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SAO stars with infrared excess in the IRAS Point Source Catalog

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Abstract. — We have undertaken a search for SAO stars with infrared excess in the IRAS Point Source Catalog. In contrast to previous searches, the entire IRAS [12]-[25]-[60] colour-colour diagram was used. This selection yielded a sample of 462 stars, of which a significant number are stars with circumstellar material. The stars selected can be identified as Pre-Main-Sequence stars, Be stars, Proto-Planetary Systems, Post-AGB stars, etc. A number of objects are (visual) binary stars. Characteristic temperatures and IR excesses are calculated and their relations to spectral type are investigated.

Key words: infrared radiation — stars: circumstellar matter — stars: early-type — stars: evolution of — stars: general — stars: mass loss.

1. Introduction.

In the recent past, many stars covering the complete evolutionary sequence have been found to have circumstellar shells. The IRAS Point Source Catalog (1985), hereafter IPSC, has proven to be a successful tool to identify the presence of circumstellar material. Dust condensed in a gaseous envelope re-radiates absorbed stellar radiation, while ionized gas surrounding hot stars emits infrared free-free and bound-free radiation. Both processes result in infrared radiation in excess of normal photospheric values.
The presence of circumstellar matter occurs especially in early and late stages of stellar evolution. When a protostar starts to contract, and nuclear burning ignites, the outer parts of the system will be blown away causing a dense stellar wind. T Tauri stars, and Herbig-Ae/Be stars appear to be in this stage. Other young objects showing dust shells are, e.g. proto-planetary systems, like the well known Vega system (Aumann *et al.* 1984). Evolved stars on the Asymptotic Giant Branch (AGB) are another example of stars surrounded by dust shells. During this stage the star undergoes a strong mass loss. Some of the ejected material will condense into dust, causing obscuration in the visual. In the short period following the AGB, commonly called the post-AGB phase, the star may become optically visible due to the dispersion of the dust shell. When the star reaches a temperature sufficiently high to ionize its circumstellar gas, it may be observable as a Planetary Nebula (PN). Young PNe still show infrared emission from the circumstellar dust, which has not yet been destroyed by the hard UV radiation of the central star, or is not yet dispersed into the interstellar medium. Many of these objects have been discovered in the IRAS data.
Our intention is to conduct a well-defined, complete search for candidate post-AGB stars in the IPSC. Since it has been found that a large number of post-AGB stars are optically visible (Trams *et al.* 1991) we have cross-correlated the IPSC with the optical SAO catalog to extend the known sample of optically bright post-AGB stars. Such a sample has the important advantage that the central star can be studied as well as the circumstellar material. Apart from post-AGB stars the selection provided many other interesting types of stars with infrared excess, such as new Be stars, proto-stars, and proto-planetary systems. We present the results of the selection process, as a target list for further studies.
Searches like the one presented here have been carried out in the past, but in most cases the application of selec-

tion criteria was not well defined or the sample did not cover the entire IRAS far infrared colour-colour diagram. (Willems 1987; Van der Veen *et al.*,1989; Parthasarathy and Pottasch 1986; Pottasch and Parthasarathy 1988; Stencel and Backman 1991). A trend for looking in particular regions in the IRAS far-infrared colour-colour diagram was started when Willems (1987) found that a sample of carbon stars was located in a specific area of the colour-colour diagram, and Van der Veen and Habing (1988) showed that different kinds of evolved stars cluster in specific areas of the colour-colour diagram. The overlap between the regions is significant however, and the regions contain never more than 80-90% of all stars of that type. Since then the tendency has been to study only specific regions in the diagram, neglecting the remainder of the colour-colour diagram. Parthasarathy and Pottasch found several infrared luminous F giants above the galactic plane, classifying them as candidate post-AGB stars, but it is unclear how the sources have been selected. Recently, Stencel and Backman (1991) have undertaken a survey for high galactic latitude SAO stars with infrared excess, but defined infrared excesses assuming that the 12μm fluxes are photospheric, hence they select only those stars which exhibit strong excesses at the other IRAS bands. We try to avoid any biases looking for stars with anomalous infrared excesses by taking the entire IRAS colour-colour diagram into account, by not putting constraints on the IR colours.

The source list as presented in this paper serves as the basis for follow-up observations, some of which have already been published (Waelkens *et al.* 1990a; Waters *et al.* 1990). These follow-up observations have shown that the selection does not only yield post-AGB stars but also a fair number of proto-planetary systems, Herbig Ae stars, and Be stars. A spectacular result has been obtained for SAO 96430 (HD 52961) which appears to be the most iron deficient star discovered to date (Waelkens *et al.*, 1990b;1991). The paper is organized as follows: In Section 2 we describe the application of the selection criteria. The methods used for calculating infrared parameters are discussed in Section 3. In Section 4 we present the results of the selection.

2. The selection procedure.

The initial constraints we have applied for the selection of SAO stars with infrared excess are as follows:
(a) As starting point we use the magnitude limited SAO catalog, and look for positional associations with IRAS sources. We have chosen the SAO catalog for it is a large catalog with excellent positional information, and fairly reliable spectral types and magnitudes. The accurate positions allow for reliable identifications with IRAS sources. The IPSC provides positional associations with the SAO catalog within an area with cross-scan distances $\leq 45''$ and in-scan distances $\leq 8''$ from the IRAS position.
(b) Because post-AGB stars have spectral types intermediate between AGB (K and M-type) and PNe (O-type), we selected only on spectral types B, A, F, and G.
We have used the SIMBAD data base, operated at CDS (Strasbourg, France), to obtain more recent values for the magnitudes and spectral types of the SAO stars. We rejected stars, that were in the original selection, if the improved spectral type was not in the range of our selection criteria. An object was also rejected if more than one SAO star was associated with an IRAS point source, since then it is not possible to determine which of the SAO stars is the source of the infrared emission.
The selection of SAO stars in the IPSC is divided in two parts: section 2.1 treats the entire far infrared colour-colour diagram, except for the Rayleigh-Jeans point, where sources with temperatures higher than 1500 K converge into one point, and the presence of circumstellar material can not be established on the infrared data alone. This area in the colour-colour diagram will be discussed separately in section 2.2., where additional optical information is used.

The selected stars are listed in Table 1. It lists respectively the SAO number, and if present, the HD, HR numbers, and names, the V magnitude, $(B-V)$, spectral type, 1950.0 equatorial coordinates and the galactic latitude, and a tentative classification of the nature of the objects. Furthermore the infrared data are given, the fluxes in Jansky at the 12, 25, 60, and 100 μm band, and the flux qualities. The next columns present the IR excesses in magnitudes (calculated in Sec.3), the last column gives the derived colour temperatures.

2.1. STARS WITH COOL DUST.

The first part of the selection concerns a search through the colour-colour diagram for stars which show an IR excess in the [12]–[25] and/or the [25]–[60] colour corresponding to a black body temperature $\lesssim 1000$ K, a temperature range indicative of circumstellar material. Here we want to avoid the Rayleigh-Jeans point in the colour-colour diagram, in which stars without circumstellar material or with very hot circumstellar material are situated. Therefore, the colour criteria on the objects are:
[12]–[25] > 0.4 or [25]-[60] > 0.3
A description of the definitions of the infrared colours and magnitudes in this paper is provided in section 3.1.
In all cases we require a flux quality at 12μm and 25μm larger than 1, for we will use the 12μm flux to derive infrared excesses of the stars, while an upper limit to the flux in the 25 μm band yields only limits for both the [12]-[25] and the [25]-[60] colour. Furthermore, for the objects with [12]–[25] < 0.6, we require their 60 μm flux quality not to be an upper limit ($FQ = 1$), this prevents sources without IR excess, that are not detected at 60μm, from being selected (FQ is the flux quality as given by the IPSC (IRAS Explanatory Suppl.1985), $FQ = 1$ implies an

upper limit to the flux density, $FQ = 2$ a moderate quality flux density, and FQ = 3 implies a good determination of the flux density). This procedure selects stars only on their colours, the magnitudes of the excesses are not taken into account.

From the 34,611 IRAS point sources with an association with a SAO star, only 1579 satisfied the colour-criteria. After selecting on spectral type we finally obtained a sample of 414 sources [1]. The remaining 414 sources are the only B, A, F, or G type stars in the SAO catalog with colour temperature indicative of circumstellar material in either the [12]-[25] or the [25]-[60] colour. The distribution of these sources in the colour-colour diagram is plotted in Fig. 1.

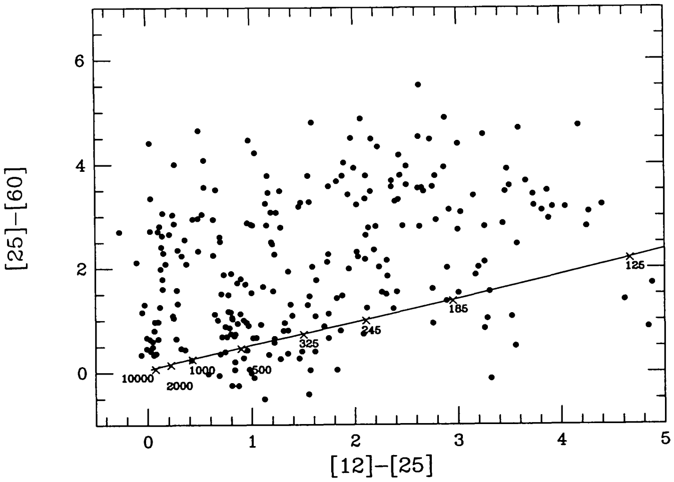

FIGURE 1. All SAO stars with spectral types B, A, F, and G which have colours [12]-[25] > 0.4 or [25]-[60] > 0.3 in the IRAS catalog. These colours correspond to black body temperatures ≤ 1000 K. The solid line represents a black body line. Some temperatures are indicated.

2.2. STARS WITH HOT DUST.

The second part of the selection of SAO stars with infrared excess treats the Rayleigh-Jeans point. In the Rayleigh-Jeans point all sources with temperatures larger than about 1500 K will converge, as the slope of the Planck function does not change in the IRAS wavelength range. This implies that we can only calculate a lower limit to the temperature of a source in the Rayleigh-Jeans point. As a consequence one only expects to see photospheric infrared radiation of stars in this part of the colour-colour diagram. However, stars with very hot dust ($\gtrsim$ 1000 K) are located in the Rayleigh-Jeans point as well. Here we try to select these stars establishing the presence of an infrared excess by combining the optical information with the observed 12 μm flux.

In order to complement the first part of the selection we use a rather broad definition of the Rayleigh-Jeans point. The initial requirements for the stars concerned are:

$$[12] - [25] < 0.6$$

Here we also require flux qualities of the 12 and 25 μm detections larger than 1. We do not put any constraints on the 60 μm flux quality, since we have not taken objects with an upper limit on the 60 μm flux, and a high [12]-[25] colour temperature into account in the first part of the selection in Sec. 2.1. The reason to include them in this part is that we expect the sources to be hot, so the 60 μm flux will be lower than the 12, and 25 μm fluxes, with a large chance of being under the detection limit. The upper limit on the 60 μm flux, implies an upper limit on the [25]-[60] colour as well. This means that these sources could possibly be located in the Rayleigh-Jeans part of the diagram. We found 983 IRAS point sources associated with SAO stars with spectral type B,A,F, and G in this region.

For the calculation of infrared excesses we adopt the method applied by Waters *et al.* (1987), who derive an empirical relation between the far infrared emission and the B and V magnitude for normal stars. Using all stars without infrared excess in the Bright Star Catalog (Hoffleit and Jaschek, 1982) that were detected at 12 μm by IRAS, they obtain a unique $(B - V), (V - [12])$ relation. This relation was derived ignoring interstellar extinction which was estimated to be low, for the Bright Star Catalog contains relatively nearby stars. Using the $(B - V), (V - [12])$ relation the photospheric 12 μm magnitude can be derived from the B and V magnitudes of a star:

$$V - [12] = 0.05 + 3.13(B - V) - 1.26(B - V)^2 + 0.29(B - V)^3 + 0.16(B - V)^4 \quad (1)$$

where [12] is the 12μm magnitude as defined in section 3.1.

Knowing the visual magnitude V, and the colour index $(B - V)$, one can predict the photospheric 12 μm magnitude. The difference between the observed IRAS 12 μm magnitude and the photospheric 12 μm, will be the magnitude of the possible 12 μm excess.

If we apply Eq. (1) to calculate the expected 12 μm flux for stars with significant reddening (either circumstellar or interstellar), this may result in an underestimate of the $V - [12]$ excess, and thus lead to erroneous results. However, in practice the error turns out to be rather small, because the slope of the $(B - V), (V - [12])$ relation is close to that of the interstellar reddening vector.

A confirmed IR excess is assumed when the stars show a

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[1] It appeared that although SAO 151362 (the famous Red Rectangle), is located only 11 arcseconds from the IPSC position, the IPSC does not give an association with this star. Probably because the separation is larger than the in-scan cut off used for the association. Since the Red Rectangle is definitely associated with the IRAS Point Source we have included the star in the sample

12μm excess larger than one magnitude. This cutoff value has been chosen so that the intrinsic width of the relation, (estimated to be 0.1-0.2 magnitudes), and the possible error in the determination of the photospheric 12μm flux density for the brighter stars, does not seriously affect the selection.

Almost all SAO stars in the IPSC with flux qualities larger than 1 in the 12 and 25 μm band satisfied the colour criterium, 12,299. A lot of these point sources had multiple associations, probably because of source confusion. The photospheric radiation of cool stars peaks in the near-infrared, and will be quite strong in these IRAS bands. Note that the problem of source confusion plays a more important role in this part of the selection, than in the one described above. There one only expects source confusion with (other) mass losing stars, while in this part one selects a priori on colours expected from cool stars.

After rejecting all double associations and stars with spectral types other than B, A, F, or G a sample of 983 stars remained. From these 983 sources only 56 show an excess of more than 1 magnitude in the $V-[12]$ colour.

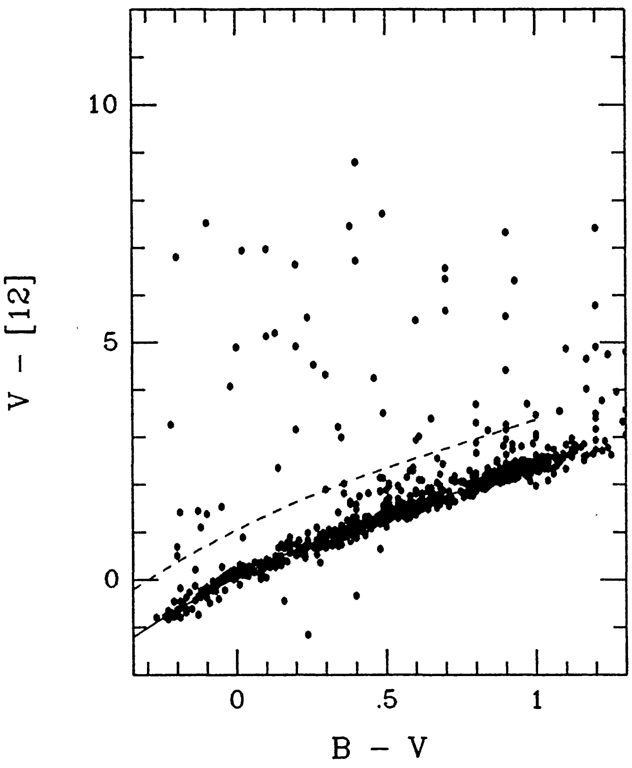

FIGURE 2. All SAO sources with spectral type B, A, F, and G with colour [12]-[25] < 0.6. The full line is the $(B-V), V-[12]$ relation (Eq. (1)). Stars above the dashed line were included in the sample.

