.57	970
699.	3 56 23.9	57 09 06	14.96	3.02	2.43	1.72	0.81	0.32	0.74	f8 V	4.10	1.24	840
700.	3 56 23.9	57 24 43	15.13	2.00	1.54	1.01	0.52	0.23	0.47	b4 V	–0.50	1.69	6140
701.	3 56 24.2	57 00 04	15.23	3.28	2.33	1.33	0.66	0.24	0.56	a2 III	0.15	1.78	4580
702.	3 56 24.3	57 03 56	14.02	2.88	2.07	1.17	0.58	0.21	0.45	a0 V	0.75	1.56	2200

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
703.	3 56 24.5	56 35 47	14.23	3.06	2.44	1.74	0.81	0.30	0.74	f8 V	4.10	1.23	600
704.	3 56 24.5	56 42 49	12.61	1.91	1.52	1.12	0.61	0.22	0.48	b2 V	–2.60	2.08	4220
705.	3 56 24.7	56 59 31	15.40	3.50:	2.57	1.65	0.75	0.29	0.68	a7 IV	1.60	1.78	2540
706.	3 56 24.7	57 10 49	13.46	4.44	3.66	2.58	1.14	0.43	1.04	g7 III	0.62	1.72	1680
707.	3 56 24.8	56 57 45	13.66	4.50	3.70	2.60	1.14	0.43	1.03	g8 III	0.65	1.67	1860
708.	3 56 25.3	57 22 39	13.66	4.61	3.73	2.67	1.17	0.44	1.09	g7 III	0.62	1.84	1750
709.	3 56 26.5	57 07 46	15.46	3.45:	2.41	1.58	0.75	0.29	0.62	f0 IV	2.10	1.55	2310:
710.	3 56 28.3	57 35 09	12.84	3.15	2.42	1.72	0.81	0.30	0.75	f6 V	3.77	1.33	350
711.	3 56 28.6	56 43 09	12.88	2.03	1.60	1.18	0.65	0.23	0.52	b2 V	–2.60	2.24	4460
712.	3 56 28.9	57 00 47	15.55	2.89:	2.13:	1.28	0.64	0.23	0.56	b9 V	0.35	1.87	4640
713.	3 56 28.9	57 12 52	15.64	3.38:	2.52	1.53	0.73	0.28	0.66	a8 III	0.97	1.66	4000
714.	3 56 29.1	56 32 53	14.25	2.35	1.82	1.27	0.68	0.21	0.57	b3.5 V	–1.00	2.28	3940
715.	3 56 29.2	57 03 51	13.19	–	4.64	3.15	1.28	0.56	1.14	k3.5 III	0.75	1.35	1660
716.	3 56 29.3	57 24 32	12.03	4.60	3.88	2.67	1.13	0.45	1.03	k0 III	0.75	1.46	920
717.	3 56 29.3	57 35 35	14.92	3.25:	2.40:	1.52	0.70	0.25	0.64	f0 III	1.30	1.40	2780:
718.	3 56 29.7	56 55 15	15.16	2.28	1.75	1.10	0.57	0.19	0.50	b6 V	–0.10	1.80	4910
719.	3 56 29.9	56 41 15	15.42	3.21:	2.32	1.35	0.67	0.24	0.56	a1.5 V	0.93	1.84	3410
720.	3 56 30.1	57 06 07	14.64	3.05	2.49	1.78	0.82	0.31	0.74	f9.5 V	4.18	1.19	720
721.	3 56 30.1	57 07 33	13.46	2.91	2.25	1.59	0.75	0.28	0.69	f5 V	3.60	1.16	550
722.	3 56 30.4	56 53 21	12.57	–	5.65	3.92	1.57	0.71	1.42	k7 III	–0.40	1.91	1630:
723.	3 56 30.4	56 56 27	14.44	2.99	2.28	1.48	0.72	0.26	0.63	f1 V	2.80	1.30	1170
724.	3 56 30.8	57 16 53	15.27	3.08	2.34	1.71	0.79	0.28	0.77	f8: V	4.10	1.14	1010:
725.	3 56 30.8	57 17 45	14.85	3.22	2.34	1.38	0.65	0.23	0.53	a3 V	1.60	1.63	2110
726.	3 56 31.3	56 50 46	12.78	3.01	2.44	1.73	0.80	0.30	0.73	f9 V	4.15	1.14	310
727.	3 56 31.8	57 25 38	12.74	2.73	2.00	1.16	0.53	0.20	0.48	a8 IV	1.77	0.87	1050
728.	3 56 32.0	57 30 52	15.18	3.42:	2.56:	1.75	0.85	0.32	0.78	f3 IV	2.33	1.66	1730:
729.	3 56 32.4	57 14 17	14.63	2.91	2.27	1.63	0.75	0.28	0.69	f6 V	3.77	1.11	890
730.	3 56 33.3	57 31 24	15.44	–	2.38	1.60	0.81	0.27	0.66	f1: V	2.80	1.65	1580:
731.	3 56 33.4	56 43 10	13.32	3.28	2.26	1.35	0.69	0.25	0.57	a0.5 III	–0.05	1.97	1900
732.	3 56 33.6	56 48 14	13.70	3.29	2.68	1.86	0.83	0.33	0.79	g3 V	4.87	1.05	360
733.	3 56 33.6	57 17 21	14.07	3.37	2.44	1.53	0.73	0.25	0.65	a9 III	0.73	1.63	2200
734.	3 56 34.9	57 35 29	14.86	3.54:	2.86	2.03	0.90	0.35	0.85	g1 IV	3.25	1.41	1100
735.	3 56 35.1	57 06 07	14.55	3.41	2.39	1.44	0.70	0.25	0.57	a4 III	–0.10	1.82	3670
736.	3 56 35.2	57 27 47	15.49	3.29:	2.44:	1.45	0.66	0.24	0.53	a4 V	1.75	1.62	2650
737.	3 56 35.3	57 01 35	14.14	1.91	1.48	0.99	0.52	0.19	0.43	b3.5 V	–1.00	1.67	4960
738.	3 56 35.6	56 59 58	13.89	2.98	2.28	1.58	0.74	0.28	0.66	f4 V	3.43	1.16	720
739.	3 56 35.8	57 15 34	13.37	–	3.70	2.64	1.18	0.44	1.06	g6 III	0.58	1.95	1480:
740.	3 56 35.9	56 23 20	15.19	3.55:	2.55	1.61	0.81	0.30	0.68	a0.5 IV	0.35	2.42	3040
741.	3 56 36.5	56 57 40	15.78	2.65:	1.99	1.17	0.59	0.20	0.48	b8.5 V	0.85	1.68	4460
742.	3 56 38.8	57 26 16	15.25	3.36:	2.38	1.40	0.66	0.26	0.50	a3 IV	0.70	1.71	3700:
743.	3 56 39.2	57 01 56	15.18	3.22:	2.55	1.68	0.80	0.31	0.71	f0 V	2.80	1.68	1380
744.	3 56 39.4	56 57 26	12.65	4.48	3.71	2.64	1.15	0.44	1.02	g8 III	0.65	1.69	1150
745.	3 56 40.5	57 22 59	10.68	2.90	2.08	1.25	0.58	0.23	0.50	f0 III	1.30	0.95	480
746*	3 56 40.9	57 15 29	10.82	1.38	1.13	0.90	0.52	0.18	0.41	o8 V	–4.10	1.91	3990
747.	3 56 41.8	56 45 44	12.99	4.29	3.65	2.45	1.03	0.44	0.95	k1 IV	3.35	1.20	490
748.	3 56 41.9	57 01 27	14.79	2.45	1.72	1.02	0.52	0.17	0.45	b8 V	–0.05	1.49	4680
749.	3 56 42.7	57 14 42	15.17	2.77	2.11	1.25	0.67	0.23	0.50	b9 V	0.35	1.98	3680
750.	3 56 42.8	56 25 28	14.95	3.27	2.65	1.92	0.93	0.32	0.86	f8 V	4.10	1.71	680
751.	3 56 43.1	57 00 53	12.06	2.51	1.99	1.40	0.65	0.25	0.59	f6 V	3.77	0.71	330
752.	3 56 43.4	56 31 57	14.61	3.37	2.71	1.91	0.92	0.35	0.77	f7 IV	2.87	1.75	1000
753.	3 56 43.5	56 30 54	11.22	–	4.73	3.25	1.34	0.56	1.19	k3.2 III	0.88	1.65	550
754.	3 56 43.5	56 56 37	15.01	3.31	2.39	1.43	0.67	0.23	0.53	a4 V	1.75	1.65	2100
755.	3 56 44.0	57 23 56	14.77	3.14	2.49	1.77	0.81	0.32	0.74	f8 IV	3.00	1.30	1240
756.	3 56 44.4	57 24 44	15.00	3.22	2.61	1.88	0.89	0.38	0.74	f8 V	4.10	1.55	740
757.	3 56 44.8	56 36 52	15.06	3.52?	2.91:	1.98	0.90	0.33	0.84	g1-g5			
758.	3 56 44.9	56 30 14	12.82	3.01	2.33	1.56	0.75	0.26	0.67	f2 V	3.10	1.29	480
759.	3 56 44.9	56 50 43	12.48	–	5.20	3.65	1.49	0.64	1.33	k3.8 III	–0.22	1.95	1420
760.	3 56 45.0	57 35 57	13.19	3.09	2.24	1.27	0.59	0.21	0.48	a3 V	1.60	1.39	1100
761.	3 56 45.4	56 31 06	12.71	3.19	2.28	1.34	0.61	0.19	0.69	a-f			
762.	3 56 45.6	57 00 36	14.90	3.10	2.33	1.49	0.70	0.27	0.59	a8 V	2.47	1.45	1570
763.	3 56 45.8	56 24 03	15.02	4.01?	2.95	1.74	0.88	0.30	0.75	a3:			
764.	3 56 46.2	57 28 20	14.34	1.96	1.46	1.10	0.43	0.28	0.58				
765.	3 56 46.4	57 17 27	10.91	2.74	2.00	1.22	0.56	0.21	0.49	f0 IV	2.10	0.80	400
766.	3 56 46.6	57 34 28	12.85	4.61	3.93	2.78	1.18	0.47	1.10	g9.5 III	0.73	1.71	1210
767.	3 56 47.4	57 04 12	14.74	3.36	2.49	1.56	0.71	0.27	0.60	a5 V	1.90	1.75	1650
768.	3 56 47.4	57 27 59	13.87	3.10	2.50	1.79	0.82	0.32	0.76	g0 V	4.20	1.16	500
769.	3 56 47.6	57 13 27	14.59	2.97	2.42	1.69	0.81	0.29	0.71	f6 V	3.77	1.33	790
770.	3 56 48.2	57 16 48	13.64	5.02:	4.21	2.90	1.22	0.50	1.10	k1 III	0.75	1.60	1810
771.	3 56 48.6	57 32 56	15.58	2.89	2.03	1.21	0.61	0.20	0.48	a0 V	0.75	1.66	4300
772.	3 56 48.7	57 11 49	14.99	3.50	2.85	2.07	0.88	0.39	0.87	g8: V	5.90	1.01	410:
773.	3 56 49.0	57 08 58	15.12	3.21	2.43	1.69	0.82	0.30	0.73	f2 V	3.10	1.56	1230
774.	3 56 50.2	57 31 35	13.20	–	5.33:	3.77	1.49	0.70	1.38	k5 III	0.00	1.72	1970
775.	3 56 50.5	56 57 25	15.19	1.93	1.50	0.97	0.52	0.18	0.43	b4 V	–0.50	1.68	6330
776.	3 56 50.7	57 25 20	13.88	3.04	2.38	1.69	0.77	0.31	0.69	f7 IV	2.87	1.19	920
777.	3 56 51.1	57 28 41	12.31	3.23	2.77	1.91	0.78	0.37	0.81	k0 V	6.00	0.55	142
778.	3 56 51.8	57 11 32	13.18	5.35	4.52	3.13	1.31	0.51	1.17	k1.5 III	0.60	1.83	1420
779.	3 56 51.9	56 59 53	15.47	3.54:	2.47	1.55	0.71	0.27	0.66	a9 III	1.13	1.55	3620:
780.	3 56 52.0	56 53 43	12.88	3.01	2.34	1.62	0.75	0.28	0.69	f6 IV	2.73	1.12	640

