First analysis of eight Algol-type systems:
V537 And, GS Boo, AM CrB, V1298 Her,
EL Lyn, FW Per, RU Tri, and WW Tri

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Abstract

Analyzing available photometry from the Super WASP and other databases, we performed the very first light curve analysis of eight eclipsing binary systems V537 And, GS Boo, AM CrB, V1298 Her, EL Lyn, FW Per, RU Tri, and WW Tri. All of these systems were found to be detached ones of Algol-type, having the orbital periods of the order of days. 722 new times of minima for these binaries were derived and presented, trying to identify the period variations caused by the third bodies in these systems.

Key words: stars: binaries: eclipsing, stars: fundamental parameters

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1 Introduction

The eclipsing binaries provide us with an excellent method how to derive the basic physical properties of the two eclipsing components (their radii, masses, temperatures). Moreover, they can also serve as independent distance indicators, one can study the dynamical evolution of the orbits, test the stellar structure models, or discover additional components in these systems (see e.g. Guinan & Engle [2006]). Due to these reasons and availability of the photometric observations for some of these systems, we decided to carry out the first analysis for a few eclipsing binaries which were never been studied before.

The analysis of the light curves (hereafter LC) became almost a routine task thanks to the programs like PHOEBE (Prša & Zwitter [2005]). Also the pho-

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Photometric data are very easy to be obtained due to long-term monitoring surveys covering a large fraction of the sky – like NSVS (Woźniak et al., 2004), ASAS (Pojmanski, 2002), Super WASP (Pollacco et al., 2006), and others.

2 Analysis

The target selection for this paper was rather straightforward. We have chosen only these systems, which are known to be eclipsing variables, their orbital period is known, has never been analysed before and have enough photometric data points for an analysis. Thanks to the good time coverage provided by the Super WASP survey we used this database for the whole analysis. All of the analysed systems are the northern-hemisphere stars (DE > 20°) of moderate brightness (9.5 mag < V < 13 mag) and with the orbital periods ranging from 0.6 to 3.3 days.

For the light curve analysis the PHOEBE program (Prša & Zwitter, 2005) was used, which is based on the algorithm by Wilson & Devinney (1971). None of the selected stars was ever observed spectroscopically, hence some of the parameters have to be fixed during the light curve solution. At first, the ”Detached binary” mode (in Wilson & Devinney mode 2) was assumed for computing. The value of the mass ratio $q$ was set to 1. The limb-darkening coefficients were interpolated from van Hamme’s tables (see van Hamme 1993), the linear cosine law was used. The values of the gravity brightening and bolometric albedo coefficients were set at their suggested values for convective or radiative atmospheres (see Lucy 1968). Therefore, the quantities which could be directly calculated from the light curve are the following: the relative luminosities $L_1$, the temperature of the secondary $T_2$, the inclination $i$, and the Kopal’s modified potentials $\Omega_1$ and $\Omega_2$. The synchronicity parameters $F_1$ and $F_2$ were also fixed at values of 1. The value of the third light $L_3$ was also computed if a non-negligible value resulted from the fitting process. And finally, the linear ephemerides were calculated using the available minima times for a particular system.

With the final LC analysis, we also derived many times of minima for a particular system, using a method presented in Zasche et al. (2014). The template of the LC is used to fit the photometric data from the Super WASP as well as from other surveys, resulting in a set of minima times, which can be used for a subsequent period analysis. The already published observations were also used for the analysis, mostly taken from the $(O - C)$ gateway (Paschke & Brát, 2006).

1 http://var.astro.cz/ocgate
3 The individual systems

3.1 V537 And

The system V537 And (= GSC 02814-01959, V=11.2 mag) is relatively neglected eclipsing binary of Algol-type. It was first mentioned by Khruslov (2008), who analysed the NSVS photometry and found an orbital period of about 0.9 days and relatively deep eclipses of about 0.3 mag. However, since then no detailed analysis of this target was performed, only a few times of minima were published to better constrain the orbital period (Hoňková et al., 2013).

We extracted the Super WASP photometry of the star for the LC analysis. However, only a small fraction of the data points were used for the LC modelling (these ones with better precision and obtained during a shorter time span). For the light curve fitting process one of the most crucial parameters is the value of the primary temperature $T_1$, which is kept fixed during the whole fitting. Due to the fact that the star was included into the Tycho survey onboard the Hipparcos satellite, as well as observed during the 2MASS and NOMAD surveys, Pickles & Depagne (2010) used all of these data to roughly estimate the spectral type of the system. This resulted in G0V, which is the only available spectral estimation of V537 And. Therefore, we fixed the primary temperature at a value of $T_1 = 5900$ K, in agreement with its spectral type (see e.g. Harmanec 1988). The PHOEBE program was used and the final fit is presented in Fig.1. As one can see, the magnitudes during both maxima are different, hence also the hypothesis of a photospheric spot on the surface of the primary component was used. The final LC parameters are presented in Table 1. The secondary component is a bit cooler and smaller, while no third light was detected.

We also used the LC template for deriving the times of minima from the available photometry (Super WASP and NSVS). All of these data points are stored in the Table 12. In total, 137 new times of minima were derived. Together with four already published minima, these observations can tell us something about the long-term evolution of the orbit (see Fig. 2). However, no additional variation is visible on these data points (no third-body modulation of the orbit), which is in agreement with no third light detected from the LC solution. However, one can speculate about the very first and the very last data points plotted, and maybe a parabolic fit would give us a better solution (which can be attributed to the mass transfer between the components). However, a longer time span is needed for this to be definitely solved. The linear ephemerides as resulted from the analysis of minima times led to the values $JD_0$ and $P$ as presented in Table 1.
Fig. 1. Light curve analysis of V537 And, based on the Super WASP photometry.

Fig. 2. O-C diagram of times of minima derived from available photometry for V537 And. The black points stand for the primary minima, while the blue open circles stand for the secondary ones. The larger the symbol, the higher the weight.

3.2 GS Boo

The star GS Boo (=GSC 02565-00667, V=11.1 mag) is also rather seldom-investigated system. It was discovered during the ROTSE survey (Akerlof et al., 2000), who presented incorrect period of 0.63 days, while the correct one is double, about 1.26 days. Later, only several papers with the minima observations were published. No light curve nor spectroscopic analysis were performed.

Therefore, we used the Super WASP photometry to analyse the LC of GS Boo. Despite a huge number of data points (more than 18000), we used only a small
Table 1
The light-curve parameters as derived from our analysis.

| Parameter | V537 And | GS Boo | AM CrB | V1298 Her |
|-----------|----------|--------|--------|-----------|
| JD        | 53231.6375 ± 0.0028 | 53128.4529 ± 0.0025 | 51242.8130 ± 0.0042 | 53726.4961 ± 0.0068 |
| $P$ [d]   | 0.9008483 ± 0.0000012 | 1.2568178 ± 0.0000017 | 0.7036534 ± 0.0000010 | 2.1446937 ± 0.0000030 |
| $q$ [10$^{-10}$d] | -- | -36.0 ± 2.2 | -- | -- |
| $i$ [deg] | 77.9 ± 1.2 | 76.9 ± 0.8 | 77.1 ± 1.8 | 83.6 ± 0.7 |
| $T_1$ [K] | 5900 (fixed) | 6400 (fixed) | 7000 (fixed) | 6100 (fixed) |
| $T_2$ [K] | 5310 ± 280 | 4410 ± 300 | 3810 ± 430 | 5410 ± 290 |
| $\Omega_1$ | 4.940 ± 0.019 | 5.683 ± 0.028 | 4.134 ± 0.013 | 7.102 ± 0.032 |
| $\Omega_2$ | 5.921 ± 0.021 | 4.748 ± 0.021 | 4.534 ± 0.020 | 10.671 ± 0.060 |
| $L_1$ [%] | 70.7 ± 1.1 | 85.4 ± 1.1 | 94.4 ± 1.2 | 80.6 ± 1.2 |
| $L_2$ [%] | 29.3 ± 0.9 | 14.6 ± 0.5 | 4.1 ± 0.7 | 18.7 ± 0.9 |
| $L_3$ [%] | 0.0 ± 0.0 | 0.0 ± 0.0 | 1.5 ± 0.6 | 0.7 ± 0.9 |

Spots:
- $b_1$ [deg] | 13.7 ± 1.7 |
- $l_1$ [deg] | 330.0 ± 12.0 |
- $r_1$ [deg] | 13.2 ± 1.2 |
- $k_1$ | 1.34 ± 0.05 |

Fig. 3. Light curve analysis of GS Boo, based on the Super WASP photometry.

Portion of these data for a LC analysis. The same situation as for V537 And also applies here, and Pickles & Depagne (2010) gave the only estimation about its spectral type. Hence, using an assumption of F6V component, we fixed the primary temperature to the value of 6400 K for the whole fitting process. The result of the light curve fit as provided by the PHOEBEBE program is plotted in Fig. 3 while the parameters are given in Table 1.

The results of the minima fitting to the whole photometric data set are given in Table 1. As one can see from the $O-C$ diagram given in Fig. 4, there is evident a long steady decrease of the orbital period, hence the quadratic term for the ephemerides was used (see the parabolic fit in Fig. 4). Despite the fact the very last two data points slightly deviate from the fit, any speculation about a possible third body is still rather premature yet.
3.3 AM CrB

AM CrB (=GSC 02579-00069, V=12.6 mag) is an Algol-type eclipsing binary discovered during the ROTSE survey (Akerlof et al., 2000). They also gave its correct orbital period of about 0.7 days, but since then no other detailed analysis was performed.