As an illustration of this part of selection we present in Fig. 2 a $(B-V)$,$(V-[12])$ plot of the 983 SAO sources of spectral type B, A, F, G which lie in the Rayleigh-Jeans part of the colour-colour diagram. The solid line represents Eq. (1), while the dashed line is the cut-off in the $V-[12]$ excess used. The second part of the selection yielded 56 objects. The overlap with the first part is 8 sources, resulting in a total sample of 462 sources.

2.3. EFFECTS OF CIRRUS ON THE SELECTION.

It may be possible that the presence of cirrus could have influenced our selection in such a way that sources which originally do not show excess infrared emission, may show excess in the 25 or 60 μm, due to cirrus. We have investigated the influence by checking the derived excess magnitudes (see Sec. 3) *versus* the CIRRUS 1 and 2 flags (IRAS Expl.Suppl.). The CIRR1 flag gives information on the number of 100 μm sources within 30 arcminutes around a source, and the CIRR2 compares the extended emission at 100 μm with the source flux. It turned out that there is not a correlation between the presence of cirrus and the magnitude of the derived excesses. From this exercise we can conclude that at least in a statistical sense our sample is not affected by cirrus.

3. Infrared definitions.

Following the definitions of infrared colours and magnitudes as described by Waters *et al.* (1987), we do not apply colour corrections to the IRAS fluxes. For the calculation of the magnitudes (used for the IR colours and the photospheric 12 μm magnitudes), for which a 10^4 black body is used originally in the IRAS Explanatory Supplement (1985), we do take this correction into account. The measured IRAS fluxes are converted to magnitudes using the definition for zero magnitude given in the IRAS Explanatory Supplement (1985). There it is described that the absolute calibration for the 12 μm magnitude was set so that the colour corrected flux density of α Tau corresponded to ground based measurements. The behaviour of a 10^4 K black body occupying a solid angle of 1.6 x 10^{-16} steradians was normalized to the 12μm magnitude of α Tau, and extrapolated to 100μm to define a magnitude for the other IRAS wavelength bands.

The zero magnitude flux densities given in the Expl.Suppl. however are not corrected for a 10^4 black body, which would lead to a different determination for the far-infrared magnitudes of α Tau itself. In order to be consequent, and use magnitudes as they should be, one has to correct all IRAS fluxes to a 10^4 black body first. The magnitudes as we apply them, can be written as follows:

$$m_\lambda = 2.5 \log \left(\frac{K_\lambda \, f_\nu[0.00\,\mathrm{mag}]}{f_\nu} \right) \qquad (2)$$

with m_λ, the magnitude at wavelength λ, $f_\nu[0.00\,\mathrm{mag}]$, the flux density in Jy corresponding to the zero magnitude, as given by the IRAS Explanatory Supplement (1985), K_λ is the colour correction factor to a 10^4 K black body, and f_ν the IPSC flux in Jy.

The colour-correction factors for a 10^4 K black body, are

1.45, 1.41, 1.32, and 1.09, for the 12, 25, 60, and 100μm bands. This results in zero magnitude flux densities 41.04, 9.49, 1.57, and 0.47 Jy respectively.

3.1. DETERMINATION OF IR EXCESS.

The IR excess per IRAS band (in magnitudes) is calculated by taking the difference between the observed infrared magnitude and the stellar photospheric contribution to the IR emission. The photospheric contribution at 12μm is calculated using the relation by Waters *et al.* (1987) (Eq. (1)).

The photospheric magnitudes at the other IRAS bands can be calculated using the intrinsic colours for normal stars, as provided by the IRAS Expl. Suppl.:

$$[12]-[25]=-0.03 \tag{3}$$

$$[25]-[60]=-0.03 \tag{4}$$

$$[60]-[100]=-0.06 \tag{5}$$

These values have been found using observations of the Sun, and several stellar model calculations. We can calculate the predicted photospheric magnitude of the other bands by adding the predicted 12 μm magnitude and the intrinsic colours. However, when using the definition of magnitudes as given in Eq. (2), the colours should be the difference of magnitudes with a colour correction to a 10^4 K black body, as is not the case with the intrinsic colours in the IRAS Expl. Suppl. In passing we note that Coté and Waters (1987), who apply the same method to determine far IR excesses of Be stars, use these intrinsic colours directly, while they use the definition for the observed magnitudes of the Be stars given in Eq. (2). Although the difference between the IRAS Expl. Suppl. colours and the correct colours is large, it does not affect their main results.

With this correction the intrinsic colours of normal stars become:

$$[12]-[25]=0.00 \tag{6}$$

$$[25]-[60]=0.05 \tag{7}$$

$$[60]-[100]=0.15 \tag{8}$$

The IR excesses that have been calculated are listed in Table 1. For detections with Flux Quality = 1 no excess is given. Using this method it is possible to obtain negative excesses, the reason for this is twofold; *(i)* stars with only excess fluxes at 25 μm or 60 μm will have photospheric fluxes at 12 μm, the intrinsic width of the $(B-V, V-[12])$ relation is 0.1-0.2 magnitudes, resulting in (small) negative calculated excesses. *(ii)* if a star is reddened by a large factor, the star moves to the right in Fig. 2, and a smaller excess is derived. Note that this effect only appears for a small number of sources, since smaller reddening effects are balanced by the slope of the $(B-V, V-[12])$ relation.

3.2. DETERMINATION OF DUST TEMPERATURES.

Dust temperatures are derived from a black body fit to the monochromatic excess fluxes. Since there are several methods used for deriving temperatures to the IRAS fluxes, we stress that we use monochromatic fluxes as input for the fit. For the calculation of the monochromatic excess fluxes, we subtract the predicted monochromatic photospheric flux from the monochromatic observed flux.

The observed IRAS fluxes have been converted into monochromatic fluxes using the colour temperatures in table VI.C.6 of the IRAS Expl. Suppl. (1985), and the colour corrections for these temperatures. This will remove the bandwidth effect of the IRAS filters.

Further, the monochromatic photospheric flux density can be calculated from the predicted photospheric magnitude, which is, taking into account the colour correction for 10^4 K,

$$f_\nu = f_\nu[0.00\text{mag}]\, 10^{-\left(\frac{m_{\lambda,\text{pred}}}{2.5}\right)}\text{Jy}.$$

The difference between the monochromatic observed fluxes and the monochromatic predicted fluxes is then the monochromatic excess flux density, which is used as input for the black body fitting.

The black body fit was done by comparing a range of black body curves to the excess fluxes, the temperature with the smallest deviation from the excess fluxes was taken as the final temperature. We do not use excess magnitudes below 0.15 mag for the fitting, since the errors we make in establishing the excess magnitude are of that order. The derived temperatures are mean colour temperatures of the circumstellar dust shells. They do not have any physical meaning in cases where the IR emission is due to thermal free-free emission.

4. Results.

In Table 2. the distribution of spectral type of the sources is presented. Between brackets are the percentages.

Table 2. *Distribution selected sources over spectral type.*

Luminosity Class	Spectral Type B	A	F	G
I-II	21	12	28	12
	(4.5%)	(2.6%)	(6.1%)	(2.6%)
III-V	172	49	37	29
	(37.2%)	(10.6%)	(8.0%)	(6.3%)
Unknown	24	41	11	26
	(5.2%)	(8.9%)	(2.4%)	(5.6%)
Total	217	102	76	67
	(46.9%)	(22.0%)	(16.5%)	(14.5%)

The large number of B dwarfs in the sample, is a result of the effective way with which this selection picks out Be stars, of which 109 entered our sample. Also note the large fraction of F stars among the supergiants, many of which have been classified earlier as post-AGB stars (Waters *et al.* 1990; Waelkens *et al.* 1990a).

The distribution of the sources with different spectral types in the IRAS colour-colour diagram is shown in Fig. 3.

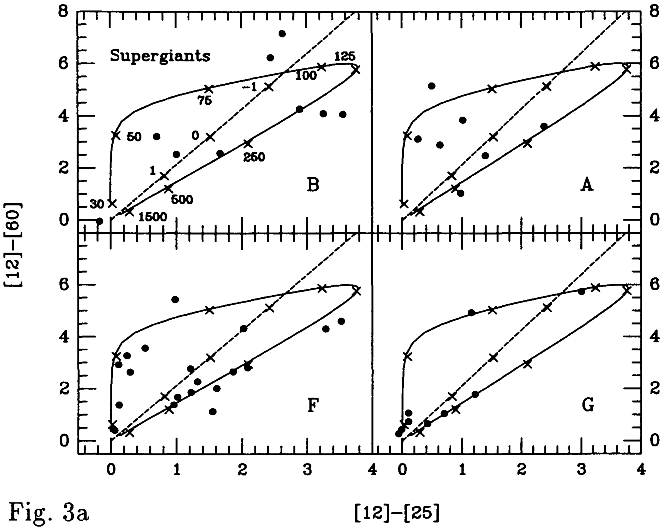

Fig. 3a

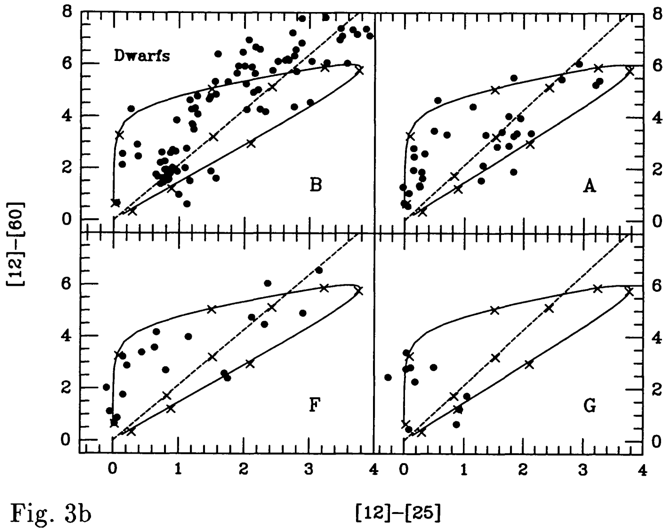

Fig. 3b

FIGURE 3. The distribution of the stars in the IRAS colour-colour diagram is plotted for the spectral types B,A,F, and G. In Fig. 3a are the Supergiants (I-II), while in Fig. 3b the Dwarfs (III-V) are shown. The solid line represents a 10^4 K black body on which the black body radiation of a cooler component is superposed. At the tickmarks the temperature of the cool component is indicated. The dashed line follows the position of a power law spectrum $S_\nu \propto \nu^\alpha$, where some values of α are marked. Notice that the [12]-[60] colour is plotted against the [12]-[25] colour. This enhances the differences between the temperatures compared to the usual [25]-[60] colour on the vertical axis.

The solid line in the figure represents the total emission from a star with temperature 10^4 K, superposed on a range of black bodies with temperature from 2000 K to 30 K, with an effective radiating surface which is a factor $10^{2.5}$ larger than that of the star. This should be fairly representative of a star surrounded by a circumstellar dust shell.

The dashed line gives the location of power law energy distributions with slope $S_\nu \propto \nu^\alpha$, with several values of α indicated. IR emission due to free-free radiation of ionized circumstellar gas can usually be represented by a power law spectrum, where the slope of the power law depends on the density gradient of the ionized gas (Waters 1986).

In spite of the simplicity of the models, they explain the location of most objects quite well. As we can see in Fig. 3 a large number of the B dwarfs are located around the power law line for $\alpha \approx 1$, the region where Be stars are located. The B dwarfs above the loop lie in the region of the colour-colour diagram where most HII regions are found to be (see for example Pottasch *et al.* 1988).

We have also investigated whether the colour temperatures of the infrared excesses are correlated with spectral type. In Fig. 4a+b we show the temperature distribution of the dwarfs and supergiants. It appears from the dwarf (luminosity class III-V) temperature distribution that the temperatures show a large peak in the interval 100-200 Kelvin, and a second peak in the range 300-500 Kelvin. Especially for the B dwarfs the second peak is very prominent. This peak is a result of the temperatures derived from the IR excesses of, mostly, free-free emitting Be stars. A colour temperature denoted to their IR excesses would have values in this range. When we exclude all Be stars from the B dwarf sample, the resulting histogram shows a peak at 100 K, followed by a shallow decline towards higher temperatures. The second peak is still present but less dominant, as shown by the dashed line in Fig. 4b. If one assumes that for all sources an expanding, cooling dust shell is responsible for the IR radiation, then it can be shown that a source will exist longer with a cool dust shell rather than with hot dust (e.g. Willems, 1987). This accounts for the large fraction of stars with cool dust. For the dwarf type stars, no real difference for the spectral types is present. The supergiant (I-II) temperature distribution is different from the dwarf temperature distribution. Although we use small numbers, especially when using the supergiants from our sample, the data suggest that the temperature range for the supergiant sample is broader than for the dwarf sample. Almost no cool ($T_{\rm colour}$ < 100 K) dust is present for the supergiants, contrary to the distribution for the dwarfs. These cool dust shells around dwarfs can be a hint for planet formation. The overall behaviour of the temperatures of the supergiants between the spectral types is the same. Summarizing we conclude that there is a distinction between the temperature distribution of the dwarf sample and the supergiant sample, but no clear difference between spectral types B, A, F, and G within these two samples.

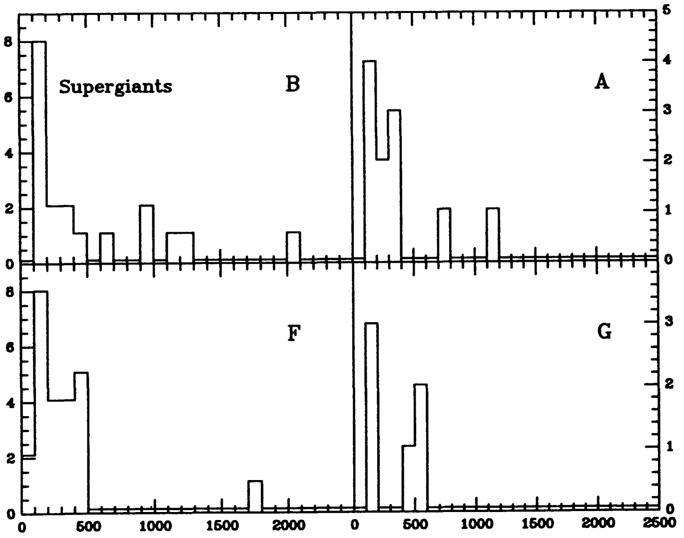

Fig. 4a

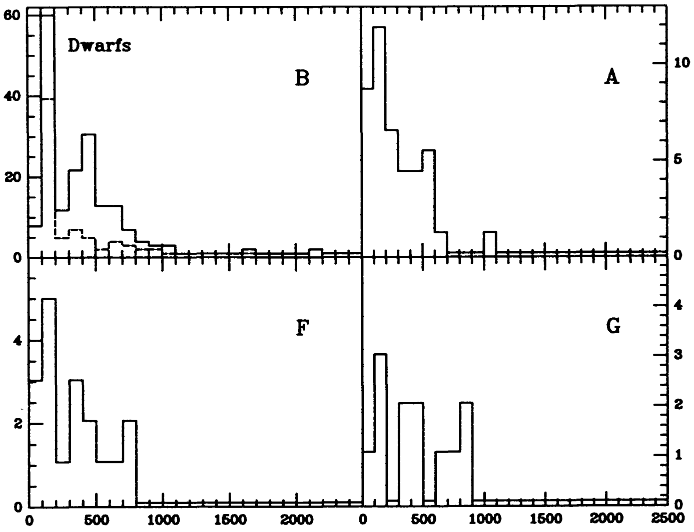

Fig. 4b

FIGURE 4. The distribution of the derived colour temperatures for the different spectral types. In Fig. 4a the distributions for the supergiants and in Fig. 4b for the dwarfs are shown. The dashed line in the histogram for the B dwarfs represents only the B dwarfs without emission characteristics.

