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Intensive photometry of southern Be variables. I. Winter objects (*)

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Summary. — We present results of an intensive photometric campaign on some bright southern Be stars to search for periodic light variations. In order to obtain good phase coverage, observations were conducted from two sites with different longitude : ESO and SAAO. Most of the stars observed are indeed variable with periods close to one day (the expected rotational period for these stars). We present our results for winter objects.

Key words : Be stars — variable stars — photometry — stellar pulsations.

1. Introduction.

Periodic variability in Be stars has attracted great interest in recent years. The discovery of unexpected short-period variations in these stars has renewed the search for a viable mechanism of mass ejection. The current consensus of opinion is that non-radial oscillations, driven by an unknown mechanism, is the likely cause of the mass loss leading to the Be phenomenon (see Percy, 1987, for a recent review). This conclusion is mostly based on line-profile variations seen in some Be stars.

The small-scale "moving bumps" seen in the line profiles of some Be stars is attributed to high-order non-radial pulsations (NRP). But moving bumps are also seen in B stars without emission lines and even in δ Scuti stars (Walker and Yang, 1987). It seems that NRP is not solely responsible for the mass ejection. It is also known that one of the distinguishing features of line-profile variations in Be stars is the presence of low-order line-profile variations which some attribute to low-order NRP (Penrod, 1987). But again, low-order NRP is present in non-Be stars as well (β Cep and δ Sct). Many β Cep variables are rotating more rapidly than some Be stars. High rotation coupled with NRP does not seem to be a sufficient condition for the Be phenomenon. The information from photometric observations has not been adequately considered and it is possible that the conclusion that NRP is responsible for the mass loss could be premature.

A viable hypothesis should be able to explain the distribution of observed periods, the fraction of Be stars which are periodic, their photometric amplitudes and evolution of the shapes of their light curves. Such information can only be obtained by intensive photometric monitoring of a large sample of Be stars. Owing to the fact that periods are close to one day, it is very important to obtain observations from different longitudes. These observations should be obtained over a short time as the light curve can evolve quite rapidly. These demands can only be met by an international campaign.

In this paper we present results of such a campaign conducted from ESO and SAAO as well as some observations obtained at SAAO only. We observed 17 bright southern Be stars ; most of them turned out to be short-period variables. These stars were chosen from the *Bright Star* catalogue on the sole criterion that they should be well placed for observing. A list of candidate and comparison stars is given in table I. Results for variable program stars are given in tables IIa and IIb.

2. Observations and reductions.

The observations at SAAO were obtained with the Volks photometer attached to the 0.5-m reflector at Sutherland. These were made mostly through a single filter, Strömgren b, which was chosen as a compromise between the expected larger amplitude towards shorter wavelength and the

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decreased sensitivity to atmospheric extinction at longer wavelengths. Some four-colour observations were also made. For the brightest stars, a neutral density filter had to be used to prevent over-illumination of the photocathode. In these circumstances we calibrated the ND filter by observing the comparison stars with and without the filter. The rms deviation suggests that this calibration is good to within 3 millimag (the expected observational error of one measurement). Systematic errors due to the use of the neutral density filters are probably negligible owing to the narrow bandpass of Strömgren b.

In the reduction procedure, mean extinction coefficients were obtained for each night using the comparison stars. Corrections for transparency changes during the night were made by calculating the deviation for each comparison star. Stars in close proximity were treated as a group and mean transparency corrections were applied to the group, which included the Be stars. Comparison stars which were variable were detected at this stage and could be eliminated. We searched for micro-variability in the comparison stars by calculating their periodograms ; again such stars could be identified and eliminated. Finally, the mean magnitude of all comparison stars was adjusted to be in exact agreement with the mean b-magnitude for the same stars observed at ESO. This zero-point correction ensured that the Be stars observed from the two sites were on the same system.

The observations at ESO were made between 13 June and 6 July 1987. They were obtained with the six-channel $uvby\mathrm{H}\beta$ photometer on the Danish 0.5-m telescope. This instrument uses a grating and slots to define the passbands ; in consequence some systematic differences could be expected between the b magnitudes of the two observatories. In practice, these differences were very small (a few millimagnitudes) and posed no problem when combining the data sets. Because a new telescope control system with autocentering and automated observations had just been installed and still had to be checked during the observing run, the quality and quantity of the observations was not as high as could be expected at the start of the run. Later on, most of the problems were solved and nowadays the new, automated system has proved to be very reliable.

For the brightest stars, the same procedure was used as at SAAO. The reduction procedure was similar except that a polynomial model for transparency changes and zero-point drift was calculated for each night. Furthermore, a general least-squares solution which included all observations for all comparison stars provided best estimates for their mean magnitudes. Variable stars among them were easily identified by the large standard deviations. They were not included in obtaining the final magnitudes for the comparison stars. A small zero-point difference between these results and the standard $uvby$ system is still possible, but this is unimportant for the study of their light variations. The rms scatter for the comparison stars is in all cases less than 5 millimag.

3. Period finding.

We employed two methods of searching for periodicities. One is the standard Fourier periodogram analysis technique for unequally spaced data ; the other is a modification of Stellingwerf's (1978) phase-dispersion minimization (PDM) technique. The first method is suited to the case where the underlying variation is approximately sinusoidal, but it can give misleading results when the variations are highly non-sinusoidal or when a multiple-wave light curve is present. It is known that many Be stars have a double-wave light curve which will not be detected by this method. Clearly it will be impossible to discriminate between a single-wave light curve and a double-wave light curve with nearly equal amplitudes.

The PDM technique will identify the period for all kinds of light curves, but since the general noise level is rather high in this method (Swingler, 1989), one has to be careful of spurious periodicities. Our final choice was based on a careful examination of the phase diagram resulting from the periods produced by the Fourier and PDM techniques. Our criterion was by nature rather subjective, but we attempted to choose the period which resulted in the curve with the least scatter. Except for one or two cases, there is little doubt that our choice is the correct one.

Besides the complication discussed above, a serious difficulty arises when the irregular light variations which are sometimes present in Be stars (attributed to effects of the circumstellar material) has a time scale comparable to the underlying periodic variation. In these cases it is not possible to obtain the correct period with any certainty. As some long-term activity is nearly always present, we normally removed the long-term trend by fitting a low-order polynomial to the data. This of course has the effect of reducing the scatter at the expense of some uncertainty in the shape and amplitude of the light curve. The derived period will in general be unaffected by this procedure.

It is difficult to derive reliable standard errors for the periods, but an estimate can be obtained from the half-width of the Fourier periodogram peaks. Typically, we observed for about four weeks in each season which leads to a standard deviation of about 0.02 d^{-1} in frequency which can be taken as a reliable guide to the error in the quoted frequencies. Sometimes we have combined many seasons in order to obtain a more accurate period. This is always possible to do, but invariably there will be many possible choices of frequency (each separated by approximately one cycle per year) which will produce as good a fit. In this case the real error is not reduced by combining the data.

4. The results.

ν Cen

This star is a single-line spectroscopic binary (Palmer, 1906). Wilson (1914) determined the orbital elements and obtained a circular orbit with P = 2.62516 d. Hendry and Bahng (1981) found Hα to have double emission surrounding an absorption core. This observation indicates that ν Cen could be classified as a Be star, but it is probable that the emission originates as a result of binary interaction rather than an intrinsic property of the star itself. Spectroscopic observations suggest that this star may be a β Cep variable with a period of about 0.17 d and an amplitude of 5 km s^{-1} (Rajamohan, 1977 ; Kubiak and Seggewiss, 1982 ; Ashoka *et al.,* 1985). Waelkens and Rufener (1983) do not find any evidence for short period light variability, except for a variation with the same period as the binary period.

Our photometric observations (SAAO only) extend over two seasons, 1987 and 1988. The 1988 observations are particularly numerous and clearly show a variation with the same period as the orbital period (Fig. 1). Minimum light corresponds to maximum positive radial velocity. As discussed by Waelkens and Rufener (1983), the resulting light curve is most probably a reflection effect. A careful investigation did not reveal any signs of a variation at any other frequency with an amplitude exceeding 2 millimags.

μ Cen

This star is known as a "pole-on" Be star (v in i = 155 km s^{-1}). Ghosh *et al.* (1987) have summarized the history of Hα emission ; they reported an outburst in March/April 1987, about three months before the first set of our observations. A full discussion of an earlier outburst (February 1987) is given in Baade *et al.* (1988). Thimm (private communication) reported from spectra taken on May 29, 30 and on June 1, 1987 that Hα changed from pure absorption to emission in 3 days. This was only a few days before the start of our observations. All indications are that this Be Star was in a very active phase during this time.

μ Cen was one of the first Be stars in which periodic line-profile variability was found (Baade, 1984). Baade observed three or four nearly equally-spaced moving bumps. There were also low-order changes in the line profile in which the symmetry of the whole line varied, but with a longer time scale. The period of the low-order variations was estimated to be 0.505 d, five times the period of the moving bumps. Baade interpreted these results in terms of NRP with $\ell = m = 2$ and $\ell = m = 10$. In our opinion the poor time coverage places considerable doubt on the accuracy of this period which is practically equal to half a day, since the aliasing problem must be quite considerable. More recently, Baade (1987a) obtained 9 nights of line profile observations in which this period is apparently confirmed.

Since two kinds of line-profile variations are seen in this star, Baade (1987b) claims that it is multiperiodic and hence proof that the NRP interpretation is the only feasible one. Harmanec (1987a) has suggested that the short period structure in Be stars can be represented by integer ratios, in which case we are dealing not with incompatible periods but harmonics of a longer period (which he identifies as the period of rotation). Baade (1987b) has criticized this suggestion. Since the period ratio in μ Cen is 5 : 1 according to Baade, this star is perhaps not a convincing case of multi-periodicity.

We observed μ Cen for 29 nights in June/July 1987, 25 nights in March/April 1988 and 7 nights in June 1988. The latter two data sets are SAAO observations only. The 1987 data show that the star was photometrically very active at this time. There are two major excursions in brightness, each with a light range of 0.07 mag, separated by five nights.

A Fourier periodogram analysis shows no obvious trace of coherent periodicity : the three largest peaks being at frequencies of 0.05, 0.95 and 0.16 d^{-1}. These first frequencies appear to be artifacts caused by the large brightness excursions. The PDM periodogram shows essentially the same structure except for a large peak at 0.48 d^{-1}. This does not seem to be associated with the random brightness fluctuation and is the only coherent period we can extract from our 1987 data. The resulting light curve is a double-wave with a period of 2.10 d (Fig. 2).

Since our results from 1987 did not lead to a convincing period determination, we re-observed the star from SAAO in 1988. This time the star was less active, but surprisingly the periodograms look very similar to those of 1987. In particular the frequency at 0.48 d^{-1} was very strongly present. This seems to indicate that the 2.10 d period is physically real. As a final check we combined the data from both seasons which allowed us to refine the period to 2.1017 d. A plot of the light curve is shown in figure 2. The double-wave nature is very clear, but the large scatter indicates that there is an additional source of variation. A large increase in amplitude followed by a swift decrease can explain some of the apparent scatter in 1987. The peak-to-peak amplitude decreased from 0.08 mag in 1987 to 0.04 mag in 1988, though the large amplitude in 1987 could be mostly a result of a non-periodic brightness excursion during a few nights. But this cannot be invoked as the cause of the large scatter in 1988 ; this phenomenon is very common in the light curves of Be stars and can be termed "flickering".

In the light of these results, we cannot confirm Baade's 0.5 d period (frequency 2.0 d^{-1}) in μ Cen. We can possibly reconcile our results with this period if we note that the single-wave frequency (0.96 d^{-1}) is the one-day alias of Baade's period. We certainly did not find any indication of a 0.5 d period in our data. As a test, we analyzed Baade's (1984) radial velocity observations for the HeI line and constructed the phase diagram using a period of 2.1017 d. The resulting velocity curve has considerably greater scatter than the one constructed with 0.505 d, but is still quite reasonable and gives a double-wave curve. However, there are only 19 observations – far too few for a reliable period estimation.

η Cen

A description of recent emission-line activity in the shell star η Cen is given by Dachs *et al.* (1986). They conclude that at times the internal self-absorption by the shell is so severe that it may obscure a certain fraction of the light from the photosphere. Mennickent and Vogt (1988) observed the star during 1987. The lower order Balmer lines showed weak variable emission wings and variable shell absorption cores.

Baade (1983) discovered significant line-profile variations with a time scale of hours. During a search for rapid spectroscopic variations, Ghosh *et al.,* (1988) discovered a continuum flux variability with a time scale of hours.

Our results clearly show large short-period variability. A nightly range in brightness of nearly 0.1 mag is not uncommon. The Fourier periodogram shows a very strong peak at 1.56 d^{-1}, but the resulting light curve has a large scatter. The PDM periodogram shows, in addition, large peaks at one-half and one-third this frequency. An examination of the phase plots show that a better fit is obtained by assuming a double-wave light curve with $f = 0.78$ d^{-1}, but even then the scatter is large. By far the best phase plot is obtained with $f = 0.52$ d^{-1} which results in a triple-wave light curve.While double-wave light curves are common, only one case of a triple-wave light curve (α Eri, Balona *et al.,* 1987) is known.

This surprising result prompted us to re-observe η Cen for a further season in 1988 (SAAO observations only). Our analysis of these data showed quite convincingly that $f = 0.52$ d^{-1} is indeed present once again and gives a light curve with the least scatter. On this basis we feel that a triple-wave light curve with period of 1.927 d is likely to be the correct interpretation (Fig. 3). The peculiar light curve and the very large amplitude (0.14 mag in 1987, 0.10 mag in 1988) makes this star unique among the periodic Be variables. Line profile observations of η Cen are potentially of great importance in view of the large amplitude. If NRP is involved, the geometrical distortions and/or temperature variation must be exceedingly severe to give rise to such a large amplitude for an $\ell = |m| = 3$ mode.

HD 137518

This star was included in our program at the suggestion of C. Waelkens who found it to be a large-amplitude variable. Very little is known about this star. It has been classified as a luminous blue supergiant (B5Ia) by McConnell and Bidelman (1976). On the other hand, Garrison *et al.,* (1977) obtain a classification B1IIInep with a comment that the HeI lines are strongly veiled and the suspicion that it is a double-line spectroscopic binary. Ine the *Michigan Spectral Catalogue* (Houk, 1978), it is given the classification B1/2(I/IIIn), while Mermilliod (1987) tabulates it as O9Vn.

The photometric variability was discovered by Strohmeier *et al.* (1964) who found a range of 0.5 mag from sky patrol plates of the Bamberg Southern Station. The variability was later confirmed by Kozok (1985).

Our 1987 observations show a light range of 0.5 mag, but we could not find a definite periodicity. The Fourier periodogram shows a strong peak at $f = 0.11$ d^{-1} or its one-day alias at 0.89 d^{-1}. Smaller peaks are present at $f = 0.36$ and 1.29 d^{-1}. The PDM periodogram is similar except that $f = 0.12$ d^{-1} is by far the strongest. We examined the light curve at many different frequencies given by the Fourier and PDM periodograms, but no single choice produced a reasonable light curve. We could assume multiperiodicity of course. If we prewhiten the data by removing a sinusoid with $f_1 = 0.115$ d^{-1}, we obtain a noisy Fourier periodogram in which the highest peak is at $f_2 = 0.55$ d^{-1}. A multiperiodic Fourier fit with f_1 and f_2 leads to a rms scatter of 0.08 mag which is clearly unacceptable. Removing these two frequencies leads to a strong peak at $f_3 = 0.35$ d^{-1}, which is the third harmonic of f_1. A Fourier fit with f_1, f_2 and f_3 gives an rms scatter of 0.044 which is still very much higher than the expected observational error. Further prewhitening just gives a periodogram in which the noise level steadily increases towards low frequencies.

It is clear that no direct evidence for coherent multiperiodicity exists as even a solution with three frequencies is quite insufficient to describe the data. A solution can always be found by including more and more frequencies until the resulting rms scatter is sufficiently small, but there is no guarantee that the resulting solution will bear any resemblance to the true physics of the problem. We prefer to believe that the only likely periodicity in HD137518 is $P = 8.70$ d ($f = 0.115$ d^{-1}) and its harmonics (Fig. 4). Prewhitening by a Fourier curve leads to a further possible periodicity of 0.685 d, but the reality of this period is far from convincing. The residual variability can be attributed to random fluctuations.

This star is a very puzzling object. Without detailed spectroscopic observations it seems impossible to determine its nature. The large light amplitude suggests some type of eclipsing phenomenon.

κ^1 Aps

Slettebak (1982) describes how two spectra, taken one day apart, show striking differences in the widths of the absorption lines (from $v \sin i = 250$ km s^{-1} to 350 km s^{-1}), suggesting that this star may be a double-line spectroscopic binary. Mennickent and Vogt (1988) observed this star during 1988 and found the spectrum characterized by narrow absorption cores flanked by weak emission at Hβ.

The Fourier periodogram of this star shows it to be another periodic variable with a frequency of 1.61 d^{-1}. The PDM periodogram also gives a strong signal at half this frequency, indicating a double-wave light curve. However, the phase plot shows that this effect arises from only five data points which deepens the second minimum; apart from this there is no strong reason to believe that the light curve is double-wave.

Observations at SAAO during 1988 give much the same results, but this time the double-wave nature is more convincing. This time the amplitude difference in the two waves is based on more observations and there are also distinct differences in their shapes. By combining the data from the two seasons we find the best double-wave period to be 1.238 d (Fig. 5). There has been relatively little change in overall amplitude between the two seasons.

η^1 TrA

This star turned out to be one of the few constant Be stars in our sample. No sign of periodicity is evident in either the Fourier or PDM periodograms. The rms scatter of all observations is 3 millimag – the value expected for a constant star. It was not observed in 1988.

48 Lib

This star has a long history of documented spectroscopic observations. It is well known for the long-lasting presence of numerous sharp shell absorption lines and for strong regular variations of Balmer emission line profiles and radial velocities of shell absorption lines with a quasi-period of about ten years (cf., e.g. Aydin and Faraggiana, 1978). Dachs *et al.* (1986) has described the emission-line history in recent years. Mennickent and Vogt (1988) found the spectrum of 48 Lib in 1987 to be characterized by many faint FeII shell lines, some of them surrounded by emission. Hβ and Hγ had deep central absorption cores with emission flanks ($V < R$). The V/R ratio was variable.

The 1987 data show a very strong peak at 2.49 d^{-1} in the Fourier periodogram. The PDM periodogram shows, in addition, smaller peaks at one-half and one-third of this frequency. Examination of the phase plots gives us no reason to suspect that the any of the lower frequencies are physically real. There is no appreciable reduction in scatter or differences in the waves. The phase plot for the single-wave period of 0.40 d shows a rather asymmetrical light curve with a gradual decline and sharp rise (Fig. 6).

To confirm the period, we re-observed the star during 1988. We obtained the same results. The best period from the combined data is 0.4017 d. This is the shortest period we have found among the periodic Be stars.

Ringuelet-Kaswalder (1963) reported periodic radial velocity variations with $P = 0.1154295$ d suggesting a pulsation similar to that of the β Cep variables. Such a variation has never been confirmed, though rapid changes in spectral appearance during one night is not unknown (Aydin and Faraggiana, 1978). We phased Ringuelet-Kaswalder's data on our photometric period, but were unable to produce a satisfactory velocity curve.

χ Oph

Recent variations in the emission lines in this well-observed Be star are discussed by Dachs *et al.* (1986). The considerable number of radial velocities in the literature were analyzed by Harmanec (1987b) who tentatively proposed that χ Oph is a spectroscopic binary with a period of 34.12 d in a highly eccentric orbit ($e = 0.699$).

Balona and Engelbrecht (1987) observed this star photometrically during 1985 and suggested a possible period of 0.935 d. The available data were insufficient to discriminate between this period and its one-day alias at 14.3 d. The shorter period was considered the more likely owing to the considerable brightness variations during the course of a night. In neither case is the resulting light curve particularly convincing.

Our 1987 data show much the same behaviour. Again, the strongest frequencies in both the Fourier and PDM periodograms occur at either 0.935 d or 14.3 d, but this time the longer period has a much higher peak. The resulting phase plot shows much less scatter for 14.3 d than for 0.935 d. Thus, by combining data from two separate sites we eliminate the alias problem and conclude that the true period is 14.3 d. Combining the 1985 and 1987 data yields a best period of 13.774 d (Fig. 7). A small number of observations were obtained in 1988.

This is the longest period so far detected for a periodic Be star. The question arises as to whether it represents an orbital variation. We looked for, but could not find, evidence for a radial velocity variation with this period from the data collected by Harmanec (1987b).

In spite of the fact that the 13.774 d period fits the photometric data, it is clear that there are variations on a much shorter time scale. However, these cannot be periodic as they would leave a signature in the periodogram. We are forced to conclude that this is one more example of the "flickering" phenomenon so common amongst these stars.

ζ Oph

ζ Oph (O9.5Ve) is one of the most rapidly rotating stars known. Emission lines at Hα and HeI were observed between July 1973 and April 1974 (Irvine, 1974 ; Niemela and Mendez, 1974 ; Barker and Brown, 1974). During 1979 there was no hint of emission at Hα, but by March 1980 Hα appeared as a well-developed double-emission feature quite similar to that observed during 1974 (Ebbets 1981).

Walker *et al.* (1979) were the first to discover the by now well-know phenomenon of "moving bumps"in the line profile of B stars. It was in this star, ζ Oph, that they were first detected. At that time they were interpreted as nonuniformities in the stellar photosphere carried across the line of sight by rotation. In this way a rotational period of 21.7 hours was deduced, leading to an estimated $v \sin i =$ 560 km s^{-1}. This value is considerably higher than observed ($v \sin i = 370$ km s^{-1}), but it is sensitive to the adopted stellar radius. Harmanec (1989) has shown that a somewhat smaller radius, which is still consistent with the physical parameters for this star, will bring the expected projected rotational velocity into good agreement with the observed value.

Walker *et al.* (1981) presented further observations of this new phenomenon and proposed an alternative model in which the moving bumps arise from obscurations in the circumstellar material. They also suggested NRP as a possible explanation.

Vogt and Penrod (1983) obtained extensive high-resolution spectra of ζ Oph and confirmed the moving bumps seen by the earlier workers. They rejected the interpretation in terms of rotational modulation or obscuration by circumstellar material. While these models give rise to moving bumps in agreement with the observations, the expected light variations are not seen. They favour the NRP model. Harmanec (1989) has criticized this conclusion as it is based on only one night of photometry which does indeed show some variability. Nevertheless, the NRP model has been accepted by most groups as the most probable explanation in this and other Be stars.

It is clear that intensive photometric observations should shed considerable light on the nature of moving bumps. According to Vogt and Penrod (1983) the NRP interpretation should give rise to periodic light variations of amplitude 0.02 mag with a period of a few hours. Such periodic variations are easily detectable.