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
781.	3 56 52.4	56 55 44	14.21	3.35	2.49	1.63	0.79	0.29	0.67	f1 III	1.52	1.63	1620
782.	3 56 52.5	57 16 56	15.62	2.36:	1.76	1.06	0.58	0.21	0.50	b7 V	–0.20	1.79	6400
783.	3 56 52.7	57 10 05	13.78	2.98	2.41	1.71	0.77	0.30	0.70	g0 V	4.20	1.00	520
784.	3 56 53.3	56 25 39	13.51	3.62	3.16	2.09	0.84	0.42	0.83	k1.5 V	6.40	0.65	196
785.	3 56 53.4	56 38 17	14.49	2.55	1.94	1.31	0.70	0.25	0.59	b6 V	–0.60	2.28	3660
786.	3 56 53.8	56 40 49	14.43	3.36	2.38	1.39	0.71	0.25	0.58	a2 III	0.15	1.95	2920
787.	3 56 54.0	57 32 20	13.40	2.90	2.27	1.59	0.74	0.29	0.69	f5 V	3.60	1.12	540
788.	3 56 55.3	57 19 51	14.58	3.09	2.57	1.84	0.83	0.33	0.78	g1 V	4.25	1.14	690
789.	3 56 55.6	56 29 34	14.12	3.36	2.68	1.90	0.92	0.33	0.83	f6 V	3.25	1.77	660
790.	3 56 55.9	56 35 05	15.14	3.60:	2.50	1.51	0.74	0.27	0.64	a3 III	–0.20	2.03	4590:
791.	3 56 56.9	56 21 17	14.82	3.41	2.69	1.92	0.94	0.33	0.86	f6 V	3.77	1.82	700
792.	3 56 57.4	56 51 48	14.53	4.18:	3.45	2.45	1.11	0.40	0.99	g5.5 III	0.57	1.68	2860
793.	3 56 58.2	56 33 10	11.65	5.28	4.46	3.02	1.23	0.54	1.12	k3 III	1.00	1.31	740
794.	3 56 58.7	56 56 54	14.78	2.96	2.25	1.58	0.75	0.26	0.68	f5 V	3.60	1.13	1020
795.	3 56 58.7	57 17 56	11.48	2.61	1.86	1.01	0.47	0.18	0.38	a0 V	0.75	1.16	820
796.	3 56 59.3	57 06 45	14.22	2.82	2.08	1.23	0.59	0.22	0.48	a0: V	0.75	1.62	2340:
797.	3 56 59.9	57 14 30	15.58	3.25:	2.40	1.49	0.69	0.25	0.60	a6 V	1.95	1.61	2540
798.	3 57 00.8	56 56 19	14.36	4.28:	3.69	2.74	1.16	0.43	0.99	g2-g8			
799.	3 57 01.8	57 04 01	15.49	3.06:	2.17	1.24	0.61	0.22	0.46:	a1 IV	0.80	1.63	4080:
800.	3 57 01.9	57 13 37	12.35	3.19	2.65	1.81	0.77	0.32	0.73	g7 V	5.30	0.67	189
801.	3 57 02.1	56 46 48	15.73	2.85:	2.46:	1.31	0.45	0.03:	0.87:				
802.	3 57 02.2	57 22 57	14.04	2.61	1.80	1.10	0.58	0.21	0.50	b8 III	–0.75	1.71	4130
803.	3 57 02.6	57 33 11	15.12	3.43:	2.71	1.96	0.91	0.33	0.82	g0 IV	3.20	1.51	1210
804.	3 57 03.2	56 24 40	12.35	4.84	4.05	2.80	1.23	0.46	1.12	k0 III	0.75	1.85	890
805.	3 57 03.2	57 05 46	15.30	2.83	2.07	1.17	0.58	0.22	0.43	a0 V	0.75	1.56	3950
806.	3 57 03.3	56 53 31	13.84	4.50	3.85	2.69	1.17	0.48	1.06	k0.5 IV	3.33	1.83	540
807.	3 57 03.6	56 33 52	14.92	3.30	2.47	1.72	0.84	0.31	0.75	f2 V	3.10	1.64	1080
808.	3 57 03.9	57 28 53	14.93	3.38	2.71	1.93	0.88	0.33	0.81	g1 IV	3.25	1.35	1160
809.	3 57 04.1	57 19 33	13.26	3.03	2.43	1.74	0.78	0.31	0.75	g0 V	4.20	1.02	410
810.	3 57 04.8	56 55 33	15.97	2.04	1.61	1.08	0.54	0.19	0.45	b4 V	–0.10	1.76	7280:
811.	3 57 05.2	57 01 23	12.96	3.53	3.02	2.01	0.81	0.39	0.78	k1.2 V	5.86	0.58	202
812.	3 57 05.2	57 20 41	15.35	3.39?	2.58:	1.74	0.86	0.32	0.74	f0 V	2.80	1.88	1360
813.	3 57 05.5	57 16 15	14.52	3.18	2.52	1.81	0.84	0.32	0.78	f8 V	4.10	1.34	660
814.	3 57 05.7	56 53 39	14.54	2.74	1.94	1.12	0.55	0.19	0.44	b9.5 V	0.55	1.51	3140
815.	3 57 06.1	57 17 46	14.12	3.22	2.53	1.82	0.84	0.33	0.80	f7 V	3.93	1.39	570
816.	3 57 06.3	57 33 37	14.96	3.42:	2.42	1.51	0.72	0.25	0.62	a7 III	0.80	1.71	3090
817.	3 57 06.4	57 07 02	13.56	3.05	2.35	1.65	0.76	0.30	0.69	f8 IV	3.00	1.11	780:
818.	3 57 07.0	57 34 52	15.37	3.37?	2.47	1.55:	0.76	0.28	0.72	f0 III	1.30	1.66	3040
819.	3 57 07.1	57 10 30	13.56	5.37:	4.70	3.24	1.37	0.55	1.22	k1.8 III	0.52	2.00	1610
820.	3 57 07.2	57 10 47	15.16	3.17:	2.49	1.50	0.67	0.26	0.57	a3: V	1.60	1.70	2350:
821.	3 57 07.9	57 06 11	13.81	1.78	1.40	0.98	0.51	0.19	0.43	b2 V	–1.40	1.72	4990
822.	3 57 08.1	57 12 20	15.49	3.48:	2.56	1.46	0.69	0.27	0.62	a4: III	0.35	1.80	4660:
823.	3 57 08.6	56 22 30	13.07	2.43	1.95	1.48	0.79	0.27	0.68	b1.5 V	–2.15	2.84	2990
824.	3 57 08.7	56 20 51	15.09	3.64?	2.71	1.76	0.84	0.28	0.77	a9 III	1.53	2.00	2050:
825.	3 57 08.9	56 40 27	12.74	3.00	2.36	1.66	0.79	0.29	0.73	f5 V	3.60	1.29	370
826.	3 57 08.9	56 58 07	12.92	4.19	3.51	2.38	1.01	0.42	0.93	k0.5 IV	3.33	1.19	480
827.	3 57 09.6	57 30 30	12.64	–	5.36	3.79	1.55	0.66	1.40	k3 III	–1.00	2.18	1950
828.	3 57 10.0	57 02 42	12.86	2.81	2.09	1.23	0.54	0.20	0.45	a5 V	1.90	1.10	940
829.	3 57 11.8	56 42 08	12.14	3.02	2.41	1.69	0.79	0.30	0.72	f7 V	3.40	1.23	320
830.	3 57 12.1	56 18 48	14.29	3.41?	2.79	1.94	0.91	0.34	0.88	f9 V	4.15	1.57	520
831.	3 57 12.6	56 30 03	12.04	3.17	2.30	1.35	0.64	0.22	0.54	a5 IV	1.40	1.51	670
832.	3 57 12.9	57 18 09	14.30	2.12	1.66	1.12	0.57	0.21	0.51	b4 V	–0.50	1.86	3860
833.	3 57 13.7	57 26 55	14.21	2.18	1.66	1.08	0.55	0.20	0.47	b6 V	–0.60	1.72	4140
834.	3 57 14.2	57 28 11	15.66	2.80	2.05	1.25	0.65	0.24	0.52	b8.5 V	0.55	1.94	4300
835.	3 57 14.5	56 55 50	14.51	2.98	2.27	1.63	0.77	0.29	0.70	f6 V	3.77	1.17	820
836.	3 57 15.3	57 01 10	12.65	3.15	2.38	1.57	0.73	0.28	0.66	f2 III	1.75	1.30	830
837.	3 57 15.7	57 07 13	14.17	3.00	2.36	1.67	0.77	0.29	0.73	f7 V	3.93	1.13	660
838.	3 57 16.3	56 39 13	13.03	3.01	2.25	1.46	0.70	0.25	0.61	f0 V	2.80	1.30	610
839.	3 57 17.0	56 34 56	13.30	2.63	1.97	1.27	0.66	0.25	0.56	b7 V	–0.20	2.09	1910
840.	3 57 17.0	56 50 39	13.25	4.71	3.94	2.75	1.19	0.47	1.08	k0 III	0.75	1.68	1460
841.	3 57 17.2	56 40 14	13.27	3.06	2.22	1.40	0.69	0.29	0.59	a			
842.	3 57 17.3	57 06 19	14.44	1.95	1.53	1.01	0.53	0.19	0.42	b4 V	–0.90	1.70	5360
843.	3 57 17.9	56 34 26	14.25	3.02	2.40	1.69	0.81	0.30	0.73	f5 V	3.60	1.37	720
844.	3 57 18.7	57 17 40	15.38	3.45:	2.35:	1.42	0.66	0.23	0.60	a8 III	0.97	1.40	4010
845.	3 57 19.3	56 57 46	14.18	3.12	2.43	1.70	0.82	0.31	0.72	f4 V	3.43	1.44	730
846.	3 57 20.0	56 45 13	13.58	4.93	4.20	2.90	1.27	0.49	1.13	k0.5 III	0.75	1.90	1530
847.	3 57 20.6	56 50 43	14.23	3.09	2.49	1.74	0.82	0.30	0.73	f8 V	3.55	1.28	760
848.	3 57 20.7	56 27 56	15.03	2.91	2.26	1.44	0.74	0.24	0.63	b8.5 V	0.15	2.31	3270
849.	3 57 22.3	56 39 59	15.19	3.47:	2.46	1.48	0.75	0.27	0.58	a1.5 III	0.08	2.14	3940:
850.	3 57 22.5	56 20 46	14.40	3.44:	2.80	1.99	0.97	0.32	0.91	f7 V	3.93	1.91	520
851.	3 57 22.6	56 19 57	15.24	–	2.79:	1.87:	0.86	0.34	0.69	a9: III			
852.	3 57 23.4	56 29 46	15.09	3.40	2.41	1.42	0.73	0.22	0.62	a1 III	0.00	2.10	3970
853.	3 57 23.6	57 28 33	15.44	–	2.49	1.63	0.77	0.29	0.72	f1 III	1.52	1.59	2920:
854.	3 57 23.7	56 47 28	13.83	3.00	2.32	1.62	0.75	0.28	0.67	f5 V	3.10	1.16	820
855.	3 57 23.7	56 56 01	14.99	3.45	2.84	2.04	0.97	0.37	0.88	g0 V	4.20	1.75	640
856.	3 57 24.1	56 51 22	15.56	3.21:	2.32	1.38	0.64	0.25	0.55	a6 III	1.05	1.49	4020:
857.	3 57 24.3	57 12 20	12.31	–	4.95	3.42	1.34	0.62	1.23	k4.5 III	0.25	1.28	1430
858.	3 57 24.4	56 59 36	14.50	3.08	2.33	1.51	0.72	0.27	0.62	a9 V	2.63	1.45	1210