Due to limited information about the system, the spectral estimation by Pickles & Depagne (2010) was used (F0III), fixing the value of the temperature to 7000 K for the whole LC analysis. The PHOEBE program provides us with a solution presented in Fig. 5 while the LC parameters are given in Table 1. As one can see, the secondary component is rather cooler and a bit smaller than the primary. A small fraction of the third light is on the lower limit what can be detected via this method and only further more detailed analysis of much more precise photometric data can confirm or refuse this hypothesis.

The $O - C$ diagram of the times of minima is plotted in Fig. 6 where the already published data points (11 observations) are plotted together with our new times of minima as derived from the Super WASP photometry (68 data points). The scatter of the new minima is rather large, but mainly the minima after the year 2010 show some variation, which can possibly be attributed to the third-body variation. New precise observations and minima timings during the upcoming years would be very useful for discussing this effect and its possible confirmation.
Fig. 5. Light curve analysis of AM CrB, based on the Super WASP photometry.

Fig. 6. O-C diagram of times of minima for AM CrB.

3.4 V1298 Her

The eclipsing binary system V1298 Her (=GSC 02077-00730, V=9.8 mag) is
the brightest system in our sample. It was first mentioned as a variable by
Norton et al. (2007), who also presented its correct orbital period of about
2.14 days. The spectral type was derived as F8 by Roester & Bastian (1988).
No other detailed analysis was performed.

The primary temperature was fixed at a value of 6100 K in agreement with its
spectral type, and the LC solution was found with the PHOEBE program.
The final fit is presented in Fig. 7 and the parameters of the LC solution are
given in Table 1. However, as one can see from the LC in Fig. 7, the shape of
the LC changes over the time interval and this intrinsic variability has certainly
some influence on the LC solution and precision of the LC parameters. Such variability is visible over many orbital revolutions of the binary in the Super WASP data, but its origin remains an open question.

The analysis of period of V1298 Her was based mainly on the Super WASP data, which yielded 62 times of minima (see Table 12 and the final $O - C$ diagram in Fig. 8). Together with a few data points derived from the ASAS photometry (Pojmanski, 2002), the time span covered with the minima times ranges over eight years. However, no variation is visible on these data points.
Table 2
The light-curve parameters as derived from our analysis.

| Parameter | EL Lyn       | FW Per       | RU Tri       | WW Tri       |
|-----------|--------------|--------------|--------------|--------------|
| JD0 − 2400000 | 55304.4386 ± 0.0022 | 54393.6419 ± 0.0036 | 53998.4392 ± 0.0066 | 53613.4883 ± 0.0056 |
| P [d]     | 0.6445384 ± 0.0000011 | 0.7912319 ± 0.000009 | 3.2685433 ± 0.000050 | 1.7484409 ± 0.000021 |
| i [deg]   | 74.9 ± 0.6 | 89.9 ± 1.2 | 77.9 ± 1.2 | 85.1 ± 0.6 |
| T1 [K]    | 8890 (fixed) | 6900 (fixed) | 5600 (fixed) | 7800 (fixed) |
| T2 [K]    | 4920 ± 155 | 5060 ± 20 | 3980 ± 30 | 4700 ± 40 |
| Ω1        | 4.204 ± 0.025 | 4.392 ± 0.014 | 4.424 ± 0.074 | 5.436 ± 0.019 |
| Ω2        | 4.374 ± 0.072 | 4.760 ± 0.014 | 4.825 ± 0.057 | 7.612 ± 0.033 |
| L1 [%]    | 80.3 ± 2.5 | 81.0 ± 1.4 | 83.7 ± 0.9 | 93.9 ± 0.9 |
| L2 [%]    | 9.6 ± 0.8 | 18.9 ± 1.0 | 10.6 ± 1.4 | 6.1 ± 0.7 |
| L3 [%]    | 16.1 ± 1.7 | 0.1 ± 0.2 | 5.7 ± 1.2 | 0.0 ± 0.0 |

3.5 EL Lyn

EL Lyn (=GSC 02977-01179, V=12.6 mag) is another Algol-type eclipsing binary lacking of any detailed analysis. The star was discovered as a variable by Otero et al. (2005), who gave its correct orbital period of about 0.64 days, which makes it the shortest one in our sample. Later, only a few minima observations were published, but other information is missing.

Owing to having no information about its spectral type, only the photometric indices from the Tycho $B − V = 0.12$ mag, and $J − H = 0.358$ mag can be used to roughly estimate its type. Hence, we assumed the spectral type of about A2, therefore the temperature of $T_1 = 8800$ K was kept fixed for the whole LC analysis. The result of the LC fitting is plotted in Fig. 9 and the LC parameters are given in Table 2. As one can see, the secondary component is significantly cooler, but only mildly smaller than the primary. The level of the third light seems to be non-negligible and one can hope to find the third body evident in upcoming years during some more detailed photometric or spectroscopic analysis.

The period analysis was done using the already published data (18 times of minima), while six new data points were derived from the NSVS photometry and 104 from the Super WASP data. All of these minima are given in the Table 12 and the final $O − C$ diagram is plotted in Fig. 10. Regrettably, no additional variation is visible on the current data set and longer time span is needed to be covered with observations.

3.6 FW Per

The eclipsing system FW Per (=GSC 03341-00406, V=12.5 mag) is an Algol-type eclipsing binary discovered by Hoffmeister (1943). Despite its rather early discovery, the star was not analysed neither photometrically, nor spectroscopically, and only a few publications with the minima timings were published
Fig. 9. Light curve analysis of EL Lyn, based on the Super WASP photometry.

Using the Super WASP photometry, we analysed the light curve of FW Per using the PHOEBE program. Owing to the fact that no spectral information is available, the photometric indices as derived from the 2MASS photometry (Skrutskie et al., 2006) indicate that the star should be earlier than F6, hence we fixed the primary temperature to the value of 6900 K for the whole LC fitting process. With this assumption the LC was fitted, the final plot is given in Fig. 11 and the parameters are written in Table 2.

The analysis of period was done using the already published minima times, as well as with those derived from the Super WASP data (36 new minima were derived). The final plot with the $O - C$ diagram is plotted in Fig. 12 while

to date. It is the northernmost star in our sample, has the orbital period of about 0.79 days, and shows rather deep eclipses.
Fig. 11. Light curve analysis of FW Per, based on the Super WASP photometry.

Fig. 12. O-C diagram of times of minima for FW Per.

no visible variation is evident on this plot.

3.7 RU Tri

The star RU Tri (=GSC 02316-00135, V=11.1 mag) was first mentioned as a variable by Strohmeier (1955). However, since then no detailed analysis was carried out. It has the orbital period of about 3.3 days and shows relatively deep minima of about 0.6 mag (V filter).

Using the Super WASP photometry, we analysed the LC of the system. The spectral type was presented as G0 by Malkov et al. (2006), however later
Fig. 13. Light curve analysis of RU Tri, based on the Super WASP photometry. 

Pickles & Depagne (2010) gave G5V type. Hence, we use the latter value and fixed the primary temperature to the value of 5600 K. Moreover, Samus et al. (2012) noted also the close companion (22\arcsec distant, 12 mag bright), but the Washington double star catalogue (Mason et al., 2001) does not include any such information, hence its connection with the star RU Tri is doubtful. Therefore, a light contamination from the close component is expected due to the angular resolution of the Super WASP data (Butters et al., 2010). The final LC fit is presented in Fig. 13 while the parameters are given in Table 2. The third light value as resulted from the LC solution is surprisingly low for a close companion of such a brightness. We can only speculate that only a fraction of its light enters the aperture of the Super WASP telescope. Another problematic issue was some kind of additional intrinsic variability of the light curve as detected on the Super WASP data. Nature of these variations still remains an open question, but it surely influence the LC fit and its precision. If is this variation somehow connected with the close companion cannot easily be solved with the current data.

On the other hand, also the times of minima were derived from the Super WASP and NSVS data. These are stored in the Table 12 and the final $O-C$ plot is given in Fig. 14. Despite rather large scatter of the data points, due to poor coverage any variation is evident.

3.8 WW Tri

WW Tri (=TYC 2322-796-1, V=12.1 mag) is an Algol-type eclipsing binary discovered by Weber (1963). Its orbital period is of about 1.7 days, and shows
Fig. 14. O-C diagram of times of minima for RU Tri.

Fig. 15. Light curve analysis of WW Tri, based on the Super WASP photometry. Rather deep eclipses of about 0.6 mag. The spectral type was roughly estimated as A7V by Pickles & Depagne (2010), which is in good agreement with the BVRI observations by Skiff (2007). No detailed analysis of the star was performed.

Therefore, for the LC analysis the primary temperature of 7800 K was fixed. The Super WASP data were used for the LC fitting in the PHOEBE program. The final fit is presented in Fig. 15, and the parameters are given in Table 2. As one can see, the secondary is significantly cooler and smaller, hence also its contribution to the total luminosity of the system is only a few percent.

The analysis of the period was carried out with the already published data points (20 minima), together with our new data as derived from the Super
WASP (63 minima). The final $O - C$ diagram is plotted in Fig. 16, but any visible variation is evident in the present data set. More observations are needed during the next decades.