5. Conclusions.

We have searched the IRAS Point Source Catalog for SAO stars with anomalous infrared excess, indicating circumstellar material. The entire IRAS [12]-[25]-[60] colour-colour diagram has been taken into account for this search. The selection provided a sample of 462 stars out of which a large number of B dwarfs has been selected. This is a result of the effective way our method includes Be stars. Stars which are suspected to have circumstellar dust shells, have a colour temperature distribution which peaks at 200 K independent of spectral type. Many supergiant type stars have been classified before as post-AGB stars. Although the selection included a large number of stars which are certainly no post-AGB candidates (e.g. the Be stars), more observations will be done to determine the nature of the objects of which the nature is not yet known. A future paper will treat the sample of post-AGB candidates in a statistical sense, with the inclusion of selection effects that have come into this sample.

6. Acknowledgements.

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Notes to Table 1

The spectral types are the spectral types given by the SAO Catalog, while most are the improved spectral types provided by the SIMBAD database. The spectral types indicated by '**', are derived by Waelkens et al. (1990a, 1990b). The coordinates are the IRAS coordinates of the sources. For the identifications of the nature of the stars, only those known to the authors have been included. We have not tried to be complete in this. The following terms are used: Be, Be star; binary, either visual or physical binaries; C*, C star; He*, Helium star; Herbig, Herbig Ae or Be object; LBV, Luminous Blue Variable; PMS Pre-Main-Sequence Object; PN, Planetary Nebula; postAGB, post-AGB candidate; RCrBr, R Cor B type star; RV Tau, RV Tauri object; Vegatype, planet forming systems

Note that the stars marked with an 'L', have Lynds (1962) dark clouds very close to the IRAS point source, so that contamination can be severe. SAO 161118 has been marked with 'HII'; the HII region is in this case closer to the IRAS point source than the SAO star.

Table 1. *SAO stars with infrared excess.*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T$_{colour}$ K
21133	432	21	β Cas	2.27	0.34	F2III	0 06 29.7	58 52 27	3.3		11.70	2.87	1.00	12.70	3 3 3 1	−0.07	−0.01	0.76		
21171	627			8.29	0.14	B7 V	0 08 08.0	58 29 29	3.7		0.32	0.84	22.30	75.10	2 3 3 2	2.56	5.19	10.67	13.15	95.0
109192	2114	97	44 Psc	5.77	0.86	G5III	0 22 50.3	01 39 47	60.2		1.35	0.63	0.40	1.00	3 2 1 1	−0.02	0.74			
248208	3003	136	β3 Tuc	5.09	0.04	A0 V	0 30 28.7	−63 18 23	54.0	binary	0.48	0.32	0.40	1.00	3 3 1 1	0.09	1.24			
11281	3191			8.57	0.44	B1 IV nn	0 32 58.8	61 11 04	1.4		0.34	1.02	5.49	16.50	3 3 3 1	2.15	4.93	8.67		130.0
11322	3672			8.90	1.40	F2	0 37 12.7	60 34 30	2.0		0.76	0.29	1.28	6.47	3 3 3 3	1.19	1.74	5.26	8.19	130.0
36620	4180	193	o Cas	4.54	−0.07	B5III e	0 41 55.7	48 00 40	14.6	Be	2.09	0.93	0.62	1.35	3 3 3 1	1.48	2.19	3.67		340.0
21775	4881	241		6.21	0.00	B9 V	0 48 41.8	51 17 59	11.3		0.28	0.28	3.88	11.20	3 3 3 2	0.75	2.33	7.10	9.42	110.0
11482	5394	264	γ Cas	2.47	−0.15	B0 IV ep	0 53 40.3	60 26 47	2.2	Be	18.80	8.40	2.62	7.67	3 3 3 1	2.07	2.79	3.43		500.0
21910	232344			8.60	0.00	B2 V	0 57 15.2	51 06 56	11.5		0.67	1.21	10.90	17.40	3 3 3 3	4.08	6.31	10.61	12.28	120.0
11526	5839			6.70	0.00	B9	0 58 11.1	69 05 23	6.5	binary	0.30	0.63	2.17	3.76	3 3 3 3	1.31	3.71	6.96	8.72	130.0
11551	6130	292		5.92	0.49	F0 II	1 00 31.1	60 48 25	1.8	binary	0.80	0.30	0.82	20.00	3 2 3 1	0.32	0.85	3.85		180.0
11564	6343			7.20	0.16	B8 IV e	1 02 38.0	65 42 14	3.1	Be	0.35	0.59	2.42	4.86	3 3 3 3	1.51	3.66	7.11	9.03	130.0
92250	6557	319	75 Psc	6.12	0.96	G8III	1 03 55.6	12 41 19	49.7		1.25	0.54	0.53	1.00	3 2 1 1	0.04	0.72			
36972	6811	335	ϕ Andr	4.25	−0.07	B7 V e	1 06 35.3	46 58 33	15.5	Be	1.06	0.48	0.40	1.00	3 3 1 1	0.46	1.19			440.0
22154	7636			6.61	0.14	B2III ne	1 14 18.4	57 22 08	5.1	Be	0.79	0.44	0.40	1.87	3 3 1 1	1.86	2.81			490.0
22268	8538	403	δ Cas	2.68	0.13	A5III v	1 22 31.5	59 58 34	2.4		4.96	1.14	0.35	6.09	3 3 2 1	−0.05	−0.06	0.57		
22279	236734			11.00	0.20	A0	1 23 38.1	56 07 50	6.1		0.95	0.26	0.40	7.69	3 3 1 1	6.28	6.47			2800.0
147886	9672	451	49 Cet	5.63	0.07	A3 V	1 32 11.2	−15 55 55	74.8		0.33	0.41	2.00	1.91	3 2 3 3	0.13	1.96	5.59	6.70	75.0
22554	10516	496	ϕ Per	4.07	−0.04	B2 V enp	1 40 30.8	50 26 16	11.3	Be/binary	7.61	3.82	1.25	1.52	3 3 3 1	2.32	3.16	3.86		480.0
232501	10647	506		5.52	0.53	F8 V	1 40 33.9	−53 59 27	61.8		0.82	0.34	0.85	1.08	3 3 3 1	−0.14	0.49	3.40		80.0
12038	11529	548	ω Cas	4.99	−0.10	B8III	1 52 04.9	68 26 27	6.5		0.34	0.23	0.92	10.10	3 3 3 1	0.06	1.23	4.64		80.0
75016				8.50	0.70	G0	1 52 04.1	21 03 42	39.2		1.15	0.70	0.40	1.00	3 3 1 1	2.86	3.91			490.0
22753	11606			7.02	0.06	B2 V ne	1 52 15.7	59 01 44	2.6	Be	0.56	0.30	0.40	8.53	3 3 1 1	2.12	3.04			500.0
255835	12363	593	σ Hyi	6.16	0.44	F5 IV	1 55 53.8	−78 35 35	38.3		0.38	0.11	0.40	1.00	3 2 1 1	−0.14	0.11			
55306	13161	622	β Tri	3.00	0.14	A5III	2 06 33.6	34 45 07	25.2	binary	3.67	1.10	0.78	1.00	3 3 3 1	−0.09	0.20	1.74		110.0
12165	13256			8.61	1.20	B1 Ia	2 08 06.5	60 28 39	0.6		0.71	0.30	2.09	17.70	3 2 1 1	1.38	2.04			650.0
55427	14055	664	γ Tri	4.01	0.02	A1 V nn	2 14 20.0	33 37 01	25.7		1.07	0.47	0.86	0.85	3 3 3 2	−0.06	0.64	3.20	4.35	85.0
12250	14402			7.40	1.00	G5	2 18 40.0	68 32 05	7.4		0.55	0.23	0.92	2.32	3 2 1 1	0.35	0.99			460.0
23389	15407			7.16	0.44	F3 V	2 27 17.8	55 19 41	4.6		1.05	0.43	0.40	1.14	3 3 1 1	1.97	2.59			750.0
148575	17081	811	π Cet	4.25	−0.14	B7 V	2 41 44.5	−14 04 10	60.6	binary	0.66	0.48	1.35	1.77	3 3 3 3	0.18	1.42	4.46	5.92	140.0
148584	17206	818	τ1 Eri	4.47	0.48	F6 V	2 42 46.1	−18 47 00	62.5	bin,Vegatype	1.88	0.65	1.63	5.01	3 3 2 2	−0.18	0.26	3.17	5.55	60.0
12469	17443			8.74	0.29	B9 V	2 47 09.1	67 36 34	7.5		0.42	2.39	14.50	22.80	3 3 3 3	2.91	6.38	10.25	11.91	110.0
12472	17463	829	SU Cas	5.80	0.64	F5 Ib	2 47 28.9	68 41 00	8.5		1.07	0.31	0.84	3.06	3 3 3 2	0.20	0.45	3.44	6.01	130.0
12493	17706			8.44	0.34	B5 V	2 49 32.0	64 14 53	4.6		0.40	1.15	11.80	26.00	3 3 3 3	2.43	5.17	9.61	11.63	110.0
12619	19243			6.62	0.26	B1 V e	3 04 47.7	62 11 36	3.6	Be	1.10	0.50	0.47	25.20	3 3 2 1	1.91	2.64	4.49		310.0
233023	20037			6.70	0.80	G8III	3 09 24.0	−57 59 52	50.8		0.64	0.29	0.40	1.00	3 2 1 1	0.22	0.95			380.0
168373	20010	963	α For	3.85	0.52	F8 V	3 09 56.8	−29 10 59	59.0	binary	4.11	0.97	0.29	1.00	3 3 2 1	−0.04	−0.02	0.59		
23903	20041	964		5.79	0.73	A0 Ia	3 11 57.1	56 57 22	0.4	binary	2.00	1.52	9.64	44.20	3 3 1 1	0.69	1.98			330.0
12704	20336	985	BK Cam	4.84	−0.15	B2 V en	3 15 33.8	65 28 18	7.1	Be	0.67	0.33	0.40	10.80	3 3 1 1	0.82	1.64			480.0
12750	20898			7.97	0.43	B1 IV n	3 21 11.3	60 18 28	3.1		0.52	4.98	15.40	21.00	3 3 2 1	2.04	6.08	9.22		120.0
12772	21212			8.13	0.59	B1 IV ne+	3 24 25.2	62 19 13	5.0	Be/binary	0.54	0.31	0.52	13.40	3 3 1 1	1.89	2.88			480.0
24061	21389	1040		4.54	0.56	A0 Iae	3 25 54.2	58 42 26	2.1		4.60	2.71	6.08	36.80	3 3 2 1	0.69	1.71	4.49		190.0
38874	21455	1047		6.24	0.13	B7 V	3 25 56.3	46 46 00	7.8	binary	0.50	0.31	0.40	2.08	3 3 1 1	1.02	2.09			420.0
24109	21894			7.94	0.21	B8	3 30 40.8	58 25 08	2.2		0.38	4.50	12.80	17.00	3 3 3 2	2.20	6.48	9.52	10.99	110.0

Table 1. (*continued*)

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
38980	22192	1087	ψ Per	4.23	−0.06	B5 V e	3 32 55.5	48 01 41	6.1	Be	4.00	2.17	0.91	7.63	3 3 3 1	1.84	2.77	3.74		390.0
24131	22298			7.66	0.54	B2 V ne	3 34 09.9	55 00 27	0.3	Be	0.42	0.38	1.28	24.30	3 3 3 1	1.25	2.73	5.97		170.0
39078	23230	1135	ν Per	3.77	0.42	F5 II	3 41 47.3	42 25 21	9.6		4.02	1.04	0.55	1.72	3 3 3 1	0.08	0.20	1.42		120.0
76131	23302	1142	17 Tau	3.70	−0.11	B6III e	3 41 54.1	23 57 28	23.9	Be/binary	3.28	9.61	42.80	70.10	3 3 2 2	1.27	4.02	7.56	9.26	120.0
76155	23408	1149	20 Tau	3.87	−0.02	B8III	3 42 50.8	24 12 47	23.5	L	2.51	9.07	32.30	39.80	3 3 1 2	0.85	3.83		8.52	120.0
76159	23432	1151	21 Tau	5.76	−0.04	B8 V	3 42 55.4	24 24 00	23.4		0.42	1.14	4.68	10.90	3 3 3 3	0.86	3.54	6.98	9.06	120.0
76172	23480	1156	23 Tau	4.18	−0.06	B6 IV e	3 43 21.2	23 47 39	23.7	Be	1.31	2.17	4.67	9.67	3 3 3 1	0.58	2.72	5.47		160.0
76199	23630	1165	η Tau	2.87	−0.09	B7III e	3 44 30.4	23 57 08	23.5	Be/binary	4.32	2.06	0.71	7.27	3 3 1 1	0.67	1.45			450.0
256025	24188			6.26	−0.14	A p Si	3 45 38.7	−71 48 47	39.5		0.21	0.29	1.12	2.32	2 3 3 3	0.95	2.89	6.27	8.22	130.0
76228	23850	1178	27 Tau	3.62	−0.08	B8III	3 46 11.0	23 54 08	23.2		1.28	0.52	0.40	8.26	3 3 1 1	0.06	0.68			
12946	23982			8.05	0.27	B3III e	3 48 45.8	63 20 05	7.4	Be	0.28	0.27	1.46	3.48	2 3 3 3	1.83	3.38	7.12	9.23	130.0
149253				9.10		G0	3 53 03.7	−16 17 36	46.1		1.88	0.73	0.40	1.00	3 3 1 1					
39336	25940	1273	MX Per	4.04	−0.03	B3 V ep	4 05 01.3	47 34 52	3.0	Be	3.80	1.95	0.77	2.42	3 3 3 1	1.50	2.37	3.27		410.0
93805	26398			6.94	0.20	B7 IV e	4 08 12.0	16 31 05	24.7	Be	0.52	0.39	1.61	6.17	3 3 3 3	1.57	2.85	6.30	8.92	130.0
93821	26676			6.23	0.05	B8 V n	4 10 50.2	10 05 12	28.4	L	1.15	6.43	26.30	37.20	3 3 3 3	2.15	5.60	9.05	10.59	110.0
194858	26979			7.00	0.90	G8III	4 12 33.1	−38 23 07	46.5		0.59	0.17	0.40	1.00	3 2 1 1	0.23	0.47			850.0
111696	26912	1320	μ Tau	4.27	0.06	B3 IV	4 12 49.0	08 46 07	28.8	binary	0.70	0.62	0.40	6.06	3 3 1 1	−0.38	1.07			
13089	26810			8.10	1.20	G5	4 14 06.5	65 07 51	10.6		2.15	0.57	0.40	7.63	3 3 1 1	2.07	2.22			2100.0
233457	27290	1338	γ Dor	4.25	0.30	F4III	4 14 42.9	−51 36 43	44.8	Vegatype	1.66	0.44	0.32	1.00	3 3 2 1	−0.12	0.03	1.60		
685	26356	1289		5.57	−0.13	B5 V	4 16 24.3	83 41 33	23.4		0.46	0.19	0.40	1.09	3 2 1 1	1.07	1.70			650.0
248983	27693			7.10	1.00	G8III	4 16 55.7	−69 50 55	38.3		0.58	0.13	0.40	1.00	3 2 1 1	0.11	0.07			
76618	28226	1403		5.72	0.27	A3 m	4 25 02.4	21 30 37	18.5	binary	0.39	0.37	0.40	2.14	3 2 1 1	−0.15	1.39			
111845	28375	1415		5.55	−0.10	B3 V	4 25 56.9	01 16 17	30.6	binary	0.35	1.06	2.61	3.49	3 3 3 3	0.65	3.45	6.34	7.82	130.0
149674	28497	1423	DU Eri	5.60	−0.23	B1 V ne	4 26 47.5	−13 09 26	37.4	Be	0.94	0.51	0.40	1.00	3 3 1 1	2.24	3.17			500.0
13171	28270			8.60	0.20	A2	4 26 59.5	62 25 36	9.7	binary	0.58	0.37	0.40	8.38	3 3 1 1	3.35	4.45			480.0
13181	28433			7.00	1.30	G5	4 28 37.9	64 03 49	11.0		0.83	0.30	0.43	12.80	3 2 1 1	−0.32	0.17			
76704	29647			8.11	0.95	B8III	4 38 03.8	25 53 50	13.4		0.74	1.05	11.00	18.30	3 3 3 3	1.48	3.45	7.92	9.63	120.0
5307	29760			9.40	1.20	F8	4 41 51.8	71 08 38	16.5		1.45	0.39	0.40	1.00	3 3 1 1	2.95	3.11			2100.0
39773	30353		KS Per	7.76	0.46	A5 I ap	4 45 20.1	43 11 19	1.0	He*/binary	1.58	0.52	0.40	1.35	3 3 1 1	2.97	3.35			1100.0
57506	31293		AB Aur	7.08	0.12	B9 V nneSh	4 52 34.4	30 28 22	8.0	Be/PMS?	27.20	48.10	106.00	114.00	3 3 3 3	6.23	8.43	11.20	12.45	150.0
57507	31305			7.56	0.11	A0	4 52 37.0	30 15 34	8.1		0.46	0.36	0.40	11.10	3 3 1 1	2.30	3.63			390.0
76866	31648			7.66	0.17	A2 eSh	4 55 35.5	29 46 06	7.9		10.30	10.30	11.10	12.50	3 3 3 3	5.61	7.20	9.20	10.49	200.0
76945	32509			7.40	0.10	A2	5 01 43.8	26 39 12	8.7		0.43	0.69	2.48	6.59	3 3 3 3	2.10	4.20	7.50	9.73	130.0
25001	32343	1622	11 Cam	5.08	−0.08	B2 V e	5 01 47.2	58 54 18	10.8	Be/binary	1.98	1.39	2.24	9.02	3 3 3 1	2.00	3.20	5.63		230.0
94332	32923	1656	104 Tau	5.01	0.65	G4 V	5 04 29.5	18 34 47	12.9		1.92	0.55	0.40	6.91	3 3 1 1	0.03	0.26			
76972	32991	1660	105 Tau	5.89	0.19	B2 V e	5 04 55.9	21 38 26	11.1	Be/binary	1.73	1.20	3.39	8.88	3 3 3 3	1.85	3.04	6.08	8.29	150.0
57704	33203	1669		6.02	0.71	B2 II +...	5 06 55.6	37 14 25	1.4	binary	6.49	1.84	1.29	5.19	3 3 1 1	2.24	2.46			2000.0
112509	33646	1691		5.89	0.66	G5III	5 09 10.4	00 58 39	21.5	binary	1.22	0.29	0.59	1.12	3 2 3 2	0.39	0.42	3.11	4.97	150.0
150239	33949	1705	κ Lep	4.36	−0.1	B7 V	5 10 55.2	−12 59 57	27.5		0.59	0.19	0.33	5.61	3 2 2 1	0.03	0.39	2.90		85.0
131926	34282			9.70	0.10	A0	5 13 38.1	−09 51 51	25.6	Ae (Herbig?)	0.70	1.63	10.40	10.70	3 3 3 3	4.93	7.44	11.36	12.56	120.0
5496	33564	1686		5.05	0.47	F6 V	5 14 16.6	79 10 43	22.6	binary	1.14	0.24	0.28	1.00	3 2 2 1	−0.12	−0.22	1.86		
13458	34200			6.50	1.20	G5	5 15 34.5	66 41 46	16.5		0.92	0.70	0.40	1.00	3 2 1 1	−0.45	0.85			
112630	34700			8.80	0.80	G0	5 17 01.2	05 35 42	17.5		0.61	4.42	14.10	9.38	3 3 3 3	2.27	6.01	9.18	9.90	120.0
112667	34989	1763		5.80	−0.13	B1 V	5 19 00.1	08 22 51	15.6	binary	0.43	2.89	3.35	23.40	3 3 1 1	1.23	4.89			150.0
77144	35187			7.78	0.27	A2	5 20 56.7	24 54 54	6.2	binary	5.39	11.50	7.95	5.01	3 3 3 3	4.77	7.18	8.69	9.35	200.0