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
859.	3 57 24.7	57 22 35	13.89	3.18	2.23	1.30	0.62	0.24	0.52	a3 III	–0.60	1.56	3850
860.	3 57 25.1	57 26 03	12.29	3.02	2.30	1.59	0.74	0.28	0.68	f3 V	3.27	1.21	360
861.	3 57 25.2	57 09 45	12.26	4.13	3.40	2.39	1.05	0.40	0.95	g6 III	0.58	1.42	1120
862.	3 57 25.9	56 21 23	15.14	3.37	2.76:	1.92	0.94	0.33	0.89	f6 V	3.77	1.82	810
863.	3 57 26.0	56 38 26	14.47	2.27	1.77	1.18	0.62	0.22	0.54	b5 V	–0.70	2.02	4260
864.	3 57 26.3	56 39 54	15.11	–	2.80	1.88	0.91	0.33	0.81	f0: III	1.30	2.22	2080:
865.	3 57 26.4	56 51 35	11.94	–	5.45	3.83	1.51	0.68	1.39	k7 III	–0.40	1.68	1350
866.	3 57 27.1	57 15 22	15.48	3.30?	2.39	1.47	0.68	0.25	0.56	a3: V	1.60	1.74	2670:
867.	3 57 27.5	56 46 22	13.52	3.03	2.37	1.68	0.79	0.28	0.71	f5 V	3.60	1.31	530
868.	3 57 27.8	56 43 39	13.25	2.99	2.24	1.29	0.59	0.22	0.48	a3 V	1.60	1.41	1120
869.	3 57 27.8	57 34 04	14.01	3.15	2.55	1.86	0.84	0.31	0.78	g0 V	4.20	1.25	510
870.	3 57 28.1	56 59 34	15.12	3.23	2.22	1.26	0.60	0.22	0.49	a3 III	0.25	1.46	4810
871.	3 57 28.1	57 27 31	15.49	3.33:	2.49	1.49	0.67	0.24	0.60	a4 V	1.75	1.64	2630
872.	3 57 28.2	57 04 25	13.93	5.10?	4.32	2.99	1.23	0.48	1.13	k1.5 III	0.60	1.50	2320:
873.	3 57 28.5	57 21 15	11.42	2.83	2.10	1.31	0.58	0.22	0.51	a8 V	2.47	0.98	390
874.	3 57 28.6	57 01 06	14.04	3.19	2.65	1.81	0.79	0.32	0.72	g6 V	4.73	0.82	500
875.	3 57 29.2	56 28 56	14.00	3.01	2.36	1.60	0.76	0.27	0.68	f2 V	3.10	1.34	820
876.	3 57 29.7	57 12 53	14.86	2.91	2.41	1.75	0.80	0.32	0.72	g0 V	4.20	1.08	820
877.	3 57 29.9	56 40 57	13.92	3.04	2.36	1.67	0.80	0.30	0.75	f5 V	3.60	1.34	620
878.	3 57 30.3	57 06 53	15.36	3.16:	2.26	1.37	0.65	0.21	0.58	a7 III	0.80	1.47	4150:
879.	3 57 31.2	57 32 51	13.98	2.91	1.94	1.15	0.60	0.21	0.55	b9: III	–0.55	1.72	3650:
880.	3 57 31.5	57 01 54	11.75	1.34	1.08	0.80	0.44	0.15	0.35	b1 V	–2.50	1.52	3510
881.	3 57 33.0	56 22 27	12.52	–	5.13	3.56	1.51	0.62	1.37	k2 III	–0.30	2.35	1240:
882.	3 57 33.2	57 12 23	15.40	3.07	2.20	1.28	0.65	0.24	0.54	a0 V	0.75	1.83	3660
883.	3 57 33.8	57 01 24	13.60	2.28	1.62	0.95	0.48	0.19	0.37	b8 IV	–0.40	1.36	3370
884.	3 57 33.9	57 26 55	15.08	3.38	2.61	1.85	0.88	0.31	0.83	f7 IV	2.33	1.59	1700
885.	3 57 34.9	57 34 13	14.75	3.28:	2.82:	1.98:	0.85	0.35	0.79	g8 V	5.45	0.94	470
886.	3 57 35.1	56 47 30	15.39	2.45	1.99	1.25	0.69	0.23	0.57	b6 V	–0.10	2.22	4500
887.	3 57 35.3	57 10 28	14.84	2.82	1.99	1.19	0.63	0.25	0.46	b9 IV	–0.10	1.86	4140
888.	3 57 35.6	56 20 29	15.02	3.27	2.59	1.81	0.85	0.29	0.81	f7 IV	2.87	1.47	1370
889.	3 57 36.1	57 24 17	14.92	3.14	2.59	1.84	0.82	0.31	0.77	g2.5 V	4.83	1.01	650
890.	3 57 36.2	57 34 59	11.31	2.52	2.04	1.45	0.63	0.25	0.61	f9 V	4.15	0.50	215
891.	3 57 36.8	57 21 49	13.44	4.49	3.65	2.62	1.17	0.44	1.10	g5.5 III	1.22	1.99	1110
892.	3 57 37.4	57 21 00	15.24	3.19	2.40	1.71	0.82	0.32	0.72	f4 V	3.43	1.46	1170
893.	3 57 38.3	56 30 37	11.83	3.18	2.51	1.70	0.80	0.29	0.73	f4 III	1.98	1.45	480:
894.	3 57 38.4	57 21 28	15.67	2.64	1.88	1.26	0.64	0.23	0.54	b7 V	–0.20	2.00	5950
895.	3 57 38.6	56 40 23	14.91	3.21	2.42	1.75	0.83	0.31	0.79	f5 V	3.95	1.40	820
896.	3 57 38.7	57 05 57	12.93	3.24	2.60	1.83	0.83	0.31	0.78	g0 IV	2.70	1.21	640
897.	3 57 38.8	57 32 58	14.47	4.04:	3.11:	2.29	1.13	0.40	0.99	f5 III	2.10	2.65	880
898.	3 57 39.1	56 36 42	11.07	4.58	3.83	2.63	1.10	0.43	1.00	k0.5 III	0.75	1.24	660
899.	3 57 40.0	56 37 49	13.24	2.94	2.28	1.56	0.74	0.29	0.66	f4 V	3.43	1.14	540
900.	3 57 40.5	56 59 46	15.36	3.19	2.17	1.19	0.55	0.18	0.51	a3 IV	1.15	1.29	3850
901.	3 57 40.9	56 27 42	13.31	3.14	2.38	1.40	0.65	0.22	0.54	a4 V	1.75	1.59	980
902.*	3 57 41.3	57 11 09	10.69	2.01	1.51	0.99	0.52	0.19	0.43	b5			
903.	3 57 41.3	57 31 59	14.93	2.44	1.74	1.07	0.55	0.21	0.44	b8 V	–0.05	1.62	4700
904.	3 57 41.6	57 20 05	14.89	3.13	2.57	1.87	0.83	0.32	0.76	g1.5 V	4.28	1.14	780
905.	3 57 41.7	57 06 13	14.24	–	2.22	1.38	0.65	0.23	0.61	f2			
906.	3 57 41.8	56 57 48	15.27	3.32:	2.49	1.83:	0.88	0.37	0.73	f6 V	4.50	1.50	710:
907.	3 57 41.9	57 29 31	15.27	3.24	2.35	1.43	0.63	0.25	0.53	a6:			
908.	3 57 42.0	57 28 50	12.30	3.09	2.47	1.73	0.78	0.29	0.73	g0 IV	2.70	1.00	520:
909.	3 57 42.1	56 32 43	14.31	4.67:	3.88	2.73	1.27	0.46	1.16	g5 III	0.55	2.35	1910:
910.	3 57 42.2	57 34 40	14.54	3.12	2.26	1.28	0.63	0.20	0.52	a2 V	1.05	1.63	2350
911.	3 57 42.4	57 02 52	14.67	2.69	1.96	1.09	0.52	0.18	0.43	a0 V	0.75	1.35	3260
912.	3 57 42.4	57 19 44	12.76	2.96	2.36	1.65	0.76	0.29	0.71	f8 V	3.55	1.07	420
913.	3 57 42.8	56 59 31	12.53	3.86	3.22	2.22	0.96	0.38	0.89	g8.5 IV	3.26	1.21	410
914.	3 57 43.5	57 01 20	14.63	3.20	2.58	1.86	0.88	0.33	0.76	f8 V	4.10	1.51	640
915.	3 57 43.6	57 32 18	13.50	4.34	3.53	2.58	1.15	0.41	1.05	g4 III	0.53	1.95	1600
916.*	3 57 43.9	56 27 29	12.22	1.96	1.57	1.20	0.66	0.22	0.53	b1.5 V	–2.53	2.34	3020
917.	3 57 44.0	57 27 39	15.18	2.69	2.00	1.22	0.64	0.24	0.55	b8 V	–0.05	1.94	4540
918.	3 57 44.1	57 09 39	15.15	2.61	1.93	1.27	0.64	0.24	0.68	b7 V	–0.20	1.99	4700
919.	3 57 44.2	56 36 01	13.78	2.53	1.88	1.22	0.66	0.23	0.54	b6 V	–0.60	2.14	2810
920.	3 57 45.1	56 38 15	15.34	2.94	2.41	1.65	0.81	0.28	0.71	f6 V	3.77	1.32	1120
921.	3 57 45.8	56 46 54	14.65	3.68	2.73	1.71	0.81	0.29	0.66	a4 V	1.75	2.21	1370
922.	3 57 45.8	57 01 33	14.31	2.88	2.32	1.62	0.76	0.29	0.68	f7 V	3.93	1.08	720
923.	3 57 45.9	57 14 36	15.03	2.49	1.87	1.23	0.63	0.22	0.53	b7 V	–0.20	1.96	4510
924.	3 57 46.0	57 24 29	13.57	3.33	2.39	1.50	0.69	0.25	0.62	a9 III	0.28	1.54	2240
925.	3 57 46.1	56 45 49	12.68	3.13	2.47	1.75	0.83	0.30	0.77	f6 V	3.77	1.39	320
926.*	3 57 46.7	57 06 15	9.77	1.53	1.16	0.74	0.39	0.14	0.32	b3 V	–1.55	1.18	1060
927.	3 57 47.1	56 37 40	14.46	3.26	2.73	1.90	0.86	0.35	0.80	g3 V	4.87	1.17	480
928.	3 57 47.1	57 15 43	14.02	2.88	2.26	1.59	0.75	0.28	0.67	f5 V	3.60	1.16	710
929.	3 57 47.1	56 23 23	13.59	3.31	2.57	1.74	0.83	0.30	0.75	f1 V	2.80	1.71	660
930.	3 57 48.1	57 31 28	12.76	1.34	1.07:	0.77	0.08	0.09	0.38				
931.	3 57 48.4	57 16 34	14.81	3.16	2.41	1.62	0.77	0.29	0.68	f2 IV	2.20	1.45	1700
932.	3 57 48.5	56 43 56	13.99	3.24	2.57	1.81	0.87	0.31	0.77	f5 V	3.60	1.61	570
933.	3 57 49.4	56 34 16	13.74	4.88:	4.21:	2.89	1.24	0.50	1.13	k0.5 IV	1.50	1.86	1190
934.	3 57 49.5	56 27 22	12.33	3.17	2.42	1.49	0.67	0.24	0.58	a5 V	1.90	1.59	580
935.	3 57 49.5	56 49 13	14.11	4.93?	4.23:	2.93	1.29	0.51	1.15	k0 III	0.75	2.06	1820
936.	3 57 50.0	56 45 20	14.38	4.56:	4.10:	2.73	1.02	0.63	1.08	k6 V	7.30	0.79	181:

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U-V$	$P-V$	$X-V$	$Y-V$	$Z-V$	$V-S$	Sp	M_V	A_V	r
937.	3 57 50.0	57 27 20	13.99	4.70:	3.93	2.78	1.21	0.48	1.10	g9.5 IV	1.45	1.87	1370
938.	3 57 50.2	56 36 25	14.62	3.10	2.42	1.68	0.80	0.29	0.75	f5 V	3.60	1.35	860
939.	3 57 50.8	57 06 02	14.16	–	1.82	1.09	0.57	0.20	0.54	b8: V	–0.05	1.70	3170:
940.*	3 57 51.0	57 11 36	9.17	4.34	3.62	2.52	1.07	0.41	0.96	g9 III	0.70	1.31	270
941.	3 57 51.3	57 33 16	13.54	2.91	2.30	1.66	0.76	0.28	0.71	f8 V	4.10	1.03	480
942.	3 57 51.6	56 24 24	13.72	2.78	2.08	1.35	0.71	0.24	0.57	b8 IV	–0.40	2.21	2410
943.	3 57 52.1	57 15 24	15.18	3.13	2.39	1.38	0.64	0.25	0.53	a4 V	1.75	1.53	2400
944.	3 57 52.5	56 18 44	13.51	3.32	2.56	1.76	0.86	0.31	0.79	f2 V	3.10	1.70	550
945.	3 57 52.8	57 00 34	12.95	2.02	1.47	0.88	0.47	0.17	0.37	b6 IV	–1.10	1.39	3390
946.	3 57 52.9	56 51 07	15.06	3.24	2.43	1.69	0.79	0.29	0.74	f3 V	3.27	1.41	1190
947.	3 57 54.3	57 16 08	14.48	2.08	1.62	1.10	0.57	0.20	0.48	b4 V	–0.90	1.86	5070
948.	3 57 54.6	56 59 52	13.98	4.35	3.75	2.52	1.06	0.43	0.98	k1 IV	3.35	1.31	730
949.	3 57 55.2	56 40 11	11.51	3.11	2.44	1.73	0.81	0.30	0.74	f6 IV	2.73	1.38	300
950.	3 57 56.1	57 10 21	14.53	3.03	2.41	1.69	0.82	0.30	0.75	f5 V	3.60	1.41	800
951.	3 57 56.2	56 55 16	13.66	1.99	1.54	0.98	0.50	0.17	0.41	b5 V	–0.70	1.55	3640
952.	3 57 56.4	56 57 34	12.82	4.15	3.44	2.41	1.06	0.40	0.97	g6 III	0.58	1.47	1430
953.	3 57 56.4	57 30 50	14.70	3.83:	3.16:	2.34	1.10	0.39	1.02	g2 V	4.80	2.11	360
954.	3 57 58.4	56 45 40	13.40	3.19	2.48	1.73	0.81	0.29	0.73	f6 IV	2.22	1.39	910
955.	3 57 58.8	57 23 47	14.87	3.14	2.24	1.31	0.65	0.24	0.57	a0.5 IV	0.35	1.81	3490
956.	3 57 58.9	56 35 50	15.41	3.16	2.48	1.70	0.82	0.30	0.76	f2 V	3.10	1.56	1410
957.	3 57 59.2	56 48 27	14.76	3.34	2.49	1.53	0.71	0.26	0.60	a4 V	1.75	1.80	1740
958.	3 57 59.3	57 18 28	14.87	3.37	2.47	1.62	0.76	0.29	0.68	f2 III	0.30	1.51	4090:
959.	3 57 59.4	56 51 13	14.89	3.48	2.59	1.65	0.77	0.30	0.63	a7 III	1.20	1.89	2290
960.	3 58 00.5	56 31 24	13.19	–	4.53	3.12	1.31	0.53	1.14	k2 III	1.20	1.84	1070
961.	3 58 00.8	57 29 41	14.47	3.17	2.25	1.35	0.61	0.22	0.54	a7 III	0.80	1.29	2990
962.	3 58 01.3	56 59 32	14.17	2.79	2.13	1.39	0.63	0.25	0.59	f2 V	3.10	0.83	1110
963.	3 58 02.1	56 38 41	10.63	4.48	3.75	2.58	1.10	0.43	0.99	k0 III	0.75	1.33	510
964.	3 58 02.4	57 00 52	13.81	2.69	2.15	1.53	0.72	0.27	0.65	f6 V	3.77	0.98	650
965.	3 58 03.4	57 22 31	13.96	1.94	1.52	1.06	0.56	0.20	0.47	b2.5 V	–1.45	1.88	5090
966.	3 58 03.5	57 10 17	13.54	5.38:	4.41	3.08	1.29	0.51	1.18	k1 III	0.00	1.80	2230
967.	3 58 04.1	57 09 38	14.65	3.05	2.21	1.26	0.57	0.21	0.45	a3 IV	1.15	1.34	2700
968.	3 58 04.2	57 19 47	12.07	–	5.55	3.84	1.54	0.68	1.41	k9 III	–0.60	1.74	1540
969.	3 58 04.3	57 01 58	13.90	3.01	2.28	1.42	0.64	0.25	0.58	a8 V	2.47	1.22	1100
970.	3 58 04.4	57 29 32	13.48	3.94	3.34	2.26	0.94	0.41	0.88	k0.5 IV	3.33	0.93	700
971.	3 58 04.9	57 12 17	14.10	1.91	1.50	1.02	0.52	0.18	0.44	b4 V	–0.90	1.67	4640
972.	3 58 05.0	56 56 39	15.23	2.96	2.31	1.62	0.76	0.28	0.70	f5 V	3.60	1.18	1230
973.	3 58 05.5	56 53 51	12.82	4.18	3.64	2.47	0.85	0.57	0.94	k6 V	7.30	0.13	120
974.	3 58 05.6	57 09 09	15.33	3.26:	2.41	1.41	0.67	0.27	0.51	a4 V	1.75	1.65	2440
975.	3 58 05.8	56 42 35	12.60	–	5.76:	4.13	1.67	0.69	1.47	k7 II	–2.55	2.16	3950
976.	3 58 05.9	57 32 11	14.19	4.45:	3.49	2.58	1.12	0.41	1.06	g5 III	0.55	1.76	2380:
977.	3 58 06.2	57 17 06	14.15	4.53:	3.72	2.68	1.20	0.45	1.09	g6 III	0.58	1.99	2070
978.	3 58 06.4	57 28 51	14.10	3.00	2.20	1.34	0.64	0.23	0.54	a7 V	2.30	1.28	1270
979.	3 58 06.8	56 43 12	12.92	–	4.69	3.25	1.39	0.55	1.25	k1.5 III	0.60	2.14	1090
980.	3 58 06.9	57 03 39	15.64	–	2.06	1.17	0.56	0.22	0.51	a			
981.	3 58 07.2	57 29 45	13.55	5.36:	4.61	3.14	1.28	0.55	1.14	k3 III	1.00	1.51	1610
982.	3 58 07.6	57 31 48	13.39	4.91:	4.26	2.90	1.21	0.50	1.11	k3.5 IV	3.42	1.70	450
983.	3 58 07.7	56 31 19	10.58	4.20	3.49	2.40	1.05	0.40	0.96	g8 III	0.65	1.31	530
984.	3 58 07.8	57 10 34	14.34	2.93	2.35	1.67	0.78	0.28	0.71	f8 V	4.10	1.12	670
985.	3 58 07.9	56 22 27	14.14	4.50:	3.78	2.59	1.13	0.45	1.04	k0 IV	2.60	1.68	940
986.	3 58 08.7	57 34 32	14.93	3.05:	2.46	1.66	0.80	0.27	0.74	f4 V	3.43	1.38	1060
987.	3 58 09.0	56 46 14	13.39	–	4.78	3.35	1.40	0.57	1.26	k2 III	0.45	2.04	1510
988.	3 58 09.2	57 01 35	13.97	4.08	3.41	2.38	1.04	0.40	0.95	g7 III	1.27	1.37	1850
989.	3 58 09.3	57 05 27	15.36	2.87	2.12	1.22	0.59	0.23	0.46	a0 V	0.77	1.57	4000
990.	3 58 10.1	56 35 01	13.69	3.25	2.47	1.67	0.80	0.28	0.71	f2 IV	2.20	1.54	980
991.	3 58 12.1	56 30 18	15.36	3.06	2.23	1.33	0.69	0.24	0.62	b9.5 IV	0.10	2.06	4370
992.	3 58 12.6	57 09 05	13.92	4.35	3.50	2.53	1.10	0.41	1.04	g5: III	0.55	1.69	2170:
993.	3 58 13.3	56 47 30	15.05	3.32	2.68:	1.89	0.87	0.32	0.82	g1 V	4.25	1.29	800
994.	3 58 13.5	57 11 36	14.23	4.75:	3.90	2.82	1.21	0.49	1.08	g9 III	0.70	1.85	2170
995.	3 58 13.6	56 39 59	13.52	–	4.79:	3.39	1.45	0.56	1.29	k0 II	–2.25	2.28	5000:
996.	3 58 13.6	56 44 20	13.92	–	4.35	2.92	1.29	0.51	1.17	k3.5 IV	3.42	2.01	500:
997.	3 58 13.8	57 29 05	14.53	3.38	2.38	1.52	0.72	0.28	0.61	f1 III	0.15	1.47	3830
998.	3 58 15.0	56 35 06	14.25	3.82	2.65	1.61	0.80	0.28	0.68	a3 IV	1.15	2.23	1490
999.	3 58 15.1	56 29 42	14.77	2.97	2.14	1.37	0.71	0.25	0.60	b8.5 IV	–0.25	2.19	3670
1000.	3 58 15.2	57 13 37	14.53	3.48	2.63	1.81	0.82	0.32	0.75	f5 III	0.50	1.51	3190:
1001.	3 58 15.9	56 57 30	14.15	2.85	2.22	1.51	0.71	0.26	0.64	f4 V	3.43	1.03	860
1002.	3 58 17.2	56 52 31	12.92	–	5.72:	3.79	1.49	0.68	1.35	m0 III	–0.70	1.53	2620
1003.	3 58 17.8	57 22 14	13.98	3.09	2.44	1.71	0.82	0.30	0.76	f5 V	3.60	1.42	620
1004.	3 58 18.1	56 19 39	14.88	3.25:	2.56	1.79	0.88	0.33	0.77	f4 V	3.43	1.71	890
1005.	3 58 18.7	57 21 46	13.64	3.25	2.44	1.57	0.75	0.27	0.65	a9 IV	1.93	1.60	1050
1006.	3 58 19.3	56 53 59	15.28	3.55:	2.52	1.71	0.81	0.30	0.75	f3 III	1.87	1.55	2360:
1007.	3 58 19.9	57 16 15	14.98	2.37	1.79	1.18	0.60	0.22	0.50	b6 V	–0.10	1.90	4310
1008.	3 58 20.3	56 57 04	11.34	4.13	3.47	2.40	1.01	0.40	0.93	g8.5 III	0.68	1.12	810
1009.	3 58 20.5	56 48 01	14.85	3.29	2.57	1.87	0.87	0.32	0.83	f9 V	4.15	1.42	720
1010.	3 58 20.9	57 25 43	11.12	2.77	2.05	1.34	0.60	0.22	0.56	f3 III	1.87	0.74	500
1011.	3 58 21.1	57 27 39	13.85	3.33	2.45	1.62	0.73	0.26	0.70	f?			
1012.	3 58 21.3	57 30 15	13.98	4.21:	3.41	2.47	1.10	0.40	1.05	g5 III	1.20	1.73	1620
1013.	3 58 21.4	56 36 30	13.76	4.34:	3.67	2.49	1.07	0.44	1.03	k0 IV	2.60	1.46	870
1014.	3 58 21.9	56 34 49	14.43	3.55	2.61	1.61	0.75	0.28	0.64	a4 V	1.75	1.98	1380