4 Discussion and conclusions

The first light curve analysis of eight Algol-type eclipsing binaries based on the Super WASP photometric data led to several interesting results:

- Confirming the well-known finding that for classical Algols the difference between the minima depths is in correlation with the temperature difference of the components.
- The surveys like Super WASP are suitable for this kind of analysis and the LC parameters as resulted from the analysis have only relatively small errors. Also the second-order effects like the third light contribution is detectable in these quality of data.
- The intrinsic variability is easily detectable in the Super WASP data due to the LC fitting and studying the residuals.
- Deriving the large set of minima timings for a prospective period analysis can be done relatively easily using the LC template.
- Using also some other surveys and the minima fitting procedure one can detect an additional variation in the $O - C$ diagram. But this method is more suitable for these systems, which have rather longer time span of observations for the third body perturbations to be discovered.

All of the presented systems are rather seldom-investigated and their follow-up observations using spectroscopy would be of great benefit. Especially those ones, where some indication of additional component in the system was found.
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| Star     | HJD     | Error (days) | Type | Filter | Source |
|----------|---------|--------------|------|--------|--------|
| V537 And | 53184.70823 | 0.00173  | Prim | W      | Super WASP |
| V537 And | 53184.57386 | 0.00120  | Sec  | W      | Super WASP |
| V537 And | 53203.72084 | 0.00169  | Prim | W      | Super WASP |
| V537 And | 53204.63534 | 0.00105  | Prim | W      | Super WASP |
| V537 And | 53207.76254 | 0.01098  | Sec  | W      | Super WASP |
| V537 And | 53208.65439 | 0.01228  | Sec  | W      | Super WASP |
| V537 And | 53217.57441 | 0.00326  | Sec  | W      | Super WASP |
| V537 And | 53218.57141 | 0.00212  | Sec  | W      | Super WASP |
| V537 And | 53222.62876 | 0.01144  | Prim | W      | Super WASP |
| V537 And | 53220.73497 | 0.01332  | Prim | W      | Super WASP |
| V537 And | 53221.63819 | 0.00420  | Prim | W      | Super WASP |
| V537 And | 53222.53868 | 0.00971  | Prim | W      | Super WASP |
| V537 And | 53235.69198 | 0.00677  | Sec  | W      | Super WASP |
| V537 And | 53236.59196 | 0.00169  | Prim | W      | Super WASP |
| V537 And | 53239.74230 | 0.00440  | Prim | W      | Super WASP |
| V537 And | 53240.64621 | 0.00163  | Prim | W      | Super WASP |
| V537 And | 53241.54789 | 0.00217  | Prim | W      | Super WASP |
| V537 And | 53245.60086 | 0.00067  | Sec  | W      | Super WASP |
| V537 And | 53246.50021 | 0.00416  | Sec  | W      | Super WASP |
| V537 And | 53249.64549 | 0.00211  | Prim | W      | Super WASP |
| V537 And | 53260.65554 | 0.00112  | Prim | W      | Super WASP |
| V537 And | 53262.61624 | 0.00128  | Sec  | W      | Super WASP |
| V537 And | 53263.61703 | 0.00098  | Sec  | W      | Super WASP |
| V537 And | 53271.72474 | 0.00155  | Sec  | W      | Super WASP |
| V537 And | 53272.62442 | 0.00005  | Sec  | W      | Super WASP |
| V537 And | 53275.72423 | 0.00029  | Prim | W      | Super WASP |
| V537 And | 53276.60862 | 0.00056  | Prim | W      | Super WASP |
| V537 And | 53277.58068 | 0.00026  | Prim | W      | Super WASP |
| V537 And | 53277.64278 | 0.00193  | Sec  | W      | Super WASP |
| V537 And | 53277.58044 | 0.01264  | Sec  | W      | Super WASP |
| V537 And | 53277.53668 | 0.00352  | Prim | W      | Super WASP |
| V537 And | 53279.79883 | 0.00111  | Sec  | W      | Super WASP |
| V537 And | 53280.62445 | 0.00072  | Sec  | W      | Super WASP |
| V537 And | 53281.59993 | 0.00941  | Sec  | W      | Super WASP |
| V537 And | 53292.49984 | 0.02951  | Sec  | W      | Super WASP |
| V537 And | 53293.75421 | 0.00625  | Prim | W      | Super WASP |
| V537 And | 53294.65512 | 0.00714  | Prim | W      | Super WASP |
| V537 And | 53295.75562 | 0.00059  | Prim | W      | Super WASP |
| V537 And | 53298.70349 | 0.00640  | Sec  | W      | Super WASP |
| V537 And | 54002.75938 | 0.00619  | Prim | W      | Super WASP |
| V537 And | 54003.66459 | 0.00273  | Prim | W      | Super WASP |
| V537 And | 54004.55059 | 0.00564  | Prim | W      | Super WASP |
| V537 And | 54005.46788 | 0.01045  | Prim | W      | Super WASP |
| V537 And | 54007.71497 | 0.01114  | Sec  | W      | Super WASP |
| V537 And | 54008.62074 | 0.00301  | Sec  | W      | Super WASP |
| V537 And | 54011.76409 | 0.00004  | Prim | W      | Super WASP |
| V537 And | 54021.68135 | 0.00718  | Prim | W      | Super WASP |
| V537 And | 54022.58291 | 0.01332  | Prim | W      | Super WASP |
| V537 And | 54023.48914 | 0.00584  | Prim | W      | Super WASP |
| V537 And | 54030.68815 | 0.00234  | Prim | W      | Super WASP |
| V537 And | 54031.59027 | 0.00697  | Prim | W      | Super WASP |
| V537 And | 54032.49237 | 0.00437  | Prim | W      | Super WASP |
| V537 And | 54049.60784 | 0.01430  | Prim | W      | Super WASP |
| V537 And | 54059.51017 | 0.00032  | Prim | W      | Super WASP |
| V537 And | 54056.36123 | 0.00502  | Sec  | W      | Super WASP |
| V537 And | 54063.37928 | 0.00422  | Sec  | W      | Super WASP |
| V537 And | 54066.26839 | 0.00555  | Sec  | W      | Super WASP |
| V537 And | 54068.52362 | 0.00005  | Prim | W      | Super WASP |
| V537 And | 54069.42659 | 0.00212  | Prim | W      | Super WASP |
| V537 And | 54074.37961 | 0.00225  | Sec  | W      | Super WASP |
| V537 And | 54075.28237 | 0.00100  | Sec  | W      | Super WASP |
| V537 And | 54083.38823 | 0.00609  | Sec  | W      | Super WASP |
| V537 And | 54084.28621 | 0.00149  | Sec  | W      | Super WASP |
| V537 And | 54087.44161 | 0.00269  | Prim | W      | Super WASP |
| V537 And | 54092.39702 | 0.00181  | Sec  | W      | Super WASP |
| V537 And | 54093.29664 | 0.00958  | Sec  | W      | Super WASP |
| V537 And | 54097.54430 | 0.00141  | Prim | W      | Super WASP |
Table 4
The heliocentric minima times used for the analysis.

| Star   | HJD  | Error | Type   | Filter | Source |
|--------|------|-------|--------|--------|--------|
|        | 2400000+ [days] |        |        |        |        |
| V537 And | 54102.30458 | 0.00212 | Sec    | W      | Super WASP |
| V537 And | 54321.56479 | 0.00186 | Prim   | W      | Super WASP |
| V537 And | 54322.56459 | 0.00434 | Prim   | W      | Super WASP |
| V537 And | 54325.71542 | 0.00349 | Sec    | W      | Super WASP |
| V537 And | 54326.61677 | 0.00220 | Sec    | W      | Super WASP |
| V537 And | 54327.51694 | 0.00426 | Sec    | W      | Super WASP |
| V537 And | 54329.77087 | 0.00488 | Prim   | W      | Super WASP |
| V537 And | 54330.67247 | 0.00679 | Prim   | W      | Super WASP |
| V537 And | 54331.57325 | 0.00102 | Prim   | W      | Super WASP |
| V537 And | 54334.71542 | 0.00015 | Sec    | W      | Super WASP |
| V537 And | 54335.62449 | 0.02744 | Sec    | W      | Super WASP |
| V537 And | 54338.77887 | 0.00587 | Prim   | W      | Super WASP |
| V537 And | 54339.68143 | 0.00212 | Prim   | W      | Super WASP |
| V537 And | 54340.58251 | 0.00035 | Prim   | W      | Super WASP |
| V537 And | 54341.47954 | 0.00020 | Prim   | W      | Super WASP |
| V537 And | 54344.63401 | 0.00004 | Sec    | W      | Super WASP |
| V537 And | 54345.53310 | 0.00282 | Sec    | W      | Super WASP |
| V537 And | 54347.70894 | 0.00184 | Prim   | W      | Super WASP |
| V537 And | 54348.68995 | 0.00125 | Prim   | W      | Super WASP |
| V537 And | 54349.59071 | 0.00127 | Prim   | W      | Super WASP |
| V537 And | 54350.49025 | 0.00276 | Prim   | W      | Super WASP |
| V537 And | 54352.74307 | 0.00207 | Sec    | W      | Super WASP |
| V537 And | 54353.64366 | 0.00200 | Sec    | W      | Super WASP |
| V537 And | 54354.54290 | 0.00458 | Sec    | W      | Super WASP |
| V537 And | 54355.44601 | 0.00091 | Sec    | W      | Super WASP |
| V537 And | 54357.69749 | 0.00217 | Prim   | W      | Super WASP |
| V537 And | 54358.59851 | 0.00046 | Prim   | W      | Super WASP |
| V537 And | 54359.49763 | 0.00551 | Prim   | W      | Super WASP |
| V537 And | 54361.79413 | 0.00474 | Sec    | W      | Super WASP |
| V537 And | 54362.65199 | 0.00035 | Sec    | W      | Super WASP |
| V537 And | 54363.55275 | 0.00354 | Sec    | W      | Super WASP |
| V537 And | 54364.45124 | 0.01015 | Sec    | W      | Super WASP |
| V537 And | 54368.50260 | 0.00014 | Prim   | W      | Super WASP |
| V537 And | 54373.46064 | 0.00022 | Sec    | W      | Super WASP |
| V537 And | 54374.81226 | 0.00594 | Prim   | W      | Super WASP |
| V537 And | 54377.51569 | 0.00154 | Prim   | W      | Super WASP |
| V537 And | 54381.57046 | 0.00550 | Sec    | W      | Super WASP |
| V537 And | 54382.40708 | 0.00923 | Sec    | W      | Super WASP |
| V537 And | 54383.57218 | 0.00360 | Sec    | W      | Super WASP |
| V537 And | 54387.42544 | 0.00681 | Prim   | W      | Super WASP |
| V537 And | 54389.67750 | 0.00493 | Sec    | W      | Super WASP |
| V537 And | 54392.36089 | 0.00061 | Sec    | W      | Super WASP |
| V537 And | 54393.73044 | 0.00079 | Prim   | W      | Super WASP |
| V537 And | 54394.63237 | 0.00109 | Prim   | W      | Super WASP |
| V537 And | 54395.53203 | 0.00092 | Prim   | W      | Super WASP |
| V537 And | 54396.43337 | 0.00060 | Prim   | W      | Super WASP |
| V537 And | 54398.06667 | 0.00317 | Sec    | W      | Super WASP |
| V537 And | 54402.73835 | 0.00010 | Prim   | W      | Super WASP |
| V537 And | 54405.44332 | 0.00075 | Prim   | W      | Super WASP |
| V537 And | 54406.34515 | 0.00137 | Prim   | W      | Super WASP |
| V537 And | 54407.69948 | 0.00271 | Sec    | W      | Super WASP |
| V537 And | 54409.40697 | 0.00412 | Sec    | W      | Super WASP |
| GS Boo  | 55128.45198 | 0.00286 | Prim   | W      | Super WASP |
| GS Boo  | 55129.70997 | 0.00620 | Prim   | W      | Super WASP |
| GS Boo  | 55130.34378 | 0.00031 | Sec    | W      | Super WASP |
| GS Boo  | 55138.50697 | 0.00091 | Prim   | W      | Super WASP |
| GS Boo  | 55139.45638 | 0.00899 | Prim   | W      | Super WASP |
| GS Boo  | 55141.64437 | 0.00308 | Sec    | W      | Super WASP |
| GS Boo  | 55143.53306 | 0.00167 | Prim   | W      | Super WASP |
| GS Boo  | 55150.44136 | 0.00020 | Sec    | W      | Super WASP |
| GS Boo  | 55151.74342 | 0.00172 | Sec    | W      | Super WASP |
Table 5
The heliocentric minima times used for the analysis.