Table 1. *(continued)*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
112734	35439	1789	25 Ori	4.94	−0.19	B1 V pe	5 22 09.0	01 48 08	18.2	Be	1.59	0.61	0.40	1.00	3 3 1 1	2.00	2.55			750.0
132136	35929			8.20	0.20	A5	5 25 18.7	−08 22 04	22.4	Ae (Herbig?)	0.75	0.54	0.40	1.86	3 3 1 1	3.23	4.46			420.0
77217	36112			8.10	0.60	A3 e	5 27 22.5	25 17 43	4.8	Ae (Herbig?)	5.59	12.60	28.00	19.00	3 3 3 3	4.38	6.85	9.63	10.37	150.0
94626	244604			9.00	0.10	A0 V eSh*	5 29 10.3	11 15 33	12.0	Herbig	2.00	2.31	1.08	2.67	3 3 3 1	5.37	7.12	8.20		290.0
132217	36457			6.70	0.90	G5	5 29 13.7	−03 15 07	19. 1		1.70	0.40	7.00	6.90	3 3 1 1	1.08	1.10			4500.0
94649	36576	1858	120 Tau	5.69	0.01	B2 IV e	5 30 35.7	18 30 23	7.8	Be	1.36	0.97	1.30	2.97	3 3 3 1	1.91	3.13	5.36		240.0
132288	36917		V372 Ori	7.99	0.16	A0 V	5 32 19.7	−05 36 11	19.6	L	5.73	3.37	37.80	740.00	3 2 1 1	5.33	6.35			500.0
132308			LP Ori	8.45	0.10	B1 V p	5 32 42.5	−05 29 47	19.4		33.90	367.00	4800.00	24.50	3 2 2 1	7.89	12.07	16.77		95.0
77299	36910		CQ Tau	8.30		F2 IV e	5 32 54.1	24 43 04	4.0		6.21	20.70	21.90	13.60	3 3 3 3					
132320	37018	1892	42 Ori	4.59	−0.19	B1 V	5 32 55.1	−04 52 11	19.1		7.64	33.80	3.09	3920.00	3 2 1 1	3.36	6.56			180.0
132328	37061		ν Ori	6.84	0.26	B1 V	5 33 03.8	−05 17 55	19.3	L	82.10	561.00	1610.00	1600.00	3 2 1 1	6.81	10.48			160.0
132366	37258		V586 Ori	9.62	0.13	A2 V ea	5 34 32.7	−06 11 02	19.4		1.91	1.77	4.40	46.50	3 3 1 1	5.85	7.36			360.0
77336	37202	1910	ζ Tau	3.00	−0.19	B4III pe	5 34 39.3	21 06 50	5.6	Be	8.30	3.87	1.21	1.76	3 3 3 1	1.86	2.62	3.27		480.0
132384	37357			8.86	0.10	A0 V	5 35 21.1	−06 44 13	19.4		2.01	2.79	2.90	20.30	3 3 2 2	5.23	7.18	9.13	12.41	140.0
58280	37269	1914	26 Aur	5.40	0.41	B9 V	5 35 25.3	30 27 53	0.5		1.41	0.46	0.52	12.40	3 3 2 1	0.59	0.97	3.01		260.0
132389	37389			8.38	−0.07	A0	5 35 36.3	−01 46 49	17.0		0.38	1.40	13.30	42.10	3 3 3 3	3.47	6.48	10.83	13.25	100.0
132393	37411			9.79	0.13	B9 V	5 35 47.1	−05 26 53	18.7		0.75	2.20	1.60	38.70	3 3 2 1	5.01	7.77	9.33		200.0
113001	37490	1934	ω Ori	4.57	−0.11	B3III e	5 36 32.6	04 05 41	14.0	Be	1.21	0.58	0.42	11.70	3 3 1 1	1.05	1.85			500.0
196059	37795	1956	α Col	2.64	−0.12	B7 IV e	5 37 50.2	−34 05 59	28.9	Be	5.89	2.81	1.03	1.00	3 3 3 1	0.88	1.66	2.49		390.0
132452	37806			7.96	−0.03	B9 V esh**	5 38 31.7	−02 44 29	16.9	Herbig	11.00	9.40	5.18	34.00	3 3 1 1	6.58	7.99			390.0
170689	37961			6.90	1.40	G8III	5 38 56.7	−29 44 43	27.4		0.45	0.21	0.40	1.00	3 2 1 1	−1.37	−0.61			
77450	37967	1961	V731 Tau	6.21	−0.06	B2 V e	5 40 17.2	23 10 57	3.4	Be	0.58	0.33	0.40	2.52	3 2 1 1	1.73	2.71			480.0
132478	38087			8.30	0.13	B5 V	5 40 29.5	−02 20 05	16.3	L	0.96	3.15	47.30	107.00	2 3 2 3	3.79	6.67	11.52	13.57	100.0
77459	38010			6.84	0.03	B1 V pe	5 40 33.6	25 25 05	2.2	Be	0.66	0.53	0.81	2.88	3 2 1 1	2.21	3.56			390.0
132483	38120			9.07	0.07	B9 V e	5 40 44.0	−05 01 09	17.4	Be	8.37	16.40	15.00	28.40	3 3 3 2	7.08	9.40	11.22	13.07	170.0
249346	39014	2015	δ Dor	4.35	0.21	A7 V	5 44 40.9	−65 45 15	31.4		1.39	0.37	0.51	1.13	3 3 3 2	0.02	0.17	2.43	4.46	70.0
150801	38678	1998	ζ Lep	3.55	0.10	A3 V n	5 44 41.3	−14 50 21	20.8	binary	2.18	1.17	0.53	1.00	3 3 1 1	0.01	0.93			
132542	38771	2004	κ Ori	2.06	−0.17	B0 Iae	5 45 23.0	−09 41 09	18.5		4.29	1.21	0.40	2.98	3 3 1 1	0.13	0.34			
234134	39060	2020	β Pic	3.85	0.17	A5 V	5 46 05.9	−51 05 02	30.6	Vegatype	3.46	9.05	19.90	11.30	3 3 3 3	0.62	3.25	6.02	6.57	140.0
40689	39415			8.6	−0.4	F5 V	5 51 02.2	44 29 37	9.4		0.30	0.27	0.40	1.23	3 2 1 1	4.68	6.15			370.0
113389	40932	2124	μ Ori	4.13	0.16	A2 V	5 59 37.9	09 38 57	6.3		1.50	0.99	3.26	2.77	3 3 3 3	0.02	1.16	4.36	5.35	80.0
132793	41335	2142		5.21	−0.06	B2 V en	6 01 47.6	−06 42 19	13.5	Be/binary	2.23	1.07	0.61	6.09	3 3 1 1	2.19	2.98			600.0
151093	41511	2148	SS Lep	4.93	0.24	A2 eSh	6 02 45.2	−16 28 47	17.5		144.00	72.20	14.50	3.77	3 3 3 3	5.56	6.40	6.57	6.27	750.0
196503	42054	2170		5.83	−0.13	B4 IV e	6 05 15.5	−34 18 16	23.5	Be	0.66	0.40	0.40	1.00	3 3 1 1	1.72	2.77			470.0
132868				9.30	0.30	B2 V	6 05 38.9	−06 21 11	12.5	L	7.07	29.30	13100.00	20200.00	3 3 1 1	6.51	9.64			180.0
132875	42051			8.90	0.40	B3	6 05 57.5	−06 32 24	12.5		0.38	4.41	9.64	6.52	3 3 2 2	2.69	6.94	9.71	10.45	120.0
132884	42132			6.60	0.90	G8III	6 06 22.0	−06 48 42	12.6		0.69	0.21	1.62	13.20	3 2 1 1	0.00	0.30			
151362	44179			8.83	0.43	B9II-III	6 17 37.0	−10 36 52	11.8	postAGB	422.00	456.00	173.00	66.20	3 3 3 3	10.17	11.84	12.70	12.82	320.0
151401	44458	2284	FR CMa	5.54	−0.01	B1 V pe	6 19 04.8	−11 44 56	11.9	Be	1.79	0.85	0.40	1.70	3 3 1 1	2.12	2.90			600.0
151449	44892			6.57	0.13	A9/F0IV	6 21 28.7	−16 26 21	13.4		0.97	0.54	0.40	1.00	3 3 1 1	2.07	3.02			500.0
78360	256959			10.70	0.00	A0	6 23 01.0	25 36 29	6.2		0.49	0.95	0.63	6.57	3 3 3 1	5.84	8.15	9.62		230.0
196798	45330			9.50	1.40	A0	6 23 15.1	−39 00 34	21.5		1.79	0.48	0.40	1.00	3 3 1 1	2.73	2.89			2100.0
113872	45152			6.80	0.80	G5	6 23 16.8	00 50 33	5.3		0.82	0.24	0.40	1.76	3 2 1 1	0.59	0.85			1100.0
151534	45677		FS CMa	7.55	0.03	B2 IV epSh	6 25 59.1	−13 01 12	11.0	Be	146.00	143.00	24.80	5.87	3 3 3 3	8.79	10.35	10.36	9.96	500.0
113974	45910		AX Mon	6.76	0.34	B2III:pshevar	6 27 52.4	05 54 08	1.9	Be/binary	1.56	0.54	0.45	17.90	3 3 1 1	2.23	2.67			1000.0