We started our photometric campaign on this star in 1985. The results of this first season were briefly reported in Balona and Engelbrecht (1987). During 1985 ζ Oph showed a clear indication of pulsation with a period of 0.193 d and amplitude of 0.02 mag. There was also a longer period of 1.075 d with amplitude 0.03 mag (Fig. 8a). The short-period pulsations were interpreted as NRP, but not as a new phenomenon. Since ζ Oph lies on the hot end of the β Cep instability strip, it seemed reasonable to classify the star as a β Cep variable. However, the presence of the longer period in a β Cep star is most unusual ; rather it is indicative of a periodic Be star. It is also of particular interest to note that if the light curve is phased on the long period of 1.075 d the short-period variation is easily visible as a sinusoidal modulation of the light curve (Fig. 8b). It looks very much as if the short period is practically one-sixth of the long period to within observational errors. This seems to confirm Harmanec's (1987a) suspicion that whenever a short-period is present it turns out to be a sub-multiple of the rotation period.

We observed ζ Oph during 1987 expecting to confirm the provisional results announced by Balona and Engelbrecht (1987). The Fourier and PDM periodograms both show some power at frequencies of 1.00 or 2.00 d^{-1} with a peak-to-peak amplitude of 0.01 mag. There is no sign of the short period variation seen in 1985. While the long period is close to the value seen in 1985, it is practically the same as one cycle per day and, as such, must give rise to a grave suspicion that this is an artifact. Indeed, since we had to observe ζ Oph at SAAO using a neutral density filter it would not be entirely surprising if some slight systematic error was present in the data. Under these conditions we can understand the results of the periodogram and we do not consider the one day period to be real. Indeed, the rms error of one observation from both sites is only 4 millimags., i.e. close to the expected rms error of a constant star. We conclude that ζ Oph was constant in light during June/July 1987.

Some observations at SAAO during early 1988 again indicated a constant light. But in June of that year a dramatic change took place : our results of four photometric nights show marked photometric activity with night-to-night variations exceeding 0.01 mag. It would be very interesting to discover if this is associated with the development of emission at Hα. Further photometric monitoring is planned for 1989.

ι Ara

Our photometric observations of this star now cover four seasons (1985 - 1988). The 1985 light variations were particularly difficult to interpret in spite of the fact that there were no long-term trends or other difficulties. The problem is the very large flickering associated with this star which tends to mask the underlying variation almost completely. Balona and Engelbrecht (1987) obtained a double-wave light curve with period 0.515 d as the most likely solution for this season. During 1986 the amplitude appeared to increase steadily during the observing period of one month, but a period of 0.56 d could be extracted. This is the same as the period obtained in 1985 within the observational error and results in a single-wave light curve.

Our 1987 data showed that once more the star was active with a short time scale. The strongest peak in the Fourier periodogram occurs at 0.265 d, but the PDM periodogram indicates that a double-wave solution is better as the strongest peak occurs at 0.53 d. The 1988 observations are too few to derive a period, but a solution with $P = 0.56$ d fits the data well.

The conclusion is that in spite of the low signal-to-noise ratio, a period close to 0.55 d is derived independently from each observing season. On this account we feel confident that this is indeed the correct period. Combining all the data gives a best solution of $P = 0.5565$ d (Fig. 9). The flickering in this star is one of the largest we have encountered. As a consequence the periodicity in this star is somewhat blurred, but periodicity implies coherence over many cycles and this period was the only one where such a coherence was observed. The rms deviation from the light curve is as large as 0.02 mag though the amplitude is as large as 0.10 mag.

α Ara

Mennickent and Vogt (1988) found the spectrum in 1986-7 to show double emission in Hβ and Hγ ($V \simeq R$) with small variations in the V/R ratio on a short time scale.

This star was immediately recognized as a large-amplitude short-period variable during the first observing run in 1985. The Fourier periodogram shows strong peaks at frequencies of 2.04 or 3.04 d^{-1} and its one day aliases. These two frequencies are also the strongest in the PDM periodogram, but the double-wave solution at 1.52 d^{-1} is nearly as strong. An examination of the light curve does indicate that there is a significant difference in amplitude between the two waves in the double-wave solution. Thus we adopted a period of 0.658 d ($f = 1.52$ d^{-1}, Balona and Engelbrecht, 1987).

In 1986 the highest peak in the periodograms occurs at

2.04 d^{-1} ; the solution for 1985 thus appears to be a one-day alias of the true period. That a wrong choice was made is not surprising in view of the closeness of the frequency to a half a day and the severe aliasing problem.

Our 1987 data shows that the ambiguity is completely resolved thanks to the different longitudes of the observing sites. The true period is either a single-wave with $P = 0.49$ d or a double-wave with $P = 0.98$ d. It is very difficult to be sure of the double-wave solution since the two waves are of nearly equal amplitude, but it is a distinct possibility. Unfortunately, the period is so close to one day that we cannot use the other observations (all made at SAAO) to settle this problem. By combining all the data we find a best period of 0.9807 d for the double-wave solution (Fig. 10). Results from 1988 indicate that this period fits the data well.

66 Oph

During 1987 this star showed double emission at Hβ and Hγ (Mennickent and Vogt, 1988).

We observed this star for one season only (1987). Apart from a gradual increase in brightness, there is no indication of periodicity. Nevertheless, the star is variable as the scatter (0.01 mag) is much larger than expected. It appears that we are seeing only the flickering component.

V986 Oph

This star is not known as a Be star, but we have included it here owing to its great interest in connection with the role of NRP in the Be phenomenon. V986 Oph has a long history of photometric variability. Lynds (1959) determined a period of 0.289 d and classified it as a β Cep variable. Jerzykiewicz (1975) confirmed this period from seven nights of photometry and deduced a peak-to-peak amplitude of 0.014 mag. However, not all the data could be described by a simple sinusoidal variation with this period. Pike and Lloyd (1979) failed to detect any radial velocity variations with the photometric period, though a systematic decrease in nightly mean velocities was observed.

To clarify the nature of this star, C. D. Pike organized an international campaign for July 1980. Fullerton *et al.* (1985) analyzed both the photometry and radial velocities obtained during the campaign and found a period of 0.325 d with a light amplitude of 0.01 mag in B. No significant radial velocity variations were found, but the systematic variation in mean nightly velocity was confirmed and orbital elements derived ($P = 25.56$ d, $2K = 35$ km s^{-1}, $e = 0.23$). They also obtained an extensive set of high dispersion line-profile observations and discovered high-order profile variations progressing from blue to red with a period of about 0.3 d. They deduced $\ell = 6$, but at times $\ell = 4$ and $\ell = 8$ are excited.

This confusing picture of V986 Oph prompted us to include it in our observing project. Our photometry for 1985 was obtained over 10 nights and showed light variations at a low level. Fourier periodogram analysis showed peaks at 1.74 and 1.16 d^{-1} and their one-day aliases (Fig. 11a - top panel). An unique period or periods could not be determined from these data alone. Combining these data with all available photometry showed the most likely period to be 0.30 d or 0.23 d, its alias.

Our 1987 data again shows micro-variability, but owing to the spacing in longitude the aliasing problem largely disappears. The Fourier periodogram shows three strong peaks at $f_1 = 3.30$, $f_2 = 1.41$ and $f_3 = 0.77$ d^{-1} with semi-amplitudes of 4.7, 4.6 and 3.8 millimags respectively (Fig. 11a - middle panel). Prewhitening by f_1 leaves f_2 and f_3 with f_2 slightly stronger (Fig. 11a - bottom panel). Further prewhitening by either f_2 or f_3 leads to a pure noise spectrum. Our conclusion is that there are two periods present : the short period is well determined to be 0.303 d (Fig. 11b), but the long period is uncertain, it is either 1.299 d or 0.709 d.

The short period is the same as the one originally suggested by Lynds and Jerzykiewicz and also found in our 1985 data. We cannot confirm the period found by Fullerton *et al.* (1985) ; indeed there is no indication of a 0.325 d period in our data at all. We note, however, that the 0.303 d period is the same as their estimate of the period of the high-order line-profile variations. The low photometric amplitude is consistent with a high-order NRP mode. The nature of the long period is uncertain. It could be another NRP mode (either rotationaly split p-mode or a g-mode), but the period is close to the expected period of rotation so that some kind of rotational modulation is not ruled out.

There appears to be no compelling reason to classify this star as anything other than a β Cep variable as originally suggested by Lynds (1959). Admittedly, it has the longest know period of a star in this class, but this is not surprising in view of its early spectral type and luminosity. It does apparently oscillate with somewhat higher order modes than the majority of other β Cep variables, but this is not a criterion for reclassification. The only reasonable criterion for classification is a definite indication of a different pulsation mechanism. Since there is no reason to believe that the pulsation mechanism in this star is any different from other β Cep variables, we feel that reclassification serves merely to confuse the issue.

ϵ Cap

Mennickent and Vogt (1988) observed this star in 1986 and found deep central absorption with no traces of emission at Hβ. Dachs *et al.* (1986) found Hα to have a central absorption and emission wings in 1982.

Our 1985 photometry showed that ϵ Cap underwent a sharp drop in brightness of nearly 0.2 mag in just three days followed by a rapid recovery. Excluding this period, the periodogram shows a set of peaks with $f = 2.60$ d^{-1} and its one-day aliases, but a double-wave light curve with half this frequency is possible as the waves have distinctly different amplitudes. This solution ($P = 0.769$ d) was proposed by Balona and Engelbrecht (1987).

The 1986 photometry again showed indications of periodicity, but we could not confirm the solution derived for 1985. Instead a frequency close to two cycles per day was indicated. The severe aliasing problem prevented a meaningful solution.

The combined ESO and SAAO data of 1987 showed a slow brightening over the observing run. Removing this trend showed a possible period very close to one day. By combining all available data we determined the best value to be 1.030 d (Fig. 12). Because it is so close to one day and because of the discrepancy obtained in 1985, this period must be regarded as very uncertain.

η PsA

Mennickent and Vogt (1988) find Hβ to be very diffuse with weak double emission ($V \simeq R$) around a broad absorption core.

We were unable to detect any clear periodicity in η PsA during 1985, but the star was clearly a low-amplitude variable. A Fourier periodogram suggested a possible period of 0.774 d, which is the value quoted by Balona and Engelbrecht (1987). During 1986, the low-level variability (flickering) was again evident. No reliable period could be extracted. The same is true for the combined ESO and SAAO data of 1987.

HR 8408

Slettebak (1982) discovered HR 8408 to be a Be star showing faint double emission ($V \simeq R$) at Hβ surrounding an absorption core. Mennickent and Vogt (1988) did not see emission during 1986, but suspect incipient emission at Hβ. Buscombe and Morris (1961) found a radial velocity range of 40 km s^{-1}.

This star was originally used as a photometric standard before we discovered its variability. The 1985 SAAO photometry shows clear indications of periodicity with a frequency $f = 2.53$ d^{-1}, though a double-wave solution with half this frequency shows the two waves to have significantly different amplitudes.

The 1986 data produced the highest peak in the Fourier periodogram at $f = 1.53$ d^{-1}, i.e. the one-day alias of the solution adopted for 1985. Again, a double-wave solution appeared to be significant.

The combined ESO and SAAO data of 1987 removed the aliasing problem. The correct frequency was found to be $f = 1.53$ d^{-1} or the double-wave solution at $f = 0.765$ d^{-1}. By combining all available data we refined the period to 1.3106 if we adopt the double-wave solution (Fig. 13). This value (or possibly the single-wave period of 0.6553 d) seems to be well established.

o Aqr

The emission features in this star have been relatively static since 1975. The spectrum shows double emission in the Balmer lines ($V \simeq R$) and a central shell absorption feature (Mennickent and Vogt 1988).

Photometry during 1985 showed a steady brightening of the star over a period of three months with a large excursion in magnitude on one occasion. These complications made period extraction very difficult. A subset of the data indicated a possible double-wave light curve with $P = 1.449$ d (Balona and Engelbrecht 1987). During 1986 a much larger amount of data was obtained and the star was more quiescent. Both the Fourier and PDM periodograms show a strong signal at $f = 1.40$ d^{-1} ($P = 0.71$ d) - half the period found in 1985. However, a double-wave light curve with the period found in 1985 also described the 1986 data well.

The combined ESO and SAAO data for 1987 again shows a strong signal with $f = 1.39$ d^{-1} or the double-wave equivalent at $f = 0.70$ d^{-1}. This time the amplitude difference in the waves did not appear to be significant. Considering the good agreement of the period determinations of three seasons, we can state with little doubt that the period of this star is $P = 1.4325$ d from all available data (Fig. 14). This gives a double-wave light curve with distinctly different amplitudes for the two waves in 1985 and 1986. An increase in amplitude from 0.01 mag in 1986 to 0.02 mag in 1987 seems to have occurred.

One of the aims of this project was to determine the temperature range at which periodic Be stars could be found. o Aqr is one of the coolest stars (B7IVe) which has been found to be periodic. Our impression is that periodicity is most likely to be found amongst earlier spectral types.

ψ^2 Aqr

This star is not known as an emission-line star. We decided to include it in our observing program owing to its very rapid rotation ($v \sin i = 332$ km s^{-1}) and to test the hypothesis that rapidly-rotating non-Be stars do not show low-order profile variations (which are expected to give rise to periodic light variations). Abt and Levy (1978) regard the star as a probable spectroscopic binary.

The SAAO data for 1986 showed a strong peak at $f = 1.87$ d^{-1} in the Fourier periodogram. The PDM periodogram suggested that a double-wave solution with half this frequency is more appropriate. The ESO and SAAO data of 1987 confirmed these conclusions. We have adopted a double-wave solution with $P = 1.073$ d obtained from an analysis of all existing photometry. A large decrease in amplitude seems to have occurred between the two seasons (Fig. 15).

The light variation in this star is in every respect similar to those in Be stars. It would be of great+ value to look for possible emission at Hα in this star. If it can be shown that emission is definitely not present but that short-period light variations are present, it could offer an important clue to the relationship between the short-period variations and the Be phenomenon.

5. Colour variations.

There are very few observations of periodic Be stars observed in more than one colour. Van Vuuren et al. (1988) found that the colour variations in periodic Be stars in the open cluster NGC 3766 were very small. The evidence indicates that the star is bluest (hotest) when brightest. The ESO observations produced simultaneous *uvby* colours. In figures 16 - 20 we show light and colour curves for some of the periodic Be stars observed at ESO. In general, the conclusions of van Vuuren *et al.*, (1988) are supported. The best evidence comes from observations of 48 Lib (Fig. 17). There is a small phase shift between b and u-b, but the star is brightest when bluest.

6. Conclusions.

A detailed interpretation of the results found in this paper and others in the series will be presented elsewhere. Here we summarize the main findings.

We found periodic light variations in almost all Be stars. Of the 17 candidates, only three stars were constant in light, three others had uncertain periods. The Be star HD137518 has a very unusual light curve which may not be strictly periodic or else could be another example of a triple-wave light curve as found in η Cen and α Eri.

In most cases the light curves are double waves with unequal maxima and minima. Sometimes the waves are of nearly equal amplitude, so it is quite possible that the periods of some apparently single-wave variables may be in error by a factor of two. Such a situation was found for two Be stars in the cluster NGC3766 (Ahmed 1 and Ahmed 15) where an apparently single-wave light curve became a double-wave light curve with twice the period in the course of a year (van Vuuren *et al.* 1988). The triple-wave light curve of η Cen is remarkable for its large amplitude, but has a counterpart in the bright star α Eri (Balona *et al.*, 1987).

It has become increasingly clear, both in this work and in previous studies of the light variability of periodic Be stars, that the light variations are never adequately described by purely periodic variations. There is always a residual scatter which is often many times larger than the expected observational error. We have called these random, short-term variations *flickering*. It seems that flickering is closely associated with periodic variability. The constant Be stars are really constant and do not show this flickering (or at least not to the same extent).

In all cases we found the period of light variation to be consistent with the expected period of rotation of the star. There is no clear evidence for multiperiodicity in any of the stars. In the case of ζ Oph we found a β Cep - like variation with a period of 0.193 d superimposed on a longer period of 1.075 d which is practically six times the length of the shorter period and could be the rotation period. This behaviour was only seen for one season. This star is clearly an exception to the rule and deserves closer study. For χ Oph (and possibly HD137518) we found evidence for a period longer than the expected period of rotation. It is not very clear whether this variation is intrinsic to the star (as is the case in general) or a result of a close companion or circumstellar material.

The results of this work clearly show the importance of multi-site observations for these short-period variables. The aliasing problem that still existed in some stars was completely resolved by combining results from the two sites.

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TABLE I. — *A summary of stars observed. Notes are given for program stars ; the others are comparison stars. The abbreviation 2W and 3W stands for double-wave and triple -wave light curve respectively. The grouping includes stars which are in close proximity and for which the same transparency corrections were applied. The projected rotational velocity, the mean Strömgren b magnitude and the total number of observations is shown.*

HR	HD	Name	MK type	vsini	<b>	N	Notes
HR 5190	HD 120307	ν Cen	B2IV	91	3.33	279	P = 2.621 d.
HR 5193	HD 120324	μ Cen	B2IV–Ve	175	3.39	360	P = 2.1017 d, 2W.
HR 5439	HD 127971		B7V		5.872	202	
HR 5440	HD 127972	η Cen	B1.5Vne	333	2.32	352	P = 1.927 d, 3W.
HR 5668	HD 135348		B3IV		6.026	178	
	HD 137518		B1IIInep		7.94	183	P = 8.696 d?
HR 5730	HD 137387	κ^1 Aps	B1pne		5.39	308	P = 1.238 d, 2W.
HR 5786	HD 138867		B9V		5.950	246	
HR 6172	HD 149671	η^1 TrA	B7IVe		5.89	202	Constant.
HR 6233	HD 151441		B8II–III		6.150	215	
HR 5902	HD 142096		B2.5V	197	5.065	230	
HR 5941	HD 142983	48 Lib	B5IIIpe	393	4.81	232	P = 0.4017 d.
HR 5993	HD 144470		B1V	142	3.986	401	
HR 6112	HD 147933		B2V	303	4.781	134	
HR 6118	HD 148184	χ Oph	B2IV:pe	134	4.61	346	P = 13.774 d.
HR 6175	HD 149757	ζ Oph	O9.5Vne	379	2.67	313	P_1= 1.075, P_2= 0.193 d.
HR 6224	HD 151133		B9.5III	100	6.050	131	
HR 6451	HD 157042	ι Ara	B2IIIne	369	5.25	542	P = 0.556 d, 2W.
HR 6460	HD 157243		B7III	150	5.120	684	
HR 6475	HD 157599		B8–9V		6.190	405	
HR 6510	HD 158427	α Ara	B2IIIne	298	2.81	545	P = 0.9807 d, 2W.
HR 6712	HD 164284	66 Oph	B2Ve	221	4.77	160	Constant.
HR 6719	HD 164432		B2IV		6.352	287	
HR 6732	HD 164716		B9V		6.878	66	
HR 6747	HD 165174	V986 Oph	B0IIIn	434	6.20	274	P_1=0.303, P_2=1.3/0.7 d.
HR 8260	HD 205637	ϵ Cap	B2.5Vpe	293	4.36	567	P = 1.03 d?
HR 8293	HD 206546		A3m	47	6.336	581	
HR 8386	HD 209014	η PsA	B8Ve		5.39	598	Constant.
HR 8408	HD 209522		B4IVne	300	5.90	597	P = 1.3106 d, 2W.
HR 8446	HD 210300		A5V		6.500	482	
HR 8402	HD 209409	o Aqr	B7IVe	227	4.67	526	P = 1.433 d, 2W.
HR 8451	HD 210419		A1Vnn	254	6.270	455	
HR 8533	HD 212404		A0V	65	5.750	406	
HR 8840	HD 219402		A3V		5.561	389	
HR 8858	HD 219688	ψ^2 Aqr	B5V	332	4.32	388	P = 1.073 d, 2W.

TABLE IIa. — *Strömgren-b observations for periodic Be stars observed at SAAO. The heliocentric Julian day is with respect to JD2440000.000.*

HR 5190

HJD	b
6959.2227	3.326
6959.2679	3.314
6959.3058	3.315
6959.3447	3.322
6959.3817	3.329
6959.4169	3.331
6959.4671	3.328
6960.4225	3.341
6961.2177	3.324
6961.2457	3.322
6961.2717	3.320
6961.3051	3.321
6961.3383	3.319
6961.3701	3.321
6961.4039	3.323
6961.4493	3.320
6962.2118	3.307
6962.2566	3.319
6962.2845	3.324
6962.3188	3.324
6965.2383	3.363
6965.3849	3.343
6965.4322	3.337
6966.2226	3.319
6966.2535	3.318
6966.2820	3.323
6966.3301	3.323
6966.3609	3.328
6966.3923	3.328
6966.4238	3.321
6967.2232	3.336
6967.2512	3.333
6967.2836	3.335
6967.3203	3.337
6967.3495	3.344
6967.3813	3.341
6967.4218	3.334
6967.4628	3.353
6968.2189	3.341
6968.2458	3.332
6968.2735	3.339
6968.3018	3.337
6968.3318	3.357
6972.2623	3.327
6972.3074	3.330
6972.3585	3.340
6978.2279	3.330
6978.2657	3.326
6978.3111	3.341
6978.3564	3.344
6978.4156	3.334
6980.2514	3.334
6980.2988	3.328
6980.3467	3.342
6980.3858	3.334
6980.4386	3.340
6981.2317	3.329
6981.2653	3.333
6981.3039	3.331
6981.3763	3.336
6982.2613	3.322
6982.3033	3.324
6982.3941	3.317
6983.2248	3.337
6983.2623	3.333
6983.3049	3.340
6983.3515	3.327
7236.3839	3.297
7236.4252	3.292
7236.4608	3.306
7236.5013	3.296
7236.5363	3.300
7236.5711	3.297
7236.6065	3.300
7236.6294	3.294
7237.2946	3.304
7237.3298	3.305
7237.3642	3.306
7237.3980	3.301
7237.4322	3.306
7237.4647	3.300
7238.2962	3.310
7238.3271	3.311
7238.3598	3.305
7238.3944	3.300
7238.4292	3.303
7238.4630	3.307
7238.4967	3.303
7238.5291	3.300
7238.5642	3.304
7238.5966	3.305
7238.6240	3.304
7238.6399	3.305
7240.2931	3.311
7240.3257	3.309
7240.3615	3.311
7240.3959	3.309
7240.4288	3.307
7240.4636	3.306
7240.4964	3.309
7240.5293	3.310
7240.5626	3.306
7240.5956	3.307
7240.6216	3.309
7240.6403	3.312
7241.2953	3.307
7241.3289	3.303
7241.3624	3.298
7241.3961	3.303
7241.4290	3.300
7241.4622	3.304
7241.4971	3.299
7241.5310	3.300
7241.5663	3.300
7241.5998	3.301
7241.6214	3.301
7241.6288	3.295
7242.2955	3.301
7242.3293	3.295
7242.3639	3.303
7242.4022	3.303
7242.4351	3.301
7242.4691	3.302
7242.5016	3.301
7242.5813	3.304
7242.6059	3.301
7242.6217	3.302
7243.3035	3.313
7243.3364	3.308
7243.3686	3.308
7243.4018	3.306
7243.4337	3.305
7243.4663	3.303
7243.5014	3.306
7243.5338	3.306
7243.5665	3.307
7243.5939	3.306
7243.6132	3.311
7243.6293	3.311
7245.5135	3.302
7246.3011	3.312
7246.3329	3.305
7246.3650	3.304
7246.3962	3.307
7246.4297	3.308
7246.4662	3.303
7246.4984	3.305
7246.5304	3.304
7246.5628	3.308
7246.6060	3.300
7246.6331	3.301
7246.6495	3.304
7247.3082	3.300
7247.3452	3.296
7247.3791	3.296
7247.4125	3.299
7247.4498	3.300
7247.4839	3.298
7247.5213	3.299
7247.5558	3.299
7247.5891	3.302
7247.6141	3.301
7247.6308	3.298
7248.3134	3.310
7248.4083	3.304
7248.5753	3.315
7250.3382	3.284
7250.3889	3.290
7250.4330	3.288
7250.4904	3.298
7250.5435	3.307
7250.5967	3.318
7250.6334	3.302
7251.3468	3.287
7251.3967	3.301
7251.4350	3.304
7251.4798	3.305
7251.5175	3.306
7251.5535	3.298
7251.6264	3.299
7252.3409	3.297
7252.3767	3.300
7252.4116	3.296
7252.4501	3.293
7252.4938	3.293
7252.5343	3.290
7252.5714	3.288
7252.6084	3.293
7252.6448	3.288
7260.3091	3.290
7260.3822	3.287
7261.4754	3.311
7261.5132	3.310
7261.5483	3.309
7261.5806	3.305
7261.6154	3.308
7261.6464	3.311
7262.2964	3.298
7262.3359	3.297
7262.4091	3.296
7262.4427	3.295
7262.4803	3.300
7262.5154	3.297
7262.5524	3.290
7262.5871	3.295
7262.6210	3.300
7263.2964	3.301
7263.3338	3.300
7263.3668	3.299
7263.4020	3.299
7263.4381	3.299
7263.4733	3.297
7263.5084	3.302
7263.5451	3.295
7263.5821	3.294
7264.2774	3.305
7265.3068	3.298
7265.4163	3.294
7265.4681	3.299
7265.5188	3.297
7265.5552	3.294
7265.5912	3.306
7266.2761	3.304
7266.3096	3.308
7266.3422	3.304
7266.3743	3.308
7266.4403	3.304
7266.4977	3.306
7266.5316	3.307
7266.5724	3.306