| Star | HJD 2400000+ | Error [days] | Type | Filter | Source |
|------|----------------|---------------|------|--------|--------|
| GS Boo | 53152 32972 | 0.00199 | Prim | W | Super WASP |
| GS Boo | 53155 58075 | 0.00113 | Prim | W | Super WASP |
| GS Boo | 53155 47863 | 0.00460 | Sec | W | Super WASP |
| GS Boo | 53157 35934 | 0.00207 | Prim | W | Super WASP |
| GS Boo | 53158 61436 | 0.00170 | Prim | W | Super WASP |
| GS Boo | 53160 50894 | 0.00095 | Sec | W | Super WASP |
| GS Boo | 53162 34794 | 0.00288 | Prim | W | Super WASP |
| GS Boo | 53163 64338 | 0.00374 | Prim | W | Super WASP |
| GS Boo | 53165 52548 | 0.00095 | Sec | W | Super WASP |
| GS Boo | 53167 41598 | 0.00139 | Prim | W | Super WASP |
| GS Boo | 53168 67398 | 0.00389 | Prim | W | Super WASP |
| GS Boo | 53170 54527 | 0.00111 | Sec | W | Super WASP |
| GS Boo | 53172 44206 | 0.00094 | Prim | W | Super WASP |
| GS Boo | 53175 57282 | 0.00119 | Sec | W | Super WASP |
| GS Boo | 53177 46497 | 0.00234 | Prim | W | Super WASP |
| GS Boo | 53179 59395 | 0.00161 | Sec | W | Super WASP |
| GS Boo | 53180 60300 | 0.00235 | Sec | W | Super WASP |
| GS Boo | 53182 49006 | 0.00068 | Prim | W | Super WASP |
| GS Boo | 53184 36022 | 0.00178 | Sec | W | Super WASP |
| GS Boo | 53189 41563 | 0.00647 | Sec | W | Super WASP |
| GS Boo | 53192 55230 | 0.00156 | Prim | W | Super WASP |
| GS Boo | 53194 45461 | 0.00027 | Sec | W | Super WASP |
| GS Boo | 53196 31742 | 0.00109 | Prim | W | Super WASP |
| GS Boo | 53197 56118 | 0.00257 | Prim | W | Super WASP |
| GS Boo | 53199 47823 | 0.00040 | Sec | W | Super WASP |
| GS Boo | 53201 34778 | 0.00272 | Prim | W | Super WASP |
| GS Boo | 53202 60508 | 0.00206 | Prim | W | Super WASP |
| GS Boo | 53204 48888 | 0.00313 | Sec | W | Super WASP |
| GS Boo | 53206 37907 | 0.00570 | Prim | W | Super WASP |
| GS Boo | 53209 51534 | 0.00025 | Sec | W | Super WASP |
| GS Boo | 53216 42352 | 0.00291 | Prim | W | Super WASP |
| GS Boo | 53218 32295 | 0.00021 | Sec | W | Super WASP |
| GS Boo | 53221 45837 | 0.00261 | Prim | W | Super WASP |
| GS Boo | 53223 34009 | 0.00030 | Sec | W | Super WASP |
| GS Boo | 53226 48729 | 0.00122 | Prim | W | Super WASP |
| GS Boo | 53228 36932 | 0.01442 | Sec | W | Super WASP |
| GS Boo | 53231 51291 | 0.00578 | Prim | W | Super WASP |
| GS Boo | 53233 26404 | 0.00951 | Prim | W | Super WASP |
| GS Boo | 53239 42759 | 0.00182 | Sec | W | Super WASP |
| GS Boo | 53240 30754 | 0.00720 | Prim | W | Super WASP |
| GS Boo | 53243 45978 | 0.00091 | Sec | W | Super WASP |
| GS Boo | 53245 35280 | 0.00651 | Prim | W | Super WASP |
| GS Boo | 53249 36355 | 0.00581 | Prim | W | Super WASP |
| GS Boo | 53255 39214 | 0.00808 | Prim | W | Super WASP |
| GS Boo | 53260 41825 | 0.05111 | Prim | W | Super WASP |
| GS Boo | 53262 30575 | 0.00732 | Sec | W | Super WASP |
| GS Boo | 53288 49555 | 0.00060 | Prim | W | Super WASP |
| GS Boo | 53292 25757 | 0.01078 | Prim | W | Super WASP |
| GS Boo | 53381 64979 | 0.00094 | Sec | W | Super WASP |
| GS Boo | 53833 52745 | 0.00106 | Prim | W | Super WASP |
| GS Boo | 53831 74783 | 0.00285 | Sec | W | Super WASP |
| GS Boo | 53873 63468 | 0.00215 | Prim | W | Super WASP |
| GS Boo | 53882 54379 | 0.00306 | Prim | W | Super WASP |
| GS Boo | 53884 42932 | 0.00204 | Sec | W | Super WASP |
| GS Boo | 53901 38656 | 0.00007 | Prim | W | Super WASP |
| GS Boo | 53902 65515 | 0.00116 | Prim | W | Super WASP |
| GS Boo | 53904 52523 | 0.00287 | Sec | W | Super WASP |
| GS Boo | 54139 61162 | 0.00385 | Sec | W | Super WASP |
| GS Boo | 54152 75865 | 0.00102 | Prim | W | Super WASP |
| GS Boo | 54154 64321 | 0.00061 | Sec | W | Super WASP |
| GS Boo | 54156 52587 | 0.00070 | Prim | W | Super WASP |
| GS Boo | 54157 76487 | 0.00395 | Prim | W | Super WASP |
| GS Boo | 54159 68850 | 0.00063 | Sec | W | Super WASP |
| GS Boo | 54161 54922 | 0.00087 | Prim | W | Super WASP |
| GS Boo | 54162 81691 | 0.00038 | Prim | W | Super WASP |
| GS Boo | 54166 57820 | 0.00189 | Prim | W | Super WASP |
| GS Boo | 54167 84202 | 0.00112 | Prim | W | Super WASP |
| GS Boo | 54171 60667 | 0.00202 | Prim | W | Super WASP |
| GS Boo | 54189 62673 | 0.00562 | Sec | W | Super WASP |
| GS Boo | 54190 45906 | 0.00062 | Prim | W | Super WASP |
| GS Boo | 54191 72317 | 0.00072 | Prim | W | Super WASP |
| GS Boo | 54194 86473 | 0.00026 | Sec | W | Super WASP |
Table 6
The heliocentric minima times used for the analysis.