Table 1. *(continued)*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
95823	259431			8.74	0.28	B5 V pe	6 30 19.4	10 21 38	0.7	Be	12.50	20.20	109.00	159.00	3 3 3 2	6.61	8.73	12.47	14.04	130.0
114058	46484			7.74	0.36	B1 V	6 31 15.2	04 42 07	1.8		0.60	4.48	18.70	21.50	3 3 1 1	2.12	5.90			150.0
25845	46703		V382 Aur	9.07	0.40	F7 I	6 33 49.4	53 33 38	19.6	postAGB	0.46	0.38	0.40	1.15	3 2 1 1	3.07	4.45			390.0
133469	47054	2418		5.52	−0.08	B8 V e	6 34 07.6	−05 10 05	5.7	Be	0.46	0.18	0.40	1.24	3 2 1 1	0.85	1.42			600.0
197149	48917	2492	10 CMa	5.20	−0.12	B2III e	6 42 34.2	−31 01 05	14.9	Be	1.26	0.54	0.41	1.00	3 3 1 1	1.76	2.43			650.0
197177	49131	2501	HP CMa	5.80	−0.19	B1.5ne	6 43 36.8	−30 53 43	14.7	Be	0.78	0.37	0.40	1.00	3 3 1 1	2.09	2.87			600.0
151962	49662	2522		5.39	−0.10	B6 V	6 46 41.7	−15 05 13	7.4	binary	0.43	1.62	4.60	5.68	3 3 3 3	0.72	3.75	6.79	8.18	120.0
96157	49564			8.20	0.30	F8	6 46 47.2	13 14 56	5.5		1.14	0.39	0.40	1.18	3 3 1 1	3.42	3.85			1000.0
197258	50013	2538	κ CMa	3.96	−0.23	B1 IV ne	6 47 58.3	−32 26 59	14.5	Be	6.52	3.03	0.95	1.45	3 3 3 1	2.70	3.46	4.11		500.0
197263	50123	2545		5.72	0.14	B6 V npe	6 48 29.9	−31 38 48	14.0	Be/binary	1.82	0.60	0.40	1.00	3 3 1 1	1.87	2.26			1000.0
114528	50083			6.92	0.06	B2 V e	6 49 06.2	05 08 44	2.4	Be	0.70	0.81	3.61	5.03	3 3 3 2	2.27	4.01	7.55	9.07	140.0
133781	50138			6.67	0.01	B8 eSh	6 49 07.6	−06 54 22	3.1	Be	70.30	62.50	13.30	2.81	3 3 3 3	7.17	8.64	8.87	8.34	500.0
172500	50616			9.40	1.40	G6III	6 50 50.9	−28 41 44	12.4		11.10	5.75	0.76	1.36	3 3 3 1	4.61	5.48	5.20		850.0
133881	50820	2577		6.16	0.61	B3 IV e +...	6 52 10.3	−01 41 32	0.0	Be/binary	2.22	0.64	0.40	12.20	3 3 1 1	1.41	1.65			1600.0
152147	51479			8.42	−0.02	B7 V	6 54 45.9	−10 12 46	3.4		0.75	4.36	19.70	48.30	3 3 3 2	4.09	7.59	11.14	13.28	110.0
152149	51480		V644 Mon	6.89	0.35	A pe	6 54 48.1	−10 45 24	3.6	binary	1.12	0.44	0.43	13.90	3 3 1 1	1.97	2.55			750.0
96430	52961			8.50	−0.90	A0	7 00 53.6	10 50 42	7.6	postAGB	4.53	2.22	0.95	0.87	3 3 3 2	10.00	10.82	11.81	12.88	320.0
172855	53246			8.50	0.40	G6 V	7 01 17.0	−22 29 43	7.6		0.46	0.20	0.40	1.60	3 2 1 1	2.50	3.19			700.0
152302	53179		Z CMa	9.31	1.21	B5 neqSh	7 01 22.6	−11 28 36	2.6	Be	127.00	221.00	322.00	354.00	3 3 3 3	7.69	9.88	12.20	13.47	170.0
134141	53300			8.08	0.32	A0 Ib	7 01 51.6	−05 13 48	0.4		0.75	0.31	0.41	2.80	3 3 2 2	2.80	3.43	5.65	8.90	160.0
59769	53314			7.80	1.40	G5	7 02 42.1	33 49 10	17.4		2.67	0.71	0.40	1.00	3 3 1 1	1.46	1.61			1900.0
173002	54309	2690	FV CMa	5.71	−0.10	B2 IVe	7 05 17.1	−23 45 40	7.3	Be	0.81	0.35	0.40	1.48	3 3 1 1	1.72	2.40			650.0
173152	55271			6.80	0.00	B8 V ne	7 09 12.6	−21 43 10	5.6	Be	0.31	0.14	0.40	9.76	3 2 1 1	1.45	2.17			600.0
173264	56014	2745	27 CMa	4.65	−0.20	B3III e	7 12 12.8	−26 15 54	7.0	Be	0.88	0.30	0.40	5.61	3 3 1 1	1.11	1.53			800.0
173282	56139	2749	ω CMa	3.85	−0.17	B2 IV e	7 12 46.9	−26 41 05	7.2	Be	2.05	0.86	0.40	2.15	3 3 2 1	1.12	1.76	2.84		400.0
96709	56126			8.30	0.40	F5 I	7 13 25.3	10 05 09	10.0	postAGB	24.50	117.00	50.10	18.70	3 3 3 3	6.62	9.90	10.90	10.99	200.0
173329				9.70		F5	7 14 01.9	−23 21 39	5.4		2.28	1.83	0.64	10.40	3 3 3 1					
152695	56895			8.70	0.40	F2	7 16 10.5	−11 06 03	0.8		6.62	2.13	0.53	9.03	3 3 3 1	5.60	5.95	6.36		900.0
197824	57150	2787	NV Pup	4.66	−0.10	B2 V	7 16 31.7	−36 38 31	10.9		2.69	1.38	1.12	2.32	3 3 2 2	1.98	2.84	4.53	6.48	210.0
249809	57623	2803	δ Vol	3.98	0.79	F6 II	7 16 51.7	−67 51 57	22.7		5.55	1.32	0.32	0.79	3 3 2 2	−0.13	−0.10	0.27	2.42	30.0
173498	57437			7.10	0.80	G8III	7 18 14.6	−21 59 25	3.8		1.76	0.38	1.19	9.05	3 3 1 1	1.72	1.64			4500.0
235105	57764			7.40	1.10	G8III	7 18 39.9	−52 28 14	17.2		0.46	0.16	0.40	1.46	3 2 1 1	−0.06	0.38			
152773				8.55	1.17	B3	7 19 56.5	−19 58 27	2.5		1.12	0.28	0.40	1.99	3 3 1 1	1.89	1.97			3000.0
152776	57821	2812		4.96	−0.04	B7 IV	7 20 01.4	−18 55 12	2.1		0.41	0.40	1.36	5.17	3 3 2 3	0.04	1.60	4.84	7.45	65.0
173651	58350	2827	η CMa	2.45	−0.08	B5 Ia	7 22 07.0	−29 12 16	6.5		4.75	1.33	0.40	7.02	3 3 1 1	0.32	0.53			1100.0
152834	58343	2825	FW CMa	5.33	−0.05	B2 IV e	7 22 24.5	−16 06 06	0.2	Be	1.20	0.73	0.40	10.20	3 3 1 1	1.60	2.65			460.0
152860	58647			6.81	0.04	B9 IV	7 23 38.2	−14 04 40	1.0	Herbig	4.95	2.87	0.47	7.36	3 3 3 1	4.34	5.34	5.29		650.0
115456	58715	2845	β CMi	2.90	−0.09	B8 V e	7 24 26.4	08 23 30	11.7	Be	4.07	1.87	0.70	1.00	3 3 3 1	0.63	1.38	2.22		370.0
173752	58978	2855	FY CMa	5.61	−0.13	B1 II	7 24 52.2	−22 59 03	2.9		0.87	0.31	0.40	18.10	3 3 1 1	1.80	2.27			900.0
14226	59033			6.70	0.99	G5	7 27 33.4	61 51 57	28.4		0.81	0.40	0.40	1.01	3 3 1 1	0.09	0.91			
134775	59693		U Mon	6.30	1.15	F8 Ibe	7 28 24.3	−09 40 15	4.2	RVTau	124.00	88.40	26.60	9.54	3 3 3 3	4.80	6.02	6.63	6.68	410.0
218764	59894			6.50	0.80	G8III	7 28 38.4	−40 52 59	10.7		0.92	0.22	0.80	11.00	3 2 2 1	0.41	0.45	3.77		170.0
198130	60606	2911	OW Pup	5.54	−0.06	B3 V ne	7 32 02.4	−36 13 43	7.9	Be	1.58	0.87	0.69	1.50	3 3 3 1	2.15	3.09	4.75		310.0
218858	61712			8.96	−0.02	B7 V	7 37 07.5	−43 28 44	10.5		5.72	2.80	1.23	15.90	3 3 2 1	6.83	7.65	8.67		420.0
135012				9.90	0.10	A2	7 40 06.1	−02 01 58	10.3		2.73	0.67	0.40	1.00	3 3 1 1	6.61	6.67			4200.0

Table 1. (*continued*)

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
174400	62623	2996	3 Pup	3.96	0.18	A2 Iae	7 41 48.0	−28 50 03	2.5	binary/L	258.00	147.00	25.70	7.25	3 3 3 3	5.38	6.36	6.38	6.17	700.0
198422				8.60	1.60	A0	7 44 38.3	−32 10 51	3.7		117.00	93.70	21.70	8.12	3 3 3 3	5.67	7.02	7.34	7.44	460.0
174558	63462	3034	o Pup	4.50	−0.05	B1 IV:nne	7 46 00.4	−25 48 43	0.2	Be	2.65	0.95	1.16	7.68	3 3 1 1	1.63	2.11			850.0
14368	64018			7.30	0.80	G5	7 51 05.9	62 10 33	31.1		1.02	0.25	0.40	1.00	3 3 1 1	1.33	1.39			3500.0
174852	65228	3102	11 Pup	4.20	0.72	F7 II	7 54 42.5	−22 44 44	3.1		4.14	1.16	0.40	5.56	3 3 1 1	−0.09	0.12			
116186	65372			6.67	0.14	A3	7 55 53.6	03 04 20	16.2		0.99	0.76	0.40	1.00	3 3 1 1	2.16	3.46			390.0
198658						A0	7 56 52.1	−32 26 24	1.6		29.10	17.30	2.62	3.94	3 3 3 1					
219291	66234			9.3	0.0	F3 V	7 59 00.4	−44 31 02	7.5		1.55	0.67	0.40	1.63	3 3 1 1	5.69	6.37			750.0
175217	67523	3185	ρ Pup	2.81	0.43	F6 II p	8 05 24.8	−24 09 32	4.4		7.20	1.76	0.40	1.14	3 3 2 1	−0.27	−0.21	0.09		
198860				8.60	0.40	F5	8 07 18.8	−36 08 17	1.8	C*/binary	49.00	14.60	4.39	4.27	3 3 3 2	7.67	7.94	8.55	9.69	450.0
219538	68478			6.47	−0.14	B3 IV	8 08 52.1	−49 05 18	8.6		0.34	2.29	11.20	12.20	3 3 3 1	1.68	5.34	8.98		110.0
198957	68980	3237	MX Pup	4.78	−0.11	B1III e	8 11 36.2	−35 44 51	0.8	Be	2.23	1.18	1.03	3.86	3 3 3 2	1.93	2.83	4.59	7.19	180.0
199291	72106			8.60	0.00	A0 IV	8 27 43.6	−38 26 17	0.2		2.22	3.62	1.88	16.80	3 3 3 1	5.38	7.50	8.70		250.0
220069	72754		FY Vel	6.84	0.19	B2 IaepSh	8 30 51.4	−49 25 50	5.8		1.17	0.80	0.58	16.40	3 3 1 1	2.38	3.55			430.0
199490	74006	3438	β Pyx	3.97	0.94	G7 Ib	8 38 08.6	−35 07 47	3.9	binary	7.58	1.74	0.44	1.58	3 3 2 1	−0.11	−0.12	0.30		
236232	74956	3485	δ Vel	1.96	0.04	A1 V	8 43 19.4	−54 31 28	7.4	binary	8.21	1.99	0.52	8.76	3 3 3 1	0.04	0.09	0.55		
236268	75311	3498	V344 Car	4.49	−0.17	B3 V ne	8 45 25.0	−56 35 07	8.4	Be	0.74	0.35	0.23	7.90	3 3 2 1	0.65	1.43	2.88		300.0
117146	75137	3492	ρ Hya	4.36	−0.04	A0 V n	8 45 47.1	06 01 25	28.6	binary	0.82	0.32	0.40	1.00	3 2 1 1	0.19	0.76			400.0
154972			TU Pyx	8.70	1.20	G0	9 07 58.3	−19 42 35	18.7		12.50	4.93	0.80	1.00	3 3 3 1	4.58	5.16	5.10		1200.0
155096	80499	3706	26 Hya	4.79	0.93	G8III	9 17 21.8	−11 45 47	25.5	binary	3.67	1.01	0.40	1.00	3 3 1 1	−0.06	0.13			
256599	80951	3720		5.29	0.02	A1 V	9 17 31.9	−74 41 00	17.6	binary	0.47	0.18	1.28	2.75	3 2 3 3	0.33	0.87	4.92	6.91	120.0
177400				8.50		G0	9 22 08.1	−22 40 45	19.2		2.62	0.61	0.40	1.00	3 3 1 1					
236987	81949			6.86	1.10	G3 Ib	9 25 17.4	−54 08 02	2.6		0.74	0.28	0.49	7.85	3 2 1 1	−0.09	0.45			
6898	82189	3768	22 UMa	5.72	0.48	F7 V	9 30 13.3	72 25 46	37.7		0.61	0.30	0.40	1.06	3 2 1 1	−0.15	0.67			
177822				9.20		G	9 37 53.2	−28 06 02	18.0		1.06	0.23	0.40	2.45	3 3 1 3					
177840	83953	3858		4.77	−0.12	B6 V e	9 39 00.0	−23 21 48	21.6	Be	1.91	1.08	0.41	1.00	3 3 2 1	1.78	2.75	3.62		400.0
237307	84759			7.5	1.1	G8 II /III+	9 43 41.9	−59 14 43	4.7	binary	0.53	0.22	0.68	26.00	3 2 1 1	0.19	0.82			410.0
250716	85567			8.58	0.14	B8 V ne	9 48 59.4	−60 43 58	5.4	Be	6.39	5.81	1.40	8.84	3 3 3 2	6.10	7.58	7.95	11.11	210.0
250795	87543	3971		6.14	−0.04	B7 IV ne	10 02 01.5	−61 38 28	5.2	Be/binary	0.51	0.29	0.56	18.10	3 3 1 1	1.45	2.43			460.0
237672	87643			8.67	0.68	B2 eqSh	10 02 49.7	−58 25 16	2.5	Be	157.00	252.00	311.00	261.00	3 3 3 3	8.41	10.51	12.65	13.62	180.0
237776	88661	4009	QY Car	5.72	−0.08	B2 IV pne	10 10 01.7	−57 48 47	1.5	Be	0.95	0.61	20.80	200.00	3 3 1 1	1.84	2.95			450.0
237799	88825	4018		6.10	−0.08	B4 V e	10 11 19.6	−59 40 12	2.9	Be	0.47	0.24	2.26	94.30	3 2 1 1	1.46	2.32			500.0
250885	89080	4037	ω Car	3.32	−0.08	B8III eSh	10 12 33.0	−69 47 21	11.2	Be	3.16	1.36	0.57	1.05	3 3 3 1	0.74	1.42	2.39		380.0
43276	89221			6.53	0.90	G5	10 15 32.4	43 18 01	55.3		0.73	0.23	0.40	1.00	3 2 1 1	−0.01	0.33			
178644	89353	4049	AG Ant	5.34	0.24	B9.5Ib−II	10 15 49.9	−28 44 29	22.9	postAGB/binary	48.30	9.55	1.77	1.69	3 3 3 1	4.78	4.61	4.70		4500.0
238005	90177		HR Car	8.55	0.88	B2 eq	10 21 07.2	−59 22 17	2.0	LBV/Be	11.00	53.50	37.10	181.00	3 3 3 1	5.00	8.31	9.82		180.0
238077	90772	4110		4.66	0.51	A9 Ia	10 25 32.4	−57 23 00	0.0	L	3.40	1.24	14.90	91.40	3 3 3 1	0.59	1.08	5.69		130.0
250969	90966			6.45	−0.06	B2III ne	10 26 36.3	−62 54 31	4.6	Be	0.64	0.38	0.66	8.03	3 3 1 1	2.07	3.10			490.0
238126	91139			8.70	1.10	G3III	10 28 12.8	−52 31 56	4.4		20.50	11.10	2.39	2.14	3 3 3 1	5.36	6.28	6.53		600.0
251006	91465	4140	PP Car	3.32	−0.09	B4 V neSh	10 30 14.5	−61 25 40	3.2	Be	6.91	3.32	10.10	656.00	3 3 1 1	1.63	2.42			550.0
27695	91480	4141	37 UMa	5.16	0.34	F1 V	10 31 57.3	57 20 27	51.6		0.73	0.27	0.40	1.00	3 2 1 1	−0.20	0.31			
251015				8.10		G0	10 32 31.7	−62 27 07	3.9	C*/binary	62.50	19.40	4.92	21.30	3 3 3 1					
201540				9.10	1.60	G5	10 33 16.5	−36 07 39	18.9		7.73	3.77	0.50	1.00	3 3 2 1	3.22	4.03	3.75		900.0
238271	92207	4169	V370 Car	5.45	0.50	A0 Iae	10 35 32.3	−58 28 24	0.3	L	3.97	13.40	260.00	1660.00	3 2 1 1	1.57	4.48			190.0
62173	92125	4166	37 LMi	4.66	0.82	G3 Ib	10 35 54.7	32 14 11	60.8		3.19	0.81	0.33	1.00	3 3 2 1	−0.12	−0.01	0.92		

Table 1. (*continued*)