HR 5190

HJD	b
7266.6034	3.302
7267.2784	3.305
7267.3253	3.299
7268.2740	3.298
7268.3204	3.301
7268.3712	3.297
7268.4254	3.295
7268.4744	3.302
7270.2753	3.302
7270.3249	3.300
7270.3770	3.299
7270.4316	3.297
7270.4852	3.302
7270.5198	3.296
7270.5547	3.299
7270.5862	3.301
7270.6178	3.296
7274.2888	3.309
7274.3473	3.297
7274.4088	3.298
7274.4674	3.300
7274.5045	3.302
7274.5428	3.305
7274.5761	3.301
7321.4137	3.297
7322.2234	3.308
7322.2834	3.305
7322.3407	3.306
7322.3973	3.303
7322.4569	3.303
7323.2288	3.295
7323.2858	3.291
7323.3409	3.311
7323.4231	3.293
7323.4773	3.296
7328.2484	3.298
7328.3338	3.298
7329.2485	3.302
7329.3097	3.302
7329.3602	3.302
7329.4219	3.307
7330.2522	3.300
7330.3110	3.305
7330.3578	3.303
7330.4208	3.307
7331.2508	3.292
7331.3115	3.297
7331.3640	3.294
7331.4328	3.299

HR 5193

HJD	b
6959.2239	3.407
6959.2692	3.393
6959.3072	3.389
6959.3459	3.382
6959.3829	3.394
6959.4181	3.399
6959.4683	3.395
6960.4242	3.408
6961.2187	3.408
6961.2467	3.408
6961.2727	3.408
6961.3062	3.411
6961.3393	3.406
6961.3711	3.406
6961.4050	3.406
6961.4504	3.402
6962.2128	3.386
6962.2577	3.396
6962.2856	3.404
6962.3198	3.401
6965.2394	3.401
6965.2722	3.403
6965.3859	3.392
6965.4332	3.386
6966.2237	3.357
6966.2546	3.358
6966.2833	3.367
6966.3311	3.361
6966.3619	3.358
6966.3932	3.362
6966.4249	3.356
6967.2241	3.366
6967.2521	3.357
6967.2846	3.353
6967.3212	3.348
6967.3506	3.350
6967.3822	3.354
6967.4226	3.359
6967.4636	3.386
6968.2200	3.410
6968.2467	3.411
6968.2743	3.405
6968.3026	3.407
6968.3327	3.412
6972.2657	3.347
6972.3088	3.350
6978.2293	3.400
6978.2672	3.396
6978.3125	3.409
6978.3589	3.412
6978.4171	3.408
6980.3003	3.408
6980.3480	3.411
6980.3871	3.406
6980.4399	3.413
6981.2331	3.411
6981.2666	3.415
6981.3052	3.416
6981.3775	3.421
6982.2629	3.392
6982.3046	3.397
6982.3457	3.397
6982.3955	3.386
6983.2261	3.408
6983.2637	3.409
6983.3062	3.406
6983.3528	3.393
7236.3852	3.350
7236.4266	3.356
7236.4618	3.361
7236.5024	3.359
7236.5374	3.359
7236.5720	3.356
7236.6083	3.360
7236.6303	3.359
7237.2956	3.363
7237.3308	3.363
7237.3654	3.365
7237.3988	3.361
7237.4331	3.363
7237.4659	3.364
7238.2971	3.366
7238.3280	3.367
7238.3608	3.366
7238.3954	3.368
7238.4302	3.372
7238.4640	3.374
7238.4976	3.373
7238.5300	3.376
7238.5652	3.375
7238.5976	3.375
7238.6260	3.378
7238.6412	3.377
7240.2941	3.396
7240.3270	3.384
7240.3623	3.386
7240.3970	3.382
7240.4298	3.381
7240.4649	3.385
7240.4974	3.381
7240.5302	3.383
7240.5636	3.383
7240.5965	3.380
7240.6231	3.384
7240.6419	3.388
7241.2965	3.390
7241.3300	3.384
7241.3635	3.381
7241.3971	3.379
7241.4300	3.379
7241.4631	3.380
7241.4980	3.377
7241.5321	3.377
7241.5672	3.379
7241.6013	3.376
7241.6234	3.378
7241.6304	3.373
7242.2966	3.379
7242.3304	3.377
7242.3651	3.380
7242.4032	3.382
7242.4361	3.382
7242.4700	3.389
7242.5025	3.387
7242.5826	3.381
7242.6071	3.373
7242.6231	3.377
7243.3044	3.378
7243.3376	3.381
7243.3697	3.381
7243.4027	3.383
7243.4347	3.377
7243.4686	3.373
7243.5024	3.369
7243.5347	3.369
7243.5675	3.370
7243.5950	3.376
7243.6146	3.382
7243.6306	3.380
7245.5144	3.381
7246.3021	3.398
7246.3339	3.394
7246.3660	3.396
7246.3971	3.394
7246.4306	3.397
7246.4674	3.397
7246.4993	3.393
7246.5314	3.391
7246.5637	3.393
7246.6070	3.386
7246.6343	3.387
7246.6507	3.388
7247.3092	3.390
7247.3461	3.386
7247.3800	3.382
7247.4134	3.382
7247.4507	3.381
7247.4849	3.382
7247.5223	3.381
7247.5567	3.384
7247.5900	3.384
7247.6155	3.383
7247.6318	3.384
7248.3143	3.388
7248.4093	3.387
7248.5783	3.407
7250.3399	3.369
7250.3902	3.383
7250.4345	3.378
7250.4920	3.385
7250.5448	3.395
7250.5979	3.396
7250.6345	3.398
7251.3480	3.371
7251.3980	3.386
7251.4361	3.386
7251.4809	3.384
7251.5184	3.384
7251.5545	3.380
7251.6274	3.376
7252.3419	3.386
7252.3777	3.389
7252.4126	3.384
7252.4515	3.380
7252.4950	3.382
7252.5354	3.380
7252.5723	3.384
7252.6093	3.386
7252.6462	3.383
7260.3107	3.381
7260.3834	3.380
7261.4763	3.381
7261.5142	3.375
7261.5492	3.375
7261.5815	3.369
7261.6165	3.371
7261.6473	3.369
7262.2974	3.377
7262.3370	3.381
7262.3741	3.379
7262.4101	3.376
7262.4438	3.375
7262.4815	3.381
7262.5168	3.370
7262.5535	3.37
7262.5882	3.379
7262.6220	3.380
7263.2975	3.389
7263.3350	3.393
7263.3678	3.391
7263.4030	3.385
7263.4392	3.379
7263.4743	3.374
7263.5094	3.372
7263.5462	3.372
7263.5831	3.377
7264.2784	3.376
7265.3077	3.394
7265.4175	3.385
7265.4691	3.389
7265.5197	3.387
7265.5561	3.385
7266.2771	3.386
7266.3106	3.382
7266.3432	3.374
7266.3752	3.383
7266.4413	3.373
7266.4989	3.374
7266.5387	3.378
7266.5734	3.379

HR 5193

HJD	b
7266.6044	3.382
7267.2793	3.392
7267.3262	3.389
7268.2751	3.389
7268.3214	3.391
7268.3721	3.385
7268.4263	3.384
7268.4753	3.382
7270.2763	3.389
7270.3258	3.389
7270.3779	3.384
7270.4327	3.384
7270.4861	3.380
7270.5207	3.380
7270.5560	3.377
7270.5872	3.382
7270.6189	3.375
7274.2904	3.398
7274.3484	3.389
7274.4098	3.385
7274.4685	3.388
7274.5055	3.391
7274.5439	3.391
7274.5771	3.397
7321.4149	3.337
7322.2247	3.372
7322.2848	3.372
7322.3420	3.376
7322.3988	3.382
7322.4581	3.372
7323.2302	3.369
7323.2875	3.369
7323.3421	3.377
7323.4243	3.381
7323.4785	3.378
7328.2501	3.385
7328.3353	3.378
7328.4112	3.405
7329.2500	3.390
7329.3109	3.383
7329.3614	3.379
7329.4231	3.384
7330.2536	3.383
7330.3122	3.380
7330.3591	3.384
7330.4220	3.379
7331.2528	3.382
7331.3129	3.385
7331.3652	3.381
7331.4342	3.379

TABLE IIa (*continued*)

HR 5440

HJD	b
6959.2277	2.298
6959.2714	2.287
6959.3088	2.290
6959.3477	2.292
6959.3845	2.298
6959.4197	2.306
6959.4699	2.315
6960.4272	2.286
6961.2201	2.298
6961.2483	2.299
6961.2744	2.306
6961.3079	2.312
6961.3407	2.316
6961.3725	2.331
6961.4065	2.333
6961.4522	2.341
6962.2143	2.319
6962.2594	2.302
6962.2873	2.290
6962.3212	2.281
6962.3541	2.280
6965.2412	2.342
6965.2739	2.345
6965.3874	2.372
6965.4348	2.341
6965.4784	2.296
6966.2254	2.269
6966.2563	2.272
6966.2850	2.278
6966.3328	2.298
6966.3634	2.309
6966.3948	2.317
6966.4265	2.316
6966.4665	2.318
6967.2257	2.372
6967.2540	2.384
6967.2863	2.397
6967.3227	2.393
6967.3524	2.379
6967.3838	2.350
6967.4241	2.319
6967.4651	2.287
6968.2220	2.304
6968.2485	2.312
6968.2758	2.319
6968.3042	2.328
6968.3342	2.356
6972.2683	2.337
6972.3107	2.344
6978.2321	2.319
6978.2691	2.316
6978.3143	2.311
6978.3607	2.293
6978.4192	2.292
6980.3026	2.278
6980.3499	2.282
6980.3898	2.284
6980.4417	2.296
6981.2354	2.311
6981.2686	2.310
6981.3074	2.311
6981.3793	2.313
6982.2655	2.275
6982.3064	2.287
6982.3475	2.294
6982.3973	2.298
6982.4503	2.300
6983.2286	2.312
6983.2659	2.310
6983.3080	2.316
6983.3561	2.318
7236.3883	2.213
7236.4291	2.226
7236.4642	2.225
7236.5052	2.221
7236.5400	2.216
7236.5744	2.196
7236.6124	2.175
7236.6339	2.164
7237.3331	2.166
7237.3679	2.171
7237.4019	2.178
7237.4352	2.181
7237.4680	2.192
7238.3306	2.213
7238.3634	2.218
7238.3984	2.213
7238.4326	2.202
7238.4667	2.207
7238.4999	2.195
7238.5322	2.183
7238.5676	2.178
7238.5999	2.173
7238.6289	2.171
7238.6440	2.169
7240.3299	2.221
7240.3648	2.232
7240.3996	2.219
7240.4326	2.207
7240.4673	2.189
7240.5001	2.170
7240.5323	2.155
7240.5658	2.148
7240.5988	2.151
7240.6261	2.159
7240.6448	2.164
7241.3325	2.183
7241.3660	2.198
7241.3998	2.203
7241.4324	2.211
7241.4655	2.211
7241.5005	2.198
7241.5348	2.184
7241.5719	2.187
7241.6046	2.191
7241.6265	2.193
7241.6340	2.193
7242.2992	2.206
7242.3327	2.187
7242.3685	2.181
7242.4058	2.161
7242.4386	2.150
7242.4726	2.147
7242.5050	2.149
7242.5848	2.172
7242.6094	2.181
7242.6260	2.188
7243.3069	2.192
7243.3401	2.199
7243.3720	2.211
7243.4050	2.204
7243.4376	2.193
7243.4711	2.191
7243.5047	2.191
7243.5369	2.197
7243.5698	2.202
7243.5975	2.200
7243.6181	2.204
7243.6334	2.198
7245.5170	2.211
7246.3043	2.163
7246.3362	2.150
7246.3681	2.155
7246.3993	2.157
7246.4333	2.169
7246.4696	2.187
7246.5019	2.204
7246.5336	2.217
7246.5663	2.215
7246.6095	2.217
7246.6370	2.216
7246.6534	2.215
7247.3115	2.204
7247.3485	2.195
7247.3823	2.200
7247.4157	2.193
7247.4531	2.194
7247.4879	2.184
7247.5245	2.176
7247.5590	2.173
7247.5922	2.167
7247.6180	2.169
7247.6344	2.170
7248.3164	2.169
7248.4118	2.205
7248.5807	2.233
7250.3453	2.203
7250.3942	2.221
7250.4387	2.217
7250.4966	2.210
7250.5483	2.204
7250.6010	2.203
7250.6384	2.194
7251.4028	2.180
7251.4390	2.188
7251.4844	2.180
7251.5215	2.178
7251.5571	2.186
7251.6304	2.201
7252.3449	2.206
7252.3804	2.220
7252.4153	2.227
7252.4984	2.204
7252.5385	2.193
7252.5747	2.184
7252.6119	2.178
7252.6493	2.174
7260.3150	2.200
7260.3875	2.192
7261.4797	2.235
7261.5173	2.224
7261.5517	2.217
7261.5842	2.203
7261.6192	2.202
7261.6500	2.199
7262.3017	2.200
7262.3409	2.201
7262.3767	2.194
7262.4473	2.187
7262.4844	2.188
7262.5196	2.188
7262.5562	2.194
7262.5928	2.192
7262.6250	2.201
7263.3001	2.218
7263.3377	2.234
7263.3704	2.242
7263.4057	2.243
7263.4421	2.239
7263.4772	2.228
7263.5120	2.214
7263.5489	2.204
7263.5861	2.191
7264.2809	2.180
7265.3107	2.227
7265.4204	2.203
7265.4715	2.176
7265.5225	2.173
7265.5585	2.172
7266.2798	2.179
7266.3131	2.184
7266.3458	2.186
7266.3783	2.194
7266.4441	2.182
7266.5018	2.194
7266.5431	2.212
7266.5763	2.221
7266.6071	2.218
7267.2821	2.210
7267.3288	2.197

HR 5440

HJD	b
7268.2777	2.173
7268.3242	2.182
7268.3755	2.195
7268.4290	2.210
7268.4777	2.222
7270.2797	2.205
7270.3286	2.198
7270.3810	2.200
7270.4355	2.198
7270.4890	2.203
7270.5234	2.193
7270.5590	2.186
7270.5912	2.173
7270.6226	2.176
7274.2955	2.227
7274.3519	2.210
7274.4132	2.183
7274.4718	2.160
7274.5094	2.162
7274.5469	2.160
7274.5802	2.163
7321.4189	2.197
7322.2284	2.180
7322.2885	2.198
7322.3454	2.215
7322.4024	2.219
7322.4621	2.215
7323.2340	2.215
7323.2919	2.205
7323.3463	2.187
7323.4277	2.166
7323.4827	2.195
7328.2550	2.219
7328.3391	2.226
7328.4160	2.210
7329.2549	2.166
7329.3145	2.182
7329.3651	2.201
7329.4265	2.202
7330.2594	2.206
7330.3160	2.201
7330.3629	2.194
7330.4257	2.181
7331.2568	2.181
7331.2581	2.186
7331.3168	2.209
7331.3690	2.214
7331.4383	2.217

HD 137518

HJD	b
6959.2314	8.019
6959.2753	8.003
6959.3122	8.025
6959.3510	8.014
6959.3880	8.000
6959.4228	7.998
6959.4733	7.999
6959.5259	7.989
6960.4300	7.989
6960.4879	7.975
6960.5329	7.960
6961.2228	7.984
6961.2509	8.007
6961.2775	8.024
6961.3107	8.046
6961.3435	8.065
6961.3752	8.080
6961.4093	8.101
6961.4548	8.101
6962.2177	8.135
6962.2625	8.139
6962.2904	8.141
6962.3239	8.136
6965.2447	7.866
6965.2771	7.856
6965.3907	7.801
6965.4376	7.783
6965.4812	7.795
6965.5312	7.782
6966.2287	7.644
6966.2591	7.639
6966.2880	7.631
6966.3353	7.625
6966.3662	7.636
6966.3975	7.644
6966.4291	7.655
6966.4692	7.666
6966.5069	7.671
6967.2283	7.999
6967.2572	8.008
6967.2890	8.008
6967.3254	7.997
6967.3549	7.984
6967.3866	7.980
6967.4267	7.983
6967.4677	7.988
6967.5100	7.997
6968.2248	8.000
6968.2514	7.986
6968.2801	7.972
6968.3070	7.955
6972.2731	7.827
6972.3145	7.815
6972.3798	7.833
6978.2363	8.040
6978.2732	8.049
6978.3178	8.056
6978.3642	8.061
6978.4229	8.054
6978.4865	8.061
6980.3063	7.978
6980.3536	8.003
6980.3933	8.022
6980.4509	8.032
6981.2392	7.879
6981.2722	7.893
6981.3108	7.914
6981.3826	7.971
6981.4322	7.999
6982.2690	7.889
6982.3100	7.851
6982.3507	7.827
6982.4009	7.824
6982.4538	7.825
6983.2326	7.657
6983.2695	7.644
6983.3116	7.627
6983.3839	7.667
6983.3909	7.673
6983.4050	7.681

HR 5730

HJD	b
6959.2340	5.373
6959.2775	5.367
6959.3148	5.371
6959.3528	5.378
6959.3897	5.383
6959.4245	5.384
6959.4757	5.383
6959.5280	5.389
6960.4320	5.397
6960.4898	5.375
6960.5353	5.368
6961.2249	5.370
6961.2526	5.378
6961.2794	5.377
6961.3128	5.381
6961.3453	5.388
6961.3771	5.398
6961.4114	5.400
6961.4567	5.416
6962.2196	5.388
6962.2644	5.383
6962.2923	5.369
6962.3257	5.358
6965.2469	5.396
6965.2792	5.406
6965.3928	5.365
6965.4399	5.353
6965.4830	5.348
6965.5331	5.355
6966.2310	5.379
6966.2612	5.384
6966.2904	5.395
6966.3370	5.400
6966.3682	5.403
6966.3994	5.409
6966.4310	5.417
6966.4709	5.404
6966.5088	5.396
6967.2307	5.370
6967.2591	5.364
6967.2908	5.360
6967.3271	5.355
6967.3565	5.359
6967.3885	5.364
6967.4287	5.369
6967.4701	5.382
6967.5117	5.397
6968.2270	5.390
6968.2533	5.392
6968.2821	5.393
6968.3088	5.403
6972.2762	5.422
6972.3186	5.416
6972.3824	5.407
6973.3889	5.441
6978.2395	5.404
6978.2766	5.412
6978.3216	5.411
6978.3673	5.412
6978.4256	5.390
6978.4896	5.380
6980.3096	5.386
6980.3567	5.376
6980.3960	5.376
6980.4534	5.381
6981.2425	5.405
6981.2749	5.413
6981.3136	5.423
6981.3856	5.441
6981.4355	5.438
6982.2727	5.379
6982.3134	5.387
6982.3533	5.391
6982.4048	5.397
6982.4574	5.404
6983.2356	5.431
6983.2752	5.427
6983.3157	5.408
7246.6019	5.340
7246.6456	5.355
7247.6101	5.419
7247.6267	5.419
7248.3081	5.391
7248.3585	5.363
7248.4043	5.337
7248.5713	5.387
7250.3331	5.371
7250.3843	5.369
7250.4282	5.373
7250.4858	5.413
7250.5367	5.393
7250.5923	5.398
7250.6291	5.372
7251.3416	5.373
7251.3923	5.373
7251.4307	5.339
7251.4754	5.343
7251.5134	5.350
7251.5493	5.355
7251.5866	5.385
7251.6224	5.363
7252.3367	5.377
7252.3727	5.372
7252.4076	5.361
7252.4458	5.369
7252.4895	5.381
7252.5299	5.394
7252.5675	5.394
7252.6045	5.402
7252.6408	5.384
7260.3043	5.390
7260.3777	5.385
7261.4713	5.356
7261.5093	5.370
7261.5444	5.377
7261.5768	5.373
7261.6112	5.376
7261.6421	5.379
7262.3316	5.395
7262.3680	5.396
7262.4049	5.424
7262.4388	5.436
7262.4762	5.437
7262.5115	5.427
7262.5487	5.406
7262.5830	5.394
7262.6465	5.388
7263.2922	5.361
7263.3299	5.361
7263.3632	5.372
7263.3979	5.382
7263.4344	5.373
7263.4693	5.385
7263.5040	5.388
7263.5413	5.386
7263.5783	5.395
7264.2737	5.407
7265.3028	5.367
7265.4128	5.384
7265.4642	5.407
7265.5149	5.415
7265.5514	5.404
7265.5874	5.391
7265.6515	5.379
7266.2722	5.356
7266.3057	5.339
7266.3385	5.344
7266.3706	5.348
7266.4367	5.355
7266.4938	5.369
7266.5278	5.361
7266.5684	5.370
7266.5997	5.382
7266.6585	5.394
7267.2746	5.404
7267.3215	5.389
7267.3723	5.420
7268.2702	5.355
7268.3167	5.360
7268.3675	5.373
7268.4214	5.377
7268.4708	5.371
7270.2713	5.379
7270.3214	5.381
7270.3733	5.380
7270.4279	5.403
7270.4818	5.391
7270.5162	5.376
7270.5506	5.369
7270.5825	5.371
7270.6141	5.356
7270.6433	5.355
7270.6582	5.353
7274.2851	5.388
7274.3435	5.374
7274.4049	5.362
7274.4636	5.365
7274.5006	5.371
7274.5393	5.374
7274.5722	5.380
7321.4212	5.368
7322.2306	5.363
7322.2909	5.373
7322.3475	5.371
7322.4045	5.384
7322.4646	5.399
7323.2364	5.373
7323.2938	5.353
7323.3486	5.346
7323.4299	5.361
7328.2584	5.337
7328.3443	5.347
7329.2574	5.375
7329.3165	5.367
7329.3674	5.371
7329.4288	5.351
7329.4842	5.333
7330.2624	5.366
7330.3183	5.374
7330.3653	5.375
7330.4284	5.367
7330.4835	5.367
7331.2617	5.360
7331.3194	5.349
7331.3719	5.354
7331.4412	5.363
7331.5005	5.361