| Star | HJD 2400000+ | Error [days] | Type | Filter | Source |
|------|--------------|--------------|------|--------|--------|
| GS Boo | 54195.48584 | 0.00264 | Prim | W | Super WASP |
| GS Boo | 54206.68953 | 0.00662 | Prim | W | Super WASP |
| GS Boo | 54208.68754 | 0.00323 | Sec | W | Super WASP |
| GS Boo | 54210.57153 | 0.00222 | Prim | W | Super WASP |
| GS Boo | 54212.46273 | 0.00993 | Sec | W | Super WASP |
| GS Boo | 54213.70720 | 0.00279 | Sec | W | Super WASP |
| GS Boo | 54214.32732 | 0.02288 | Prim | W | Super WASP |
| GS Boo | 54215.59876 | 0.00023 | Prim | W | Super WASP |
| GS Boo | 54217.46326 | 0.00192 | Sec | W | Super WASP |
| GS Boo | 54218.72055 | 0.00687 | Sec | W | Super WASP |
| GS Boo | 54219.36946 | 0.00411 | Prim | W | Super WASP |
| GS Boo | 54220.62854 | 0.01111 | Prim | W | Super WASP |
| GS Boo | 54222.51347 | 0.00003 | Sec | W | Super WASP |
| GS Boo | 54224.39252 | 0.00230 | Prim | W | Super WASP |
| GS Boo | 54225.65122 | 0.00134 | Prim | W | Super WASP |
| GS Boo | 54227.53380 | 0.00146 | Sec | W | Super WASP |
| GS Boo | 54230.68757 | 0.00885 | Prim | W | Super WASP |
| GS Boo | 54232.58269 | 0.00281 | Sec | W | Super WASP |
| GS Boo | 54234.45133 | 0.00484 | Prim | W | Super WASP |
| GS Boo | 54235.70629 | 0.00180 | Prim | W | Super WASP |
| GS Boo | 54236.32835 | 0.00336 | Sec | W | Super WASP |
| GS Boo | 54247.65260 | 0.00174 | Sec | W | Super WASP |
| GS Boo | 54249.53608 | 0.00052 | Prim | W | Super WASP |
| GS Boo | 54252.68728 | 0.00221 | Sec | W | Super WASP |
| GS Boo | 54254.56009 | 0.00305 | Prim | W | Super WASP |
| GS Boo | 54256.44375 | 0.00060 | Sec | W | Super WASP |
| GS Boo | 54261.76262 | 0.00161 | Sec | W | Super WASP |
| GS Boo | 54264.61208 | 0.00264 | Sec | W | Super WASP |
| GS Boo | 54266.58781 | 0.00001 | Sec | W | Super WASP |
| GS Boo | 54268.08603 | 0.00106 | Prim | W | Super WASP |
| GS Boo | 54269.64056 | 0.00118 | Prim | W | Super WASP |
| GS Boo | 54271.52633 | 0.00145 | Sec | W | Super WASP |
| GS Boo | 54273.40502 | 0.00116 | Prim | W | Super WASP |
| GS Boo | 54276.55615 | 0.00126 | Sec | W | Super WASP |
| GS Boo | 54278.44918 | 0.00134 | Prim | W | Super WASP |
| AM CrB | 53831.54932 | 0.00154 | Prim | W | Super WASP |
| AM CrB | 53832.60808 | 0.00241 | Sec | W | Super WASP |
| AM CrB | 53833.66138 | 0.00029 | Prim | W | Super WASP |
| AM CrB | 53832.65880 | 0.00288 | Prim | W | Super WASP |
| AM CrB | 53855.47132 | 0.00115 | Prim | W | Super WASP |
| AM CrB | 53856.52710 | 0.00183 | Sec | W | Super WASP |
| AM CrB | 53902.62626 | 0.01162 | Prim | W | Super WASP |
| AM CrB | 53906.49193 | 0.00030 | Sec | W | Super WASP |
| AM CrB | 53907.54699 | 0.00010 | Prim | W | Super WASP |
| AM CrB | 53908.60478 | 0.00173 | Sec | W | Super WASP |
| AM CrB | 53920.63424 | 0.00416 | Sec | W | Super WASP |
| AM CrB | 54170.61639 | 0.00017 | Prim | W | Super WASP |
| AM CrB | 54171.77554 | 0.00240 | Sec | W | Super WASP |
| AM CrB | 54189.71467 | 0.00067 | Prim | W | Super WASP |
| AM CrB | 54194.64122 | 0.00084 | Prim | W | Super WASP |
| AM CrB | 54202.73251 | 0.00578 | Sec | W | Super WASP |
| AM CrB | 54204.49031 | 0.00355 | Prim | W | Super WASP |
| AM CrB | 54206.69272 | 0.00484 | Prim | W | Super WASP |
| AM CrB | 54208.71357 | 0.01308 | Prim | W | Super WASP |
| AM CrB | 54212.56166 | 0.00128 | Sec | W | Super WASP |
| AM CrB | 54213.63889 | 0.00601 | Prim | W | Super WASP |
| AM CrB | 54214.69954 | 0.00223 | Sec | W | Super WASP |
| AM CrB | 54215.74926 | 0.00919 | Prim | W | Super WASP |
| AM CrB | 54218.54193 | 0.00180 | Prim | W | Super WASP |
| AM CrB | 54219.61331 | 0.00060 | Sec | W | Super WASP |
| AM CrB | 54221.42008 | 0.00668 | Prim | W | Super WASP |
| AM CrB | 54224.54547 | 0.00358 | Sec | W | Super WASP |
| AM CrB | 54225.60048 | 0.00250 | Prim | W | Super WASP |
| AM CrB | 54226.65798 | 0.00365 | Sec | W | Super WASP |
| AM CrB | 54227.71087 | 0.00670 | Prim | W | Super WASP |
| AM CrB | 54228.41011 | 0.00129 | Prim | W | Super WASP |
| AM CrB | 54230.52634 | 0.00134 | Prim | W | Super WASP |
| AM CrB | 54231.58044 | 0.00324 | Sec | W | Super WASP |
| AM CrB | 54232.63747 | 0.00397 | Prim | W | Super WASP |
| AM CrB | 54235.45844 | 0.00093 | Prim | W | Super WASP |
| AM CrB | 54236.59065 | 0.00277 | Sec | W | Super WASP |
Table 7
The heliocentric minima times used for the analysis.

| Star   | HJD     | Error [days] | Type   | Filter | Source  |
|--------|---------|--------------|--------|--------|---------|
| AM CrB | 54248.47699 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54249.52519 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54250.57809 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54251.63576 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54252.34144 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54254.45028 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54256.56119 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54257.61855 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54260.43618 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54261.48729 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54262.54214 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54263.59757 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54266.40990 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54267.47001 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54268.52289 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54269.58119 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54271.33406 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54273.44667 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54275.53920 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54278.61681 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54279.73288 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54280.48561 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54281.45418 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54282.60009 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54285.40992 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54286.46866 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54287.52153 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54288.57304 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54292.44729 | 0.000000 | Prim W | Super WASP |
| AM CrB | 54293.50477 | 0.000000 | Sec W | Super WASP |
| AM CrB | 54294.55838 | 0.000000 | Prim W | Super WASP |
| V1298Her | 52349.60925 | 0.000000 | Prim V | ASAS |
| V1298Her | 52350.66793 | 0.000000 | Sec V | ASAS |
| V1298Her | 55099.67548 | 0.000000 | Prim V | ASAS |
| V1298Her | 55100.74810 | 0.000000 | Sec V | ASAS |
| V1298Her | 53132.43972 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53137.78140 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53149.57755 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53150.64987 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53151.71789 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53152.83141 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53153.94975 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53161.36218 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53162.43983 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53163.50879 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53164.58376 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53165.65705 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53166.72965 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53176.37643 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53177.45113 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53178.52580 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53179.59646 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53180.67008 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53181.74281 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53191.39056 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53192.46444 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53193.53790 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53194.60495 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53195.65511 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53207.47841 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53208.55145 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53209.62310 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53219.73569 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53220.84613 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53221.48770 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53222.49105 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53223.56498 | 0.000000 | Sec W | Super WASP |
| V1298Her | 53224.63669 | 0.000000 | Prim W | Super WASP |
| V1298Her | 53235.35933 | 0.000000 | Prim W | Super WASP |
Table 8
The heliocentric minima times used for the analysis.