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
238468	93563	4221		5.23	−0.08	B8III e	10 44 56.1	−56 29 35	2.1	Be	0.66	0.38	2.14	20.70	3 3 1 1	0.95	1.95			420.0
43564	95241	4285		6.02	0.57	F9 V	10 57 30.9	43 10 54	62.5	binary	0.68	0.22	0.40	1.00	3 2 1 1	0.07	0.44			
27876	95418	4295	β UMa	2.37	−0.02	A1 V	10 58 50.3	56 39 03	54.8		4.80	1.39	0.63	1.00	3 3 3 1	0.05	0.30	1.35		140.0
251227	95767			8.70	0.80	F0 Ib	11 00 02.6	−61 53 33	2.0	postAGB(?)	22.10	15.60	10.90	58.90	3 3 3 3	6.07	7.28	8.80	11.80	170.0
256784	95881			8.20	0.20	A1III e	11 00 14.4	−71 14 41	10.5		9.14	6.87	1.45	1.09	3 3 3 1	5.94	7.22	7.44		470.0
238723	96042			8.23	0.18	B1 V ne	11 01 34.8	−59 09 48	0.6	Be	0.61	1.32	4.69	44.00	3 3 2 1	3.09	5.51	8.80		150.0
238813	96918	4337	V382 Car	3.91	1.23	G4 0-I	11 06 26.8	−58 42 14	1.3		14.40	3.66	1.10	31.60	3 3 2 1	−0.13	−0.02	0.58		
238896	97872			8.80	0.30	F2 IV	11 12 25.2	−59 06 19	1.2		1.85	0.93	2.74	23.70	3 3 1 1	4.55	5.39			600.0
239007	98922			6.70	0.10	B9 V e	11 20 13.1	−53 05 44	7.2	Be	40.20	27.20	6.19	7.96	3 3 3 1	6.33	7.49	7.80		500.0
239145	100261	4441	o Cen	5.13	1.08	G3 Ia	11 29 26.8	−59 09 58	1.9		5.74	3.85	20.80	19.90	3 3 2 3	0.45	1.61	5.35	6.47	140.0
239162	100453			7.90	0.20	A9 V	11 30 43.4	−54 02 53	6.8		7.23	33.60	39.40	23.90	3 3 3 3	5.39	8.64	10.73	11.35	150.0
251457	100546			6.70	−0.40	B9 V ne	11 31 14.1	−69 55 07	8.3	Be	65.80	243.00	165.00	98.60	3 3 3 3	8.63	11.64	13.13	13.74	180.0
239271	101412			8.60	0.40	A0 V e	11 37 21.6	−59 53 49	1.5	PMS?	3.22	3.09	1.69	10.50	3 3 2 2	4.71	6.26	7.52	10.66	170.0
239288	101584			7.01	0.39	F0 IapeSh	11 38 33.7	−55 17 48	5.9	postAGB/binary?	92.60	138.00	193.00	104.00	3 3 3 3	6.79	8.82	11.09	11.59	190.0
251542	101684			7.23	0.94	F5 Ib	11 39 15.9	−63 33 07	2.0		0.79	0.45	4.55	169.00	3 2 2 1	0.70	1.68	6.10		130.0
239364	102323			8.90	0.10	A2 IV	11 43 55.9	−56 06 03	5.4		2.28	1.37	0.40	34.40	3 3 1 1	5.41	6.45			500.0
99809	102647	4534	β Leo	2.14	0.09	A3 V	11 46 30.6	14 51 06	70.8		6.97	2.11	1.18	1.00	3 3 3 1	−0.11	0.19	1.47		120.0
256895	104237			6.50	0.20	A0 peSh	11 57 33.5	−77 54 51	15.6	Herbig	23.60	23.00	14.70	9.58	3 3 3 3	5.27	6.83	8.26	8.96	250.0
251684	104432			8.47	0.04	B9 V	11 58 50.0	−62 19 53	0.3		0.76	0.58	7.33	87.30	3 3 1 1	3.97	5.26			410.0
223193	104731	4600		5.15	0.41	F6 V	12 01 03.7	−42 09 15	19.5		1.02	0.47	0.40	1.07	3 3 1 1	−0.01	0.74			
239671	105209			8.60	0.20	A1 V	12 04 16.2	−59 18 47	2.8		0.49	0.37	1.78	25.00	3 2 1 1	3.16	4.45			410.0
239689	105435	4621	δ Cen	2.60	−0.12	B2 IV ne	12 05 45.4	−50 26 38	11.6	Be	15.40	8.55	3.43	2.54	3 3 3 3	1.88	2.83	3.75	4.59	320.0
223245	105578		RU Cen	8.50		A7 Ibpe	12 06 47.6	−45 08 53	16.8	RV Tau	5.32	11.00	5.65	2.09	3 3 3 3					
251791	106111	4645	S Mus	6.17	0.84	F6 Ib	12 10 04.2	−69 52 26	7.5		1.19	0.36	0.52	1.10	3 3 2 1	0.28	0.58	2.89		220.0
239853				9.40	0.50	A9 Iab**	12 17 33.8	−53 38 53	8.7	postAGB	1.03	20.60	7.57	2.52	3 3 3 3	4.05	8.90	9.72	9.69	200.0
223370	107439		SX Cen	0.00		G3 V p	12 18 32.2	−48 56 02	13.4	RV Tau	5.92	3.59	1.10	1.55	3 3 3 1					
223420	108015			8.20	0.30	F3 Ib	12 22 12.4	−46 52 30	15.5	postAGB(?)	32.50	33.20	7.99	2.41	3 3 3 3	7.06	8.68	9.04	8.90	400.0
7593	109387	4787	κ Dra	3.87	−0.13	B6III pe	12 31 21.5	70 03 49	47.3	Be	4.12	2.05	0.65	1.00	3 3 3 1	1.75	2.59	3.25		470.0
157401			S Crv	9.20	0.90	F5	12 34 58.9	−16 59 21	45.4		7.14	1.83	0.82	1.00	3 3 1 1	5.14	5.25			3100.0
240161	110335	4823		4.93	−0.04	B6 IV e	12 39 03.0	−59 24 42	3.2	Be	1.54	0.78	0.75	14.30	3 3 1 1	1.44	2.29			550.0
252002	110432	4830		5.24	0.25	B2 pe	12 39 53.2	−62 47 06	0.2	Be	4.72	2.38	8.33	90.20	3 3 1 1	2.13	2.98			550.0
252019	110879	4844	β Mus	3.05	−0.18	B2 V	12 43 11.5	−67 50 05	5.2	binary	1.30	0.34	0.52	15.10	3 3 2 1	−0.14	−0.01	2.37		
252045	111408			9.17	0.13	B7 IV	12 46 46.9	−60 14 28	2.3		1.05	0.41	2.42	23.50	3 3 1 1	4.75	5.32			800.0
240362	112044	4895	S Cru	6.58	0.76	F7 Ib	12 51 23.6	−58 09 34	4.4		0.61	0.25	0.40	11.80	3 2 1 1	0.13	0.75			
240367	112091	4899	μ2 Cru	5.17	−0.12	B5 V ne	12 51 39.6	−56 53 50	5.7	Be	1.10	0.67	0.40	13.60	3 3 1 1	1.58	2.64			460.0
181244	112374	4912	LN Hya	6.62	0.68	F3 Ia	12 53 48.5	−26 11 22	36.4	postAGB	1.24	1.59	0.55	1.00	3 3 3 1	1.10	2.96	3.72		280.0
257003	113120	4930		6.03	0.05	B1.5IIIne	12 59 39.4	−71 12 26	8.6	Be	0.97	0.44	0.40	1.33	3 3 1 1	1.76	2.49			600.0
223904	113766			7.40	0.80	F3 V	13 03 42.8	−45 45 58	16.8	binary	1.59	1.76	0.66	1.00	3 3 3 1	1.91	3.61	4.46		300.0
252304	116457	5048		5.31	0.40	F2III	13 21 51.7	−64 13 29	1.9	binary	0.93	0.41	2.36	30.10	3 2 1 1	0.08	0.78			
241080	118978	5140		5.38	−0.03	B9III	13 38 41.0	−58 32 05	3.4		0.37	0.86	3.95	22.50	3 3 2 1	0.31	2.82	6.39		130.0
224471	120324	5193	μ Cen	2.90	−0.15	B2 V npe	13 46 35.7	−42 13 32	19.1	Be	1.81	0.78	0.40	1.00	3 3 1 1	−0.04	0.64			
257300	138403		PK315-13.1	10.47	−0.23	B eq	15 31 54.0	−71 44 59	13.0	PN	6.48	105.00	62.70	21.10	3 3 3 3	9.21	13.82	15.17	15.15	190.0
241315	121384	5236		6.00	0.78	G6 IV	13 53 14.3	−54 27 26	7.0	binary	1.05	0.19	0.38	10.20	3 2 2 1	0.10	−0.17	2.50		
241464				7.70	2.10	G2	14 04 23.5	−53 27 13	7.5	binary	5.47	1.53	0.40	11.90	3 3 1 1	−1.35	−1.15			
252662	124237			9.40	0.40	B5 V	14 10 52.2	−61 33 57	0.5		2.78	12.80	143.00	250.00	3 3 3 3	5.35	8.60	13.13	14.90	100.0

Table 1. *(continued)*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
44965	125162	5351	λ Boo	4.18	0.08	A0 V pSh	14 14 29.0	46 19 02	64.7		1.15	0.36	0.47	1.00	3 3 2 1	0.01	0.34	2.54		90.0
120426	126129	5386		5.12	−0.02	A0 V	14 20 55.0	08 40 24	61.3	binary	0.60	0.23	0.40	1.00	3 2 1 1	0.55	1.09			550.0
224919	126341	5395	τ Lup	4.56	−0.15	B2 IV	14 22 55.0	−44 59 47	14.5		0.65	0.98	1.26	1.99	3 3 3 1	0.51	2.54	4.73		180.0
241781	127381	5425	σ Lup	4.42	−0.19	B2III	14 29 14.1	−50 14 12	9.2		0.51	0.45	0.90	3.35	3 3 1 2	0.25	1.70		6.96	120.0
64203	127762	5435	γ Boo	3.03	0.19	A7III	14 30 03.8	38 31 34	66.2		3.89	0.96	0.39	1.00	3 3 3 1	−0.13	−0.06	0.88		
252817	127926			9.19	0.38	B1/B2II	14 32 37.4	−60 50 12	0.7		8.19	3.01	7.25	126.00	3 3 1 1	6.36	6.87			950.0
257183	128400			6.70	0.70	G5 V	14 36 37.2	−74 55 30	13.8		0.69	0.31	0.40	1.46	3 3 1 1	0.50	1.22			460.0
252871	129492			9.50	0.50	A9 V	14 41 34.9	−60 37 31	1.0		0.99	0.61	14.20	256.00	3 2 1 1	4.11	5.17			500.0
158836	130819	5530	α1 Lib	5.15	0.41	F4 IV	14 47 55.0	−15 47 26	38.1	binary	0.94	0.42	0.40	1.00	3 2 1 1	−0.10	0.62			
252962	131356		EN TrA	8.70		F2 Ib	14 52 28.1	−68 38 17	8.7	RV Tau	13.20	10.30	4.11	2.12	3 3 3 2					
252965	131492	5551	θ1 Cir	5.11	0.00	B4 V npe	14 52 41.0	−62 34 46	3.3	Be	0.61	0.18	1.19	34.80	3 2 2 1	0.49	0.76	4.72		150.0
253010	132947			8.90	0.10	A0	15 00 48.4	−62 56 12	4.1	Ae (Herbig?)	0.61	0.32	3.70	32.40	3 3 1 1	3.98	4.87			550.0
206445	135153	5660	1 Lup	4.91	0.37	F1 II	15 11 33.1	−31 20 02	22.1		1.37	0.76	0.40	1.84	3 2 1 1	0.17	1.12			320.0
206462	135344			8.70	0.60	F4 V e**	15 12 36.9	−36 58 12	17.3	Herbig/binary	1.59	6.71	25.60	25.70	3 3 3 3	3.61	6.77	10.13	11.30	120.0
253097	135382	5671	γ TrA	2.89	0.00	A1 V	15 14 12.6	−68 29 49	9.6		3.37	0.76	0.42	5.41	3 3 2 1	0.13	0.10	1.37		
253107	135592		R TrA	6.35	0.57	F7 Ib	15 15 15.9	−66 18 53	7.8		0.57	0.25	0.42	2.27	3 2 1 1	0.21	0.91			390.0
257289	137387	5730	κ^1 Aps	5.49	−0.12	B1npe	15 26 01.1	−73 13 07	14.0	Be	0.71	0.28	0.40	1.01	3 3 1 1	1.43	2.01			750.0
242637	137865			8.50	0.00	B9 III/IV	15 27 04.3	−52 36 00	2.8		1.47	0.42	0.81	11.90	3 3 1 1	4.84	5.07			2100.0
83893	139006	5793	α CrB	2.23	−0.02	A0 V	15 32 34.1	26 52 55	53.8	Vegatype?	5.92	1.73	0.75	1.00	3 3 3 1	0.14	0.40	1.40		150.0
45650	139798	5830		5.75	0.36	F2 V	15 36 40.0	46 57 42	51.9		0.49	0.18	0.40	1.04	3 2 1 1	−0.09	0.42			
226057	139614			8.30	0.10	A7 V e	15 37 22.9	−42 20 14	10.2	PMS?/binary	4.11	18.10	19.30	13.90	3 3 3 3	5.45	8.65	10.63	11.44	160.0
226064	139664	5825		4.64	0.40	F5 IV	15 37 44.5	−44 29 50	8.4		1.42	0.69	0.66	2.37	3 3 3 1	−0.14	0.67	2.54		110.0
242996	140863			10.10	0.20	A0III	15 44 47.9	−57 28 44	2.6		5.29	6.58	1.14	40.20	3 3 3 1	7.25	9.07	9.08		370.0
84015	141527	5880	R CrB	5.85	0.77	G0 I epSh	15 46 30.7	28 18 32	51.0	RCrB	38.90	17.10	3.94	2.00	3 3 3 3	3.89	4.59	4.91	5.33	550.0
140789	141569			7.00	−0.10	A0 V e**	15 47 20.2	−03 46 12	36.9	Herbig/binary	0.55	1.87	5.53	3.47	3 3 3 3	2.59	5.51	8.60	9.26	130.0
183895	142096	5902	λ Lib	5.03	−0.01	B2 V	15 50 25.6	−20 01 09	25.4	binary	0.56	0.39	0.65	1.30	3 2 3 1	0.35	1.55	4.01		190.0
243098	141926			8.62	0.56	B2III nep	15 50 26.4	−55 10 54	1.2	Be	0.76	1.11	6.86	381.00	3 3 2 1	2.81	4.82	8.71		140.0
183896	142114	5904	2 Sco	4.59	−0.07	B2 V n	15 50 36.3	−25 10 46	21.6	binary/L	0.66	1.73	4.20	11.60	3 3 1 1	0.28	2.92			180.0
226389	142527			8.20	0.80	F6III e	15 53 16.3	−42 10 42	8.5	postAGB/Herbig	10.40	21.20	105.00	84.70	3 3 3 3	4.75	7.11	10.76	11.69	130.0
183956	142666			8.80	0.40	A7 V e**	15 53 43.3	−21 53 00	23.5	Herbig	8.57	11.20	7.23	5.46	3 3 3 3	5.98	7.86	9.29	10.15	220.0
101826	142860	5933	γ Ser	3.85	0.48	F6 V	15 54 08.5	15 49 25	45.7		3.85	0.85	0.41	1.00	3 3 3 1	−0.02	−0.07	1.05		
159607	142983		FX Lib	4.88	−0.10	B8 Ia/Iab	15 55 23.1	−14 08 12	28.6		1.61	0.59	0.40	2.06	3 3 1 3	1.64	2.14		6.57	180.0
183986	143006			10.30	1.00	G5 I e	15 55 38.9	−22 48 42	22.5	postAGB	0.86	3.16	6.57	4.82	3 3 3 3	3.73	6.74	9.44	10.27	140.0
243332	144057			8.60	0.70	A6 :V+...	16 02 59.1	−59 59 22	5.9	binary	2.73	0.69	0.47	3.32	3 3 1 1	3.90	3.99			3000.0
184124	144432			8.00	0.50	A7 V e**	16 03 53.6	−27 35 08	17.8	postAGB/Ae Herbig	7.53	9.36	5.76	3.29	3 3 3 3	4.81	6.64	8.02	8.58	240.0
207367	144668	5999	V856 Sco	7.05	0.36	A7 IV e	16 05 12.8	−38 58 23	9.4		18.00	14.50	14.40	63.30	3 3 2 1	5.13	6.48	8.39		270.0
207373				9.28	1.92	G5	16 05 38.0	−32 42 51	13.9		5.42	1.55	0.40	2.03	3 3 1 1	1.44	1.67			1700.0
184232	145718		V718 Sco	8.50		A8III/IV	16 10 13.3	−22 21 29	20.4	binary	5.68	5.89	5.01	3.14	3 3 3 2					
253474	145544	6030	δ TrA	3.85	1.11	G2 Ib	16 10 52.1	−63 33 37	9.2	binary	13.30	2.91	0.66	2.02	3 3 3 1	0.02	−0.04	0.26		
159918	148184	6118	χ Oph	4.42	0.28	B2 IV pe	16 24 07.3	−18 20 40	20.7	Be	11.20	5.41	2.62	23.60	3 3 3 1	2.18	2.97	4.10		370.0
207732	148703	6143		4.23	−0.16	B2III	16 28 06.5	−34 35 50	9.2	binary	0.66	1.20	1.29	12.10	3 3 3 1	0.23	2.47	4.46		170.0
226900	149038	6155	μ Nor	4.94	0.05	B0 Ia	16 30 31.3	−43 56 29	2.5	L	1.88	0.83	1.40	22.00	3 3 2 1	1.39	2.09	4.57		250.0
46161	149630	6168	σ Her	4.20	−0.01	B9 V	16 32 29.3	42 32 21	42.7	binary	0.96	0.25	0.26	1.00	3 3 2 1	0.10	0.23	2.19		95.0
160017	149914			6.70	0.00	B9.5IV	16 35 34.4	−18 07 17	18.7		0.39	0.52	3.53	12.30	3 3 3 2	1.59	3.50	7.49	10.01	120.0
227012	149855			8.98	0.33	B1/2III	16 35 57.2	−49 15 10	1.7		0.78	2.08	9.07	379.00	3 3 2 1	3.72	6.37	9.89		140.0