TABLE IIa (*continued*)

HR 5941

HJD	b	HJD	b
6959.2407	4.840	6978.3751	4.800
6959.2844	4.849	6978.4322	4.803
6959.3225	4.834	6980.3161	4.791
6959.3596	4.829	6980.3628	4.801
6959.3966	4.807	6980.4019	4.810
6959.4311	4.795	6980.4593	4.815
6959.4869	4.804	6981.2490	4.827
6959.5350	4.805	6981.2828	4.827
6960.4382	4.846	6981.3250	4.830
6960.4963	4.844	6981.3917	4.836
6960.5418	4.834	6981.4450	4.815
6961.2307	4.830	6982.2794	4.798
6961.2589	4.827	6982.3199	4.793
6961.2855	4.830	6982.3592	4.801
6961.3190	4.834	6982.4117	4.809
6961.3512	4.817	6982.4639	4.822
6961.3833	4.806	6983.2423	4.809
6961.4172	4.798	6983.2813	4.822
6961.4630	4.801	6983.3222	4.829
6962.2273	4.791	7321.5036	4.804
6962.2707	4.804	7322.2370	4.804
6962.2981	4.807	7322.2974	4.804
6962.3316	4.813	7322.3532	4.819
6965.2531	4.826	7322.4103	4.831
6965.2853	4.817	7322.4704	4.827
6965.3986	4.802	7322.5424	4.806
6965.4457	4.806	7323.2424	4.827
6965.4891	4.803	7323.2998	4.820
6966.2376	4.806	7323.3548	4.804
6966.2673	4.806	7323.4356	4.809
6966.2980	4.799	7323.4910	4.810
6966.3426	4.801	7328.3497	4.819
6966.3742	4.806	7328.4582	4.825
6966.4050	4.816	7329.2641	4.846
6966.4365	4.813	7329.3224	4.827
6966.4766	4.814	7329.3730	4.816
6966.5146	4.810	7329.4342	4.803
6967.2369	4.827	7329.4906	4.827
6967.2657	4.823	7330.2693	4.814
6967.2984	4.785	7330.3236	4.815
6967.3328	4.817	7330.3714	4.824
6967.3620	4.813	7330.4337	4.840
6967.3939	4.815	7330.4891	4.854
6967.4340	4.810	7331.2669	4.856
6967.4756	4.802	7331.3252	4.832
6967.5175	4.805	7331.3772	4.807
6968.2329	4.802	7331.4470	4.810
6968.2600	4.804	7331.5073	4.814
6968.2888	4.801		
6968.3146	4.813		
6972.2841	4.795		
6972.3259	4.803		
6973.3965	4.811		
6978.2457	4.816		
6978.2846	4.802		
6978.3276	4.796		

HR 6118

HJD	b	HJD	b	HJD	b	HJD	b
6271.2342	4.575	6277.3710	4.603	6959.4358	4.593	6981.2547	4.629
6271.2381	4.573	6277.3850	4.603	6959.4923	4.589	6981.2881	4.628
6271.2551	4.574	6277.3986	4.601	6959.5402	4.596	6981.3473	4.626
6271.2848	4.576	6277.4109	4.598	6960.4743	4.591	6981.3972	4.631
6271.3006	4.574	6277.4233	4.598	6960.5010	4.587	6981.4504	4.631
6271.3152	4.576	6278.2331	4.611	6960.5460	4.595	6982.2852	4.620
6271.3302	4.577	6278.2511	4.610	6961.2350	4.608	6982.3252	4.624
6271.3449	4.576	6278.2667	4.611	6961.2631	4.601	6982.3644	4.624
6271.3627	4.581	6278.3642	4.609	6961.2900	4.593	6982.4174	4.623
6271.3762	4.578	6278.3774	4.607	6961.3233	4.588	6982.4689	4.622
6271.3904	4.577	6278.3905	4.604	6961.3556	4.590	6983.2480	4.625
6271.4040	4.576	6278.4035	4.602	6961.3877	4.591	6983.2866	4.629
6271.4179	4.574	6278.4160	4.603	6961.4221	4.599	6983.3307	4.627
6271.4309	4.576	6279.3282	4.619	6961.4675	4.600	6983.4155	4.628
6273.2347	4.583	6279.3427	4.620	6962.2750	4.595	7321.4334	4.531
6273.2557	4.582	6279.3563	4.618	6962.3030	4.591	7321.5075	4.522
6273.2730	4.588	6279.3711	4.615	6962.3361	4.595	7322.2401	4.500
6273.2895	4.587	6279.3843	4.616	6965.2584	4.612	7322.3007	4.508
6273.3050	4.585	6279.4006	4.617	6965.2903	4.612	7322.3563	4.517
6273.3230	4.586	6279.4141	4.611	6965.4033	4.619	7322.4133	4.528
6273.3394	4.585	6281.2376	4.600	6965.4503	4.622	7322.4793	4.525
6273.3549	4.584	6281.2531	4.603	6965.4942	4.616	7322.5458	4.516
6273.3702	4.583	6281.2686	4.605	6965.5419	4.619	7323.2458	4.501
6273.3850	4.586	6281.2823	4.611	6966.2426	4.626	7323.3031	4.507
6273.4006	4.588	6281.2977	4.618	6966.2725	4.625	7323.3584	4.514
6274.2374	4.595	6281.3132	4.621	6966.3036	4.622	7323.4389	4.516
6274.2536	4.601	6281.3277	4.626	6966.3466	4.616	7323.4941	4.514
6274.2686	4.601	6281.3413	4.631	6966.3785	4.617	7328.2743	4.525
6274.2844	4.601	6281.3551	4.630	6966.4096	4.622	7328.3539	4.526
6274.2990	4.603	6281.3695	4.630	6966.4407	4.621	7328.4618	4.520
6274.3136	4.603	6281.3824	4.633	6966.4811	4.623	7329.2680	4.524
6274.3560	4.608	6281.3984	4.628	6966.5191	4.623	7329.3255	4.525
6274.3709	4.604	6281.4115	4.619	6967.2415	4.621	7329.3762	4.526
6274.3843	4.606	6282.3268	4.614	6967.2701	4.621	7329.4373	4.529
6274.4095	4.608	6282.3395	4.613	6967.3071	4.618	7329.4946	4.527
6276.2803	4.592	6282.3518	4.612	6967.3370	4.617	7330.2726	4.514
6276.2951	4.592	6282.3635	4.608	6967.3661	4.617	7330.3269	4.516
6276.3096	4.595	6282.3901	4.597	6967.3994	4.616	7330.3746	4.524
6276.3264	4.596	6282.4024	4.595	6967.4383	4.610	7330.4369	4.526
6276.3415	4.600	6282.4148	4.588	6967.4827	4.609	7330.4923	4.526
6276.3568	4.608	6283.2379	4.592	6967.5216	4.616	7331.2702	4.510
6276.3697	4.612	6283.2518	4.594	6968.2374	4.610	7331.3287	4.523
6276.3831	4.615	6283.2659	4.595	6968.2649	4.614	7331.3809	4.522
6276.3964	4.620	6283.2801	4.595	6968.2928	4.609	7331.4504	4.519
6276.4091	4.612	6283.2974	4.596	6968.3186	4.592	7331.5105	4.544
6276.4226	4.617	6283.3110	4.593	6972.2905	4.586		
6277.2328	4.593	6283.3245	4.589	6972.3325	4.578		
6277.2473	4.598	6283.3375	4.587	6973.4027	4.580		
6277.2611	4.601	6283.3501	4.584	6978.2521	4.614		
6277.2751	4.607	6283.3633	4.580	6978.2902	4.610		
6277.2887	4.604	6283.3766	4.578	6978.3327	4.611		
6277.3036	4.602	6283.3897	4.578	6978.3822	4.616		
6277.3168	4.604	6283.4034	4.580	6978.4378	4.616		
6277.3310	4.603	6959.2458	4.598	6980.3218	4.627		
6277.3446	4.606	6959.2892	4.582	6980.3681	4.628		
6277.3583	4.603	6959.3273	4.602	6980.4079	4.628		
		6959.3649	4.607	6980.4649	4.629		
		6959.4017	4.603	6980.5080	4.628		

HR 6175

HJD	b	HJD	b	HJD	b	HJD	b
6271.2420	2.670	6277.3874	2.666	6959.5413	2.670	6981.4515	2.654
6271.2577	2.668	6277.4009	2.662	6960.4753	2.665	6982.2864	2.658
6271.2877	2.668	6277.4133	2.663	6960.5019	2.658	6982.3265	2.665
6271.3039	2.670	6277.4258	2.662	6960.5470	2.650	6982.3655	2.664
6271.3182	2.670	6278.2356	2.663	6961.2359	2.664	6982.4187	2.659
6271.3330	2.675	6278.2539	2.666	6961.2640	2.664	6982.4701	2.661
6271.3475	2.677	6278.3537	2.677	6961.2909	2.655	6983.2498	2.662
6271.3654	2.678	6278.3665	2.672	6961.3241	2.656	6983.2878	2.659
6271.3793	2.676	6278.3799	2.674	6961.3564	2.660	6983.3319	2.665
6271.3931	2.678	6278.3929	2.671	6961.3886	2.655	6983.4171	2.652
6271.4065	2.670	6278.4058	2.672	6961.4230	2.658	7321.4352	2.680
6271.4204	2.663	6278.4183	2.664	6961.4684	2.656	7321.5105	2.679
6271.4335	2.662	6279.3310	2.671	6962.2761	2.662	7322.2425	2.670
6273.2396	2.670	6279.3454	2.667	6962.3042	2.661	7322.3027	2.653
6273.2583	2.672	6279.3589	2.666	6962.3374	2.659	7322.3587	2.651
6273.2758	2.672	6279.3736	2.660	6965.2596	2.662	7322.4157	2.655
6273.2922	2.673	6279.3869	2.657	6965.2914	2.660	7322.4872	2.674
6273.3084	2.674	6279.4039	2.660	6965.4045	2.658	7322.5477	2.685
6273.3255	2.674	6279.4168	2.658	6965.4514	2.659	7323.2480	2.671
6273.3424	2.671	6281.2402	2.664	6965.4951	2.660	7323.3050	2.654
6273.3577	2.667	6281.2570	2.661	6965.5429	2.661	7323.3607	2.658
6273.3728	2.667	6281.2710	2.658	6966.2437	2.664	7323.4413	2.650
6273.3877	2.665	6281.2854	2.657	6966.2739	2.665	7323.4967	2.665
6273.4032	2.666	6281.3002	2.654	6966.3047	2.662	7328.2803	2.660
6274.2400	2.683	6281.3156	2.655	6966.3478	2.657	7328.3579	2.658
6274.2566	2.687	6281.3300	2.657	6966.3794	2.655	7328.4727	2.654
6274.2728	2.685	6281.3436	2.664	6966.4106	2.656	7329.2705	2.645
6274.2869	2.685	6281.3575	2.667	6966.4415	2.659	7329.3285	2.643
6274.3017	2.681	6281.3718	2.669	6966.4820	2.662	7329.3788	2.637
6274.3163	2.681	6281.3850	2.683	6966.5201	2.658	7329.4396	2.640
6274.3589	2.678	6281.4009	2.675	6967.2425	2.659	7329.4967	2.641
6274.3734	2.679	6281.4138	2.681	6967.2710	2.658	7330.2750	2.673
6274.3867	2.678	6282.3291	2.664	6967.3079	2.659	7330.3292	2.676
6274.4119	2.682	6282.3417	2.664	6967.3379	2.658	7330.3770	2.684
6276.2837	2.645	6282.3540	2.663	6967.3671	2.659	7330.4397	2.692
6276.2975	2.658	6282.3658	2.667	6967.4003	2.664	7330.4971	2.698
6276.3147	2.660	6282.3924	2.663	6967.4391	2.659	7331.2728	2.710
6276.3289	2.663	6282.4047	2.667	6967.4838	2.663	7331.3311	2.693
6276.3440	2.673	6282.4162	2.666	6967.5227	2.663	7331.3837	2.692
6276.3594	2.672	6283.2404	2.658	6968.2383	2.662	7331.4528	2.696
6276.3721	2.676	6283.2542	2.658	6968.2660	2.662		
6276.3853	2.676	6283.2686	2.659	6968.2940	2.657		
6276.3986	2.675	6283.2827	2.664	6972.2917	2.666		
6276.4114	2.668	6283.2999	2.667	6972.3336	2.659		
6276.4250	2.678	6283.3135	2.671	6973.4044	2.659		
6277.2355	2.652	6283.3271	2.672	6978.2533	2.657		
6277.2498	2.656	6283.3400	2.671	6978.2913	2.660		
6277.2636	2.659	6283.3526	2.668	6978.3338	2.656		
6277.2776	2.664	6283.3657	2.666	6978.3834	2.658		
6277.2911	2.662	6283.3789	2.663	6978.4397	2.657		
6277.3059	2.668	6283.3921	2.664	6980.3234	2.657		
6277.3191	2.670	6283.4056	2.667	6980.3692	2.661		
6277.3336	2.673	6959.2468	2.654	6980.4090	2.659		
6277.3470	2.675	6959.3283	2.657	6980.4661	2.657		
6277.3605	2.673	6959.3659	2.662	6981.2559	2.660		
6277.3732	2.669	6959.4025	2.666	6981.2892	2.655		
		6959.4369	2.660	6981.3484	2.655		
		6959.4935	2.658	6981.3983	2.665		

HR 6451

HJD	b	HJD	b	HJD	b	HJD	b
6271.2496	5.286	6277.4065	5.265	6676.4017	5.278	6693.2468	5.239
6271.2796	5.270	6277.4189	5.262	6677.3386	5.253	6693.2698	5.247
6271.2949	5.258	6277.4311	5.263	6677.3580	5.254	6693.2912	5.264
6271.3109	5.249	6278.2454	5.251	6677.3811	5.257	6693.3144	5.275
6271.3252	5.235	6278.2615	5.245	6677.4028	5.268	6693.3399	5.266
6271.3396	5.228	6278.3601	5.249	6680.2154	5.250	6693.3661	5.263
6271.3552	5.225	6278.3729	5.250	6680.2390	5.248	6694.2288	5.219
6271.3715	5.222	6278.3861	5.250	6680.2562	5.248	6694.2521	5.203
6271.3855	5.217	6278.3996	5.255	6680.2752	5.247	6694.2756	5.224
6271.3992	5.217	6278.4122	5.256	6680.2932	5.253	6694.2995	5.215
6271.4131	5.220	6278.4245	5.259	6680.3115	5.258	6694.3288	5.228
6271.4262	5.226	6278.4334	5.260	6680.3295	5.260	6694.3563	5.248
6271.4395	5.234	6279.3381	5.228	6680.3475	5.255	6695.2499	5.313
6271.4494	5.239	6279.3522	5.228	6680.3695	5.254	6695.2740	5.282
6273.2487	5.258	6279.3653	5.228	6682.2195	5.268	6695.2969	5.264
6273.2652	5.263	6279.3798	5.228	6682.2421	5.260	6695.3234	5.215
6273.2834	5.266	6279.3933	5.233	6682.2595	5.254	6695.3494	5.203
6273.2992	5.260	6279.4099	5.244	6682.2757	5.245	6696.2475	5.260
6273.3170	5.256	6279.4229	5.248	6682.2928	5.249	6696.2701	5.265
6273.3331	5.249	6281.2480	5.236	6682.3103	5.253	6696.2921	5.278
6273.3491	5.243	6281.2637	5.248	6682.3271	5.251	6696.3146	5.292
6273.3642	5.240	6281.2776	5.252	6682.3649	5.263	6696.3407	5.311
6273.3795	5.243	6281.2926	5.258	6682.3841	5.270	6697.2369	5.223
6273.3950	5.248	6281.3075	5.261	6684.3074	5.251	6697.2586	5.228
6273.4096	5.249	6281.3227	5.264	6684.3130	5.244	6697.2818	5.228
6274.2477	5.236	6281.3367	5.266	6684.3319	5.255	6697.3045	5.234
6274.2630	5.239	6281.3513	5.264	6684.3510	5.246	6697.3294	5.245
6274.2791	5.249	6281.3650	5.260	6684.3759	5.245	6697.3533	5.238
6274.2931	5.255	6281.3782	5.255	6686.2272	5.266	6698.2426	5.237
6274.3079	5.258	6281.3943	5.251	6686.2457	5.263	6698.2637	5.216
6274.3654	5.260	6281.4075	5.250	6686.2631	5.264	6698.2850	5.224
6274.3794	5.259	6281.4205	5.244	6686.2802	5.264	6698.3088	5.219
6274.4175	5.257	6281.4302	5.240	6686.2977	5.266	6698.3297	5.220
6276.2905	5.230	6282.3356	5.276	6686.3147	5.270	6699.2392	5.234
6276.3044	5.234	6282.3479	5.273	6686.3319	5.271	6699.2621	5.234
6276.3216	5.233	6282.3600	5.269	6686.3514	5.274	6700.2393	5.263
6276.3357	5.245	6282.3718	5.262	6686.3699	5.275	6700.2621	5.256
6276.3498	5.258	6282.3986	5.251	6686.3883	5.272	6700.2840	5.245
6276.3651	5.264	6282.4108	5.249	6688.2207	5.246	6700.3089	5.231
6276.3781	5.266	6282.4223	5.247	6688.2441	5.252	6700.3330	5.229
6276.3910	5.262	6282.4302	5.248	6688.2625	5.250	6703.2598	5.209
6276.4043	5.264	6282.4378	5.250	6688.2807	5.233	6703.2811	5.232
6276.4172	5.256	6282.4455	5.248	6688.2987	5.264	6703.3040	5.236
6276.4308	5.246	6283.2468	5.238	6688.3173	5.272	6703.3262	5.235
6277.2422	5.255	6283.2608	5.234	6690.2293	5.256	6959.2512	5.225
6277.2558	5.257	6283.2754	5.232	6690.2605	5.249	6959.3379	5.234
6277.2698	5.253	6283.2929	5.234	6690.2866	5.251	6959.3751	5.229
6277.2837	5.252	6283.3063	5.236	6690.3125	5.254	6959.4119	5.226
6277.2982	5.250	6283.3201	5.240	6690.3479	5.245	6959.4572	5.234
6277.3120	5.250	6283.3333	5.247	6690.3753	5.253	6959.5075	5.257
6277.3261	5.251	6283.3459	5.250	6691.2271	5.288	6959.5544	5.274
6277.3398	5.256	6283.3586	5.259	6691.2768	5.277	6959.5801	5.281
6277.3535	5.259	6283.3722	5.264	6691.2982	5.268	6960.4795	5.240
6277.3662	5.264	6283.3851	5.269	6691.3232	5.262	6960.5062	5.243
6277.3787	5.262	6283.3983	5.273	6691.3486	5.247	6960.5512	5.249
6277.3940	5.266	6283.4119	5.274	6691.3721	5.262	6960.5826	5.260
		6676.3675	5.270	6692.2241	5.270	6960.6028	5.263
		6676.3848	5.273	6693.2240	5.228	6960.6214	5.269

TABLE IIa (*continued*)

HR 6451

HJD	b	HJD	b	HJD	b
		6972.3387	5.280	7328.5936	5.207
		6972.5204	5.242	7329.2879	5.168
6961.2414	5.258	6972.5434	5.247	7329.3419	5.203
6961.2673	5.267	6972.5646	5.248	7329.3918	5.273
6961.2945	5.248	6972.5868	5.252	7329.4514	5.271
6961.3277	5.235	6973.4105	5.268	7329.5100	5.254
6961.3603	5.231	6975.5615	5.249	7329.5476	5.236
6961.3922	5.235	6978.2589	5.238	7329.6029	5.201
6961.4267	5.240	6978.2973	5.238	7330.2900	5.219
6961.4728	5.248	6978.3389	5.241	7330.3417	5.201
6962.2798	5.226	6978.3888	5.249	7330.3900	5.199
6962.3082	5.224	6978.4448	5.267	7330.4527	5.202
6962.3411	5.241	6978.4971	5.268	7330.5089	5.170
6962.5534	5.229	6978.5364	5.257	7330.5453	5.186
6962.5807	5.228	6978.5564	5.249	7330.5817	5.190
6962.6106	5.226	6978.5755	5.244	7331.2879	5.242
6965.2641	5.220	6980.3287	5.238	7331.3451	5.250
6965.2953	5.223	6980.3741	5.237	7331.4013	5.229
6965.4084	5.265	6980.4136	5.242	7331.4665	5.226
6965.4552	5.276	6980.4713	5.259	7331.4671	5.223
6965.4990	5.273	6980.5113	5.263	7331.4677	5.221
6965.5461	5.249	6980.5421	5.258	7331.4682	5.218
6965.5914	5.239	6980.5607	5.251	7331.4687	5.221
6965.6135	5.249	6980.5783	5.247	7331.4692	5.221
6966.2484	5.259	6981.2610	5.255	7331.5250	5.225
6966.2777	5.263	6981.2937	5.271	7331.5665	5.218
6966.3121	5.258	6981.3532	5.268	7332.5677	5.243
6966.3512	5.250	6981.4029	5.239	7332.5683	5.240
6966.3830	5.239	6981.4581	5.215	7332.5689	5.238
6966.4142	5.229	6981.4985	5.228	7332.6038	5.240
6966.4450	5.233	6981.5313	5.239		
6966.4856	5.250	6981.5542	5.263		
6966.5254	5.257	6982.2914	5.222		
6966.5659	5.255	6982.3316	5.246		
6966.5828	5.255	6982.3702	5.282		
6966.5986	5.255	6982.4236	5.303		
6966.6136	5.258	6982.4745	5.279		
6967.2465	5.256	6983.2549	5.264		
6967.2747	5.265	6983.2925	5.258		
6967.3113	5.261	6983.3381	5.249		
6967.3411	5.249	6983.4237	5.262		
6967.3772	5.249	7321.4397	5.240		
6967.4039	5.246	7321.5138	5.245		
6967.4426	5.234	7321.5852	5.246		
6967.4874	5.245	7322.2454	5.224		
6967.5274	5.256	7322.3054	5.244		
6967.5678	5.256	7322.3637	5.267		
6967.5830	5.257	7322.4184	5.265		
6967.5987	5.254	7322.4904	5.256		
6967.6154	5.258	7322.5502	5.245		
6968.2419	5.244	7322.5940	5.243		
6968.2695	5.247	7322.6282	5.246		
6968.2974	5.251	7323.2624	5.244		
6968.3225	5.247	7323.3174	5.224		
6970.5270	5.238	7323.4554	5.263		
6970.5659	5.228	7328.3075	5.203		
6970.5905	5.228	7328.4908	5.204		
6972.3000	5.273	7328.5491	5.210		