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U–V$	$P–V$	$X–V$	$Y–V$	$Z–V$	$V–S$	Sp	M_V	A_V	r
1015.	3 58 21.9	57 28 50	10.72	1.92	1.44	0.91	0.53	0.17	0.41	b3.5 V	–1.00	1.71	1010
1016*	3 58 21.9	56 44 46	9.85	2.57	1.99	1.33	0.62	0.24	0.57	f5 V			
1017.	3 58 22.0	57 03 00	11.84	4.71	3.70	2.68	1.13	0.50	1.07	k2: III			
1018.	3 58 22.3	57 28 07	14.51	3.62	3.04	2.15	0.88	0.40	0.81	k0.5 V	6.15	0.87	310
1019.	3 58 23.2	56 33 13	13.63	3.25	2.32	1.32	0.67	0.23	0.54	a2 IV	0.60	1.79	1770
1020.	3 58 23.7	57 01 49	14.36	3.03	2.17	1.21	0.55	0.18	0.49	a4 III	0.35	1.26	3550
1021.	3 58 23.9	56 49 17	13.36	4.54	3.74	2.67	1.16	0.46	1.06	g9 IV	1.98	1.80	830
1022.	3 58 24.2	57 07 29	13.84	2.08	1.56	0.99	0.50	0.18	0.42	b6 V	–0.60	1.50	3860
1023.	3 58 24.8	57 10 15	15.03	3.18	2.30	1.36	0.63	0.22	0.55	a6 III	0.62	1.45	3900
1024.	3 58 25.8	56 46 54	14.23	3.29	2.30	1.35	0.64	0.23	0.54	a4 III	0.80	1.60	2320
1025.	3 58 26.3	57 18 17	15.43	3.27:	2.53	1.68	0.83	0.28	0.75	f2 IV	2.20	1.67	2040
1026.	3 58 26.5	56 33 01	14.01	3.61	2.95	2.09	0.94	0.38	0.88	g5.5 V	5.07	1.37	330
1027.	3 58 26.5	57 09 17	14.66	4.15:	3.52:	2.44	1.05	0.41	1.00	g9.5 IV	3.29	1.49	950
1028.	3 58 26.9	56 31 35	15.35	2.82	2.12	1.32	0.69	0.24	0.58	b8.5 V	0.15	2.09	4190
1029.	3 58 28.5	57 18 58	13.69	2.97	2.40	1.72	0.80	0.29	0.73	f9 V	4.15	1.13	480
1030.	3 58 28.7	57 05 06	14.19	3.13	2.26	1.34	0.62	0.22	0.54	a7 III	0.80	1.33	2580
1031.	3 58 29.1	57 30 58	14.15	2.00	1.53	1.09	0.58	0.20	0.51	b2.5 V	–1.73	1.94	6140
1032.	3 58 29.7	56 49 12	11.49	4.04	3.37	2.34	1.01	0.39	0.94	g8 IV	1.90	1.31	450
1033*	3 58 29.7	57 00 09	8.76	–	5.03	3.49	1.34	0.61	1.21	k5.5 III	–0.68	1.07	470:
1034.	3 58 30.7	56 25 11	12.05	2.99	2.51	1.71	0.75	0.29	0.73	g4 V	4.93	0.69	193
1035.	3 58 30.9	56 50 02	14.42	2.90	2.12	1.23	0.61	0.21	0.49	a0 V	0.75	1.67	2510
1036.	3 58 30.9	57 12 40	11.95	2.81	2.04	1.13	0.51	0.19	0.42	a4 V	1.75	1.04	680
1037.	3 58 31.1	56 24 42	14.24	3.38	2.54	1.54	0.76	0.28	0.63	a5 V	1.90	1.96	1190
1038.	3 58 31.9	56 20 57	14.61	3.41:	2.79	1.91	0.90	0.36	0.82	f9 IV	2.58	1.57	1240:
1039.	3 58 32.2	56 54 20	15.15	3.07	2.42	1.61	0.74	0.27	0.70	f5: III	1.05	1.19	3820:
1040.	3 58 32.6	56 23 57	15.70	2.79	2.05	1.33	0.68	0.28	0.52	b8 V	0.30	2.09	4600
1041.	3 58 32.6	56 40 37	14.72	3.51	2.55	1.53	0.71	0.26	0.58	a3: V	1.60	1.88	1770:
1042.	3 58 32.8	56 18 43	10.67	5.22	4.41	3.00	1.22	0.53	1.12	k3 IV	1.50	1.36	360
1043.	3 58 33.7	56 55 24	13.03	–	5.08:	3.58	1.43	0.60	1.30	k3 II	–1.45	1.66	3660:
1044.	3 58 33.9	56 30 38	14.02	3.55	2.52	1.52	0.75	0.26	0.63	a4 III	0.80	2.00	1750
1045.	3 58 33.9	56 36 60	12.41	2.41	1.83	1.19	0.62	0.21	0.52	b7 IV	–0.60	1.93	1650
1046.	3 58 34.6	56 19 05	14.44	3.74:	3.15	2.17	0.94	0.39	0.89	g9.5 V	5.49	1.22	350
1047.	3 58 34.7	56 48 56	13.74	3.05	2.36	1.63	0.78	0.27	0.72	f5 V	3.10	1.26	750
1048.	3 58 35.0	57 29 38	14.45	3.43	2.52	1.65	0.76	0.26	0.70	f1 III	1.52	1.55	1880
1049.	3 58 36.2	56 56 17	14.96	2.81	2.17	1.54	0.75	0.28	0.67	f5 V	3.95	1.10	960
1050.	3 58 37.7	56 43 38	11.91	4.38	3.65	2.55	1.10	0.41	1.01	g8 III	0.65	1.51	890
1051.	3 58 37.9	57 10 08	13.38	–	5.17?	3.61	1.44	0.65	1.32	k4.5 III	0.25	1.67	1960
1052.	3 58 38.4	57 34 54	14.71	3.40	2.53	1.63	0.75	0.29	0.69	a9 III	1.53	1.67	2000
1053.	3 58 38.4	56 19 36	14.97	3.12	2.67:	1.84	0.90	0.33	0.79	f8 V	4.10	1.59	720
1054.	3 58 38.5	57 06 10	15.44	2.28	1.68	1.04	0.54	0.22	0.45	b7 V	–0.20	1.62	6360
1055.	3 58 38.9	56 48 56	14.91	3.20	2.64	1.87	0.86	0.34	0.78	g1 V	4.25	1.25	760
1056.	3 58 39.3	57 15 36	14.22	3.24	2.29	1.34	0.65	0.24	0.51	a2 III	0.15	1.74	2940
1057.	3 58 40.0	57 31 15	14.09	2.87	2.23	1.58	0.74	0.26	0.68	f6 V	3.77	1.08	710
1058.	3 58 40.1	56 34 15	13.92	3.26	2.47	1.56	0.75	0.26	0.62	a6 V	2.25	1.78	950
1059.	3 58 40.2	56 48 26	14.23	3.26	2.36	1.39	0.67	0.23	0.57	a5 III	0.90	1.65	2160
1060.	3 58 40.2	57 16 07	15.16	3.38	2.46	1.56	0.73	0.29	0.55	a8 III	0.97	1.67	3200
1061.	3 58 40.4	56 28 00	15.62	–	2.50	1.53	0.76	0.27	0.62	a4 V	1.75	1.99	2380
1062.	3 58 40.7	56 51 50	13.78	4.56	3.82	2.71	1.18	0.44	1.06	g8.5 III	0.68	1.77	1850
1063.	3 58 40.9	56 39 36	14.10	3.38	2.67	1.89	0.88	0.34	0.81	f9 IV	2.58	1.48	1020
1064.	3 58 41.1	56 57 59	14.74	2.68	1.94	1.10	0.54	0.20	0.44	b9.5 V	0.55	1.46	3520
1065.	3 58 41.1	57 06 01	13.46	4.64	3.99	2.75	1.15	0.46	1.07	k0.5 IV	1.50	1.52	1220
1066.	3 58 41.1	57 17 40	12.55	2.96	2.34	1.68	0.79	0.29	0.72	f6 V	3.77	1.25	320
1067.	3 58 41.4	57 14 46	11.14	2.84	2.19	1.53	0.71	0.26	0.64	f5 V	3.60	0.99	200
1068.	3 58 41.8	57 29 19	15.26	2.62	1.86	1.23	0.65	0.29	0.49	b6-a0 V			
1069.	3 58 42.1	56 24 20	15.13	3.27:	2.43	1.34	0.68	0.23	0.55	a2 V	1.50	1.80	2330
1070.	3 58 42.4	57 04 09	13.92	2.78	2.16	1.49	0.70	0.26	0.63	f4 V	3.43	1.01	780
1071.	3 58 42.9	57 09 12	14.01	2.99	2.21	1.42	0.67	0.24	0.61	f1 IV	2.38	1.13	1260
1072.	3 58 43.6	56 53 50	12.99	2.98	2.35	1.66	0.77	0.28	0.71	f7 V	3.93	1.13	390
1073.	3 58 44.0	56 44 57	13.82	4.33	3.63	2.53	1.14	0.43	1.07	g5.5 III	0.57	1.82	1940
1074.	3 58 44.0	56 51 19	14.90	3.04	2.20	1.25	0.61	0.23	0.48	a1 IV	0.80	1.64	3110
1075.	3 58 44.5	56 25 29	15.20	3.10	2.20	1.30	0.67	0.23	0.57	a0 III	–0.10	1.93	4700
1076.	3 58 44.7	57 15 00	14.30	2.83	2.22	1.61	0.79	0.30	0.67	f5: V	3.95	1.26	660:
1077.	3 58 44.8	57 21 39	14.37	4.13:	3.43:	2.50	1.13	0.42	1.05	g3 III	1.40	2.02	1550:
1078.	3 58 45.0	57 11 30	14.37	2.01	1.56	1.01	0.52	0.19	0.44	b5 V	–0.70	1.65	4830
1079.	3 58 45.1	56 47 47	13.68	4.82	4.01	2.78	1.19	0.45	1.06	k0 III	0.75	1.68	1770
1080.	3 58 45.9	57 05 42	12.04	–	5.62	3.94	1.56	0.69	1.45	m0 III	–0.70	1.80	1540:
1081*	3 58 46.5	57 10 44	11.16	1.43	1.15	0.85	0.47	0.17	0.38	b1 V	–2.20	1.63	2230
1082.	3 58 47.7	57 00 41	14.97	2.81	2.03	1.12	0.53	0.19	0.43	a1.5 V	1.35	1.28	2930
1083.	3 58 48.2	56 48 18	13.39	4.26	3.51	2.47	1.10	0.42	1.01	g8 IV	1.90	1.65	930:
1084.	3 58 48.2	57 21 09	15.15	3.43:	2.59	1.80	0.86	0.30	0.80	f4 III	1.50	1.69	2470
1085.	3 58 48.5	56 36 51	15.27	3.12:	2.47	1.82	0.88	0.30	0.85	f8: V	4.90	1.40	620:
1086.	3 58 48.5	57 03 16	14.65	–	2.79	1.92	0.85	0.34	0.80	g6 V	4.73	1.01	600:
1087.	3 58 48.7	56 48 47	13.00	2.45	1.74	0.98	0.49	0.18	0.39	b9 V	0.35	1.31	1850
1088.	3 58 48.7	56 56 10	11.50	2.28	1.61	0.99	0.50	0.18	0.42	b7 V	–0.20	1.45	1120
1089.	3 58 49.1	56 53 43	13.00	4.73	3.91	2.74	1.16	0.45	1.07	k0 III	0.75	1.60	1350
1090.	3 58 49.1	57 15 17	12.89	2.89	2.18	1.52	0.70	0.40	0.64	a3			
1091.	3 58 49.4	57 14 17	14.15	2.14	1.66	1.10	0.57	0.20	0.47	b5 V	–0.70	1.84	3990
1092.	3 58 49.8	56 51 16	12.76	2.78	2.17	1.51	0.71	0.26	0.65	f5 V	3.60	1.00	430

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	U–V	P–V	X–V	Y–V	Z–V	V–S	Sp	M_V	A_V	r
1093*	3 58 49.9	57 27 03	6.96	2.04	1.43	0.58	0.22	0.09	0.14	a1.5 V	1.10	0.07	140
1094.	3 58 50.0	56 21 50	12.44	3.02	2.35	1.58	0.76	0.27	0.70	f2 V	3.10	1.34	400
1095.	3 58 50.5	56 37 49	13.33	3.39	2.37	1.39	0.70	0.24	0.57	a2 III	0.15	1.93	1780
1096.	3 58 51.0	56 46 50	10.99	5.11	4.34	2.93	1.17	0.50	1.04	k2.8 III	1.05	1.13	580
1097.	3 58 51.7	57 07 59	13.41	3.23	2.26	1.31	0.62	0.23	0.52	a4 III	–0.10	1.51	2510
1098.	3 58 53.8	57 10 34	13.08	3.09	2.33	1.56	0.73	0.27	0.67	f2 IV	2.20	1.29	830
1099.	3 58 54.1	56 45 39	13.54	3.07	2.35	1.55	0.74	0.26	0.67	f2 IV	2.20	1.31	1010
1100.	3 58 54.2	56 25 22	15.21	3.50:	2.70	1.71	0.85	0.30	0.71	a6 V	1.95	2.22	1620
1101.	3 58 54.7	56 49 28	14.68	2.88	2.26	1.55	0.73	0.24	0.71	f5 V	3.60	1.08	1000
1102.	3 58 54.7	56 22 20	13.42	3.19	2.22	1.30	0.67	0.23	0.55	a0.5 III	–0.05	1.90	2060
1103.	3 58 55.4	57 04 48	15.30	–	2.49	1.72	0.81	0.33	0.72	f4 III	1.98	1.49	2320:
1104.	3 58 55.5	57 22 19	14.01	2.92	2.29	1.63	0.75	0.28	0.70	f6 V	3.77	1.12	670
1105.	3 58 55.5	57 32 53	13.39	3.24	2.72	1.97	0.86	0.34	0.84	g4 V	4.93	1.14	291
1106.	3 58 55.9	57 18 01	15.48	3.36?	2.49	1.47	0.69	0.25	0.55	a3 V	1.60	1.80	2600
1107.	3 58 56.1	56 37 48	13.71	3.62	2.98	2.07	0.92	0.35	0.88	g4 III	1.30	1.11	1820
1108.	3 58 56.2	56 57 29	14.92	3.58	3.06	2.16	0.93	0.41	0.89	g9 V	5.95	1.17	360
1109.	3 58 57.9	57 16 15	15.18	3.29	2.38	1.40	0.67	0.24	0.56	a4 III	0.80	1.69	3450
1110.	3 58 57.9	56 21 24	13.83	3.34	2.73	1.90	0.89	0.33	0.80	g1 IV	2.75	1.35	880
1111.	3 58 58.0	57 06 17	12.61	4.43	3.72	2.59	1.13	0.43	1.03	g8.5 III	0.68	1.60	1170
1112.	3 58 58.5	57 19 60	14.86	2.88	2.34	1.71	0.79	0.30	0.72	f8 V	4.50	1.13	700
1113.	3 58 58.9	56 58 07	15.02	3.13	2.54	1.84	0.86	0.34	0.77	f8 V	4.10	1.44	790
1114.	3 58 59.9	56 43 23	14.33	3.26	2.56	1.87	0.88	0.31	0.79	f8 V	4.10	1.50	560
1115.	3 59 00.1	56 46 36	14.27	2.98	2.32	1.60	0.77	0.28	0.68	f4 V	3.43	1.27	820
1116.	3 59 00.3	56 59 59	14.57	2.77	1.89	1.09	0.54	0.19	0.45	a0 III	–0.10	1.44	4420
1117.	3 59 00.6	57 12 31	14.13	4.47:	3.69	2.60	1.16	0.43	1.07	g7 III	0.62	1.79	2210
1118*	3 59 00.9	56 41 55	9.83	2.25	1.83	1.24	0.55	0.21	0.53	f6 V	4.13	0.28	121
1119.	3 59 01.4	56 29 19	14.21	3.50	2.86	2.06	0.94	0.37	0.90	g3 V	4.40	1.49	460
1120.	3 59 01.4	56 53 07	13.81	4.36	3.66	2.53	1.11	0.41	1.02	g8 III	0.65	1.54	2110
1121.	3 59 01.6	56 22 01	12.84	3.43	2.99	1.95	0.77	0.38	0.81	k1.2 V	6.35	0.38	167
1122.	3 59 01.7	56 51 43	14.62	2.81	2.04	1.14	0.53	0.18	0.44	a5 V	1.90	1.05	2150
1123.	3 59 02.0	56 43 56	14.84	3.18	2.39	1.65	0.79	0.30	0.71	f2 V	3.10	1.44	1150
1124.	3 59 04.6	57 29 14	14.49	3.54	2.70	1.86	0.89	0.31	0.81	f3 III	1.87	1.85	1430:
1125.	3 59 05.0	56 27 32	14.74	3.07	2.30	1.35	0.68	0.23	0.56	a0.5 V	0.77	1.92	2570
1126.	3 59 05.4	57 04 12	12.07	2.99	2.18	1.37	0.62	0.24	0.56	f0 III	1.30	1.12	850
1127.	3 59 05.7	56 29 39	13.90	3.11	2.43	1.64	0.79	0.28	0.73	f2 V	3.10	1.43	750
1128.	3 59 06.0	57 08 03	15.22	3.29	2.50	1.62	0.74	0.28	0.63	a7 V	2.30	1.68	1770
1129.	3 59 06.2	56 50 06	14.11	4.23	3.50	2.43	1.08	0.42	0.97	g6 III	0.58	1.56	2470:
1130.	3 59 06.7	56 21 50	14.70	3.55	2.65	1.58	0.76	0.30	0.60	a2 V	1.50	2.14	1630
1131.	3 59 07.0	57 14 58	13.04	2.86	2.06	1.18	0.56	0.19	0.47	a1 IV	0.80	1.46	1440
1132*	3 59 07.5	57 14 12	10.05	1.19	0.99	0.81	0.47	0.17	0.38	o6 V	–4.50	1.80	3560
1133.	3 59 07.6	56 45 23	14.01	3.24	2.37	1.41	0.66	0.23	0.54	a4 V	1.75	1.62	1340
1134.	3 59 08.1	56 28 05	14.87	3.55	2.67	1.64	0.77	0.27	0.66	a4 V	1.75	2.03	1650
1135.	3 59 08.3	56 53 10	15.14	3.19	2.55	1.77	0.87	0.33	0.75	f4 V	3.43	1.65	1030
1136.	3 59 08.4	57 06 24	14.78	3.68	2.69	1.75	0.86	0.32	0.80	f1			
1137.	3 59 08.7	56 48 13	15.88	2.63:	1.90	1.08	0.56	0.21	0.39	b8.5 V	0.85	1.56	4940
1138.	3 59 08.7	57 26 32	12.84	2.90	2.16	1.38	0.65	0.23	0.58	f0 V	2.80	1.10	610
1139.	3 59 08.8	57 27 07	13.77	2.89	2.29	1.64	0.76	0.28	0.70	f8 V	4.10	1.05	530
1140.	3 59 09.9	57 12 37	14.28	3.27	2.71	1.86	0.83	0.33	0.80	g4 V	4.93	1.02	460
1141.	3 59 10.4	56 31 05	14.54	3.94:	3.32	2.28	0.99	0.41	0.96	k0 V	5.50	1.37	340
1142.	3 59 10.4	56 35 48	13.23	3.22	2.51	1.73	0.81	0.28	0.76	f5 III	2.10	1.44	870:
1143.	3 59 10.7	56 52 58	14.90	3.19	2.31	1.39	0.65	0.23	0.58	a8 III	0.97	1.39	3220
1144.	3 59 11.4	57 09 49	14.74	3.39	2.74	1.92	0.86	0.35	0.79	g3 V	3.88	1.15	870
1145*	3 59 11.5	56 34 28	8.98	2.93	2.43	1.57	0.64	0.25	0.61	g8.5 IV	4.00	0.04	97
1146.	3 59 12.1	57 02 29	12.81	2.97	2.15	1.24	0.54	0.21	0.45	a4 V	1.75	1.16	960
1147.	3 59 12.3	56 40 36	13.77	3.23	2.40	1.56	0.73	0.25	0.69	f1 III	1.52	1.41	1470
1148.	3 59 12.3	57 34 27	12.91	–	4.81	3.47	1.47	0.62	1.39	k1.2: IV	1.42	2.58	610:
1149.	3 59 12.5	56 49 58	15.70	3.08:	2.07	1.20	0.57	0.19	0.51	a3-f0 III			
1150.	3 59 12.8	57 32 06	11.91	3.07	2.29	1.52	0.70	0.25	0.63	f3 III	1.87	1.13	600
1151.	3 59 13.0	56 29 23	15.45	3.54:	2.67	1.53	0.76	0.27	0.63	a3 V	1.60	2.06	2280:
1152.	3 59 13.5	57 35 14	14.04	–	4.38?	2.96	1.28	0.49	1.18	k0.8 III	0.75	1.87	1930:
1153.	3 59 13.6	56 32 14	13.45	5.11:	4.31	2.96	1.29	0.50	1.17	k0.5 III	0.75	1.98	1400
1154.	3 59 13.8	57 01 24	14.95	2.96	2.31	1.65	0.81	0.31	0.73	f5 V	3.95	1.35	850
1155.	3 59 14.3	57 14 54	14.75	2.03	1.59	0.99	0.50	0.17	0.43	b6 V	–0.10	1.50	4660
1156.	3 59 14.5	56 49 38	12.39	–	5.64	3.93	1.58	0.68	1.46	m0 III	–1.50	1.81	2600:
1157.	3 59 14.9	57 17 33	15.44	3.11	2.14	1.28	0.62	0.22	0.51	a0.5 IV	0.35	1.71	4730
1158.	3 59 15.2	56 40 27	14.99	3.18	2.46	1.60	0.75	0.25	0.71	f1 IV	2.38	1.44	1720:
1159.	3 59 15.9	57 08 18	14.70	2.35	1.76	1.08	0.55	0.19	0.46	b8 V	–0.05	1.61	4260
1160.	3 59 16.0	56 28 25	14.34	3.75	2.83	1.76	0.85	0.29	0.72	a3 V	1.60	2.39	1170
1161.	3 59 16.0	56 52 28	13.34	4.38	3.60	2.55	1.13	0.42	1.02	g6 III	0.58	1.74	1600
1162.	3 59 16.7	57 35 58	13.65	–	–	3.24	1.32	0.59	1.20	k3 III	1.00	1.67	1560
1163.	3 59 17.3	57 08 53	14.16	2.00	1.53	1.01	0.55	0.19	0.47	b4 V	–0.90	1.78	4550
1164.	3 59 18.0	57 07 23	14.33	3.19	2.38	1.51	0.70	0.28	0.52	f0 III	1.70	1.37	1790
1165*	3 59 18.2	57 14 14	9.68	1.15	1.18	0.91	0.47	0.22	0.40	b0.5v V	–3.65	1.61	2210?
1166.	3 59 18.3	57 31 18	14.38	3.17	2.40	1.37	0.65	0.20	0.53	a3 V	1.60	1.62	1700
1167.	3 59 18.6	56 38 12	13.14	3.15	2.50	1.77	0.83	0.31	0.77	f8 V	4.10	1.30	350
1168.	3 59 18.9	57 13 33	11.85	3.91	3.36	2.39	1.04	0.41	0.95	g8 IV	2.50	1.53	370
1169.	3 59 19.0	56 58 22	15.34	3.22:	2.39	1.42	0.66	0.25	0.53	a3 V	1.60	1.68	2580
1170.	3 59 19.1	56 54 54	14.01	3.90	3.26	2.30	1.05	0.38	0.97	g5 IV	3.00	1.76	710