Table 1. (*continued*)

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
184536	150193			9.20	−0.20	A0 e	16 37 16.5	−23 47 56	14.8		17.60	18.10	8.13	16.30	3 3 3 1	8.91	10.53	11.57		310.0
227188	150991			9.36	0.18	B3III	16 42 56.9	−41 09 37	2.7		9.81	16.70	173.00	261.00	3 3 3 3	7.23	9.40	13.85	15.46	120.0
141381				8.70		G8	16 46 27.7	−05 03 24	24.2		1.03	0.37	0.40	1.36	3 2 1 1					
2770	153751	6322	ϵ UMi	4.23	0.89	G5III	16 51 00.9	82 07 22	31.0		6.22	1.55	0.36	1.00	3 3 2 1	0.04	0.12	0.45		
208174	152404		AK Sco	0.00		F5 V pea	16 51 23.1	−36 48 29	4.2		2.60	5.06	6.11	13.80	3 3 3 1					
244280	152478	6274		6.32	−0.02	B2III pneSh	16 52 17.0	−50 35 45	4.6	Be	0.87	0.42	0.71	48.00	3 3 1 1	2.15	2.95			550.0
227466	152622			8.15	0.19	B1 Ib	16 52 48.7	−40 25 01	1.7		2.24	17.10	86.60	120.00	3 2 1 1	4.39	8.19			150.0
244338	153053	6297		5.66	0.18	A5 IV−V	16 56 02.0	−54 31 18	7.5		0.95	0.41	0.40	2.96	3 3 1 1	1.00	1.67			600.0
185142	155401	6387		6.14	−0.04	B9 V n	17 09 17.0	−27 42 08	6.7	binary	0.43	1.11	4.80	9.75	3 3 3 1	1.27	3.89	7.39		130.0
208540	155448			8.70	0.00	B9	17 09 43.8	−32 11 02	4.0	binary	1.58	6.79	6.33	56.30	3 3 3 1	5.11	8.29	10.12		170.0
244567				10.95	−0.04	B3 e	17 11 56.3	−59 26 04	12.2	Be	0.65	15.50	8.20	3.52	3 3 3 3	6.53	11.56	12.78	13.03	190.0
208605	155931			9.60	0.70	F3 V	17 12 39.1	−33 16 01	2.9		1.04	0.84	2.62	29.60	3 3 1 1	3.85	5.21			400.0
2841	159251			7.10	1.40	G5	17 19 22.4	84 39 13	29.3		0.52	0.16	0.40	3.78	3 2 1 1	−1.02	−0.71			
227886	157042	6451	ι Ara	5.24	−0.10	B2III ne	17 19 30.6	−47 25 16	6.3	Be	1.37	0.76	0.56	21.80	3 3 1 1	1.82	2.77			490.0
85062	157728	6480	73 Her	5.70	0.25	F0 IV	17 22 01.0	23 00 19	28.9		0.36	0.24	0.54	1.00	3 3 3 1	−0.20	0.95	3.74		90.0
208831	157[illegible]29			8.80	0.20	B3III	17 23 43.1	−30 02 59	2.8		3.45	3.48	2.82	32.30	3 3 1 1	5.48	7.08			340.0
227990	157832		V750 Ara	6.65	0.02	B5 V nne	17 24 10.1	−46 59 07	6.7	Be	0.57	0.32	0.75	19.60	3 2 2 1	1.89	2.86	5.70		220.0
185434	158153			9.60	1.30	F5V	17 25 34.9	−23 12 07	6.3		3.83	4.42	1.34	5.22	3 3 3 1	3.94	5.69	6.30		320.0
122418	158352	6507		5.44	0.22	A8 V Sh	17 26 16.5	00 22 10	18.5		0.63	0.25	0.51	1.34	3 2 1 1	0.22	0.81			450.0
228069	158427	6510	α Ara	2.95	−0.17	B2 V ne	17 27 58.4	−49 50 20	8.8	Be	12.70	6.13	2.02	2.37	3 3 3 1	2.20	3.00	3.70		470.0
160603	158616			9.90	0.60	F8	17 27 59.8	−11 19 55	12.2	postAGB	3.52	2.90	1.60	1.98	3 3 3 1	5.68	7.06	8.32		330.0
185470	158643	6519	51 Oph	4.81	0.0	B9.5Ve	17 28 21.7	−23 55 33	5.3	Be	15.70	10.20	1.06	5.97	3 3 3 1	3.72	4.84	4.29		750.0
208967	159091			7.60	0.10	B7III	17 30 52.7	−35 42 01	1.6	binary	1.95	2.00	6.49	209.00	3 3 1 1	3.94	5.56			340.0
209029	159573			8.37	0.28	B3III	17 33 46.2	−38 45 18	3.7		0.52	0.64	4.37	37.70	3 2 1 1	2.79	4.61			300.0
209113	160203			8.9	0.2	B9.5V	17 36 57.8	−38 43 28	4.2		6.83	3.91	3.64	51.00	3 3 1 1	6.32	7.31			500.0
185664	160958			9.80	−0.20	B9III	17 40 49.7	−29 29 04	0.0		4.74	13.80	119.00	2090.00	3 3 1 1	8.09	10.84			210.0
185668				9.58	0.42	B3	17 40 54.9	−22 04 27	3.9		1.61	13.30	33.60	44.20	3 3 2 2	4.90	8.78	11.70	13.16	120.0
141834	161114		XX Oph	9.52	1.06	A peSh	17 41 15.4	−06 14 52	11.9		9.74	4.47	1.07	9.89	3 3 3 1	5.46	6.20	6.56		650.0
141851	161306			8.19	0.60	B0 ne	17 42 22.4	−09 47 44	9.9	Be	0.87	0.51	0.44	3.01	3 3 1 1	2.45	3.46			480.0
30548	161796		V814 Her	7.12	0.47	F3 Ib	17 43 41.3	50 03 49	30.9	postAGB	6.12	184.00	152.00	48.70	3 3 3 3	3.77	9.06	10.76	10.69	180.0
185742	161489			9.30	0.50	G1 V	17 43 52.7	−29 13 49	0.4		2.74	2.19	1740.00	3690.00	3 3 1 1	5.02	6.36			410.0
209259	161529			8.60	0.60	A0/A1V+...	17 44 17.4	−35 47 24	3.9	binary	2.27	0.80	0.59	7.89	3 3 1 1	3.90	4.36			1000.0
185776	316285		PK1−0.1	9.20	1.18	B eSh	17 45 04.8	−27 59 55	0.0	Be,LBV	9.20	14.40	253.00	1040.00	3 2 1 3	4.80	6.88		14.60	95.0
122754	161868	6629	γ Oph	3.75	0.04	A0 V	17 45 23.0	02 43 28	15.4		1.41	0.51	1.29	2.35	3 3 3 1	−0.08	0.40	3.32		80.0
209304	161807			7.01	−0.08	B3 V ne	17 45 57.0	−38 58 06	5.8	Be	0.51	0.34	0.52	33.90	3 2 1 1	2.45	3.60			450.0
209306	161853			7.91	0.26	B0.5II	17 46 02.3	−31 14 24	1.9		6.26	20.80	12.20	220.00	3 3 3 1	5.08	7.98	9.31		200.0
228466	161912	6631	ι^2 Sco	4.81	0.26	A2 Ib	17 46 41.2	−40 04 35	6.5		1.43	0.42	0.97	4.07	3 2 3 1	0.38	0.64	3.46		200.0
185966	163296			6.85	0.08	A0 V epSh	17 53 20.7	−21 56 57	1.5	Herbig	18.20	21.00	28.20	40.60	3 3 3 1	5.67	7.42	9.65		220.0
85545	163506	6685	89 Her	5.46	0.34	F2 Ibe	17 53 24.0	26 03 24	23.2	postAGB	97.50	54.50	13.40	6.04	3 3 3 3	5.42	6.38	6.77	7.06	480.0
123005	164284	6712	66 Oph	4.64	−0.03	B2 V eSh	17 57 47.1	04 22 12	13.4	Be	3.64	1.92	0.90	2.04	3 3 3 3	2.05	2.95	4.04	6.09	230.0
186220	164906			7.47	0.17	B1 IV pe	18 01 21.8	−24 23 22	1.3	Be	6.85	51.60	430.00	1180.00	3 2 1 1	4.98	8.76			150.0
85766	341617			9.4	0.2	A5	18 06 16.3	24 10 12	19.7		3.98	19.60	2.90	1.00	3 3 3 1	6.24	9.56	9.40		200.0
161118	166053			8.37	0.03	B9 I b/II	18 06 39.4	−19 22 02	0.0	HII	6.51	41.20	513.00	261.00	3 3 2 1	6.23	9.82	14.47		100.0
186404	166191			8.80	0.00	F3/F5V	18 07 27.4	−23 34 38	2.1		2.35	3.80	7.18	208.00	2 3 2 1	5.64	7.76	10.36		180.0
186406	166192			8.52	0.20	B2 V	18 07 29.3	−23 55 48	2.3		1.15	9.37	38.80	206.00	3 2 2 1	4.01	7.88	11.33		120.0

Table 1. *(continued)*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
161188	166763			9.20	−0.20	B6 II/III	18 09 55.2	−16 18 34	0.8		4.46	1.44	6.73	425.00	3 3 1 1	7.42	7.78			1200.0
186521	167091			10.50	−0.80	B3III	18 11 33.3	−20 54 00	1.7		9.93	4.70	2.30	237.00	3 3 2 1	12.30	13.08	14.22		390.0
209938	167402			8.96	0.0	B0 I b/II	18 13 06.1	−30 08 34	6.3		1.31	8.02	2.11	3.91	3 3 3 1	5.17	8.73	9.19		190.0
186624	167905			9.70	0.40	F3 V	18 15 15.5	−23 29 33	3.7		4.14	2.67	2.76	59.20	3 3 1 1	6.09	7.20			480.0
161364	168522			9.10	0.20	A0III	18 17 54.1	−19 57 16	2.5	binary	0.84	0.52	12.80	122.00	3 3 1 1	4.25	5.32			500.0
210037				9.50	0.90	A0	18 18 23.2	−35 06 44	9.7		5.43	2.10	0.40	9.35	3 3 1 1	5.14	5.70			850.0
161375	168625			8.41	1.46	B8 Iae	18 18 26.2	−16 23 53	1.0		70.00	325.00	117.00	584.00	3 3 2 1	5.43	8.68	9.49		190.0
210091	169022	6879	ϵ Sgr	1.85	−0.03	B9III	18 20 51.2	−34 24 37	9.8		8.46	2.05	0.59	2.62	3 3 2 1	0.18	0.23	0.79		390.0
186777	169142			8.13	0.10	B9 V e	18 21 18.0	−29 48 28	7.8	Be/binary	2.95	18.40	29.60	23.40	3 3 3 3	4.92	8.50	10.93	11.84	140.0
186873	170235	6929	V4031 Sgr	6.59	0.07	B2 IV peSh	18 26 16.9	−25 17 25	6.7	Be	0.89	0.38	0.46	18.60	3 2 1 1	2.17	2.83			700.0
86134	170756		AC Her	7.50	0.80	F2 Ibp	18 28 09.0	21 49 53	14.2	RVTau	41.40	65.30	21.40	8.04	3 3 3 3	5.55	7.63	8.33	8.43	290.0
123621				10.70	0.20	A5	18 30 17.8	06 54 05	7.3		0.97	0.26	0.53	2.85	3 3 1 1	6.01	6.17			2200.0
186991	171152			10.00	0.50	B8/B9III	18 31 10.1	−25 46 01	7.9		1.00	0.85	0.46	15.80	3 3 1 1	4.62	6.03			390.0
103846				11.30	−0.10	B8	18 31 18.8	10 24 38	8.6		1.25	0.33	0.40	1.63	3 3 1 1	7.79	7.93			2400.0
67174	172167	7001	α Lyr	0.03	0.00	A0 V	18 35 14.7	38 44 10	19.2	Vegatype	41.60	11.00	9.51	7.76	3 3 3 3	−0.01	0.14	1.90	2.84	75.0
142454	172028			7.85	0.56	B2 V	18 35 22.4	−00 25 49	2.8		0.49	4.19	13.00	17.60	3 3 3 1	1.57	5.49	8.63		120.0
245622	171795			6.90	1.10	G6III	18 35 58.3	−58 49 33	21.6		0.61	0.25	0.40	1.00	3 2 1 1	−0.26	0.36			
187137	172481			8.30	0.90	F2 Ia	18 38 28.2	−27 59 55	10.4	postAGB	5.41	5.22	0.59	1.85	3 3 3 1	3.94	5.49	5.03		490.0
254358	172555	7012		4.79	0.20	A5 IV	18 40 32.7	−64 55 16	23.8		1.47	1.10	0.40	1.20	3 3 1 1	0.55	1.82			320.0
142583	173372			8.30	0.70	G0	18 42 24.2	−05 33 21	1.1		1.03	0.62	5.00	321.00	3 2 2 1	2.54	3.58	7.76		150.0
187239	173300	7039	ϕ Sgr	3.17	−0.11	B8III	18 42 32.0	−27 02 39	10.8	binary	2.88	1.30	0.53	1.72	3 3 1 1	0.60	1.32			470.0
104131	174238			8.30	0.90	A0	18 46 48.9	13 09 27	6.5	binary	0.77	0.46	0.40	11.80	3 3 1 1	1.82	2.85			480.0
123966	174571			8.89	0.56	B2 V ne	18 48 23.3	08 38 36	4.1	Be	0.26	0.34	1.83	30.30	2 3 3 1	1.92	3.80	7.54		140.0
67454	174665			8.90	1.10	A2	18 48 23.0	30 19 03	13.5		0.99	0.26	0.40	1.36	3 3 1 1	2.27	2.41			2300.0
86563	175427			6.80	0.00	A0	18 52 23.5	20 33 03	8.6		0.38	0.83	6.44	12.60	3 3 3 3	1.67	4.10	8.24	10.13	110.0
142840	175788			9.6	0.1	A2	18 54 31.4	−04 57 24	3.5		0.44	0.49	1.00	59.90	3 3 1 1	4.33	6.03			320.0
124093				9.45	1.98	A2	18 54 52.2	06 37 54	1.7		9.65	3.92	2.27	21.00	3 3 1 1	1.86	2.47			750.0
162130	176884	7203		6.05	1.29	G6III	19 00 07.5	−19 19 09	11.1	binary	2.83	0.72	1.45	3.97	3 3 3 2	0.09	0.19	2.87	5.12	60.0
67841	178538			7.20	0.20	F0	19 05 43.8	34 18 48	11.8		0.99	0.36	0.40	1.00	3 3 1 1	2.53	3.02			900.0
124318	178596	7266	19 Aql	5.22	0.35	F0III	19 06 32.9	05 59 35	1.1		0.96	0.64	5.45	114.00	3 3 1 1	0.14	1.29			
104567	179218			7.20	0.50	B9 e	19 08 55.4	15 42 15	2.9	Be	23.40	43.60	29.90	17.40	3 3 3 3	5.24	7.51	9.01	9.59	210.0
124408	179761	7287	V1288 Aql	5.15	−0.07	B8 II	19 11 11.4	02 12 26	3.9		0.46	1.01	5.49	12.00	3 3 3 3	0.45	2.89	6.64	8.66	110.0
124414	179821			8.30	1.40	G5 Ib	19 11 24.9	00 02 19	5.0	postAGB	31.30	648.00	516.00	168.00	3 3 3 3	4.63	9.51	11.18	11.12	180.0
211117	180093	7296	RY Sgr	6.25	0.02	G0 Iab:ep	19 13 16.9	−33 36 41	19.4	RCrBor	77.20	26.30	5.43	4.60	3 3 3 3	6.82	7.24	7.44	8.43	550.0
87171	344313			9.38	0.63	B2 V pe	19 22 38.1	22 40 31	3.3	Be	0.85	2.00	0.76	5.93	3 3 1 1	3.55	6.07			230.0
68346	183362	7403		6.34	−0.14	B3 V eSh	19 25 51.0	37 50 18	9.8	Be	0.49	0.17	0.40	1.50	3 2 1 1	1.95	2.39			950.0
104975	184450			8.00	0.40	A	19 31 42.9	16 40 44	1.5		1.04	0.54	5.16	54.60	3 3 1 1	2.89	3.76			550.0
105017	231924			9.90	0.00	B8	19 33 18.9	17 53 14	1.2		0.62	0.36	0.82	23.50	2 3 2 1	5.30	6.30	9.10		220.0
87426	184961	7452		6.33	−0.06	B9 IV pSi?	19 33 59.9	22 28 24	0.9		0.49	0.73	2.36	41.90	3 3 3 1	1.67	3.69	6.87		160.0
18448	186118			8.80	1.40	G5	19 38 05.8	63 21 59	19.0		1.42	0.40	0.40	1.07	3 3 1 1	1.78	1.99			2000.0
68739	186438			8.01	0.53	F3 Ib	19 41 05.6	37 33 30	7.0		5.91	3.48	1.06	2.09	3 3 3 1	4.50	5.51	6.13		450.0
105278	187203	542		6.44	0.96	F8 Ib	19 46 07.9	10 34 07	7.5		0.93	0.24	0.53	4.11	3 2 3 1	0.04	0.16	2.93		75.0
211598				9.20	1.50	G0	19 47 50.7	−32 50 21	26.0		3.28	0.90	0.56	1.00	3 3 1 1	2.76	2.94			2600.0
163075	187885			9.20	0.60	F3 I**	19 50 00.8	−17 09 39	21.0	postAGB	27.80	165.00	73.40	18.20	3 3 3 3	7.22	10.74	11.78	11.43	190.0
87856	188037			7.76	0.92	A2	19 50 20.6	22 19 26	2.4	binary	228.00	114.00	19.90	12.90	3 3 3 3	7.42	8.26	8.27	8.97	550.0