HR 6510

HJD	b	HJD	b	HJD	b	HJD	b
		6277.3967	2.833	6676.3866	3.124	6691.3507	3.089
		6277.4090	2.831	6676.4035	3.130	6691.3742	3.093
6271.2525	2.818	6277.4214	2.826	6677.3404	3.110	6692.2260	3.064
6271.2825	2.829	6277.4337	2.824	6677.3599	3.117	6693.2259	3.049
6271.2975	2.836	6278.2485	2.846	6677.3830	3.124	6693.2492	3.042
6271.3131	2.836	6278.2639	2.839	6677.4044	3.121	6693.2721	3.034
6271.3280	2.839	6278.3624	2.832	6680.2181	3.104	6693.2934	3.037
6271.3423	2.845	6278.3753	2.830	6680.2415	3.107	6693.3185	3.046
6271.3587	2.843	6278.3885	2.824	6680.2580	3.113	6693.3423	3.039
6271.3740	2.841	6278.4019	2.828	6680.2770	3.116	6693.3681	3.041
6271.3883	2.841	6278.4145	2.822	6680.2951	3.118	6694.2309	3.005
6271.4018	2.836	6278.4268	2.820	6680.3134	3.121	6694.2543	3.038
6271.4158	2.835	6278.4357	2.818	6680.3312	3.118	6694.2778	3.054
6271.4285	2.832	6279.3406	2.833	6680.3493	3.122	6694.3016	3.053
6271.4424	2.827	6279.3546	2.829	6680.3712	3.122	6694.3309	3.058
6271.4520	2.822	6279.3676	2.823	6680.3902	3.112	6694.3586	3.062
6273.2531	2.851	6279.3822	2.824	6682.2220	3.120	6695.2520	3.016
6273.2704	2.849	6279.3967	2.824	6682.2438	3.117	6695.2762	3.030
6273.2867	2.851	6279.4122	2.822	6682.2612	3.104	6695.2993	3.012
6273.3022	2.858	6279.4254	2.820	6682.2780	3.100	6695.3254	3.041
6273.3202	2.852	6281.2509	2.844	6682.2946	3.095	6695.3517	3.057
6273.3366	2.850	6281.2660	2.841	6682.3121	3.085	6696.2496	3.051
6273.3523	2.844	6281.2799	2.836	6682.3288	3.082	6696.2721	3.056
6273.3677	2.837	6281.2955	2.829	6682.3480	3.076	6696.2942	3.068
6273.3826	2.831	6281.3107	2.821	6682.3667	3.076	6696.3172	3.080
6273.3980	2.826	6281.3257	2.819	6682.4043	3.083	6696.3429	3.083
6273.4125	2.826	6281.3394	2.818	6684.3098	3.094	6697.2391	3.073
6274.2505	2.847	6281.3536	2.815	6684.3148	3.101	6697.2609	3.069
6274.2660	2.847	6281.3681	2.812	6684.3339	3.096	6697.2840	3.067
6274.2817	2.848	6281.3806	2.813	6684.3529	3.083	6697.3071	3.076
6274.2963	2.846	6281.3967	2.812	6684.3779	3.083	6697.3317	3.088
6274.3109	2.845	6281.4097	2.812	6684.4018	3.087	6697.3555	3.089
6274.3685	2.830	6281.4229	2.817	6686.2293	3.080	6698.2447	3.047
6274.3822	2.830	6281.4324	2.819	6686.2476	3.076	6698.2658	3.063
6274.4073	2.824	6282.3377	2.820	6686.2649	3.075	6698.2872	3.074
6274.4207	2.827	6282.3501	2.820	6686.2823	3.067	6698.3110	3.071
6276.2928	2.860	6282.3621	2.819	6686.2995	3.059	6698.3325	3.095
6276.3075	2.850	6282.3741	2.820	6686.3165	3.049	6699.2414	3.065
6276.3243	2.853	6282.4009	2.822	6686.3336	3.039	6699.2642	3.066
6276.3384	2.852	6282.4130	2.824	6686.3532	3.024	6700.2415	3.072
6276.3546	2.843	6282.4245	2.826	6686.3717	3.012	6700.2640	3 064
6276.3678	2.836	6282.4323	2.827	6686.3901	3.005	6700.2861	3 066
6276.3809	2.833	6282.4400	2.830	6688.2234	3.080	6700.3110	3.084
6276.3943	2.834	6282.4478	2.830	6688.2462	3.096	6700.3352	3.087
6276.4069	2.837	6283.2494	2.830	6688.2642	3.063	6703.2618	3.081
6276.4202	2.828	6283.2632	2.829	6688.2824	3.073	6703.2831	3.096
6276.4336	2.831	6283.2777	2.824	6688.3005	3.064	6703.3059	3.089
6277.2451	2.850	6283.2952	2.819	6688.3193	3.066	6703.3286	3.092
6277.2587	2.855	6283.3087	2.821	6690.2319	3.110	6959.2629	2.820
6277.2725	2.854	6283.3225	2.814	6690.2633	3.099	6959.3405	2.831
6277.2865	2.851	6283.3355	2.818	6690.2892	3.109	6959.3779	2.830
6277.3013	2.851	6283.3482	2.818	6690 3145	3 095	6959.4140	2 820
6277.3146	2.850	6283.3614	2.821	6690.3509	3.089	6959.4610	2.805
6277.3288	2.847	6283.3748	2.824	6690.3783	3.068	6959.5094	2 800
6277.3425	2.847	6283.3878	2 826	6691.2293	3.097	6959.5515	2 802
6277.3562	2.841	6283.4013	2.829	6691.2793	3 094	6959 5822	2.801
6277.3689	2.839	6283.4145	2.829	6691.3009	3.088	6960 4811	2.793
6277.3814	2.832	6676.3694	3.128	6691.3254	3 088	6960.5077	2 793

HR 6510

HJD	b	HJD	b	HJD	b
		6970.5622	2.822	7328.3750	2.842
		6970.5868	2.811	7328.4930	2.843
6960.5527	2.803	6972.3030	2.799	7328.5512	2.864
6960.5845	2.805	6972.3419	2.805	7328.5957	2.868
6960.6046	2.809	6972.5402	2.826	7329.2897	2.830
6960.6232	2.815	6972.5614	2.830	7329.3438	2.829
6961.2431	2.811	6972.5836	2.829	7329.3936	2.817
6961.2691	2.824	6973.4147	2.818	7329.4533	2.825
6961.2961	2.826	6975.5582	2.835	7329.5119	2.852
6961.3292	2.822	6978.2614	2.814	7329.5496	2.857
6961.3620	2.814	6978.3001	2.816	7329.6050	2.848
6961.3939	2.806	6978.3419	2.815	7330.2918	2.834
6961.4281	2.794	6978.3908	2.816	7330.3435	2.825
6961.4744	2.801	6978.4472	2.823	7330.3920	2.820
6962.2818	2.821	6978.4991	2.829	7330.4544	2.842
6962.3104	2.808	6978.5330	2.829	7330.5108	2.848
6962.3435	2.802	6978.5536	2.818	7330.5472	2.853
6962.5558	2.808	6978.5724	2.815	7330.5834	2.836
6962.5828	2.806	6980.3314	2.816	7331.2898	2.827
6962.6137	2.793	6980.3764	2.818	7331.3469	2.820
6965.2659	2.822	6980.4156	2.826	7331.3992	2.822
6965.2997	2.809	6980.4732	2.827	7331.4713	2.856
6965.4102	2.803	6980.5141	2.822	7331.5270	2.849
6965.4573	2.808	6980.5391	2.816	7331.5685	2.839
6965.5012	2.812	6980.5577	2.808	7332.5714	2.829
6965.5488	2.806	6980.5756	2.803		
6965.6110	2.813	6981.2631	2.820		
6966.2504	2.822	6981.2957	2.821		
6966.2795	2.807	6981.3551	2.818		
6966.3138	2.799	6981.4049	2.825		
6966.3529	2.803	6981.4618	2.823		
6966.3849	2.805	6981.5009	2.816		
6966.4158	2.805	6981.5273	2.811		
6966.4467	2.814	6981.5506	2.786		
6966.4872	2.805	6982.2934	2.823		
6966.5338	2.804	6982.3344	2.819		
6966.5637	2.807	6982.3727	2.817		
6966.5802	2.811	6982.4255	2.818		
6966.5963	2.814	6982.4768	2.813		
6966.6114	2.804	6983.2577	2.815		
6967.2488	2.817	6983.2950	2.821		
6967.2764	2.809	6983.3403	2.826		
6967.3129	2.804	7321.4434	2.837		
6967.3428	2.801	7321.5181	2.832		
6967.3790	2.799	7321.5871	2.827		
6967.4058	2.809	7322.2472	2.840		
6967.4441	2.801	7322.3071	2.821		
6967.4892	2.802	7322.3654	2.819		
6967.5378	2.806	7322.4201	2.827		
6967.5656	2.808	7322.4921	2.829		
6967.5803	2.812	7322.5520	2.821		
6967.5963	2.815	7322.5957	2.837		
6967.6132	2.823	7322.6300	2.845		
6968.2438	2.814	7323.2647	2.830		
6968.2712	2.816	7323.3193	2.813		
6968.2991	2.810	7323.3755	2.781		
6968.3240	2.819	7323.4572	2.835		
6970.5298	2.817	7328.3096	2.845		

HR 6747

HJD	b	HJD	b	HJD	b	HJD	b
		6277.3768	6.205	6959.3012	6.210	6981.5052	6 206
		6277.3912	6.202	6959.3339	6.212	6982.2979	6 202
6271.2464	6.196	6277.4045	6.198	6959.3712	6.200	6982.3418	6.202
6271.2768	6.196	6277.4170	6.197	6959.4061	6.213	6982.3794	6.202
6271.2923	6.197	6277.4293	6.197	6959 4406	6.210	6982.4325	6.203
6271.3078	6.197	6278.2401	6.205	6959.4987	6.202	6982.4830	6.206
6271.3222	6.198	6278.2584	6.209	6959.5448	6.216	6983.2993	6.202
6271.3369	6.200	6278.3577	6.206	6959.5871	6.214	6983.3449	6.202
6271.3517	6.200	6278.3706	6.205	6960.5130	6.201		
6271.3692	6.201	6278.3838	6.204	6960.5606	6.201		
6271.3832	6.202	6278.3968	6.205	6960.5883	6.203		
6271.3969	6.203	6278.4099	6.205	6961.3025	6.201		
6271.4101	6.203	6278.4222	6.204	6961.3341	6.204		
6271.4242	6.203	6278.4311	6.203	6961.3665	6.206		
6271.4372	6.208	6279.3352	6.199	6961.3987	6.207		
6271.4470	6.207	6279.3497	6.202	6961.4345	6.202		
6273.2445	6.207	6279.3630	6.203	6961.4792	6.204		
6273.2626	6.213	6279.3776	6.207	6962.3153	6.218		
6273.2805	6.210	6279.3907	6.212	6962.3482	6.199		
6273.2964	6.206	6279.4076	6.213	6962.5332	6.207		
6273.3142	6.209	6279.4206	6.214	6962.5603	6.204		
6273.3295	6.210	6281.2453	6.214	6962.5873	6.206		
6273.3463	6.211	6281.2612	6.211	6965.4154	6.198		
6273.3618	6.211	6281.2750	6.211	6965.4624	6.192		
6273.3770	6.211	6281.2893	6.210	6965.5133	6.196		
6273.3923	6.210	6281.3048	6.210	6965.5561	6.194		
6273.4071	6.208	6281.3199	6.212	6966.3187	6.197		
6274.2440	6.215	6281.3343	6.217	6966.3571	6.196		
6274.2603	6.209	6281.3482	6.214	6966.3893	6.197		
6274.2769	6.211	6281.3617.	6.213	6966.4204	6.194		
6274.2908	6.210	6281.3759	6.214	6966.4514	6.207		
6274.3054	6.209	6281.3920	6.209	6966.4916	6.208		
6274.3201	6.210	6281.4050	6.207	6966.5383	6.206		
6274.3628	6.214	6281.4180	6.209	6966.5589	6 206		
6274.3772	6.217	6281.4274	6.208	6967.2807	6.200		
6274.3904	6.217	6282.3333	6.194	6967.3173	6.207		
6274.4155	6.214	6282.3457	6.194	6967.3467	6.209		
6276.2874	6.202	6282.3577	6.194	6967.3736	6.206		
6276.3016	6.218	6282.3695	6.195	6967.4112	6.208		
6276.3190	6.198	6282.3966	6.201	6967.4496	6.213		
6276.3335	6.202	6282.4086	6.206	6967.4929	6 200		
6276.3476	6.198	6282.4202	6.206	6967.5427	6.198		
6276.3630	6.205	6282.4283	6.207	6967.5626	6 189		
6276.3760	6.205	6282.4355	6.208	6972.3492	6.209		
6276.3890	6.194	6282.4434	6.211	6978.3072	6.203		
6276.4023	6.195	6283.2446	6.197	6978.3510	6.200		
6276.4151	6.188	6283.2583	6.196	6978 4001	6.203		
6276.4287	6.203	6283.2731	6.194	6978.4584	6.201		
6277.2399	6.207	6283.2887	6.198	6978.5089	6.194		
6277.2536	6.218	6283.3039	6.196	6980.3387	6.202		
6277.2673	6.215	6283.3174	6.199	6980.3806	6.201		
6277.2814	6.209	6283.3312	6.200	6980.4223	6.203		
6277.2949	6.213	6283.3439	6.204	6980 4805	6.211		
6277.3096	6.206	6283.3566	6.205	6980.5182	6.206		
6277.3236	6.210	6283.3700	6.208	6981.3001	6.198		
6277.3375	6.210	6283.3833	6.206	6981.3617	6.212		
6277.3509	6.209	6283.3963	6.207	6981.4133	6.216		
6277.3643	6.206	6283.4099	6.204	6981.4696	6.206		

TABLE IIa (*continued*)

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HJD	b	HJD	b	HJD	b	HJD	b
		6278.6244	4.414	6363.3383	4.423	6682.4108	4.434
		6278.6377	4.413	6363.3541	4.423	6682.4259	4.430
6271.4769	4.431	6278.6490	4.425	6363.3698	4.419	6682.4418	4.431
6271.4901	4.432	6281.4625	4.427	6363.3847	4.421	6682.4565	4.433
6271.5035	4.429	6281.4756	4.428	6363.4002	4.423	6682.4736	4.435
6271.5166	4.429	6281.4870	4.426	6364.2602	4.421	6682.4886	4.433
6272.5434	4.428	6281.4989	4.426	6364.2770	4.419	6682.5042	4.436
6272.5557	4.431	6281.5119	4.422	6367.2909	4.446	6682.5199	4.435
6272.5697	4.433	6281.5236	4.421	6367.3075	4.453	6682.5357	4.437
6272.5832	4.430	6281.5368	4.418	6676.3762	4.437	6682.5536	4.436
6274.5166	4.438	6281.5499	4.417	6676.3932	4.437	6684.3218	4.424
6274.5292	4.439	6281.5619	4.417	6676.4102	4.437	6684.3414	4.423
6274.5401	4.437	6281.5750	4.417	6676.4275	4.440	6684.3629	4.427
6274.5515	4.435	6281.5861	4.412	6676.4440	4.443	6684.3850	4.430
6276.4542	4.417	6281.5975	4.411	6676.4626	4.442	6684.4088	4.427
6276.4677	4.415	6281.6084	4.409	6676.4820	4.447	6684.4260	4.433
6276.4794	4.414	6281.6205	4.407	6676.5037	4.451	6684.4416	4.431
6276.4907	4.414	6281.6313	4.410	6676.5202	4.448	6684.4585	4.414
6276.5022	4.417	6282.4729	4.411	6676.5371	4.447	6684.5027	4.454
6276.5141	4.417	6282.4844	4.408	6676.5536	4.448	6684.5179	4.436
6276.5252	4.415	6282.4960	4.411	6677.3473	4.414	6686.2367	4.422
6276.5377	4.415	6282.5070	4.413	6677.3667	4.434	6686.2546	4.425
6276.5503	4.417	6282.5181	4.417	6677.3898	4.436	6686.2722	4.424
6276.5633	4.414	6282.5294	4.419	6677.4109	4.435	6686.2895	4.428
6276.5745	4.415	6282.5400	4.421	6677.4288	4.441	6686.3068	4.427
6276.5848	4.417	6282.5508	4.422	6677.4454	4.448	6686.3234	4.430
6276.5973	4.413	6282.5675	4.421	6677.4618	4.443	6686.3406	4.432
6276.6082	4.409	6282.5800	4.424	6677.4783	4.447	6686.3599	4.429
6276.6183	4.411	6282.5926	4.422	6677.4977	4.453	6686.3786	4.429
6276.6287	4.412	6282.6047	4.424	6677.5132	4.451	6686.3970	4.433
6276.6391	4.413	6282.6166	4.421	6677.5325	4.440	6686.4127	4.435
6276.6494	4.414	6282.6286	4.420	6677.5538	4.462	6686.4279	4.436
6277.4611	4.413	6282.6401	4.419	6680.2267	4.427	6686.4432	4.436
6277.4735	4.412	6334.3637	4.563	6680.2489	4.429	6686.4578	4.439
6277.4844	4.415	6334.3843	4.563	6680.2654	4.430	6686.4735	4.442
6277.4961	4.417	6334.4028	4.563	6680.2845	4.429	6686.4890	4.439
6277.5070	4.418	6334.4203	4.560	6680.3027	4.430	6686.5066	4.442
6277.5190	4.417	6334.4368	4.554	6680.3205	4.436	6686.5228	4.441
6277.5305	4.422	6334.4543	4.555	6680.3383	4.436	6686.5397	4.444
6277.5414	4.419	6334.4702	4.549	6680.3560	4.434	6688.2308	4.401
6277.5560	4.415	6334.4874	4.546	6680.3777	4.436	6688.2540	4.430
6277.6151	4.421	6338.3944	4.490	6680.3996	4.437	6688.2716	4.415
6277.6267	4.416	6338.4120	4.485	6680.4287	4.441	6688.2896	4.417
6277.6373	4.420	6338.4271	4.483	6680.4388	4.442	6688.3076	4.421
6277.6479	4.414	6338.4433	4.483	6680.4540	4.441	6688.3267	4.423
6277.6552	4.410	6338.4580	4.488	6680.4736	4.442	6690.2412	4.418
6278.4497	4.423	6338.4731	4.481	6680.4975	4.444	6690.2719	4.430
6278.4872	4.419	6339.3485	4.467	6680.5145	4.445	6690.2971	4.428
6278.5007	4.418	6339.3657	4.467	6682.2295	4.418	6690.3220	4.433
6278.5137	4.413	6339.3813	4.468	6682.2506	4.418	6690.3587	4.430
6278.5262	4.414	6339.4034	4.471	6682.2683	4.417	6690.3862	4.428
6278.5389	4.408	6339.4191	4.471	6682.2848	4.421	6690.4145	4.434
6278.5513	4.412	6339.4343	4.471	6682.3012	4.422	6690.4378	4.435
6278.5644	4.410	6339.4561	4.465	6682.3187	4.425	6690.4644	4.434
6278.5768	4.407	6363.2663	4.424	6682.3356	4.422	6690.4852	4.432
6278.5890	4.407	6363.2835	4.423	6682.3545	4.426	6690.5047	4.427
6278.6008	4.411	6363.3067	4.423	6682.3739	4.427	6690.5271	4.425
6278.6129	4.412	6363.3226	4.424	6682.3924	4.423	6691.2376	4.425

HR 8260

HJD	b	HJD	b	HJD	b	HJD	b
		6696.3946	4.439	6962.5653	4.369	6978.5594	4.353
		6696.4163	4.432	6962.5880	4.369	6978.5786	4.353
6691.2644	4.424	6696.4374	4.434	6962.6141	4.379	6978.5939	4.356
6691.2874	4.427	6697.2471	4.425	6965.4169	4.367	6980.4281	4.352
6691.3089	4.424	6697.2690	4.426	6965.4632	4.364	6980.4845	4.350
6691.3333	4.428	6697.2927	4.435	6965.5139	4.370	6980.5245	4.350
6691.3585	4.432	6697.3161	4.435	6965.5574	4.369	6980.5453	4.351
6691.3818	4.432	6697.3391	4.445	6965.6218	4.362	6980.5638	4.349
6691.4031	4.432	6697.3647	4.430	6965.6369	4.362	6980.5817	4.345
6691.4214	4.432	6697.3859	4.431	6965.6520	4.362	6980.5956	4.343
6691.4387	4.434	6697.4071	4.429	6966.4534	4.360	6980.6085	4.341
6691.4628	4.435	6698.2526	4.417	6966.4938	4.364	6980.6229	4.340
6691.4803	4.436	6698.2735	4.427	6966.5399	4.365	6980.6362	4.341
6691.4969	4.438	6698.2952	4.427	6966.5671	4.366	6980.6483	4.342
6691.5146	4.434	6698.3185	4.427	6966.5840	4.367	6980.6606	4.341
6692.4238	4.438	6698.3418	4.434	6966.5996	4.366	6981.3684	4.354
6692.4465	4.436	6698.3622	4.437	6966.6150	4.372	6981.4202	4.358
6692.4671	4.434	6699.2498	4.434	6966.6330	4.366	6981.4767	4.356
6692.4892	4.438	6699.2723	4.438	6966.6484	4.369	6981.5123	4.349
6692.5119	4.438	6700.2496	4.431	6967.4131	4.362	6981.5360	4.346
6693.2342	4.423	6700.2720	4.430	6967.4512	4.367	6981.5615	4.343
6693.2578	4.424	6700.2946	4.433	6967.4948	4.360	6981.5778	4.354
6693.2803	4.425	6700.3192	4.430	6967.5443	4.354	6981.6018	4.347
6693.3030	4.433	6700.3453	4.426	6967.5690	4.348	6981.6165	4.353
6693.3262	4.434	6702.4444	4.432	6967.5842	4.355	6981.6307	4.348
6693.3524	4.436	6702.4665	4.431	6967.6004	4.356	6981.6458	4.340
6693.3766	4.437	6702.4865	4.435	6967.6167	4.358	6981.6597	4.341
6693.3996	4.438	6703.2701	4.435	6967.6299	4.356	6982.3859	4.353
6693.4194	4.437	6703.2910	4.426	6967.6409	4.359	6982 4385	4 355
6693.4389	4.438	6703.3147	4.428	6967.6514	4.358	6983.5908	4.348
6693.4650	4.444	6703.3373	4.433	6970.5399	4.365	6983.6052	4.348
6693.4876	4.445	6703.3569	4.433	6970.5701	4.365	6983.6289	4.348
6693.5092	4.456	6703.3779	4.434	6970.5968	4.355	6983.6434	4.348
6694.2395	4.419	6703.3984	4.434	6970.6248	4.357	6983.6556	4.348
6694.2624	4.421	6703.4184	4.436	6970.6431	4.357	7321.4888	4.467
6694.2857	4.434	6703.4391	4.433	6972.5242	4.357	7321.5662	4.451
6694.3096	4.418	6703.4722	4.433	6972.5463	4.356	7322.4384	4.416
6694.3387	4.432	6959.4441	4.380	6972.5674	4.354	7322.5107	4.440
6694.3664	4.429	6959.5103	4.370	6972.5894	4.357	7322.5709	4.468
6694.3882	4.431	6959.5570	4.364	6972.6021	4.357	7322.6140	4.482
6694.4113	4.441	6959.5891	4.361	6972.6158	4.360	7327.6088	4.474
6694.4356	4.434	6959.6119	4.359	6972.6288	4.361	7328.5135	4.492
6695.2616	4.424	6959.6296	4.372	6972.6416	4.359	7328.5675	4.484
6695.2841	4.444	6959.6458	4.357	6972.6542	4.365	7328.6114	4.489
6695.3071	4.430	6959.6586	4.356	6972.6666	4.367	7328.6558	4.501
6695.3343	4.436	6959.6716	4.355	6972.6802	4.368	7329.4096	4.529
6695.3605	4.435	6960.5149	4.369	6975.5424	4.359	7329.4673	4.533
6695.3833	4.435	6960.5630	4.371	6975.5651	4.355	7329.5264	4.528
6695.4048	4.438	6960.5891	4.368	6975.5823	4.352	7329.5846	4.536
6695.4267	4.438	6960.6057	4.365	6975.5976	4.352	7329.6198	4.537
6695.4505	4.440	6960.6241	4.363	6975.6122	4.350	7329.6659	4.534
6695.5063	4.434	6960.6371	4.366	6975.6270	4.350	7329.6779	4.530
6696.2577	4.430	6960.6483	4.363	6975.6415	4.352	7330.4067	4.522
6696.2796	4.427	6960.6602	4.361	6975.6562	4.355	7330.4123	4.528
6696.3018	4.428	6960.6723	4.362	6978.4068	4.347	7330.4691	4.532
6696.3249	4.429	6961.4364	4.369	6978.4629	4.344	7330.5327	4.528
6696.3510	4.433	6961.4801	4.372	6978.5181	4.351	7330.5640	4.538
6696.3726	4.431	6962.5335	4.371	6978.5398	4.355	7330.5967	4.551