| Star     | HJD     | Error  | Type | Filter | Source |
|----------|---------|--------|------|--------|--------|
|          | 2400000+| [days] |      |        |        |
| V1298Her | 53236.43182 | 0.01652 | Sec  | W      | Super WASP |
| V1298Her | 53237.50335 | 0.00187 | Prim | W      | Super WASP |
| V1298Her | 53238.57342 | 0.00756 | Sec  | W      | Super WASP |
| V1298Her | 53239.65267 | 0.00699 | Prim | W      | Super WASP |
| V1298Her | 53240.73280 | 0.00724 | Prim | W      | Super WASP |
| V1298Her | 53241.81304 | 0.00392 | Sec  | W      | Super WASP |
| V1298Her | 53242.89317 | 0.00106 | Prim | W      | Super WASP |
| V1298Her | 53243.97333 | 0.00352 | Prim | W      | Super WASP |
| V1298Her | 53244.05349 | 0.01005 | Sec  | W      | Super WASP |
| V1298Her | 53245.13365 | 0.00262 | Prim | W      | Super WASP |
| V1298Her | 53246.21382 | 0.00586 | Prim | W      | Super WASP |
| V1298Her | 53247.29398 | 0.00886 | Sec  | W      | Super WASP |
| V1298Her | 53248.37414 | 0.00712 | Prim | W      | Super WASP |
| V1298Her | 53249.45428 | 0.00450 | Sec  | W      | Super WASP |
| V1298Her | 53250.53444 | 0.00277 | Prim | W      | Super WASP |
| V1298Her | 53251.61459 | 0.00200 | Sec  | W      | Super WASP |
| V1298Her | 53252.69475 | 0.01522 | Prim | W      | Super WASP |
| EL Lyn   | 54056.61532 | 0.00146 | Prim | W      | Super WASP |
| EL Lyn   | 54057.57543 | 0.00244 | Sec  | W      | Super WASP |
| EL Lyn   | 54066.61218 | 0.00172 | Sec  | W      | Super WASP |
| EL Lyn   | 54067.57480 | 0.00551 | Prim | W      | Super WASP |
| EL Lyn   | 54068.51695 | 0.00312 | Sec  | W      | Super WASP |
| EL Lyn   | 54070.79383 | 0.00042 | Prim | W      | Super WASP |
| EL Lyn   | 54074.66085 | 0.00310 | Prim | W      | Super WASP |
| EL Lyn   | 54075.61684 | 0.00219 | Sec  | W      | Super WASP |
| EL Lyn   | 54083.64433 | 0.00139 | Prim | W      | Super WASP |
| EL Lyn   | 54084.64670 | 0.00136 | Sec  | W      | Super WASP |
| EL Lyn   | 54085.61731 | 0.00036 | Prim | W      | Super WASP |
| EL Lyn   | 54091.73460 | 0.00281 | Sec  | W      | Super WASP |
| EL Lyn   | 54092.70862 | 0.00016 | Prim | W      | Super WASP |
| EL Lyn   | 54094.64612 | 0.00228 | Prim | W      | Super WASP |
| EL Lyn   | 54099.46833 | 0.00126 | Sec  | W      | Super WASP |
| EL Lyn   | 54099.97910 | 0.00225 | Prim | W      | Super WASP |
| EL Lyn   | 54100.44179 | 0.00151 | Prim | W      | Super WASP |
| EL Lyn   | 54100.70351 | 0.00288 | Sec  | W      | Super WASP |
| EL Lyn   | 54101.83830 | 0.00299 | Sec  | W      | Super WASP |
| EL Lyn   | 54101.73171 | 0.00568 | Prim | W      | Super WASP |
| EL Lyn   | 54109.45515 | 0.00122 | Prim | W      | Super WASP |
| EL Lyn   | 54111.72532 | 0.00320 | Sec  | W      | Super WASP |
| EL Lyn   | 54114.62309 | 0.00238 | Prim | W      | Super WASP |
| EL Lyn   | 54115.58495 | 0.00250 | Sec  | W      | Super WASP |
| EL Lyn   | 54116.55419 | 0.00194 | Prim | W      | Super WASP |
| EL Lyn   | 54118.49054 | 0.00134 | Prim | W      | Super WASP |
| EL Lyn   | 54120.42432 | 0.00344 | Prim | W      | Super WASP |
| EL Lyn   | 54120.74528 | 0.00392 | Sec  | W      | Super WASP |
| EL Lyn   | 54121.71192 | 0.00166 | Prim | W      | Super WASP |
| EL Lyn   | 54122.67440 | 0.00290 | Sec  | W      | Super WASP |
| EL Lyn   | 54123.64544 | 0.00225 | Prim | W      | Super WASP |
| EL Lyn   | 54135.56891 | 0.00282 | Sec  | W      | Super WASP |
| EL Lyn   | 54136.53638 | 0.00155 | Prim | W      | Super WASP |
| EL Lyn   | 54139.43588 | 0.00243 | Sec  | W      | Super WASP |
| EL Lyn   | 54140.40330 | 0.00094 | Prim | W      | Super WASP |
| EL Lyn   | 54140.75303 | 0.00391 | Sec  | W      | Super WASP |
| EL Lyn   | 54141.36224 | 0.00348 | Sec  | W      | Super WASP |
| EL Lyn   | 54141.70810 | 0.00107 | Prim | W      | Super WASP |
| EL Lyn   | 54143.62454 | 0.00036 | Prim | W      | Super WASP |
| EL Lyn   | 54145.50610 | 0.00092 | Prim | W      | Super WASP |
| EL Lyn   | 54146.52472 | 0.00228 | Sec  | W      | Super WASP |
| EL Lyn   | 54147.49305 | 0.00415 | Prim | W      | Super WASP |
| EL Lyn   | 54148.45646 | 0.00189 | Sec  | W      | Super WASP |
| EL Lyn   | 54149.42563 | 0.00116 | Prim | W      | Super WASP |
| EL Lyn   | 54150.39832 | 0.00222 | Sec  | W      | Super WASP |
| EL Lyn   | 54151.36562 | 0.00105 | Prim | W      | Super WASP |
| EL Lyn   | 54152.32056 | 0.00255 | Sec  | W      | Super WASP |
| EL Lyn   | 54153.29809 | 0.00203 | Prim | W      | Super WASP |
| EL Lyn   | 54153.61775 | 0.00290 | Sec  | W      | Super WASP |
| EL Lyn   | 54154.58164 | 0.00362 | Prim | W      | Super WASP |
| EL Lyn   | 54155.56058 | 0.00372 | Sec  | W      | Super WASP |
| Star   | HJD (2400000+) | Error [days] | Type | Filter | Source     |
|--------|----------------|-------------|------|--------|------------|
| EL Lyn | 54156.51833    | 0.00380     | Prim | W      | Super WASP |
| EL Lyn | 54157.45795    | 0.00277     | Sec  | W      | Super WASP |
| EL Lyn | 54158.06439    | 0.00290     | Prim | W      | Super WASP |
| EL Lyn | 54159.60928    | 0.00275     | Sec  | W      | Super WASP |
| EL Lyn | 54160.81007    | 0.00178     | Prim | W      | Super WASP |
| EL Lyn | 54161.17955    | 0.00196     | Sec  | W      | Super WASP |
| EL Lyn | 54162.80219    | 0.00228     | Prim | W      | Super WASP |
| EL Lyn | 54163.59946    | 0.00222     | Prim | W      | Super WASP |
| EL Lyn | 54164.43912    | 0.00189     | Sec  | W      | Super WASP |
| EL Lyn | 54165.53879    | 0.00364     | Prim | W      | Super WASP |
| EL Lyn | 54166.01464    | 0.00178     | Sec  | W      | Super WASP |
| EL Lyn | 54167.80395    | 0.00228     | Prim | W      | Super WASP |
| EL Lyn | 54168.06439    | 0.00178     | Sec  | W      | Super WASP |
| EL Lyn | 54169.60928    | 0.00228     | Prim | W      | Super WASP |
| EL Lyn | 54170.81007    | 0.00178     | Sec  | W      | Super WASP |
| EL Lyn | 54171.17955    | 0.00196     | Prim | W      | Super WASP |
| EL Lyn | 54172.80219    | 0.00228     | Sec  | W      | Super WASP |
| EL Lyn | 54190.36862    | 0.00453     | Sec  | W      | Super WASP |
| EL Lyn | 54191.32279    | 0.00117     | Prim | W      | Super WASP |
| EL Lyn | 54193.44910    | 0.00380     | Prim | W      | Super WASP |
| EL Lyn | 54195.31831    | 0.00224     | Sec  | W      | Super WASP |
| EL Lyn | 54202.73419    | 0.00453     | Sec  | W      | Super WASP |
| EL Lyn | 54220.78304    | 0.00160     | Prim | W      | Super WASP |
| EL Lyn | 54241.26578    | 0.00135     | Prim | W      | Super WASP |
| EL Lyn | 54403.57425    | 0.00220     | Sec  | W      | Super WASP |
| EL Lyn | 54404.53491    | 0.00220     | Prim | W      | Super WASP |
| EL Lyn | 54438.50800    | 0.00453     | Sec  | W      | Super WASP |
| EL Lyn | 54438.82968    | 0.00214     | Prim | W      | Super WASP |
| EL Lyn | 54491.36341    | 0.00215     | Sec  | W      | Super WASP |
| EL Lyn | 54448.50394    | 0.00220     | Sec  | W      | Super WASP |
| EL Lyn | 54449.67729    | 0.00178     | Prim | W      | Super WASP |
| EL Lyn | 54501.34507    | 0.00229     | Prim | W      | Super WASP |
| EL Lyn | 54501.85819    | 0.00160     | Sec  | W      | Super WASP |
| EL Lyn | 54502.32899    | 0.00128     | Sec  | W      | Super WASP |
| EL Lyn | 54502.63351    | 0.00184     | Prim | W      | Super WASP |
| EL Lyn | 54504.56581    | 0.00086     | Prim | W      | Super WASP |
| EL Lyn | 54524.55013    | 0.00083     | Prim | W      | Super WASP |
| EL Lyn | 54525.50449    | 0.00081     | Sec  | W      | Super WASP |
| EL Lyn | 54526.48215    | 0.00089     | Prim | W      | Super WASP |
| EL Lyn | 54527.46049    | 0.00080     | Sec  | W      | Super WASP |
| EL Lyn | 54530.34297    | 0.00086     | Prim | W      | Super WASP |
| EL Lyn | 54532.74498    | 0.00082     | Prim | W      | Super WASP |
| EL Lyn | 54532.61658    | 0.00206     | Sec  | W      | Super WASP |
| EL Lyn | 54534.55424    | 0.00879     | Prim | W      | Super WASP |
| EL Lyn | 54534.53527    | 0.00184     | Sec  | W      | Super WASP |
| EL Lyn | 54535.50625    | 0.00311     | Prim | W      | Super WASP |
| EL Lyn | 54536.46742    | 0.00020     | Sec  | W      | Super WASP |
| EL Lyn | 54537.43785    | 0.00031     | Prim | W      | Super WASP |
| EL Lyn | 54539.37258    | 0.00072     | Sec  | W      | Super WASP |
| EL Lyn | 54540.32113    | 0.00263     | Sec  | W      | Super WASP |
| EL Lyn | 54544.52516    | 0.00150     | Prim | W      | Super WASP |
| EL Lyn | 54547.42513    | 0.00198     | Sec  | W      | Super WASP |
| EL Lyn | 54551.55305    | 0.00147     | Prim | W      | Super WASP |
| EL Lyn | 54554.52214    | 0.00220     | Sec  | W      | Super WASP |
| EL Lyn | 54555.48669    | 0.00035     | Prim | W      | Super WASP |
| EL Lyn | 54556.44937    | 0.00133     | Sec  | W      | Super WASP |
| EL Lyn | 54557.42070    | 0.00012     | Prim | W      | Super WASP |
| EL Lyn | 54558.38533    | 0.00306     | Sec  | W      | Super WASP |
| EL Lyn | 54559.34927    | 0.00200     | Prim | W      | Super WASP |
| EL Lyn | 51200.01770    | 0.00005     | Prim | C      | NSVS automat |
| EL Lyn | 51200.33257    | 0.00042     | Sec  | C      | NSVS automat |
| EL Lyn | 51409.05749    | 0.00010     | Prim | C      | NSVS automat |
| EL Lyn | 51789.76917    | 0.00013     | Prim | C      | NSVS automat |
| EL Lyn | 51790.04931    | 0.00046     | Sec  | C      | NSVS automat |
| FW Por | 53224.59847    | 0.00811     | Sec  | W      | Super WASP |
| FW Por | 53225.78453    | 0.00221     | Prim | W      | Super WASP |
| FW Por | 53989.72986    | 0.00568     | Sec  | W      | Super WASP |
| FW Por | 54358.83124    | 0.00266     | Prim | W      | Super WASP |
| FW Por | 54360.80252    | 0.00230     | Sec  | W      | Super WASP |
| FW Por | 54361.59836    | 0.00392     | Sec  | W      | Super WASP |
| FW Por | 54362.78605    | 0.00558     | Prim | W      | Super WASP |
| FW Por | 54363.57569    | 0.00395     | Prim | W      | Super WASP |
| FW Por | 54366.71766    | 0.00271     | Sec  | W      | Super WASP |
| FW Por | 54372.67543    | 0.00057     | Sec  | W      | Super WASP |
| FW Por | 54381.77352    | 0.00347     | Prim | W      | Super WASP |
| FW Por | 54382.56715    | 0.00109     | Prim | W      | Super WASP |
### Table 10
The heliocentric minima times used for the analysis.