Table 1. *(continued)*

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
9592	190252	7666		6.33	0.88	G8III	19 58 49.8	70 13 42	20.1		0.83	0.26	0.40	1.19	3 3 1 1	−0.03	0.30			
125381	190073		V1295 Aql	7.84	0.09	A0 IV epSh	20 00 34.4	05 35 50	13.1		7.16	5.53	1.92	1.00	3 3 3 1	5.62	6.93	7.70		380.0
69518	191610	7708	28 Cyg	4.93	−0.13	B2.5V e	20 07 34.1	36 41 29	2.0	Be	1.32	0.58	5.57	69.70	3 3 1 1	1.58	2.27			600.0
230089	191349			6.55	0.88	G5III	20 07 47.9	−43 48 41	32.3		0.81	0.38	0.40	1.00	3 2 1 1	0.17	0.93			350.0
105871	192388		R Sge	8.60		G0 Ib	20 11 46.7	16 34 26	9.8		10.60	7.54	2.12	1.72	3 3 3 1					
105878	192425	7724	ρ Aql	4.95	0.08	A2 V	20 11 57.7	15 02 38	10.6	binary	0.50	0.23	0.40	1.13	3 3 1 1	−0.13	0.62			
88410	192685	7739	QR Vul	4.80	−0.20	B3 V	20 13 08.7	25 26 17	5.1		0.92	0.34	0.40	19.10	3 3 1 1	1.31	1.81			750.0
69773	193237	7763	P Cyg	4.81	0.42	B2 Iapeq	20 15 56.5	37 52 36	1.3	LBV	6.98	4.06	2.75	118.00	3 3 3 1	1.72	2.72	4.21		310.0
88580	193911	7789	25 Vul	5.54	−0.06	B8III neSh	20 19 54.3	24 17 08	7.1	Be	0.52	0.27	0.40	15.50	3 2 1 1	0.94	1.82			470.0
70016	194760			8.70	−0.10	A0	20 24 16.2	35 37 24	1.3	binary	0.55	0.33	10.00	112.00	3 3 1 1	4.29	5.33			500.0
70096	195324	7835	42 Cyg	5.88	0.52	A1 Ib	20 27 25.8	36 17 13	1.5		1.07	0.63	5.42	124.00	3 3 1 1	0.53	1.55			360.0
49712	195556	7844	ω1 Cyg	4.95	−0.09	B2 IV	20 28 30.5	48 46 58	5.7	binary	0.59	2.17	3.29	10.90	3 3 1 1	0.59	3.59			170.0
70135	195593	7847	44 Cyg	6.19	1.01	F5 Ia	20 29 05.2	36 45 59	1.5	binary/L	2.04	1.27	17.30	72.60	3 3 1 1	0.54	1.62			370.0
254823	195627	7848		4.76	0.28	F0 V	20 31 27.4	−60 45 07	36.1		0.96	0.27	0.52	1.24	3 3 3 1	−0.15	0.06	2.68		
88945	196740	7894	28 Vul	5.04	−0.14	B5 IV	20 36 21.1	23 56 22	10.3		0.27	0.24	0.75	4.58	3 2 3 1	0.00	1.46	4.61		85.0
254854	196519	7881	υ Pav	5.15	−0.06	B9III	20 37 23.4	−66 56 21	35.6		0.41	0.31	0.67	1.16	3 3 3 1	0.29	1.58	4.33		170.0
70423	197572	7932	X Cyg	6.87	−0.22	F7 Ib...	20 41 26.6	35 24 24	4.2		1.46	0.43	0.41	51.20	3 3 1 1	3.95	4.21			1700.0
19003	197911			7.64	0.06	B5	20 42 27.8	63 01 40	12.6		0.60	7.98	25.70	32.30	3 3 3 2	2.82	7.22	10.40	11.81	110.0
230379	197937	7943	ι Mic	5.11	0.35	F1 IV	20 45 06.2	−44 10 20	39.0	binary	0.90	0.34	0.40	1.00	3 2 1 1	−0.04	0.49			
32890	198343			7.27	0.93	F8	20 45 48.1	58 13 56	9.3		16.70	4.54	0.73	2.32	3 3 3 1	4.07	4.25	4.17		2800.0
32938	198895			8.09	0.66	B1 V e	20 49 47.4	55 18 01	7.1	Be	0.47	0.18	0.42	4.25	3 2 1 1	1.56	2.10			750.0
50172	199021			8.45	0.56	B0 V	20 51 04.2	42 25 05	1.3		0.70	5.03	19.50	22.80	3 3 3 3	2.56	6.29	9.67	11.00	110.0
50280	199714			8.28	0.30	B8 Ib	20 55 36.4	48 06 07	1.8		0.35	0.91	9.75	27.00	3 3 3 2	2.22	4.85	9.34	11.61	110.0
33125	201113			8.10	0.20	A0	21 03 59.6	53 28 02	4.3		2.16	0.62	0.54	7.73	3 3 1 1	4.28	4.51			2000.0
145247	202406			7.80	0.40	F1 V pSr	21 13 13.8	−09 36 01	36.3		0.34	0.46	0.40	1.15	3 2 1 1	1.47	3.39			270.0
19283	203024			8.80	0.40	A	21 15 22.5	68 42 16	13.7	Ae (Herbig?)	3.68	10.80	4.26	3.58	3 3 3 1	5.06	7.82	8.72		220.0
19309	203374			6.68	0.30	B0 IV pe	21 17 54.1	61 38 47	8.6	Be/binary	1.15	0.54	0.42	16.50	3 3 1 1	1.91	2.68			600.0
19313	203467	8171	6 Cep	5.18	−0.04	B3 IV eSh	21 18 20.1	64 39 34	10.7	Be/binary	0.71	2.31	14.50	23.50	3 3 3 1	0.85	3.72	7.63		120.0
33348	235495			10.20	0.20	A0 e	21 19 46.3	50 46 58	0.8		2.42	2.76	3.23	34.00	3 3 3 1	6.50	8.23	10.31		230.0
33637	239729			8.34	0.39	B0 V	21 37 54.0	57 15 23	3.7		0.38	0.16	3.08	50.00	3 2 1 1	2.16	2.81			700.0
33677	206773			6.87	0.23	B0 V pnne	21 40 50.3	57 30 25	3.6	Be	1.20	1.01	4.13	25.90	3 3 1 1	2.33	3.73			380.0
230846	207129	8323		5.58	0.60	G0 V	21 45 01.2	−47 31 56	49.1	binary	0.81	0.22	0.25	1.00	3 2 2 1	−0.24	−0.06	1.99		
33817	208063	8357		6.62	−0.03	A1 p	21 50 18.7	55 33 23	1.3	binary	0.50	1.04	4.34	8.23	3 3 3 2	1.88	4.26	7.73	9.59	130.0
19742	208682	8375		5.86	−0.06	B2 V eSh	21 54 12.3	65 04 59	8.4	Be	0.52	0.35	0.49	5.61	3 3 1 1	1.26	2.42			400.0
33968	209296			8.27	0.26	B6 V:n	21 58 57.2	56 28 11	1.2		1.28	0.46	0.41	17.10	3 3 1 1	3.72	4.20			950.0
145837	209409	8402	o Aqr	4.69	−0.06	B7 IV eSh	22 00 43.7	−02 23 51	42.7	Be	1.18	0.75	0.40	1.04	3 3 1 1	0.98	2.08			410.0
34043	235718			9.50	0.10	B9	22 03 41.6	53 07 32	1.8		8.43	46.30	107.00	50.70	3 3 3 3	7.43	10.87	13.69	14.04	130.0
190922	210244			6.40	1.10	G8III	22 06 41.3	−23 54 18	53.4		0.94	0.35	0.40	1.00	3 2 1 1	−0.29	0.23			
34227	211336	8494	ϵ Cen	4.19	0.28	F0 IV	22 13 11.2	56 47 37	0.4		1.62	0.43	1.20	18.10	3 3 3 1	−0.15	0.00	3.02		
34495	213231			8.28	0.38	B8	22 26 48.4	58 35 23	0.9		0.36	2.80	8.19	22.50	3 3 3 1	2.06	5.88	8.96		120.0
20126	213642			7.30	1.30	G5	22 29 36.5	63 33 37	5.0		0.76	0.18	1.74	32.50	3 2 2 1	−0.11	−0.09	4.29		
165175	213985			8.90	0.18	A2 I**	22 32 46.0	−17 30 59	57.1	postAGB	5.57	4.66	2.11	1.01	3 3 3 1	6.16	7.55	8.61		340.0
34649	240010			9.48	0.38	B1 IV nnpe	22 36 32.5	55 34 28	2.3	Be	0.54	2.52	5.54	11.50	3 3 3 3	3.70	6.96	9.73	11.69	130.0
191318	214748	8628	ϵ PsA	4.20	−0.14	B8 V e	22 37 53.6	−27 18 18	60.9	Be	1.15	0.53	0.40	1.60	3 3 1 1	0.73	1.48			480.0
34881	216411			7.18	0.61	B1 Ia	22 49 33.0	58 44 35	0.4		0.69	5.21	23.10	28.00	3 3 1 1	1.17	4.95			150.0

Table 1. (*continued*)

SAO	HD	HR	Name	V	(B−V)	Sp.Type	RA(1950)	Dec(1950)	|b|	Ident.	F12 Jy	F25 Jy	F60 Jy	F100 Jy	Flux Quality	E12 mag.	E25 mag.	E60 mag.	E100 mag.	T_{colour} K
20299	216629		IL Cep	9.28	0.72	B2 IV ne	22 51 18.4	61 52 46	2.4	Be	2.70	2.30	5.21	49.20	3 3 1 1	4.52	5.94			390.0
52526	217050	8731	EW Lac	5.43	−0.09	B3III peSh	22 54 51.6	48 25 00	10.0	Be	1.68	1.06	0.41	1.40	3 3 2 1	2.20	3.29	4.17		390.0
191524	216956	8728	α PsA	1.16	0.09	A3 V	22 54 53.5	−29 53 16	64.9	Vegatype	18.20	4.81	9.02	11.20	3 3 3 3	−0.04	0.10	2.70	4.09	55.0
127934	217891	8773	β Psc	4.53	−0.12	B6 V e	23 01 19.9	03 33 02	49.6	Be	0.76	0.49	0.37	1.00	3 3 2 1	0.54	1.66	3.26		260.0
20531	219634	8854	V649 Cas	6.53	0.23	B0 V n	23 14 17.3	61 41 25	1.1	binary	0.60	0.93	13.70	40.70	3 3 2 1	1.24	3.30	8.13		120.0
35462	236138			9.80	0.8	F8	23 26 57.7	50 56 39	9.5		16.60	7.23	1.14	2.59	3 3 3 3	6.86	7.54	7.45	9.50	370.0
231749	222688			6.63	0.91	G8 IV	23 40 26.7	−46 35 24	66.5	binary	0.67	0.50	0.40	1.00	3 3 1 1	−0.02	1.25			
53508	224341			8.00	0.90	A2	23 54 26.3	46 20 22	15.2		1.48	0.39	0.40	1.22	3 3 1 1	2.23	2.37			2300.0
255609	224392	9062	η Tuc	5.00	0.06	A1 V	23 54 58.5	−64 34 33	51.8		0.52	0.19	0.40	1.00	3 2 1 1	0.02	0.52			
35963	224648			7.20	0.50	B9	23 56 59.7	50 33 16	11.2		0.29	0.59	2.62	5.68	2 3 3 3	0.48	2.84	6.37	8.37	120.0
21000				8.70	0.10	B9	23 58 30.8	69 17 50	7.1		1.51	0.41	0.83	21.00	3 3 1 1	4.76	4.94			2000.0
21009	224893	9085		5.55	0.41	F0III	23 59 03.0	60 56 41	1.1		0.92	0.39	1.65	16.90	3 3 3 1	0.28	0.94	4.42		160.0