HR 8260

HJD	b
7331.4200	4.521
7331.4868	4.526
7331.5534	4.540
7332.5856	4.527

HR 8402

HJD	b	HJD	b	HJD	b	HJD	b
		6278.6184	4.710	6363.3791	4.677	6682.5099	4.685
		6278.6318	4.709	6363.3940	4.675	6682.5250	4.684
6271.4695	4.708	6278.6434	4.702	6364.2538	4.673	6682.5410	4.681
6271.4840	4.709	6281.4552	4.718	6364.2703	4.671	6684.3271	4.687
6271.4968	4.708	6281.4699	4.718	6367.2850	4.676	6684.3468	4.688
6271.5103	4.707	6281.4815	4.717	6367.3011	4.673	6684.3681	4.680
6271.5228	4.706	6281.4932	4.715	6367.3168	4.674	6684.3907	4.669
6272.5376	4.697	6281.5053	4.717	6676.3806	4.688	6684.4141	4.676
6272.5502	4.697	6281.5179	4.716	6676.3984	4.690	6684.4312	4.685
6272.5619	4.696	6281.5311	4.716	6676.4153	4.686	6684.4472	4.693
6274.5097	4.706	6281.5429	4.716	6676.4321	4.688	6684.4636	4.704
6274.5229	4.706	6281.5558	4.711	6676.4503	4.687	6684.5072	4.690
6274.5348	4.707	6281.5678	4.711	6676.4677	4.687	6686.2599	4.686
6274.5463	4.705	6281.5805	4.711	6676.4895	4.688	6686.2772	4.690
6276.4472	4.714	6281.5921	4.710	6676.5090	4.684	6686.2944	4.687
6276.4622	4.715	6281.6030	4.706	6676.5256	4.689	6686.3118	4.689
6276.4743	4.709	6281.6141	4.710	6676.5424	4.686	6686.3279	4.688
6276.4854	4.710	6281.6260	4.709	6677.3521	4.679	6686.3453	4.688
6276.4967	4.710	6282.4668	4.701	6677.3713	4.685	6686.3642	4.689
6276.5086	4.711	6282.4792	4.701	6677.3943	4.682	6686.3837	4.688
6276.5198	4.705	6282.4909	4.700	6677.4159	4.683	6686.4016	4.685
6276.5324	4.706	6282.5021	4.701	6677.4337	4.691	6686.4177	4.688
6276.5447	4.711	6282.5131	4.700	6677.4501	4.685	6686.4326	4.686
6276.5569	4.710	6282.5241	4.699	6677.4665	4.683	6686.4481	4.689
6276.5691	4.711	6282.5352	4.699	6677.4833	4.686	6686.4628	4.683
6276.5796	4.707	6282.5455	4.697	6677.5024	4.686	6686.4783	4.683
6276.5923	4.706	6282.5617	4.697	6677.5185	4.681	6686.4951	4.682
6276.6025	4.708	6282.5750	4.695	6677.5373	4.677	6686.5124	4.683
6276.6133	4.711	6282.5877	4.696	6680.2341	4.679	6686.5285	4.683
6276.6236	4.706	6282.5999	4.697	6680.2543	4.688	6688.2393	4.670
6276.6339	4.704	6282.6119	4.697	6680.2705	4.688	6688.2597	4.694
6276.6442	4.712	6282.6238	4.696	6680.2897	4.686	6688.2773	4.677
6277.4547	4.700	6334.3772	4.715	6680.3075	4.686	6688.2954	4.692
6277.4672	4.702	6334.3944	4.715	6680.3258	4.684	6688.3133	4.687
6277.4792	4.698	6334.4134	4.716	6680.3433	4.685	6688.3320	4.695
6277.4910	4.702	6334.4301	4.714	6680.3612	4.687	6690.2496	4.682
6277.5017	4.697	6334.4465	4.709	6680.3825	4.686	6690.2792	4.680
6277.5130	4.699	6334.4634	4.713	6680.4047	4.685	6690.3043	4.682
6277.5252	4.700	6334.4801	4.710	6680.4230	4.683	6690.3286	4.687
6277.5364	4.696	6338.3871	4.668	6680.4431	4.683	6690.3651	4.685
6277.5494	4.697	6338.4050	4.671	6680.4860	4.684	6690.3939	4.688
6277.6101	4.698	6338.4209	4.672	6680.5026	4.683	6690.4223	4.685
6277.6205	4.698	6338.4370	4.672	6680.5202	4.684	6690.4446	4.688
6277.6322	4.699	6338.4518	4.671	6682.2367	4.679	6690.4708	4.691
6277.6430	4.699	6338.4667	4.675	6682.2559	4.676	6690.4914	4.687
6278.4425	4.707	6339.3416	4.681	6682.2731	4.687	6690.5118	4.683
6278.4568	4.709	6339.3596	4.693	6682.3064	4.684	6691.2447	4.688
6278.4815	4.712	6339.3747	4.689	6682.3235	4.684	6691.2711	4.688
6278.4939	4.711	6339.3953	4.684	6682.3401	4.686	6691.2943	4.693
6278.5073	4.716	6339.4128	4.685	6682.3590	4.683	6691.3160	4.695
6278.5203	4.717	6339.4277	4.680	6682.3787	4.682	6691.3400	4.692
6278.5325	4.716	6363.2576	4.672	6682.3975	4.682	6691.3649	4.685
6278.5450	4.717	6363.2774	4.674	6682.4154	4.691	6691.3879	4.689
6278.5575	4.713	6363.3001	4.675	6682.4303	4.686	6691.4102	4.688
6278.5706	4.719	6363.3167	4.674	6682.4464	4.685	6691.4275	4.685
6278.5828	4.710	6363.3323	4.677	6682.4624	4.688	6691.4451	4.687
6278.5950	4.711	6363.3479	4.677	6682.4788	4.683	6691.4684	4.683
6278.6067	4.709	6363.3637	4.677	6682.4933	4.682	6691.4857	4.684

TABLE IIa (*continued*)

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HJD	b
6691.5027	4.679
6691.5201	4.683
6692.2414	4.687
6692.4314	4.686
6692.4528	4.681
6692.4738	4.684
6692.4963	4.685
6692.5195	4.689
6693.2409	4.681
6693.2641	4.686
6693.2867	4.671
6693.3090	4.688
6693.3321	4.691
6693.3582	4.689
6693.3829	4.690
6693.4058	4.692
6693.4258	4.696
6693.4447	4.689
6693.4711	4.700
6693.4939	4.704
6693.5153	4.705
6694.2464	4.680
6694.2686	4.684
6694.2927	4.688
6694.3164	4.682
6694.3452	4.679
6694.3731	4.695
6694.3946	4.691
6694.4177	4.701
6695.3403	4.685
6695.3670	4.686
6695.3894	4.684
6695.4112	4.686
6695.4332	4.688
6696.2639	4.692
6696.2860	4.691
6696.3081	4.690
6696.3310	4.694
6696.3573	4.692
6696.3793	4.689
6696.4008	4.664
6696.4223	4.693
6696.4436	4.685
6697.2534	4.682
6697.2758	4.685
6697.2994	4.685
6697.3224	4.687
6697.3456	4.676
6697.3712	4.677
6697.3925	4.678
6697.4133	4.675
6698.2592	4.686
6698.2806	4.690
6698.3017	4.691
6698.3246	4.690
6698.3481	4.689
6698.3691	4.692
6699.2565	4.693
6700.2559	4.678
6700.2782	4.677
6700.3009	4.680
6700.3255	4.679
6700.3517	4.680
6702.4506	4.676
6702.4734	4.672
6703.2767	4.688
6703.2985	4.689
6703.3208	4.689
6703.3435	4.690
6703.3630	4.692
6703.3839	4.694
6703.4044	4.695
6703.4247	4.696
6703.4592	4.692
6703.4783	4.689
6959.4507	4.654
6959.5155	4.672
6959.5624	4.675
6959.5942	4.665
6959.6164	4.671
6959.6358	4.668
6959.6519	4.671
6959.6642	4.668
6959.6770	4.669
6960.5206	4.680
6960.5676	4.676
6960.5930	4.674
6960.6106	4.679
6960.6282	4.684
6960.6410	4.677
6960.6523	4.674
6960.6648	4.676
6960.6766	4.663
6961.4431	4.687
6961.4860	4.680
6962.5431	4.667
6962.5708	4.669
6962.5946	4.675
6962.6235	4.671
6962.6440	4.678
6965.4234	4.680
6965.4699	4.676
6965.5198	4.682
6965.5617	4.672
6965.6022	4.683
6965.6266	4.677
6965.6423	4.678
6965.6570	4.679
6966.4584	4.672
6966.4987	4.669
6966.5445	4.667
6966.5712	4.661
6966.5883	4.662
6966.6037	4.661
6966.6191	4.659
6966.6404	4.660
6966.6558	4.659
6967.4561	4.669
6967.4997	4.668
6967.5492	4.677
6967.5729	4.677
6967.5882	4.675
6967.6051	4.679
6967.6230	4.676
6967.6353	4.677
6967.6460	4.678
6967.6562	4.679
6970.5504	4.682
6970.5769	4.681
6970.6098	4.682
6970.6338	4.680
6970.6501	4.687
6972.5303	4.674
6972.5521	4.676
6972.5749	4.674
6972.5941	4.678
6972.6075	4.675
6972.6208	4.674
6972.6340	4.677
6972.6463	4.679
6972.6590	4.678
6972.6722	4.675
6972.6845	4.678
6975.5488	4.684
6975.5713	4.680
6975.5888	4.679
6975.6034	4.677
6975.6186	4.676
6975.6332	4.676
6975.6472	4.675
6975.6613	4.678
6978.4735	4.684
6978.5244	4.679
6978.5453	4.677
6978.5647	4.677
6978.5844	4.677
6978.6002	4.674
6980.4949	4.676
6980.5312	4.681
6980.5499	4.682
6980.5689	4.681
6980.5880	4.682
6980.6009	4.680
6980.6138	4.681
6980.6284	4.684
6980.6415	4.679
6980.6527	4.677
6980.6653	4.675
6981.4841	4.675
6981.5181	4.674
6981.5414	4.674
6981.5674	4.670
6981.5856	4.665
6981.6074	4.670
6981.6224	4.668
6981.6369	4.664
6981.6522	4.664
6981.6646	4.661
6983.5971	4.673
6983.6142	4.677
6983.6356	4.671
6983.6486	4.669
6983.6601	4.669
7322.5149	4.669
7322.5751	4.664
7322.6182	4.667
7327.6153	4.670
7328.5772	4.674
7328.6177	4.673
7328.6623	4.668
7329.5888	4.667
7329.6242	4.672
7329.6704	4.669
7329.6818	4.668
7330.5685	4.670
7330.6022	4.667
7332.5907	4.671

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HJD	b
6271.4724	5.896
6271.4856	5.897
6271.4993	5.896
6271.5121	5.900
6271.5246	5.900
6272.5392	5.893
6272.5518	5.895
6272.5634	5.897
6272.5791	5.896
6274.5119	5.885
6274.5245	5.887
6274.5364	5.886
6274.5477	5.885
6276.4492	5.884
6276.4637	5.887
6276.4757	5.883
6276.4870	5.886
6276.4983	5.885
6276.5103	5.889
6276.5214	5.889
6276.5340	5.893
6276.5463	5.893
6276.5596	5.892
6276.5706	5.901
6276.5813	5.900
6276.5937	5.897
6276.6040	5.902
6276.6147	5.905
6276.6251	5.904
6276.6355	5.905
6276.6456	5.902
6276.6565	5.902
6276.6597	5.906
6277.4562	5.903
6277.4696	5.904
6277.4805	5.903
6277.4925	5.902
6277.5031	5.901
6277.5145	5.900
6277.5268	5.902
6277.5379	5.900
6277.5512	5.902
6277.6116	5.897
6277.6236	5.889
6277.6337	5.890
6277.6444	5.888
6277.6562	5.881
6277.6625	5.878
6277.6682	5.879
6277.6741	5.879
6277.6798	5.882
6278.4446	5.887
6278.4582	5.889
6278.4829	5.895
6278.4957	5.893
6278.5089	5.893
6278.5217	5.895
6278.5341	5.898
6278.5467	5.898
6278.5592	5.898
6278.5722	5.900
6278.5845	5.901
6278.5965	5.903
6278.6083	5.904
6278.6200	5.908
6278.6335	5.907
6278.6448	5.910
6278.6569	5.914
6278.6635	5.910
6278.6691	5.904
6278.6752	5.909
6281.4572	5.896
6281.4712	5.897
6281.4829	5.892
6281.4947	5.890
6281.5080	5.893
6281.5194	5.893
6281.5326	5.891
6281.5458	5.893
6281.5575	5.892
6281.5693	5.893
6281.5820	5.893
6281.5935	5.893
6281.6045	5.894
6281.6155	5.896
6281.6273	5.894
6281.6374	5.898
6281.6433	5.895
6281.6495	5.895
6281.6554	5.895
6281.6613	5.894
6281.6673	5.896
6282.4682	5.887
6282.4807	5.890
6282.4922	5.892
6282.5035	5.895
6282.5145	5.897
6282.5257	5.899
6282.5365	5.900
6282.5470	5.900
6282.5633	5.904
6282.5765	5.904
6282.5890	5.905
6282.6012	5.908
6282.6132	5.906
6282.6252	5.905
6282.6366	5.908
6282.6470	5.905
6282.6545	5.907
6282.6620	5.904
6282.6690	5.903
6334.3564	5.894
6334.3792	5.894
6334.3977	5.895
6334.4154	5.896
6334.4320	5.897
6334.4482	5.899
6334.4653	5.901
6334.4823	5.901
6338.3888	5.901
6338.4068	5.899
6338.4227	5.896
6338.4387	5.896
6338.4535	5.897
6338.4682	5.892
6339.3437	5.887
6339.3613	5.906
6339.3968	5.885
6339.4144	5.887
6339.4292	5.879
6339.4502	5.898
6363.2601	5.901
6363.2789	5.906
6363.3019	5.904
6363.3182	5.901
6363.3337	5.899
6363.3494	5.893
6363.3652	5.889
6363.3804	5.886
6363.3954	5.883
6364.2552	5.890
6364.2719	5.883
6367.2865	5.892
6367.3027	5.893
6367.3183	5.897
6676.3772	5.879
6676.4109	5.879
6676.4284	5.882
6676.4468	5.883
6676.4634	5.890
6676.4841	5.898
6676.5047	5.902
6676.5211	5.901
6676.5380	5.897
6676.5545	5.892
6676.5691	5.896
6676.5832	5.896
6677.3482	5.866
6677.3676	5.866
6677.3907	5.867
6677.4119	5.869
6677.4296	5.867
6677.4463	5.873
6677.4627	5.872
6677.4793	5.879
6677.4985	5.883
6677.5141	5.873
6677.5334	5.872
6677.5547	5.880
6680.2283	5.878
6680.2500	5.879
6680.2665	5.883
6680.2855	5.884
6680.3037	5.887
6680.3215	5.890
6680.3394	5.894
6680.3569	5.897
6680.3786	5.897
6680.4007	5.895
6680.4181	5.892
6680.4397	5.889
6680.4551	5.881
6680.4747	5.881
6680.4988	5.877
6680.5161	5.876
6682.2314	5.880
6682.2516	5.876
6682.2693	5.876
6682.2857	5.879
6682.3021	5.879
6682.3196	5.879
6682.3366	5.881
6682.3555	5.883
6682.3747	5.880
6682.3933	5.879
6682.4116	5.886
6682.4267	5.880
6682.4427	5.882
6682.4575	5.877
6682.4744	5.872
6682.4894	5.872
6682.5057	5.871
6682.5208	5.871
6682.5365	5.871
6682.5544	5.873
6682.5730	5.870
6684.3227	5.894
6684.3424	5.893
6684.3639	5.889
6684.3898	5.889
6684.4100	5.887
6684.4270	5.886
6684.4425	5.875
6684.4595	5.857
6684.5035	5.872
6684.5191	5.862
6686.2380	5.880
6686.2558	5.881
6686.2732	5.883
6686.2905	5.886
6686.3073	5.885
6686.3242	5.886
6686.3415	5.886
6686.3607	5.882
6686.3794	5.879
6686.3979	5.881
6686.4136	5.880
6686.4289	5.881
6686.4443	5.881
6686.4586	5.880

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HJD	b
6686.4745	5.880
6686.4901	5.879
6686.5076	5.879
6686.5238	5.877
6686.5408	5.878
6686.5543	5.871
6686.5647	5.873
6688.2326	5.870
6688.2550	5.896
6688.2727	5.881
6688.2906	5.883
6688.3087	5.884
6688.3276	5.885
6690.2426	5.891
6690.2733	5.888
6690.2984	5.883
6690.3238	5.882
6690.3598	5.882
6690.3875	5.878
6690.4158	5.872
6690.4392	5.873
6690.4656	5.881
6690.4863	5.882
6690.5062	5.882
6690.5282	5.885
6690.5468	5.882
6691.2390	5.880
6691.2657	5.873
6691.2887	5.874
6691.3109	5.874
6691.3345	5.873
6691.3596	5.875
6691.3829	5.882
6691.4052	5.881
6691.4227	5.886
6691.4398	5.887
6691.4638	5.890
6691.4813	5.890
6691.4982	5.888
6691.5156	5.892
6691.5321	5.895
6692.4249	5.874
6692.4478	5.873
6692.4686	5.867
6692.4908	5.869
6692.5141	5.868
6693.2357	5.870
6693.2591	5.871
6693.2818	5.879
6693.3042	5.874
6693.3274	5.877
6693.3535	5.881
6693.3777	5.889
6693.4008	5.892
6693.4207	5.893
6693.4400	5.893
6693.4661	5.884
6693.4887	5.880
6693.5103	5.892
6693.5292	5.892
6694.2409	5.884
6694.2636	5.872
6694.2870	5.877
6694.3108	5.864
6694.3399	5.870
6694.3676	5.860
6694.3894	5.862
6694.4125	5.855
6694.4367	5.843
6695.2627	5.869
6695.2854	5.859
6695.3083	5.876
6695.3354	5.880
6695.3620	5.885
6695.3844	5.885
6695.4060	5.888
6695.4279	5.888
6695.4517	5.904
6695.5080	5.879
6695.5268	5.921
6695.5286	5.891
6696.2589	5.890
6696.2809	5.881
6696.3030	5.878
6696.3261	5.882
6696.3522	5.874
6696.3738	5.871
6696.3958	5.865
6696.4176	5.858
6696.4386	5.864
6697.2484	5.877
6697.2705	5.874
6697.2941	5.880
6697.3174	5.880
6697.3403	5.896
6697.3660	5.881
6697.3875	5.888
6697.4084	5.884
6698.2541	5.859
6698.2748	5.877
6698.2965	5.874
6698.3199	5.875
6698.3430	5.875
6698.3634	5.875
6699.2511	5.881
6699.2762	5.890
6700.2509	5.885
6700.2732	5.872
6700.2958	5.870
6700.3204	5.862
6700.3466	5.854
6702.4457	5.871
6702.4677	5.867
6702.4877	5.870
6703.2714	5.885
6703.2923	5.881
6703.3159	5.883
6703.3385	5.891
6703.3581	5.890
6703.3791	5.887
6703.3998	5.887
6703.4196	5.883
6703.4410	5.884
6703.4734	5.880
6703.4919	5.880
6959.4452	5.894
6959.5113	5.902
6959.5580	5.897
6959.5904	5.904
6959.6129	5.903
6959.6318	5.913
6959.6471	5.905
6959.6609	5.910
6959.6739	5.908
6960.5160	5.895
6960.5642	5.903
6960.5901	5.895
6960.6074	5.896
6960.6249	5.888
6960.6378	5.884
6960.6491	5.885
6960.6614	5.886
6960.6732	5.882
6961.4375	5.909
6961.4824	5.909
6962.5390	5.889
6962.5674	5.894
6962.5904	5.889
6962.6177	5.882
6965.4201	5.896
6965.4661	5.892
6965.5163	5.898
6965.5583	5.893
6965.6236	5.899
6965.6391	5.903
6965.6541	5.897
6966.4547	5.885
6966.4949	5.896
6966.5410	5.888
6966.5678	5.886
6966.5852	5.886
6966.6005	5.886
6966.6159	5.893
6966.6357	5.892
6966.6512	5.894
6967.4151	5.908
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6967.4961	5.908
6967.5455	5.900
6967.5700	5.892
6967.5851	5.893
6967.6012	5.892
6967.6174	5.889
6967.6319	5.886
6967.6431	5.886
6967.6531	5.880
6970.5429	5.891
6970.5717	5.903
6970.5981	5.902
6970.6267	5.905
6970.6443	5.909
6972.5256	5.906
6972.5475	5.906
6972.5708	5.912
6972.5904	5.906
6972.6032	5.907
6972.6168	5.908
6972.6299	5.907
6972.6425	5.903
6972.6552	5.904
6972.6677	5.904
6972.6811	5.902
6975.5436	5.888
6975.5662	5.883
6975.5834	5.888
6975.5989	5.891
6975.6137	5.890
6975.6280	5.890
6975.6425	5.894
6975.6574	5.898
6978.4085	5.900
6978.4668	5.908
6978.5195	5.896
6978.5409	5.892
6978.5604	5.897
6978.5795	5.898
6978.5951	5.900
6980.4313	5.904
6980.4879	5.911
6980.5258	5.907
6980.5462	5.908
6980.5648	5.904
6980.5826	5.900
6980.5966	5.899
6980.6094	5.896
6980.6239	5.896
6980.6372	5.897
6980.6491	5.893
6980.6614	5.889
6981.3700	5.893
6981.4220	5.896
6981.4779	5.885
6981.5134	5.891
6981.5372	5.889
6981.5627	5.889
6981.5791	5.880
6981.6029	5.889
6981.6176	5.892
6981.6318	5.893
6981.6468	5.887