Table 4.2.9a (continued)

ID	$\alpha\,(2000)$	$\delta\,(2000)$	V	$U{-}V$	$P{-}V$	$X{-}V$	$Y{-}V$	$Z{-}V$	$V{-}S$	Sp	M_V	A_V	r
1171.	3 59 19.2	57 04 06	15.36	3.38?	2.34	1.38	0.68	0.25	0.52	a1.5 III	0.08	1.89	4780:
1172.	3 59 19.4	56 27 49	15.20	3.33	2.34:	1.35	0.70	0.24	0.52	a2 III	0.15	1.90	4260
1173.	3 59 21.2	56 39 54	14.99	3.07	2.54	1.72	0.83	0.30	0.79	f6 V	3.77	1.42	920
1174.	3 59 21.2	56 44 52	15.12	3.54?	2.58	1.51	0.74	0.27	0.69	a4 III	0.35	1.98	3620:
1175.	3 59 22.2	57 32 22	13.42	4.63	3.83	2.76	1.21	0.45	1.13	g8 III	0.65	1.94	1470
1176.	3 59 22.5	56 48 40	14.56	3.32	2.42	1.54	0.71	0.27	0.64	a9 III	1.13	1.55	2380
1177.	3 59 22.7	57 29 26	15.13	3.32	2.38	1.36	0.66	0.24	0.54	a4 III	0.35	1.68	4170
1178.	3 59 22.8	57 28 48	14.08	3.45	2.45	1.51	0.71	0.26	0.59	a4 III	0.80	1.87	1910
1179.	3 59 23.6	57 27 12	13.23	3.09	2.48	1.82	0.82	0.31	0.77	f9 V	4.15	1.23	370
1180.	3 59 25.1	56 43 56	15.70	3.48?	2.46	1.39	0.65	0.23	0.56	a3 V	1.60	1.64	3100
1181.	3 59 25.2	56 28 15	14.40	4.10	3.28	2.23	1.08	0.38	1.02	f1:			
1182.	3 59 25.4	57 23 01	14.73	3.18:	2.39	1.41	0.64	0.23	0.58	a3 V	1.60	1.61	2020
1183.	3 59 25.8	56 37 13	14.86	3.45	2.60	1.83	0.87	0.29	0.82	f5 III	1.60	1.65	2100:
1184.	3 59 25.9	57 26 09	14.61	2.82	2.02	1.17	0.58	0.19	0.50	b9.5 V	0.55	1.62	3070
1185.	3 59 26.3	56 41 27	14.55	3.33	2.40	1.43	0.66	0.23	0.58	a4 IV	1.27	1.65	2120
1186.	3 59 26.6	57 06 42	14.45	2.56	2.07	1.27	0.62	0.25	0.42	a			
1187.	3 59 27.8	56 58 52	14.63	3.38	2.31	1.37	0.66	0.24	0.56	a5 III	–0.45	1.67	4790
1188.	3 59 27.9	57 09 25	15.17	3.02	2.15	1.20	0.57	0.20	0.47	a3 IV	1.15	1.36	3400
1189.	3 59 27.9	57 09 43	13.88	4.40	3.63	2.53	1.06	0.44	0.98	k0 IV	2.05	1.34	1260:
1190.	3 59 28.1	57 27 54	14.67	3.10	2.52	1.83	0.84	0.30	0.79	f9.5 V	4.18	1.28	700
1191.	3 59 28.2	56 24 30	12.93	2.68	1.97	1.22	1.09	0.23	0.52				
1192.	3 59 28.6	57 22 54	12.55	2.84	2.11	1.32	0.61	0.23	0.54	f0 IV	2.10	1.00	780
1193.	3 59 28.9	56 40 40	10.20	2.62	2.04	1.38	0.64	0.24	0.61	f5 V	3.60	0.71	151
1194.	3 59 29.0	56 44 59	13.35	3.19	2.33	1.35	0.62	0.21	0.51	a3 V	1.60	1.50	1120
1195.	3 59 29.0	56 46 53	12.48	2.86	2.17	1.45	0.68	0.23	0.62	f2 V	3.10	1.03	470
1196.	3 59 29.0	56 52 43	14.93	3.37	2.89	1.95	0.89	0.35	0.79	g6 V	5.15	1.14	530
1197*	3 59 29.0	57 07 05	10.27	1.35	1.12	0.89	0.51	0.17	0.40	o8 V	–4.10	1.87	3160
1198.	3 59 29.5	57 20 14	13.19	3.59	3.02	2.13	0.91	0.36	0.88	g8 V	5.00	1.18	253:
1199.	3 59 30.0	56 42 30	14.59	3.11	2.50	1.76	0.84	0.30	0.76	f8 V	4.10	1.34	680
1200.	3 59 31.5	56 26 05	12.38	3.41	2.45	1.43	0.68	0.25	0.56	a4 III	0.80	1.73	940:
1201.	3 59 33.1	57 09 13	14.95	3.16	2.42	1.63	0.77	0.27	0.73	f3 IV	2.33	1.38	1770
1202.	3 59 33.4	57 19 32	14.47	2.56	1.80	1.04	0.53	0.18	0.43	b8.5 V	0.15	1.51	3640
1203.	3 59 33.8	56 28 07	15.27	3.34:	2.54	1.60	0.81	0.26	0.68	a7: V	2.30	1.93	1610:
1204.	3 59 34.1	56 49 39	15.93	2.59:	1.92	1.06	0.53	0.18	0.47:	b9 V	0.80	1.44	5450
1205.	3 59 34.8	56 24 40	14.74	3.47	2.79:	1.98	0.92	0.35	0.85	g0 IV	2.70	1.54	1260:
1206.	3 59 34.8	56 57 41	14.19	2.40	1.76	1.07	0.55	0.19	0.45	b8 V	–0.05	1.60	3370
1207.	3 59 35.1	56 55 36	15.55	3.08:	2.35:	1.35	0.67	0.22	0.54	a2 V	1.50	1.78	2830
1208.	3 59 35.2	56 38 39	12.61	2.04	1.57	1.08	0.57	0.19	0.49	b3 V	–1.55	1.89	2850
1209.	3 59 35.9	56 19 02	13.00	–	–	4.13:	1.73	0.72	1.58	m2: III	–0.70	2.28	1920
1210.	3 59 36.0	57 21 07	13.68	2.79	2.20	1.55	0.72	0.27	0.65	f7 V	3.93	0.93	580
1211.	3 59 36.2	56 57 05	15.17	3.50:	2.69:	1.93	0.93	0.34	0.83	f5 IV	2.60	1.87	1380
1212.	3 59 36.2	56 59 55	13.15	5.12	4.37	2.99	1.22	0.52	1.11	k2.2 III	1.15	1.44	1290
1213.	3 59 36.2	57 28 07	13.90	3.75	3.25	2.24	0.86	0.43	0.91	k1.5 V	6.40	0.72	227
1214.	3 59 36.4	57 11 35	14.37	3.18	2.62	1.80	0.79	0.31	0.75	g4 V	4.93	0.86	520
1215.	3 59 36.5	57 07 35	13.30	5.47:	4.52	3.20	1.34	0.54	1.22	k1.5 III	0.60	1.93	1420
1216.	3 59 36.6	57 06 39	13.69	3.40	2.87	1.95	0.85	0.34	0.81	g8 V	5.00	0.94	360
1217.	3 59 36.7	56 54 02	12.53	3.11	2.29	1.52	0.74	0.26	0.68	f2 V	3.10	1.24	440
1218.	3 59 36.9	56 30 25	13.08	–	5.24	3.74	1.53	0.65	1.42	k2.8 III	0.11	2.34	1330
1219.	3 59 37.2	57 26 49	14.89	3.37	2.51	1.82	0.86	0.30	0.83	f8 V	4.10	1.43	740
1220.	3 59 37.2	57 27 46	14.51	2.88	2.08	1.18	0.58	0.19	0.46	a0.5 V	0.77	1.54	2760
1221.	3 59 37.2	57 30 46	14.25	3.21	2.41	1.58	0.74	0.27	0.60	a7 V	2.30	1.67	1140
1222.	3 59 37.6	57 04 17	14.39	4.60:	3.86	2.65	1.18	0.44	1.08	g8 III	0.65	1.80	2440
1223.	3 59 38.1	56 51 00	14.04	4.10	3.37	2.36	1.07	0.39	0.98	g4 III	0.53	1.63	2370
1224.	3 59 38.2	57 25 51	13.98	3.02	2.20	1.30	0.59	0.21	0.49	a5 V	1.90	1.30	1430
1225.	3 59 38.6	56 38 56	11.01	4.88	4.08	2.81	1.19	0.44	1.10	k0.5 III	0.00	1.52	790
1226.	3 59 38.7	57 25 08	13.64	2.94	2.03	1.16	0.57	0.20	0.45	a1 IV	0.40	1.49	2240
1227.	3 59 39.6	56 24 47	14.98	3.46:	2.73	1.90	0.90	0.32	0.86	f6: IV	2.22	1.73	1610:
1228.	3 59 39.6	56 56 35	14.55	4.49?	3.62	2.61	1.13	0.42	1.02	g5 II	–1.70	1.65	8320
1229.	3 59 39.9	57 10 40	15.19	3.32	2.32	1.36	0.65	0.23	0.53	a3 IV	1.15	1.66	2990
1230.	3 59 41.2	56 31 43	12.81	3.14	2.63	1.80	0.79	0.32	0.78	g5 V	5.00	0.82	250
1231.	3 59 41.7	57 32 14	12.00	3.10	2.16	1.25	0.60	0.21	0.52	a1.5: IV	0.50	1.57	970:
1232.	3 59 41.9	56 59 04	14.50	2.96	2.38	1.68	0.78	0.29	0.72	f8 V	4.10	1.12	720
1233.	3 59 42.5	57 10 13	14.98	2.61	1.92	1.25	0.64	0.23	0.58	b7 V	–0.20	2.02	4290
1234.	3 59 43.0	57 18 08	15.11	3.03	2.40	1.67	0.79	0.29	0.76	f5 V	3.60	1.29	1110
1235.	3 59 44.4	56 55 26	13.28	3.34	2.91	1.96	0.78	0.38	0.79	k1 V	6.30	0.46	202
1236.	3 59 45.0	57 17 11	15.45	3.09	2.33	1.53	0.73	0.25	0.67	f1 IV	2.38	1.36	2200
1237.	3 59 45.2	57 26 11	14.26	3.88	3.16	2.31	1.05	0.39	0.97	g2 IV	1.50	1.78	1570
1238.	3 59 45.7	56 46 57	15.11	3.10	2.21	1.27	0.59	0.20	0.51	a5 III	0.90	1.36	3720
1239.	3 59 46.5	56 45 12	12.40	3.19	2.28	1.31	0.59	0.21	0.51	a3 V	1.60	1.41	760
1240.	3 59 46.5	56 55 02	13.64	2.98	2.38	1.75	0.81	0.31	0.76	f8 V	4.10	1.23	460
1241.	3 59 47.2	57 01 12	13.49	–	5.14:	3.63	1.45	0.62	1.34	m2 III	–1.05	1.18	4690
1242.	3 59 48.1	57 04 22	13.73	3.14	2.24	1.28	0.61	0.22	0.50	a3 IV	0.70	1.54	1990
1243.	3 59 48.3	57 18 58	13.81	2.88	2.19	1.43	0.65	0.25	0.59	f0 V	2.80	1.12	950
1244.	3 59 49.0	56 21 50	14.08	3.10	2.38	1.62	0.80	0.26	0.69	f2 V	3.10	1.47	800
1245.	3 59 49.1	57 01 24	14.01	3.24	2.45	1.63	0.77	0.30	0.70	f2 III	1.75	1.45	1450
1246.	3 59 49.1	57 08 18	13.07	1.75	1.38	0.98	0.52	0.18	0.42	b2.5 V	–1.73	1.70	4160
1247.	3 59 49.8	56 22 30	13.17	4.61	3.85	2.66	1.18	0.43	1.08	g8 III	0.65	1.81	1390
1248.	3 59 50.1	56 28 37	14.78	2.84	2.14	1.42	0.74	0.25	0.64	b7 V	–0.20	2.39	3300