| Star     | HJD 2400000+ | Error [days] | Type | Filter | Source  |
|----------|---------------|--------------|------|--------|---------|
| FW Per   | 54387.74256   | 0.00139      | Sec  | W      | Super WASP |
| FW Per   | 54387.74465   | 0.00046      | Sec  | W      | Super WASP |
| FW Per   | 54387.75120   | 0.00102      | Sec  | W      | Super WASP |
| FW Per   | 54388.50291   | 0.00352      | Sec  | W      | Super WASP |
| FW Per   | 54389.68444   | 0.00068      | Prim | W      | Super WASP |
| FW Per   | 54393.49393   | 0.00118      | Sec  | W      | Super WASP |
| FW Per   | 54395.62070   | 0.00293      | Sec  | W      | Super WASP |
| FW Per   | 54396.80708   | 0.00391      | Prim | W      | Super WASP |
| FW Per   | 54397.58820   | 0.00083      | Prim | W      | Super WASP |
| FW Per   | 54399.75948   | 0.00049      | Sec  | W      | Super WASP |
| FW Per   | 54405.51062   | 0.00059      | Sec  | W      | Super WASP |
| RU Tri   | 53191.28941   | 0.02603      | Prim | W      | Super WASP |
| RU Tri   | 53192.66590   | 0.03353      | Sec  | W      | Super WASP |
| RU Tri   | 53194.13126   | 0.01136      | Prim | W      | Super WASP |
| RU Tri   | 53199.41496   | 0.03131      | Sec  | W      | Super WASP |
| RU Tri   | 53200.86170   | 0.02824      | Prim | W      | Super WASP |
| RU Tri   | 53202.57334   | 0.00919      | Sec  | W      | Super WASP |
| RU Tri   | 53203.84114   | 0.03668      | Prim | W      | Super WASP |
| RU Tri   | 53205.75455   | 0.03721      | Sec  | W      | Super WASP |
| RU Tri   | 53206.00413   | 0.01140      | Prim | W      | Super WASP |
| RU Tri   | 53206.07954   | 0.00946      | Sec  | W      | Super WASP |
| RU Tri   | 53215.76814   | 0.01704      | Sec  | W      | Super WASP |
| RU Tri   | 53217.13629   | 0.01032      | Prim | W      | Super WASP |
| RU Tri   | 53218.86226   | 0.02484      | Sec  | W      | Super WASP |
| RU Tri   | 53220.00496   | 0.00479      | Prim | W      | Super WASP |
| RU Tri   | 53221.18595   | 0.00827      | Sec  | W      | Super WASP |
| RU Tri   | 53222.65200   | 0.00386      | Sec  | W      | Super WASP |
| RU Tri   | 53224.16400   | 0.01427      | Prim | W      | Super WASP |
| RU Tri   | 53225.98413   | 0.00763      | Sec  | W      | Super WASP |
| RU Tri   | 53226.54267   | 0.00825      | Prim | W      | Super WASP |
| RU Tri   | 53228.23043   | 0.00245      | Sec  | W      | Super WASP |
| RU Tri   | 53230.81996   | 0.00576      | Prim | W      | Super WASP |
| RU Tri   | 53232.45425   | 0.00913      | Sec  | W      | Super WASP |
| RU Tri   | 53234.07401   | 0.00981      | Prim | W      | Super WASP |
| RU Tri   | 53234.69389   | 0.03176      | Sec  | W      | Super WASP |
| RU Tri   | 53243.36114   | 0.00504      | Prim | W      | Super WASP |
| RU Tri   | 53244.00690   | 0.02119      | Sec  | W      | Super WASP |
| RU Tri   | 53246.61448   | 0.00168      | Prim | W      | Super WASP |
| RU Tri   | 53248.17728   | 0.02218      | Sec  | W      | Super WASP |
| RU Tri   | 53249.90527   | 0.01307      | Prim | W      | Super WASP |
| RU Tri   | 53254.83485   | 0.00476      | Sec  | W      | Super WASP |
| RU Tri   | 53256.41568   | 0.00424      | Prim | W      | Super WASP |
| RU Tri   | 53257.83588   | 0.01185      | Sec  | W      | Super WASP |
| RU Tri   | 53259.69492   | 0.00316      | Prim | W      | Super WASP |
| RU Tri   | 53261.01252   | 0.01408      | Sec  | W      | Super WASP |
| RU Tri   | 53262.94218   | 0.00056      | Prim | W      | Super WASP |
| RU Tri   | 53264.62391   | 0.01202      | Sec  | W      | Super WASP |
| RU Tri   | 53265.20333   | 0.00996      | Prim | W      | Super WASP |
| RU Tri   | 53269.50054   | 0.00236      | Prim | W      | Super WASP |
| RU Tri   | 53272.97366   | 0.01309      | Sec  | W      | Super WASP |
| RU Tri   | 53272.75780   | 0.00272      | Prim | W      | Super WASP |
| RU Tri   | 53274.37981   | 0.00224      | Sec  | W      | Super WASP |
| RU Tri   | 53276.13843   | 0.00779      | Prim | W      | Super WASP |
| RU Tri   | 53277.69627   | 0.01081      | Sec  | W      | Super WASP |
| RU Tri   | 53969.24190   | 0.01058      | Prim | W      | Super WASP |
| RU Tri   | 53970.67635   | 0.04092      | Sec  | W      | Super WASP |
| RU Tri   | 53972.42796   | 0.02442      | Prim | W      | Super WASP |
| RU Tri   | 53973.92656   | 0.02768      | Sec  | W      | Super WASP |
### Table 11
The heliocentric minima times used for the analysis.