HR 8408

HJD	b
6981.6606	5.894
6982.3878	5.906
6982.4400	5.903
6983.5918	5.889
6983.6064	5.890
6983.6300	5.896
6983.6443	5.901
6983.6566	5.908
7321.5669	5.875
7322.4391	5.889
7322.5113	5.896
7322.5715	5.899
7322.6146	5.908
7327.6095	5.881
7328.5143	5.901
7328.5684	5.902
7328.6127	5.896
7328.6567	5.890
7329.4106	5.886
7329.4681	5.885
7329.5271	5.885
7329.5853	5.884
7329.6203	5.880
7329.6665	5.889
7329.6785	5.893
7330.4078	5.896
7330.4697	5.896
7330.5333	5.893
7330.5646	5.898
7330.5974	5.898
7331.4209	5.874
7331.4875	5.885
7331.5539	5.877
7332.5863	5.895

TABLE IIa (*continued*)

HR 8858

HJD	b
6676.3843	4.324
6676.4019	4.329
6676.4192	4.330
6676.4355	4.333
6676.4539	4.337
6676.4716	4.339
6676.4939	4.343
6676.5127	4.342
6676.5294	4.349
6676.5464	4.343
6676.5623	4.342
6676.5747	4.347
6676.5898	4.341
6676.6024	4.341
6677.3567	4.344
6677.3754	4.355
6677.3980	4.328
6677.4197	4.327
6677.4380	4.319
6677.4543	4.324
6677.4705	4.310
6677.4879	4.322
6677.5059	4.319
6677.5223	4.317
6677.5412	4.333
6677.5623	4.332
6677.5792	4.326
6680.2589	4.324
6680.2748	4.322
6680.2937	4.334
6680.3115	4.334
6680.3296	4.329
6680.3475	4.330
6680.3650	4.338
6680.3865	4.343
6680.4088	4.348
6680.4312	4.352
6680.4471	4.362
6680.4639	4.359
6680.4906	4.353
6680.5070	4.354
6680.5412	4.353
6680.5580	4.350
6680.5884	4.366
6682.2413	4.346
6682.2603	4.342
6682.2768	4.337
6682.2937	4.339
6682.3106	4.335
6682.3271	4.335
6682.3439	4.338
6682.3634	4.336
6682.4011	4.328
6682.4189	4.352
6682.4346	4.338
6682.4501	4.339
6682.4665	4.346
6682.4823	4.343
6682.4971	4.341
6682.5135	4.343
6682.5289	4.344
6682.5453	4.346
6682.5615	4.347
6682.5776	4.347
6682.5908	4.344
6682.6036	4.344
6684.3513	4.330
6684.3726	4.329
6684.3962	4.322
6684.4185	4.331
6684.4352	4.329
6684.4512	4.338
6684.4962	4.339
6686.2812	4.343
6686.2987	4.343
6686.3157	4.342
6686.3317	4.345
6686.3492	4.347
6686.3680	4.347
6686.3874	4.351
6686.4054	4.349
6686.4219	4.352
6686.4365	4.353
6686.4519	4.354
6686.4668	4.352
6686.4823	4.348
6686.4994	4.348
6686.5167	4.339
6686.5325	4.337
6686.5485	4.332
6686.5592	4.333
6686.5702	4.328
6686.5829	4.330
6686.5947	4.329
6688.2442	4.306
6688.2636	4.314
6688.2995	4.336
6688.3175	4.331
6688.3360	4.335
6690.3101	4.330
6690.3343	4.336
6690.3702	4.323
6690.3996	4.335
6690.4272	4.327
6690.4497	4.327
6690.4753	4.340
6690.4962	4.335
6690.5167	4.342
6690.5384	4.340
6690.5549	4.349
6690.5787	4.353
6692.4370	4.346
6692.4575	4.344
6692.4789	4.342
6692.5017	4.339
6692.5257	4.346
6693.2458	4.346
6693.2693	4.345
6693.2913	4.354
6693.3143	4.352
6693.3366	4.356
6693.3627	4.349
6693.3874	4.353
6693.4107	4.346
6693.4305	4.348
6693.4502	4.339
6693.4755	4.335
6693.4987	4.335
6693.5202	4.325
6693.5372	4.316
6693.5524	4.312
6693.5647	4.309
6694.2514	4.320
6694.2981	4.333
6694.3221	4.338
6694.3513	4.341
6694.3779	4.334
6694.3993	4.334
6694.4226	4.336
6694.4471	4.327
6695.2731	4.336
6695.3186	4.350
6695.3453	4.340
6695.3725	4.345
6695.3940	4.347
6695.4162	4.349
6695.4384	4.349
6695.5187	4.359
6695.5354	4.370
6696.2696	4.332
6696.2919	4.333
6696.3132	4.342
6696.3362	4.344
6696.3629	4.341
6696.3845	4.341
6696.4058	4.336
6696.4280	4.345
6696.4491	4.354
6697.2586	4.334
6697.2817	4.331
6697.3046	4.332
6697.3287	4.335
6697.3509	4.334
6697.3769	4.334
6697.3983	4.342
6697.4195	4.339
6698.2647	4.349
6698.2863	4.349
6698.3081	4.344
6698.3303	4.340
6698.3537	4.340
6700.2636	4.353
6700.2841	4.344
6700.3067	4.348
6700.3342	4.349
6702.4560	4.344
6702.4786	4.340
6702.5000	4.345
6702.5202	4.328
6702.5367	4.337
6703.2821	4.355
6703.3038	4.343
6703.3265	4.349
6703.3491	4.346
6703.3689	4.349
6703.3899	4.354
6703.4100	4.353
6703.4302	4.352
6703.4642	4.353
6703.4838	4.348
6703.4992	4.345
6703.5167	4.349
6703.5341	4.344
6959.5189	4.334
6959.5664	4.329
6959.5968	4.321
6959.6190	4.315
6959.6385	4.311
6959.6543	4.318
6959.6666	4.318
6959.6793	4.319
6960.5232	4.347
6960.5705	4.339
6960.5949	4.342
6960.6137	4.335
6960.6306	4.326
6960.6433	4.322
6960.6550	4.326
6960.6671	4.322
6961.4888	4.324
6962.5455	4.347
6962.5731	4.345
6962.5970	4.344
6965.5223	4.320
6965.5637	4.316
6965.6043	4.327
6965.6293	4.324
6965.6441	4.327
6965.6592	4.329
6966.5474	4.329
6966.5740	4.322
6966.5906	4.321
6966.6054	4.319
6966.6213	4.319
6966.6441	4.320
6966.6587	4.324
6967.5019	4.338
6967.5513	4.338
6967.5746	4.331
6967.5907	4.328

HR 8858

HJD	b
6967.6069	4.328
6967.6253	4.323
6967.6373	4.319
6967.6477	4.319
6967.6578	4.318
6970.5551	4.321
6970.5805	4.324
6970.6139	4.327
6970.6373	4.329
6970.6543	4.329
6972.5345	4.334
6972.5559	4.335
6972.5784	4.334
6972.5967	4.332
6972.6102	4.331
6972.6236	4.330
6972.6363	4.334
6972.6489	4.331
6972.6615	4.335
6972.6745	4.333
6972.6868	4.336
6975.5528	4.327
6975.5756	4.327
6975.5923	4.329
6975.6064	4.328
6975.6216	4.329
6975.6362	4.327
6975.6502	4.326
6975.6639	4.324
6978.4783	4.321
6978.5277	4.326
6978.5487	4.329
6978.5677	4.329
6978.5886	4.332
6978.6033	4.335
6980.4987	4.330
6980.5345	4.339
6980.5526	4.340
6980.5713	4.339
6980.5907	4.334
6980.6034	4.330
6980.6165	4.325
6980.6314	4.325
6980.6437	4.325
6980.6550	4.325
6980.6676	4.323
6981.4877	4.324
6981.5214	4.333
6981.5445	4.335
6981.5722	4.334
6981.5970	4.341
6981.6115	4.339
6981.6253	4.336
6981.6408	4 334
6981.6549	4.331
6981.6669	4.325
6983.6001	4.328
6983.6180	4.320
6983.6388	4.324
6983.6510	4.322
6983.6623	4.326
7322.5186	4.327
7322.5769	4.328
7322.6199	4.324
7327.6189	4.329
7328.5796	4.334
7328.6197	4.340
7328.6645	4.337
7329.5912	4.324
7329.6260	4.332
7329.6723	4.339
7329.6832	4.337
7330.5706	4.333
7330.6038	4.333
7332.5926	4.327

TABLE IIb. — *Four-colour Strömgren photometry for periodic Be stars observed at ESO. Observations between JD2446991 and 2447000 were obtained at SAAO. The heliocentric Julian day is with respect to JD 2440000.000.*

HR 5193

HJD	u	v	b	y
6961.6036	3.954	3.687	3.418	3.444
6961.6330	3.953	3.685	3.416	3.441
6961.6522	3.952	3.685	3.417	3.446
6961.6780	3.950	3.684	3.416	3.444
6961.7008	3.948	3.679	3.410	3.438
6961.7379	3.947	3.680	3.412	3.442
6963.5516	3.926	3.682	3.400	3.434
6963.5675	3.929	3.665	3.394	3.420
6963.5856	3.929	3.668	3.395	3.421
6963.6102	3.929	3.670	3.397	3.423
6963.6385	3.933	3.668	3.395	3.422
6963.6633	3.933	3.670	3.395	3.422
6963.6956	3.935	3.673	3.401	3.427
6963.7329	3.935	3.672	3.398	3.425
6965.5115	3.918	3.654	3.384	3.410
6965.5525	3.910	3.650	3.378	3.405
6965.5902	3.907	3.649	3.378	3.404
6965.6291	3.907	3.647	3.376	3.402
6965.6895	3.899	3.644	3.370	3.400
6965.7197	3.906	3.646	3.375	3.401
6967.4974	3.882	3.647	3.370	3.391
6967.5349	3.887	3.670	3.385	3.412
6967.5629	3.883	3.645	3.369	3.388
6967.5947	3.872	3.642	3.365	3.386
6967.6326	3.873	3.642	3.363	3.382
6967.6716	3.872	3.640	3.364	3.380
6967.6989	3.876	3.642	3.365	3.383
6968.4851	3.934	3.677	3.402	3.433
6968.5176	3.928	3.673	3.399	3.428
6968.5536	3.922	3.668	3.395	3.425
6968.5920	3.918	3.666	3.392	3.422
6968.6279	3.921	3.663	3.391	3.421
6968.6648	3.919	3.660	3.388	3.419
6968.7102	3.917	3.658	3.386	3.418
6969.5790	3.973	3.671	3.412	3.434
6969.6168	3.947	3.676	3.404	3.433
6969.6491	3.947	3.673	3.403	3.430
6969.6773	3.948	3.675	3.406	3.433
6970.6210	3.936	3.665	3.388	3.418
6970.6626	3.929	3.657	3.381	3.413
6970.6953	3.919	3.652	3.375	3.404
6971.4822	3.893	3.638	3.364	3.389
6971.5219	3.889	3.635	3.361	3.383
6971.5517	3.884	3.629	3.354	3.376
6971.5934	3.875	3.620	3.346	3.364
6971.6301	3.876	3.625	3.347	3.363
6971.6729	3.878	3.627	3.352	3.369
6971.7157	3.892	3.639	3.365	3.379
6972.4852	3.847	3.605	3.333	3.351
6972.5230	3.858	3.614	3.337	3.355
6972.5521	3.857	3.617	3.340	3.356
6972.5948	3.864	3.627	3.348	3.362
6972.6371	3.871	3.635	3.356	3.373
6972.6761	3.884	3.640	3.363	3.380
6973.4807	3.884	3.645	3.369	3.387
6973.5107	3.878	3.646	3.366	3.387
6973.5523	3.874	3.641	3.365	3.387
6973.5925	3.859	3.630	3.357	3.383
6973.6791	3.869	3.634	3.358	3.378
6975.5990	3.942	3.674	3.399	3.430
6975.6156	3.938	3.669	3.394	3.428
6975.6320	3.946	3.671	3.399	3.427
6975.6553	3.933	3.661	3.386	3.417
6979.4812	3.959	3.688	3.413	3.443
6979.5282	3.955	3.685	3.408	3.439
6979.5701	3.957	3.689	3.411	3.441
6979.6095	3.957	3.685	3.408	3.441
6979.6422	3.957	3.683	3.406	3.438
6980.4793	3.958	3.676	3.409	3.443
6980.4823	3.959	3.680	3.413	3.446
6980.5207	3.957	3.677	3.410	3.442
6980.5654	3.962	3.682	3.414	3.444
6980.6022	3.960	3.682	3.412	3.443
6980.6627	3.956	3.679	3.409	3.444
6981.4869	3.974	3.694	3.424	3.453
6981.5449	3.969	3.691	3.419	3.450
6981.5840	3.969	3.691	3.420	3.451
6981.6247	3.969	3.691	3.417	3.450
6981.6698	3.968	3.690	3.416	3.455
6982.6634	3.977	3.688	3.416	3.451

HR 5440

HJD	u	v	b	y
6965.5139	2.768	2.542	2.275	2.300
6965.5541	2.751	2.531	2.264	2.288
6965.5919	2.759	2.535	2.267	2.292
6965.6308	2.776	2.545	2.278	2.307
6965.6919	2.803	2.564	2.297	2.330
6965.7219	2.819	2.572	2.307	2.338
6965.7645	2.832	2.583	2.317	2.350
6967.4990	2.787	2.557	2.289	2.315
6967.5373	2.787	2.557	2.289	2.313
6967.5650	2.786	2.556	2.286	2.311
6967.5965	2.791	2.562	2.292	2.318
6967.6345	2.806	2.571	2.302	2.327
6967.6731	2.826	2.583	2.313	2.340
6967.7011	2.829	2.585	2.315	2.344
6967.7403	2.832	2.580	2.308	2.337
6968.4870	2.910	2.636	2.361	2.388
6968.5214	2.931	2.657	2.380	2.406
6968.5560	2.944	2.675	2.400	2.422
6968.5938	2.948	2.682	2.408	2.429
6968.6294	2.976	2.689	2.427	2.442
6968.6309	2.945	2.684	2.411	2.431
6968.6322	2.946	2.683	2.411	2.432
6968.6664	2.920	2.658	2.388	2.412
6968.7123	2.857	2.601	2.333	2.360
6968.7514	2.827	2.571	2.302	2.324
6969.5807	2.873	2.605	2.335	2.357
6969.6183	2.881	2.613	2.344	2.365
6969.6507	2.876	2.609	2.341	2.361
6969.6790	2.870	2.605	2.334	2.357
6969.7171	2.872	2.604	2.334	2.354
6970.6227	2.845	2.597	2.324	2.346
6970.6642	2.863	2.585	2.315	2.341
6970.6985	2.865	2.579	2.307	2.334
6971.4838	2.894	2.612	2.343	2.368
6971.5236	2.917	2.626	2.358	2.382
6971.5537	2.921	2.623	2.356	2.379
6971.5952	2.926	2.620	2.352	2.375
6971.6320	2.915	2.612	2.343	2.365
6971.6747	2.922	2.618	2.347	2.368
6971.7175	2.936	2.637	2.367	2.386
6972.4878	2.900	2.623	2.357	2.378
6972.5246	2.879	2.615	2.346	2.368
6972.5552	2.853	2.597	2.326	2.351
6972.5970	2.836	2.581	2.312	2.334
6972.6388	2.825	2.567	2.299	2.325
6972.6778	2.833	2.570	2.302	2.330
6972.7255	2.853	2.584	2.317	2.345
6973.4827	2.878	2.613	2.343	2.369
6973.5124	2.873	2.610	2.337	2.363
6973.5539	2.870	2.604	2.334	2.359
6973.5942	2.861	2.599	2.330	2.358
6973.6809	2.896	2.625	2.355	2.379
6973.7315	2.856	2.600	2.332	2.359
6975.6006	2.862	2.602	2.332	2.357
6975.6173	2.864	2.604	2.335	2.362
6975.6337	2.864	2.609	2.339	2.365
6975.6569	2.851	2.598	2.328	2.357
6979.4842	2.839	2.599	2.326	2.348
6979.5299	2.835	2.603	2.326	2.350
6979.5722	2.822	2.592	2.318	2.342
6979.6114	2.800	2.569	2.294	2.321
6979.6440	2.790	2.561	2.287	2.314
6980.4842	2.823	2.575	2.311	2.341
6980.5227	2.832	2.582	2.316	2.344
6980.5680	2.834	2.583	2.315	2.344
6980.6065	2.835	2.582	2.315	2.343
6980.6690	2.839	2.584	2.317	2.345
6980.7219	2.839	2.587	2.316	2.347
6981.4893	2.816	2.584	2.316	2.341
6981.5468	2.783	2.558	2.289	2.315
6981.5860	2.780	2.544	2.277	2.303
6981.6266	2.782	2.553	2.283	2.311
6981.6719	2.797	2.563	2.293	2.325
6982.6656	2.848	2.593	2.327	2.362

HD 137518

HJD	u	v	b	y
6960.4987	8.737	8.427	7.988	7.745
6960.5410	8.728	8.416	7.977	7.740
6960.5642	8.700	8.397	7.959	7.720
6960.5909	8.671	8.373	7.938	7.697
6960.6093	8.652	8.356	7.921	7.711
6960.6508	8.603	8.329	7.889	7.657
6960.6794	8.579	8.307	7.874	7.638
6960.7160	8.531	8.284	7.850	7.615
6960.7352	8.502	8.262	7.835	7.604
6960.7369	8.500	8.260	7.834	7.601
6960.7816	8.462	8.237	7.808	7.583
6960.8153	8.446	8.223	7.798	7.574
6962.5389	8.799	8.475	8.053	7.841
6962.5545	8.791	8.470	8.049	7.832
6962.5584	8.788	8.466	8.047	7.826
6962.5762	8.784	8.467	8.046	7.825
6962.5916	8.783	8.463	8.041	7.821
6962.6075	8.780	8.459	8.040	7.818
6962.6248	8.774	8.453	8.035	7.812
6962.6413	8.775	8.448	8.027	7.810
6962.6929	8.767	8.438	8.016	7.798
6962.7199	8.758	8.433	8.013	7.795
6962.7418	8.748	8.418	7.996	7.780
6962.7636	8.732	8.408	7.987	7.771
6962.7658	8.734	8.397	7.981	7.764
6962.7991	8.718	8.392	7.975	7.754
6965.5275	8.505	8.227	7.805	7.583
6965.5668	8.514	8.228	7.808	7.587
6965.6027	8.515	8.223	7.806	7.581
6965.6423	8.509	8.224	7.800	7.576
6965.7298	8.525	8.242	7.823	7.600
6965.7770	8.549	8.261	7.837	7.615
6967.5145	8.686	8.430	8.005	7.787
6967.5457	8.706	8.440	8.019	7.801
6967.5742	8.705	8.436	8.020	7.794
6967.6065	8.707	8.447	8.025	7.807
6967.6488	8.719	8.459	8.040	7.819
6967.6813	8.722	8.465	8.047	7.831
6967.7087	8.721	8.470	8.048	7.828
6967.7488	8.727	8.473	8.056	7.838
6967.7888	8.753	8.488	8.071	7.856
6968.4990	8.703	8.386	7.950	7.729
6968.5319	8.698	8.381	7.949	7.723
6968.5649	8.685	8.375	7.942	7.718
6968.6020	8.666	8.361	7.932	7.702
6968.6453	8.617	8.335	7.899	7.669
6968.6737	8.598	8.323	7.889	7.663
6968.7218	8.572	8.313	7.880	7.653
6968.7606	8.563	8.305	7.874	7.648
6968.8056	8.514	8.270	7.842	7.614
6969.5947	8.730	8.433	8.004	7.759
6969.6270	8.714	8.412	7.984	7.745
6969.6594	8.682	8.390	7.961	7.724
6969.6873	8.653	8.367	7.939	7.705
6969.7251	8.607	8.331	7.904	7.676
6970.6339	8.911	8.565	8.128	7.893
6970.6738	8.929	8.572	8.136	7.900
6970.7085	8.937	8.580	8.140	7.905
6970.7474	8.970	8.601	8.162	7.923
6971.4991	8.731	8.426	7.989	7.756
6971.5333	8.707	8.404	7.970	7.736
6971.5626	8.665	8.369	7.938	7.708
6971.6031	8.641	8.348	7.912	7.681
6971.6407	8.640	8.344	7.909	7.675
6971.6844	8.626	8.337	7.900	7.665
6971.7275	8.605	8.314	7.882	7.647
6971.7756	8.573	8.301	7.869	7.628
6972.4992	8.656	8.352	7.927	7.708
6972.5347	8.673	8.373	7.947	7.725
6972.5626	8.696	8.391	7.965	7.735
6972.6092	8.723	8.420	7.989	7.764
6972.6473	8.755	8.436	8.007	7.777
6972.6852	8.812	8.471	8.046	7.812
6972.7324	8.843	8.497	8.066	7.845
6972.7657	8.852	8.500	8.071	7.841
6973.4917	8.748	8.442	8.020	7.805
6973.5230	8.743	8.439	8.023	7.802
6973.5630	8.730	8.432	8.010	7.797
6973.6022	8.692	8.398	7.988	7.775
6973.6890	8.642	8.352	7.939	7.726
6973.7453	8.572	8.291	7.876	7.672
6975.6081	8.333	8.117	7.703	7.485
6975.6251	8.352	8.127	7.718	7.503
6975.6410	8.368	8.144	7.729	7.513
6975.6645	8.394	8.163	7.749	7.530
6979.4990	8.841	8.499	8.069	7.840
6979.5425	8.817	8.480	8.047	7.821
6979.5853	8.805	8.461	8.030	7.804
6979.6201	8.799	8.463	8.026	7.792
6979.6517	8.800	8.461	8.019	7.793
6979.7109	8.776	8.442	8.004	7.776
6980.4989	8.825	8.460	8.024	7.794
6980.5359	8.820	8.462	8.022	7.791
6980.5774	8.823	8.466	8.029	7.788
6980.6237	8.820	8.464	8.026	7.786
6980.6801	8.783	8.436	7.999	7.760
6980.7328	8.734	8.401	7.969	7.736
6981.5194	8.737	8.450	8.030	7.800
6981.5572	8.748	8.454	8.032	7.804
6981.5978	8.751	8.466	8.039	7.809
6981.6363	8.750	8.464	8.042	7.805
6981.6823	8.752	8.468	8.036	7.809
6982.6786	8.510	8.261	7.838	7.614