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U–V$	$P–V$	$X–V$	$Y–V$	$Z–V$	$V–S$	Sp	M_V	A_V	r
1249.	3 59 50.5	56 45 05	13.34	–	5.00	3.53	1.43	0.61	1.32	k3.2 III	0.88	2.00	1240:
1250.	3 59 50.5	57 35 27	14.32	3.10	2.35	1.37	0.64	0.23	0.51	a4 V	1.75	1.54	1610
1251.	3 59 50.6	57 26 43	12.03	4.85	4.10	2.89	1.21	0.48	1.10	k0.5 III	0.75	1.66	840
1252.	3 59 51.2	57 24 56	13.27	2.87	2.20	1.57	0.72	0.25	0.66	f5 V	3.60	1.02	540
1253.	3 59 51.7	56 25 27	15.30	3.33:	2.39	1.39	0.67	0.22	0.63	a6 III	0.62	1.59	4130
1254.	3 59 52.9	56 59 44	14.47	3.17	2.47	1.72	0.79	0.29	0.74	f7 IV	2.33	1.26	1500
1255.	3 59 53.1	57 27 09	11.78	2.92	2.17	1.39	0.64	0.23	0.56	a9 V	2.63	1.13	400
1256.	3 59 53.4	57 14 43	14.11	3.80	3.16	2.25	1.00	0.38	0.94	g5.5 IV	3.04	1.54	800
1257.	3 59 54.1	56 35 40	11.77	3.02	2.20	1.28	0.62	0.22	0.53	a3: V	1.90	1.47	480:
1258.	3 59 54.5	56 21 26	13.85	3.25	2.42	1.61	0.79	0.27	0.74	f2 V	3.10	1.43	730
1259.	3 59 54.6	57 33 37	14.53	4.15?	3.53	2.39:	0.91	0.51	0.93	k3.5 V	6.70	0.68	270
1260.	3 59 55.3	57 25 37	14.52	3.22	2.65	1.87	0.89	0.36	0.80	f8 V	4.10	1.55	590
1261.	3 59 55.5	56 56 46	13.08	4.27	3.48	2.48	1.10	0.41	1.01	g5 III	0.55	1.68	1480
1262.	3 59 55.8	56 42 30	15.15	3.67?	2.66:	1.74	0.84	0.29	0.77	f2 III	0.30	1.80	4060
1263.	3 59 56.1	57 10 31	12.52	2.68	2.08	1.45	0.67	0.24	0.62	f5 V	3.60	0.85	410
1264.	3 59 56.4	56 56 13	14.88	2.97	2.16	1.22	0.60	0.22	0.41	a1.5 V	0.93	1.57	3000
1265.	3 59 58.0	56 43 34	12.24	2.96	2.35	1.66	0.76	0.28	0.72	f7 V	3.93	1.10	276
1266.	3 59 58.3	56 54 09	14.99	2.90	2.05	1.21	0.60	0.20	0.50	a0 V	0.75	1.63	3320
1267.	3 59 58.4	57 27 21	14.63	3.37	2.37	1.51	0.74	0.27	0.61	a8 III	0.97	1.70	2470
1268.	3 59 58.5	56 30 45	13.31	3.32	2.60	1.79	0.85	0.29	0.81	f5 III	2.10	1.59	840
1269.	3 59 58.6	57 00 41	15.44	2.29	1.69	1.07	0.54	0.19	0.47	b7 V	–0.20	1.62	6390
1270.	3 59 58.7	56 53 53	14.82	4.24?	3.89:	2.80	1.25	0.47	1.13	g6 III	–0.07	2.14	3550:
1271.	3 59 58.9	57 35 26	15.22	–	1.61	1.13	0.58	0.22	0.51	b3 V	–1.10	1.92	7580:
1272.	3 59 59.1	57 26 49	14.54	3.20	2.45	1.71	0.83	0.31	0.74	f3 V	3.62	1.54	750
1273.	3 59 59.6	57 05 56	12.82	2.79	2.19	1.53	0.69	0.25	0.64	f7 IV	2.87	0.85	660
1274.	3 59 60.0	57 26 01	11.42	1.95	1.43	0.89	0.47	0.17	0.40	b5 III	–1.60	1.44	2080
1275.	4 00 00.1	56 29 10	13.28	3.23	2.40	1.37	0.65	0.22	0.53	a3 V	1.60	1.63	1020
1276.	4 00 00.8	56 28 02	13.62	3.59	2.89	2.02	0.94	0.33	0.89	g0 V	4.60	1.62	300
1277.	4 00 01.2	56 59 36	15.44	3.40:	2.32	1.41	0.68	0.23	0.62	a8 III	1.37	1.48	3300:
1278.	4 00 01.3	57 08 14	15.23	2.99:	2.44	1.72	0.83	0.30	0.71	f5 V	3.60	1.44	1090
1279.	4 00 01.9	57 21 45	14.21	4.19	3.44	2.42	1.09	0.42	1.04	g6 IV	2.50	1.83	950:
1280.	4 00 02.2	57 08 53	13.51	2.88	2.19	1.51	0.70	0.26	0.62	f4 V	3.43	1.00	650
1281.	4 00 02.6	56 45 38	13.46	3.15	2.36	1.46	0.67	0.23	0.59	a6 V	2.25	1.48	880
1282.	4 00 03.0	57 20 13	15.40	2.32	1.68	1.01	0.51	0.17	0.44	b8 V	–0.05	1.44	6350
1283.	4 00 03.1	57 34 18	15.19	3.18:	2.44	1.78:	0.83	0.30	0.80	f6 V	3.77	1.42	1000
1284.	4 00 03.2	57 33 21	14.30	3.42	2.48:	1.69	0.79	0.31	0.70	f2 III	1.30	1.56	1940:
1285.	4 00 03.5	56 58 51	14.97	2.96	2.26	1.57	0.76	0.27	0.68	f4 V	3.43	1.23	1150
1286.	4 00 04.7	56 59 20	14.83	3.16	2.24	1.26	0.59	0.21	0.49	a3 IV	0.70	1.45	3440
1287.	4 00 04.8	56 24 19	15.37	–	2.57:	1.63	0.79	0.26	0.74	f0 III	0.90	1.78	3450:
1288.	4 00 05.0	57 19 40	12.02	3.16	2.56	1.83	0.81	0.30	0.78	g1.5 V	4.28	1.07	216
1289.	4 00 05.0	56 22 23	15.48	–	2.32	1.41	0.73	0.29	0.54	b9.5 V	0.55	2.18	3540
1290.	4 00 05.1	56 28 22	14.92	3.53	2.83	1.65	0.79	0.25	0.67	a3 V	1.60	2.16	1710
1291.	4 00 06.2	56 44 41	14.89	2.99	2.13	1.25	0.62	0.19	0.50	a0.5 IV	0.35	1.69	3720
1292.	4 00 07.4	56 47 09	15.26	3.21:	2.48	1.76	0.83	0.31	0.77	f4 V	3.43	1.49	1170
1293.	4 00 07.8	57 15 37	15.56	3.01	2.02	1.19	0.58	0.19	0.46	a1 III	0.00	1.52	6430
1294.	4 00 07.9	57 07 13	14.78	3.37	2.47	1.52	0.70	0.26	0.61	a5 IV	1.40	1.74	2130
1295.	4 00 08.5	56 27 18	15.51	3.17:	2.33:	1.33	0.65	0.19	0.63	a			
1296.	4 00 08.6	57 11 26	14.68	3.33	2.44	1.49	0.70	0.27	0.58	a4 V	1.75	1.76	1710
1297.	4 00 09.2	56 40 34	15.60	3.25:	2.36:	1.31	0.67	0.23	0.57:	a2 IV	0.60	1.79	4400:
1298.	4 00 10.7	57 01 45	13.82	4.24:	3.61	2.53	1.10	0.44	1.02	g9.5 IV	3.29	1.65	600
1299.	4 00 11.3	57 21 11	14.70	2.88	2.27	1.57	0.74	0.26	0.69	f5 V	3.60	1.10	1000
1300.	4 00 14.4	56 58 16	15.29	2.42	1.77	1.15	0.58	0.20	0.54	b7 V	–0.20	1.77	5530
1301.	4 00 14.6	57 12 36	14.09	4.28	3.55	2.51	1.10	0.41	0.99	g7 III	–0.03	1.49	3350
1302.	4 00 15.3	57 25 02	14.19	3.12	2.30	1.40	0.65	0.23	0.56	a6 IV	1.50	1.47	1750
1303.	4 00 15.5	57 09 49	15.23	2.23	1.58	1.03	0.50	0.16	0.47	b7: V	–0.20	1.48	6160:
1304.	4 00 15.6	57 11 51	13.87	2.02	1.51	0.98	0.49	0.20	0.44	b6 V	–0.60	1.46	3990
1305.	4 00 15.7	56 49 53	14.01	–	4.69:	3.33	1.38	0.56	1.26	k2 III	0.45	1.97	2090:
1306*	4 00 16.3	56 25 60	9.59	3.06	2.13	1.14	0.56	0.19	0.45	a3 III	0.25	1.33	400
1307.	4 00 17.4	57 12 44	14.07	2.82	2.18	1.47	0.70	0.26	0.61	f4 V	3.43	0.98	850
1308.	4 00 18.0	56 57 38	15.09	3.15	2.61	1.86	0.86	0.33	0.78	g0 V	4.20	1.31	830
1309.	4 00 18.6	56 49 56	15.09	3.08	2.43	1.67	0.80	0.30	0.73	f3 V	3.27	1.43	1200
1310.	4 00 19.1	57 29 01	15.44	2.21:	1.63:	1.11	0.59	0.22	0.53:	b5 V	–0.70	1.89	7080
1311.	4 00 19.3	57 12 06	14.28	2.70	2.10	1.50	0.70	0.28	0.63	f5 V	3.60	0.96	880
1312.	4 00 20.1	57 33 12	13.08	–	2.34	1.55	0.73	0.25	0.65	f0 V	3.10	1.37	530:
1313.	4 00 20.2	57 16 53	14.31	–	3.82	2.64	1.17	0.46	1.04	k0.5 IV	3.33	1.80	680:
1314.	4 00 20.8	57 32 41	12.68	2.93	2.39	1.76	0.80	0.28	0.74	f9.5 V	4.18	1.11	300
1315.	4 00 21.0	56 25 00	13.40	3.74	3.06	2.09	0.98	0.35	0.91	g1.5 III	1.40	1.57	1220:
1316.	4 00 21.3	56 30 07	14.75	3.66	2.96	2.04	0.92	0.34	0.89	g2 IV	1.50	1.31	2450
1317.	4 00 22.6	57 30 50	12.97	3.11	2.41	1.74	0.81	0.28	0.74	f5 V	3.60	1.39	390
1318.	4 00 23.0	57 12 40	15.37	3.01	2.27	1.29	0.60	0.20	0.54	a4 V	1.75	1.38	2800
1319*	4 00 23.3	56 54 06	9.14	1.39	1.11	0.84	0.49	0.17	0.37	b0.5 V	–3.15	1.71	1300
1320.	4 00 23.6	56 34 51	14.63	2.86:	2.15	1.26	0.63	0.22	0.51	b9.5 V	0.55	1.81	2840
1321.	4 00 24.8	57 15 38	13.64	2.87	2.37	1.71	0.78	0.29	0.74	f9 V	4.15	1.06	480
1322.	4 00 25.0	56 30 11	15.47	3.42?	2.48	1.48	0.72	0.25	0.61	a5 III	0.90	1.86	3470
1323.	4 00 25.0	57 31 22	13.94	3.25	2.27	1.35	0.66	0.24	0.53	a0.5 V	0.77	1.86	1820
1324.	4 00 25.9	57 21 45	13.73	4.58	3.79	2.66	1.13	0.44	1.06	g9 III	0.70	1.55	1970
1325.	4 00 28.1	56 50 39	13.83	3.15	2.60	1.82	0.82	0.30	0.76	g1.5 V	4.75	1.08	400
1326.	4 00 28.5	57 32 12	10.92	–	3.65	2.63	1.13	–	1.05	g			