| Star     | HJD     | Error  | Type | Filter | Source  |
|----------|---------|--------|------|--------|---------|
|          | 2400000+ [days] |        |      |        |         |
| RU Tri   | 53975.57432 | 0.02329 | Prim | W      | Super WASP |
|          | 53975.86989 | 0.01711 | Prim | W      | Super WASP |
|          | 53980.40233 | 0.01423 | Sec  | W      | Super WASP |
|          | 53982.5314   | 0.01465 | Prim | W      | Super WASP |
|          | 53991.91971  | 0.00235 | Prim | W      | Super WASP |
|          | 53993.57862  | 0.00848 | Sec  | W      | Super WASP |
|          | 53995.11407  | 0.00785 | Prim | W      | Super WASP |
|          | 53998.46206  | 0.03034 | Prim | W      | Super WASP |
| RU Tri   | 54001.73797 | 0.02008 | Prim | W      | Super WASP |
|          | 54003.36872  | 0.00550 | Sec  | W      | Super WASP |
|          | 54005.00913  | 0.01433 | Prim | W      | Super WASP |
|          | 54006.64452  | 0.01744 | Sec  | W      | Super WASP |
|          | 54008.28368  | 0.00304 | Prim | W      | Super WASP |
|          | 54011.52927  | 0.04792 | Prim | W      | Super WASP |
|          | 54012.34572  | 0.00306 | Sec  | W      | Super WASP |
|          | 54015.05162  | 0.00223 | Sec  | W      | Super WASP |
|          | 54050.76747  | 0.00496 | Prim | W      | Super WASP |
|          | 54057.31130  | 0.00531 | Prim | W      | Super WASP |
|          | 54063.84039  | 0.00875 | Prim | W      | Super WASP |
|          | 54065.48342  | 0.05588 | Sec  | W      | Super WASP |
|          | 54067.13662  | 0.01003 | Prim | W      | Super WASP |
|          | 54068.70153  | 0.00648 | Sec  | W      | Super WASP |
|          | 54075.33813  | 0.01360 | Sec  | W      | Super WASP |
|          | 54076.90126  | 0.00135 | Prim | W      | Super WASP |
|          | 54081.46500  | 0.00355 | Prim | W      | Super WASP |
|          | 54085.06070  | 0.00489 | Sec  | W      | Super WASP |
|          | 54086.68096  | 0.01055 | Prim | W      | Super WASP |
|          | 54091.60155  | 0.01689 | Sec  | W      | Super WASP |
|          | 54093.26839  | 0.00225 | Prim | W      | Super WASP |
|          | 54095.10521  | 0.00585 | Sec  | W      | Super WASP |
|          | 54103.08774  | 0.01115 | Prim | W      | Super WASP |
|          | 54104.52280  | 0.01342 | Sec  | W      | Super WASP |
|          | 54333.54742  | 0.01168 | Sec  | W      | Super WASP |
|          | 54335.03664  | 0.01250 | Prim | W      | Super WASP |
|          | 54338.42782  | 0.00519 | Prim | W      | Super WASP |
|          | 54340.04775  | 0.01094 | Sec  | W      | Super WASP |
|          | 54341.71369  | 0.00560 | Prim | W      | Super WASP |
|          | 54344.95772  | 0.03008 | Prim | W      | Super WASP |
|          | 54346.64691  | 0.01192 | Sec  | W      | Super WASP |
|          | 54348.15791  | 0.01283 | Prim | W      | Super WASP |
|          | 54349.84391  | 0.00142 | Sec  | W      | Super WASP |
|          | 54351.50670  | 0.00434 | Prim | W      | Super WASP |
|          | 54353.08118  | 0.00964 | Sec  | W      | Super WASP |
|          | 54354.78476  | 0.00322 | Prim | W      | Super WASP |
|          | 54356.37478  | 0.00495 | Sec  | W      | Super WASP |
|          | 54358.14942  | 0.00409 | Prim | W      | Super WASP |
|          | 54359.69758  | 0.00105 | Sec  | W      | Super WASP |
|          | 54361.33019  | 0.01173 | Prim | W      | Super WASP |
|          | 54362.89016  | 0.00949 | Sec  | W      | Super WASP |
|          | 54374.38397  | 0.00576 | Prim | W      | Super WASP |
|          | 54377.66886  | 0.00745 | Prim | W      | Super WASP |
|          | 54382.59218  | 0.01100 | Sec  | W      | Super WASP |
|          | 54384.11220  | 0.00667 | Prim | W      | Super WASP |
|          | 54387.46234  | 0.00023 | Prim | W      | Super WASP |
|          | 54388.91536  | 0.00859 | Sec  | W      | Super WASP |
|          | 54392.29160  | 0.00642 | Sec  | W      | Super WASP |
|          | 54393.98469  | 0.00280 | Prim | W      | Super WASP |
|          | 54395.63658  | 0.01055 | Sec  | W      | Super WASP |
|          | 54397.26731  | 0.00483 | Prim | W      | Super WASP |
|          | 54398.79476  | 0.00677 | Sec  | W      | Super WASP |
|          | 54401.56600  | 0.00120 | Sec  | W      | Super WASP |
|          | 54405.51048  | 0.00323 | Sec  | W      | Super WASP |
|          | 54407.00493  | 0.00195 | Prim | W      | Super WASP |
|          | 54408.72172  | 0.00583 | Sec  | W      | Super WASP |
|          | 54410.34511  | 0.00456 | Prim | W      | Super WASP |
|          | 54416.63684  | 0.01275 | Prim | W      | Super WASP |
|          | 54419.51404  | 0.00468 | Sec  | W      | Super WASP |
|          | 54420.15851  | 0.00553 | Prim | W      | Super WASP |
Table 12
The heliocentric minima times used for the analysis.

| Star  | HJD   | Error | Type | Filter | Source |
|-------|-------|-------|------|--------|--------|
|       | 2400000+ [days] |        |      |        |        |
| RU Tri | 54346.50605 | 0.00303 | Prim | W      | Super WASP |
| RU Tri | 54408.06309 | 0.00311 | Sec  | W      | Super WASP |
| RU Tri | 54439.42507 | 0.00238 | Prim | W      | Super WASP |
| RU Tri | 54441.42159 | 0.00748 | Sec  | W      | Super WASP |
| RU Tri | 54444.66103 | 0.01172 | Sec  | W      | Super WASP |
| RU Tri | 54552.94841 | 0.00412 | Prim | W      | Super WASP |
| RU Tri | 56698.55591 | 0.01363 | Prim | W      | Super WASP |
| RU Tri | 56701.57373 | 0.03986 | Sec  | W      | Super WASP |
| RU Tri | 54841.39191 | 0.01455 | Prim | C      | NSVS   |
| WW Tri | 53974.60586 | 0.00073 | Prim | W      | Super WASP |
| WW Tri | 53980.60653 | 0.00311 | Prim | W      | Super WASP |
| WW Tri | 53987.65189 | 0.00124 | Prim | W      | Super WASP |
| WW Tri | 53993.70906 | 0.00396 | Sec  | W      | Super WASP |
| WW Tri | 53994.64708 | 0.00118 | Prim | W      | Super WASP |
| WW Tri | 53995.52227 | 0.00632 | Sec  | W      | Super WASP |
| WW Tri | 54016.64114 | 0.00312 | Prim | W      | Super WASP |
| WW Tri | 54019.69053 | 0.01260 | Sec  | W      | Super WASP |
| WW Tri | 54027.75803 | 0.00245 | Sec  | W      | Super WASP |
| WW Tri | 54030.65203 | 0.01135 | Prim | W      | Super WASP |
| WW Tri | 54087.68086 | 0.00304 | Prim | W      | Super WASP |
| WW Tri | 54092.58067 | 0.00402 | Sec  | W      | Super WASP |
| WW Tri | 54094.42507 | 0.00475 | Sec  | W      | Super WASP |
| WW Tri | 54115.26841 | 0.01844 | Prim | W      | Super WASP |
| WW Tri | 54210.50272 | 0.01145 | Prim | W      | Super WASP |
| WW Tri | 54211.45577 | 0.00750 | Sec  | W      | Super WASP |
| WW Tri | 54215.84212 | 0.01086 | Sec  | W      | Super WASP |
| WW Tri | 54334.71323 | 0.00528 | Sec  | W      | Super WASP |
| WW Tri | 54335.59473 | 0.00098 | Prim | W      | Super WASP |
| WW Tri | 54340.57574 | 0.00827 | Prim | W      | Super WASP |
| WW Tri | 54348.70896 | 0.00451 | Sec  | W      | Super WASP |
| WW Tri | 54349.57852 | 0.00002 | Prim | W      | Super WASP |
| WW Tri | 54354.83006 | 0.00402 | Prim | W      | Super WASP |
| WW Tri | 54355.69685 | 0.00249 | Sec  | W      | Super WASP |
| WW Tri | 54356.74549 | 0.00082 | Prim | W      | Super WASP |
| WW Tri | 54381.82312 | 0.01521 | Sec  | W      | Super WASP |
| WW Tri | 54382.67200 | 0.00102 | Sec  | W      | Super WASP |
| WW Tri | 54383.56793 | 0.00184 | Prim | W      | Super WASP |
| WW Tri | 54368.81602 | 0.00704 | Prim | W      | Super WASP |
| WW Tri | 54307.55151 | 0.00161 | Prim | W      | Super WASP |
| WW Tri | 54382.80485 | 0.00101 | Prim | W      | Super WASP |
| WW Tri | 54383.67114 | 0.00168 | Sec  | W      | Super WASP |
| WW Tri | 54384.54927 | 0.00022 | Prim | W      | Super WASP |
| WW Tri | 54389.79777 | 0.00839 | Prim | W      | Super WASP |
| WW Tri | 54392.42578 | 0.00642 | Sec  | W      | Super WASP |
| WW Tri | 54393.29086 | 0.00497 | Prim | W      | Super WASP |
| WW Tri | 54396.79393 | 0.00827 | Prim | W      | Super WASP |
| WW Tri | 54397.66351 | 0.00325 | Sec  | W      | Super WASP |
| WW Tri | 54398.55579 | 0.00905 | Prim | W      | Super WASP |
| WW Tri | 54405.88391 | 0.00056 | Prim | W      | Super WASP |
| WW Tri | 54406.49063 | 0.00797 | Sec  | W      | Super WASP |
| WW Tri | 54407.28542 | 0.00865 | Prim | W      | Super WASP |
| WW Tri | 54410.76111 | 0.00510 | Prim | W      | Super WASP |
| WW Tri | 54419.59984 | 0.00349 | Prim | W      | Super WASP |
| WW Tri | 54420.40253 | 0.00067 | Sec  | W      | Super WASP |
| WW Tri | 54421.70067 | 0.00789 | Prim | W      | Super WASP |
| WW Tri | 54439.62705 | 0.03069 | Sec  | W      | Super WASP |
| WW Tri | 54441.38355 | 0.00253 | Sec  | W      | Super WASP |