Table 4.2.9a (continued)

ID	α (2000)	δ (2000)	V	$U–V$	$P–V$	$X–V$	$Y–V$	$Z–V$	$V–S$	Sp	M_V	A_V	r
1327.	4 00 29.0	57 20 06	13.07	3.11	2.63	1.87	0.79	0.35	0.78	g4 V	4.93	0.85	286
1328.	4 00 29.0	57 30 27	13.21	4.50	3.78	2.67	1.19	0.42	1.08	g8 III	0.65	1.84	1400
1329.	4 00 29.3	56 56 24	14.52	2.82	2.20	1.56	0.73	0.26	0.67	f6 V	3.77	1.03	880
1330.	4 00 29.8	56 46 16	14.34	3.23	2.41	1.42	0.68	0.23	0.57	a4 V	1.75	1.68	1520
1331.	4 00 30.3	56 41 02	13.41	4.53	3.74	2.65	1.18	0.43	1.13	g7 III	1.27	1.91	1120
1332.	4 00 31.5	57 25 11	14.80	3.13	2.16	1.28	0.65	0.22	0.51	a1 III	0.00	1.78	4030
1333.	4 00 32.0	57 04 40	15.15	3.50?	2.81	1.97:	0.88	0.33	0.80	g2.5 IV	1.45	1.11	3300
1334.	4 00 32.2	56 52 10	13.93	3.94?	3.38	2.39	1.06	0.40	1.00	g8 IV	3.25	1.66	640:
1335.	4 00 32.5	56 34 39	12.29	4.43	3.56	2.56	1.15	0.42	1.08	g0 II	–2.50	2.10	3450
1336.	4 00 32.5	56 39 03	14.81	3.45	2.69	1.87	0.90	0.28	0.90	f2–5			
1337.	4 00 32.9	56 58 03	13.69	5.06?	4.34:	2.94	1.24	0.47	1.14	k3.8 IV	3.46	1.82	480:
1338.	4 00 33.0	57 15 45	13.46	3.17	2.48	1.79	0.82	0.30	0.77	f9 V	4.15	1.21	420
1339.	4 00 33.6	56 43 34	11.25	4.97	4.22	2.87	1.17	0.48	1.08	k1.5 III	0.60	1.29	740
1340.	4 00 33.7	57 03 20	14.35	4.36?	3.59:	2.58:	1.18	0.43	1.06	g4 III	0.53	2.04	2260
1341.	4 00 35.1	57 23 01	14.42	–	3.78:	2.67:	1.18	0.45	1.04	g8 III	0.65	1.80	2480:
1342.	4 00 35.3	57 08 33	15.10	3.14	2.26:	1.26	0.63	0.28	0.39	a1 IV	0.40	1.72	3940:
1343.	4 00 35.5	57 27 43	14.86	3.67:	3.18	2.28:	1.04	0.40	0.96	g5.5 V	5.07	1.74	410
1344.	4 00 35.7	57 16 00	14.10	4.19:	3.52	2.49	1.08	0.39	1.03	g6 III	0.58	1.54	2490
1345.	4 00 35.8	57 05 38	12.06	2.84	2.12	1.31	0.59	0.22	0.52	a8 V	2.47	1.01	520
1346.	4 00 35.9	56 42 21	13.88	4.53?	3.80:	2.71	1.20	0.44	1.13	g8 III	0.65	1.88	1860
1347.	4 00 36.3	56 54 09	13.69	3.57	2.68	1.70	0.82	0.29	0.77	a9 III	1.13	1.95	1320:
1348.	4 00 36.7	57 26 48	14.79	2.97	2.31	1.73	0.81	0.27	0.74	f7 V	3.93	1.26	830
1349.	4 00 37.6	56 41 55	15.76	2.82?	2.08:	1.21:	0.63:	0.17	0.56:	b9 V	0.35	1.84	5180
1350.	4 00 38.3	57 02 32	13.93	3.47	–	2.02	0.93	0.35	0.86	g1.5 IV	3.28	1.50	680
1351.	4 00 39.2	56 39 13	13.92	–	3.76:	2.66	1.16	0.43	1.07	g8 III	0.65	1.72	2040:
1352.	4 00 39.6	57 14 07	10.74	4.38	3.68	2.58	1.09	0.41	1.00	g9 III	0.70	1.38	540
1353.	4 00 39.6	57 14 45	13.50	3.02	2.23	1.47	0.69	0.25	0.65	f2 III	1.75	1.13	1330
1354.	4 00 40.5	57 23 21	14.20	2.92:	2.22	1.33	0.61	0.22	0.47	a5 V	1.90	1.39	1520
1355.	4 00 41.3	57 19 37	15.10	3.00	2.13	1.21	0.57	0.21	0.44:	a2 V	1.50	1.41	2730
1356.	4 00 41.4	56 53 06	12.18	4.25	3.57	2.49	1.09	0.41	1.01	g7 III	0.62	1.53	1010
1357.	4 00 41.7	56 43 55	11.74	2.70	1.92	1.03	0.50	0.16	0.40	a1 IV	0.80	1.19	890
1358.	4 00 42.1	56 49 12	14.35	–	4.06?	2.85:	1.26	0.47	1.16	g8.5 III	0.68	2.10	2070
1359.	4 00 42.1	57 15 56	14.54	3.13	2.25	1.40	0.64	0.22	0.54	a7 III	1.20	1.41	2440
1360.	4 00 42.6	57 00 15	14.03	3.28	2.65	1.86	0.82	0.32	0.77	g3 IV	3.37	1.00	860
1361.	4 00 42.7	57 07 31	14.90	3.11:	2.29	1.67	0.75	0.29	0.73	f7 V	4.32	1.03	820
1362.	4 00 43.1	56 34 35	14.05	3.68:	3.15:	2.16	0.97	0.38	0.94	g7 V	5.30	1.42	293
1363.	4 00 43.2	56 35 43	15.31	–	2.52:	1.69:	0.77	0.29	0.73:	f3-f8			
1364.	4 00 44.0	57 03 50	15.35	–	2.37	1.69:	0.78	0.30	0.72	f8 V	4.10	1.12	1070:
1365.	4 00 44.4	57 08 25	11.43	3.80	3.07	2.17	0.97	0.38	0.92	g3: III	1.40	1.41	530:
1366.	4 00 44.9	56 53 56	12.52	2.80	1.99	1.10	0.53	0.18	0.43	a1 V	1.20	1.31	1000
1367.	4 00 45.5	57 24 05	13.98	3.15	2.62	1.89	0.84	0.32	0.77	g2.5 V	4.35	1.13	500
1368.	4 00 46.1	57 16 42	12.50	2.78	2.07	1.27	0.57	0.21	0.50	a9 V	2.63	0.87	630
1369.	4 00 46.3	57 19 39	13.36	2.93	2.42	1.73	0.78	0.30	0.72	g0 V	4.20	1.02	420
1370.	4 00 46.4	56 34 52	12.96	5.07:	–	3.05	1.29	–	1.20	k3			
1371.	4 00 46.7	57 11 05	12.21	2.30	1.61	0.98	0.50	0.19	0.44	b8 III	–0.75	1.43	2020
1372.	4 00 48.1	57 24 36	14.75	3.07	2.51	1.71	0.80	0.29	0.76	g0 V	4.20	1.08	780
1373.	4 00 49.3	57 24 16	12.50	2.87	2.13	1.36	0.63	0.23	0.56	a9 V	2.63	1.12	560
1374.	4 00 49.7	57 05 14	13.51	4.05?	–	2.43	–	–	1.06	g3:			
1375.	4 00 50.5	57 09 35	15.29	2.57?	2.27:	1.10:	–	–	–	b6:			
1376.	4 00 51.5	57 26 41	14.24	3.07	2.55	1.84	0.82	–	0.79	g1:			

NOTES

2. BD +56 850, B3p, emission in Hα

35. BD +56 851

141. BD +56 852

163. ALS 7789, LS I +56 91

172. HD 237188, BD +56 853, ADS 2812A, 7.6″, 9.2/12.6

242. TDSC 8255A, WDS 035331+5645, 12.6″, 12.4/13.0

424. HDE 237191, BD +57 753

448. TDSC 8298, 0.54″, V(Tycho) 10.98/10.89

498. HD 24298, BD +56 855, HIP 18314

560. HD 24350, BD +56 856, ADS 2845, 1.2″, 10.9/8.3

572. BD +55 833

625. HD 24395, BD +56 857, ALS 7802, LS I +56 93, HIP 18383

650. HDE 237195, BD +56 858

696. Suspected cepheid (P. Wils, J. Greaves, IBSV 5512, 2004)
746. ALS 7811, LS I +57 136
880. ALS 7815, LS I +56 94
902. TDSC 8404A, ADS 2878, 4.5″, 10.0/11.1
916. ALS 7817, LS +56 90
926. BD +56 859
940. BD +56 860
1016. BD +56 861, TDSC 8429AB, 0.52″, V(Tycho) 10.76/10.72
1033. HDE 237201, BD +56 862
1081. ALS 7829, LS I +57 137
1093. HD 24717, BD +57 760, HIP 18602
1118. BD +56 863
1132. ALS 7833, LS I +57 138 = Hiltner 412 (O7.5), O7 V (Negueruela, Marco 2003)
1145. HDE 237202, BD +56 865
1165. BD +56 864, ALS 7836, LS I +57 139, Hiltner 413 (O6nn), susp. variable NSV 15852, O6.5+ (Negueruela, Marco 2003)
1197. BD +56 866, ALS 7838, LS I +56 97, Hiltner 414 (O9.5)
1306. HDE 237203, BD +56 867
1319. HDE 237204, BD +56 868, ALS 7847, LS I +56 98, Hiltner 415 (B0.5 V)