HR 5730

HJD	u	v	b	y
6961.6091	5.955	5.704	5.394	5.365
6961.6363	5.951	5.704	5.391	5.366
6961.6556	5.947	5.700	5.388	5.363
6961.6814	5.931	5.689	5.380	5.354
6961.7032	5.919	5.680	5.371	5.343
6961.7424	5.908	5.673	5.364	5.342
6963.5568	5.876	5.654	5.344	5.319
6963.5721	5.873	5.653	5.343	5.316
6963.5920	5.872	5.652	5.343	5.315
6963.6194	5.882	5.662	5.353	5.324
6963.6438	5.893	5.673	5.362	5.334
6963.6678	5.898	5.673	5.363	5.335
6963.7004	5.906	5.678	5.369	5.342
6963.7069	5.903	5.681	5.368	5.345
6963.7382	5.919	5.681	5.373	5.348
6963.7588	5.914	5.677	5.368	5.347
6963.7830	5.917	5.677	5.367	5.346
6963.8144	5.921	5.674	5.366	5.349
6963.8377	5.924	5.678	5.367	5.352
6965.5208	5.907	5.670	5.361	5.340
6965.5587	5.908	5.671	5.363	5.340
6965.5960	5.913	5.677	5.369	5.345
6965.6360	5.921	5.682	5.374	5.350
6965.7255	5.943	5.693	5.384	5.362
6965.7720	5.961	5.710	5.400	5.377
6967.5054	5.960	5.701	5.395	5.377
6967.5409	5.972	5.712	5.404	5.384
6967.5689	5.977	5.716	5.406	5.384
6967.6006	5.974	5.713	5.403	5.379
6967.6396	5.971	5.713	5.404	5.379
6967.6767	5.958	5.705	5.396	5.370
6967.7041	5.949	5.700	5.392	5.366
6967.7429	5.935	5.693	5.387	5.365
6967.7842	5.928	5.691	5.383	5.361
6968.4924	5.900	5.669	5.358	5.335
6968.5253	5.891	5.660	5.350	5.326
6968.5595	5.887	5.661	5.351	5.328
6968.5973	5.903	5.672	5.364	5.339
6968.6358	5.919	5.683	5.373	5.349
6968.6388	5.920	5.681	5.372	5.346
6968.6688	5.928	5.687	5.379	5.355
6968.7170	5.942	5.692	5.383	5.360
6968.7556	5.954	5.702	5.391	5.371
6968.8001	5.944	5.690	5.382	5.361
6969.5839	5.958	5.717	5.405	5.380
6969.6211	5.942	5.706	5.396	5.369
6969.6542	5.920	5.692	5.384	5.358
6969.6820	5.909	5.683	5.375	5.348
6969.7201	5.899	5.672	5.363	5.341
6969.7544	5.895	5.664	5.356	5.336
6970.6288	5.956	5.701	5.392	5.372
6970.6688	5.944	5.690	5.378	5.357
6970.7022	5.936	5.682	5.372	5.349
6971.4902	6.044	5.788	5.477	5.448
6971.4930	6.047	5.791	5.480	5.450
6971.5282	6.041	5.787	5.478	5.447
6971.5579	6.007	5.757	5.447	5.416
6971.5980	5.965	5.713	5.404	5.376
6971.6360	5.951	5.699	5.389	5.360
6971.6796	5.940	5.695	5.383	5 350
6971.7207	5.931	5.688	5.376	5.348
6971.7704	5.925	5.681	5.371	5.343
6971.8139	5.940	5.686	5.378	5.356
6972.4934	5.965	5.711	5.401	5.376
6972.5287	5.961	5.705	5.394	5.364
6972.5583	5.949	5.695	5.383	5.353
6972.6011	5.953	5.701	5.387	5.356
6972.6422	5.961	5.714	5.400	5.368
6972.6810	6.005	5.744	5.430	5.396
6972.7285	6.088	5.794	5.481	5.451
6972.7617	6.100	5.804	5.490	5.460
6973.4867	6.021	5.732	5.410	5.386
6973.5163	6.000	5.710	5.395	5.362
6973.5570	5.988	5.701	5.387	5.357
6973.5978	5.987	5.705	5.393	5.364
6973.6841	6.024	5.728	5.414	5.390
6973.7347	5.991	5.703	5.392	5.371
6973.7881	5.989	5.720	5.405	5.402
6975.6038	5.995	5.720	5.406	5.378
6975.6206	5.992	5.716	5.403	5.374
6975.6370	5.979	5.704	5.392	5.364
6975.6588	6.014	5.733	5.420	5.396
6979.4942	6.009	5.738	5.430	5.404
6979.5362	6.002	5.733	5.421	5.395
6979.5775	5.990	5.723	5.412	5.385
6979.6158	5.978	5.718	5.407	5.379
6979.6474	5.964	5.708	5.397	5.372
6980.4920	5.954	5.693	5.385	5.363
6980.5299	5.965	5.702	5.392	5.368
6980.5722	5.970	5.706	5.395	5.370
6980.6157	5.967	5.701	5.390	5.366
6980.6751	5.998	5.725	5.411	5.385
6980.7270	6.015	5.742	5.428	5.407
6980.7667	6.029	5.757	5.444	5.426
6981.4947	5.981	5.720	5.408	5.385
6981.5514	5.947	5.689	5.380	5.357
6981.5922	5.936	5.682	5.372	5.348
6981.6319	5.931	5.679	5.366	5.344
6981.6776	5.945	5.693	5.382	5.363
6982.6710	6.020	5.731	5.425	5.398
6982.7317	6.020	5.745	5.440	5.416

TABLE IIb (*continued*)

HR 5941

HJD	u	v	b	y
6960.5071	5.862	5.185	4.836	4.793
6960.5455	5.839	5.171	4.824	4.787
6960.5681	5.826	5.162	4.814	4.780
6960.5956	5.818	5.150	4.805	4.772
6960.6264	5.812	5.140	4.792	4.763
6960.6538	5.824	5.145	4.800	4.768
6960.6830	5.834	5.158	4.810	4.780
6960.7196	5.839	5.160	4.813	4.783
6960.7407	5.843	5.159	4.812	4.783
6960.7848	5.856	5.166	4.817	4.784
6960.8184	5.858	5.173	4.822	4.788
6962.5198	5.876	5.192	4.842	4.805
6962.5211	5.868	5.176	4.829	4.791
6962.5231	5.858	5.178	4.826	4.791
6962.5424	5.850	5.167	4.818	4.785
6962.5662	5.841	5.157	4.808	4.776
6962.5799	5.843	5.158	4.809	4.779
6962.5951	5.836	5.149	4.802	4.772
6962.6103	5.836	5.150	4.803	4.774
6962.6279	5.832	5.149	4.801	4.771
6962.6484	5.836	5.150	4.803	4.773
6962.7015	5.847	5.162	4.814	4.784
6962.7228	5.853	5.166	4.818	4.787
6962.7444	5.858	5.169	4.821	4.790
6962.7699	5.867	5.172	4.825	4.790
6962.8030	5.868	5.178	4.827	4.788
6965.5312	5.836	5.154	4.805	4.774
6965.5690	5.848	5.166	4.815	4.784
6965.6061	5.855	5.172	4.820	4.788
6965.6448	5.851	5.170	4.819	4.785
6965.7327	5.844	5.160	4.810	4.777
6965.7808	5.837	5.158	4.810	4.775
6967.5179	5.843	5.158	4.809	4.782
6967.5483	5.835	5.154	4.804	4.776
6967.5773	5.840	5.159	4.806	4.779
6967.6113	5.852	5.167	4.816	4.786
6967.6528	5.860	5.171	4.818	4.790
6967.6846	5.866	5.178	4.825	4.794
6967.7116	5.870	5.182	4.830	4.797
6967.7518	5.849	5.173	4.822	4.790
6967.7912	5.829	5.156	4.804	4.769
6968.5027	5.889	5.204	4.847	4.814
6968.5344	5.889	5.201	4.846	4.814
6968.5673	5.864	5.184	4.829	4.799
6968.6057	5.841	5.160	4.807	4.778
6968.6480	5.843	5.153	4.802	4.773
6968.6767	5.834	5.151	4.800	4.772
6968.7244	5.851	5.164	4.811	4.781
6968.7636	5.857	5.166	4.814	4.783
6969.5975	5.864	5.164	4.812	4.785
6969.6331	5.861	5.164	4.810	4.784
6969.6622	5.880	5.182	4.829	4.799
6969.6898	5.888	5.196	4.842	4.809
6969.7277	5.892	5.215	4.859	4.818
6970.6364	5.817	5.153	4.800	4.771
6970.6766	5.793	5.135	4.782	4.754

HJD	u	v	b	y
6970.7108	5.806	5.147	4.796	4.766
6970.7496	5.832	5.161	4.808	4.776
6971.5018	5.817	5.149	4.797	4.770
6971.5357	5.853	5.183	4.830	4.802
6971.5649	5.841	5.162	4.812	4.782
6971.6061	5.845	5.164	4.811	4.781
6971.6437	5.857	5.174	4.819	4.789
6971.6869	5.897	5.197	4.843	4.807
6971.7301	5.913	5.213	4.859	4.819
6971.7792	5.880	5.185	4.834	4.794
6972.5022	5.901	5.203	4.850	4.818
6972.5372	5.909	5.210	4.856	4.820
6972.5649	5.901	5.203	4.851	4.815
6972.6129	5.869	5.178	4.827	4.794
6972.6496	5.829	5.150	4.800	4.770
6972.6878	5.816	5.140	4.790	4.761
6972.7350	5.829	5.146	4.797	4.768
6972.7682	5.842	5.158	4.805	4.774
6973.4952	5.817	5.144	4.794	4.764
6973.5274	5.827	5.151	4.799	4.771
6973.5660	5.842	5.162	4.812	4.782
6973.6106	5.838	5.164	4.813	4.783
6973.6925	5.896	5.202	4.850	4.814
6973.7482	5.837	5.160	4.812	4.778
6975.6435	5.839	5.163	4.809	4.779
6975.6670	5.846	5.168	4.815	4.784
6979.5052	5.801	5.133	4.780	4.753
6979.5453	5.814	5.137	4.787	4.760
6979.5886	5.832	5.153	4.799	4.773
6979.6228	5.847	5.159	4.808	4.779
6979.6544	5.849	5.160	4.808	4.779
6979.7150	5.867	5.168	4.818	4.785
6980.5021	5.884	5.173	4.824	4.796
6980.5439	5.880	5.196	4.835	4.810
6980.5803	5.877	5.190	4.837	4.805
6980.6282	5.851	5.181	4.829	4.793
6980.6831	5.873	5.171	4.824	4.792
6980.7362	5.851	5.154	4.804	4.773
6981.5244	5.817	5.143	4.793	4.764
6981.5604	5.826	5.146	4.796	4.768
6981.6003	5.839	5.161	4.808	4.779
6981.6393	5.858	5.169	4.817	4.788
6981.6853	5.879	5.183	4.828	4.801
6982.6826	5.826	5.145	4.795	4.767
6991.2590	5.454	4.867	4.817	4.827
6991.3026	5.466	4.884	4.831	4.832
6991.3503	5.473	4.896	4.837	4.841
6991.3955	5.465	4.888	4.830	4.834
6991.4399	5.450	4.880	4.823	4.833
6991.4931	5.445	4.871	4.804	4.829
6994.2336	5.510	4.919	4.853	4.865
6994.2788	5.432	4.887	4.827	4.833
6994.3213	5.394	4.844	4.798	4.809
6994.3660	5.402	4.860	4.792	4.799
6994.4104	5.430	4.875	4.834	4.817
6995.2274	5.392	4.828	4.776	4.789
6995.2720	5.398	4.848	4.792	4.802
6995.3222	5.410	4.853	4.795	4.807

HR 5941

HJD	u	v	b	y
6998.2634	5.423	4.861	4.808	4.820
6998.3200	5.412	4.860	4.799	4.810
6998.3693	5.422	4.853	4.799	4.815
6998.4158	5.416	4.862	4.804	4.816
6999.2235	5.415	4.855	4.813	4.815
6999.2710	5.437	4.869	4.815	4.828
6999.3188	5.454	4.881	4.821	4.823
6999.3625	5.444	4.872	4.821	4.827
6999.4045	5.454	4.876	4.825	4.832
7000.2236	5.450	4.881	4.819	4.828
7000.2676	5.449	4.885	4.823	4.828
7000.3115	5.427	4.875	4.816	4.819
7000.3552	5.414	4.865	4.807	4.807
7000.4134	5.392	4.845	4.793	4.811

HR 6118

HJD	u	v	b	y
6961.6140	5.265	5.142	4.608	4.270
6961.6423	5.261	5.142	4.608	4.267
6961.6634	5.260	5.141	4.606	4.264
6961.6870	5.261	5.141	4.608	4.263
6961.7093	5.259	5.140	4.606	4.261
6961.7488	5.258	5.137	4.604	4.258
6961.7676	5.255	5.138	4.603	4.258
6961.7994	5.253	5.135	4.602	4.257
6961.8193	5.256	5.139	4.604	4.258
6963.5617	5.272	5.156	4.621	4.283
6963.5794	5.274	5.155	4.623	4.282
6963.5965	5.277	5.155	4.623	4.283
6963.6250	5.274	5.156	4.622	4.281
6963.6493	5.274	5.157	4.623	4.282
6963.6727	5.273	5.158	4.623	4.283
6963.7125	5.273	5.155	4.623	4.281
6963.7426	5.268	5.152	4.619	4.277
6963.7635	5.271	5.154	4.621	4.278
6963.7876	5.271	5.152	4.621	4.277
6963.8216	5.267	5.150	4.618	4.274
6963.8435	5.272	5.159	4.626	4.281
6965.5341	5.275	5.161	4.631	4.288
6965.5720	5.273	5.159	4.628	4.285
6965.6092	5.275	5.159	4.630	4.287
6965.6479	5.271	5.159	4.629	4.284
6965.7351	5.275	5.159	4.631	4.286
6965.7832	5.272	5.158	4.630	4.283
6967.5203	5.272	5.157	4.627	4.289
6967.5507	5.272	5.153	4.624	4.287
6967.5797	5.276	5.153	4.626	4.288
6967.6140	5.274	5.155	4.624	4.287
6967.6552	5.270	5.152	4.622	4.283
6967.6868	5.271	5.151	4.623	4.281
6967.7140	5.270	5.153	4.624	4.282
6967.7540	5.268	5.152	4.623	4.281
6967.7938	5.269	5.152	4.623	4.283
6968.5056	5.275	5.158	4.627	4.286
6968.5365	5.264	5.149	4.618	4.278
6968.5712	5.261	5.147	4.617	4.276
6968.6087	5.259	5.144	4.613	4.271
6968.6506	5.262	5.150	4.617	4.275
6968.6790	5.262	5.148	4.618	4.276
6968.7270	5.273	5.157	4.627	4.283
6968.7659	5.273	5.155	4.626	4.282
6968.8084	5.261	5.148	4.617	4.272
6969.6016	5.270	5.157	4.626	4.286
6969.6355	5.271	5.154	4.624	4.285
6969.6645	5.269	5.153	4.624	4.283
6969.6925	5.272	5.154	4.624	4.281
6969.7301	5.271	5.155	4.624	4.282
6970.6069	5.276	5.150	4.620	4.286
6970.6398	5.273	5.149	4.619	4.282
6970.6807	5.272	5.147	4.617	4.280
6970.7141	5.267	5.142	4.613	4.274
6970.7534	5.269	5.141	4.612	4.271
6970.7849	5.260	5.133	4.607	4.263

HJD	u	v	b	y
6971.5051	5.266	5.138	4.612	4.277
6971.5397	5.281	5.155	4.625	4.289
6971.5684	5.262	5.130	4.601	4.264
6971.6099	5.259	5.126	4.597	4.257
6971.6475	5.258	5.126	4.594	4.254
6971.6903	5.257	5.125	4.594	4.250
6971.7337	5.258	5.126	4.596	4.251
6971.7837	5.254	5.125	4.596	4.250
6972.5061	5.253	5.120	4.590	4.249
6972.5404	5.251	5.118	4.586	4.244
6972.5688	5.249	5.114	4.583	4.240
6972.6163	5.249	5.118	4.584	4.241
6972.6537	5.246	5.114	4.581	4.238
6972.6908	5.243	5.115	4.584	4.239
6972.7380	5.244	5.118	4.588	4.243
6972.7718	5.242	5.117	4.587	4.244
6973.4987	5.255	5.125	4.591	4.246
6973.5310	5.249	5.121	4.588	4.245
6973.5699	5.246	5.120	4.586	4.243
6973.6151	5.245	5.119	4.589	4.246
6973.6960	5.243	5.117	4.588	4.243
6973.7516	5.231	5.112	4.585	4.240
6973.7952	5.233	5.114	4.582	4.236
6975.6467	5.255	5.143	4.611	4.267
6975.6715	5.253	5.139	4.607	4.263
6977.7555	5.256	5.153	4.615	4.276
6978.7465	5.269	5.154	4.624	4.284
6979.5120	5.275	5.166	4.633	4.293
6979.5496	5.276	5.166	4.635	4.295
6979.5924	5.273	5.164	4.632	4.292
6979.6261	5.277	5.165	4.636	4.294
6979.6580	5.276	5.168	4.638	4.295
6979.7489	5.275	5.163	4.635	4.288
6980.5063	5.277	5.167	4.638	4.297
6980.5487	5.284	5.173	4.644	4.301
6980.5849	5.282	5.171	4.643	4.299
6980.6330	5.277	5.168	4.639	4.294
6980.6926	5.277	5.165	4.638	4.293
6980.7402	5.281	5.169	4.642	4.297
6980.7757	5.284	5.177	4.648	4.300
6981.5276	5.284	5.174	4.643	4.301
6981.5638	5.288	5.169	4.643	4.300
6981.6053	5.283	5.172	4.643	4.301
6981.6430	5.282	5.170	4.640	4.296
6981.6894	5.281	5.174	4.642	4.302
6982.6870	5.273	5.161	4.634	4.293
6991.2869	4.913	4.855	4.619	4.312
6991.3311	4.902	4.853	4.613	4.305
6991.3804	4.910	4.867	4.631	4.318
6991.4242	4.903	4.867	4.629	4.317
6991.4744	4.913	4.864	4.630	4.319
6991.5263	4.943	4.872	4.652	4.316
6994.2609	4.886	4.830	4.596	4.294
6994.3059	4.882	4.827	4.600	4.289
6994.3501	4.878	4.824	4.603	4.290
6994.3949	4.880	4.827	4.577	4.266
6994.4377	4.870	4.821	4.583	4.280
6995.2546	4.914	4.860	4.616	4.298

HR 6118

HJD	u	v	b	y
6995.3052	4.913	4.857	4.614	4.294
6995.3548	4.910	4.836	4.592	4.274
6998.2979	4.924	4.854	4.627	4.317
6998.3502	4.918	4.857	4.624	4.315
6998.3990	4.915	4.840	4.614	4.305
6998.4445	4.892	4.839	4.601	4.300
6999.2530	4.897	4.821	4.598	4.296
6999.3014	4.904	4.821	4.598	4.289
6999.3458	4.904	4.828	4.599	4.297
6999.3888	4.887	4.820	4.595	4.282
6999.4315	4.894	4.828	4.591	4.289
7000.2507	4.897	4.800	4.569	4.271
7000.2951	4.880	4.793	4.561	4.255
7000.3382	4.886	4.795	4.558	4.254
7000.3939	4.886	4.800	4.572	4.263

HR 6175

HJD	u	v	b	y
6965.5464	3.179	3.057	2.668	2.540
6965.5803	3.175	3.051	2.662	2.535
6965.6241	3.174	3.051	2.662	2.536
6965.6656	3.173	3.053	2.662	2.535
6965.7590	3.184	3.061	2.672	2.543
6965.8076	3.181	3.057	2.669	2.536
6967.5305	3.186	3.065	2.672	2.550
6967.5578	3.179	3.059	2.665	2.542
6967.5911	3.181	3.059	2.667	2.543
6967.6281	3.181	3.058	2.666	2.543
6967.6663	3.177	3.052	2.662	2.537
6967.6969	3.179	3.054	2.665	2.539
6967.7238	3.181	3.057	2.667	2.541
6967.7659	3.181	3.057	2.666	2.538
6967.8058	3.187	3.062	2.672	2.544
6968.5135	3.188	3.066	2.672	2.548
6968.5465	3.184	3.066	2.672	2.551
6968.5835	3.179	3.057	2.667	2.543
6968.6240	3.182	3.061	2.669	2.546
6968.6612	3.179	3.058	2.668	2.542
6968.6889	3.181	3.059	2.669	2.542
6968.7373	3.194	3.072	2.679	2.548
6968.7753	3.182	3.054	2.665	2.536
6969.6138	3.178	3.053	2.662	2.539
6969.6466	3.178	3.055	2.663	2.540
6969.6753	3.184	3.058	2.668	2.543
6969.7020	3.182	3.059	2.667	2.541
6969.7423	3.185	3.063	2.671	2.544
6970.6177	3.182	3.061	2.669	2.547
6970.6518	3.181	3.060	2.666	2.546
6970.6911	3.181	3.058	2.668	2.541
6970.7242	3.181	3.059	2.669	2.543
6970.7654	3.185	3.062	2.670	2.544
6971.5132	3.191	3.070	2.676	2.553
6971.5474	3.201	3.080	2.688	2.564
6971.5843	3.189	3.066	2.675	2.549
6971.6243	3.183	3.062	2.670	2.546
6971.6624	3.192	3.066	2.674	2.547
6971.7004	3.189	3.061	2.671	2.541
6971.7540	3.183	3.057	2.666	2.536
6971.8015	3.180	3.056	2.669	2.532
6972.5122	3.188	3.059	2.670	2.541
6972.5479	3.185	3.056	2.667	2.540
6972.5881	3.181	3.060	2.666	2.539
6972.6294	3.179	3.057	2.665	2.539
6972.6651	3.179	3.057	2.666	2.541
6972.7020	3.176	3.056	2.664	2.538
6972.7476	3.184	3.058	2.670	2.540
6972.7911	3.181	3.057	2.666	2.538
6973.5083	3.190	3.059	2.667	2.540
6973.5398	3.188	3.059	2.668	2.541
6973.5813	3.179	3.055	2.668	2.542
6973.6260	3.173	3.053	2.666	2.541
6973.7054	3.170	3.053	2.660	2.534
6973.7626	3.157	3.042	2.654	2.527
6977.7374	3.173	3.057	2.657	2.539
6979.5250	3.185	3.059	2.669	2.543
6979.5625	3.183	3.061	2.670	2.544
6979.6048	3.180	3.061	2.670	2.546
6979.6400	3.180	3.057	2.666	2.542
6979.6701	3.188	3.065	2.674	2.549
6980.5166	3.191	3.065	2.677	2.552
6980.5625	3.182	3.060	2.671	2.546
6980.5986	3.179	3.057	2.667	2.541
6980.6479	3.186	3.059	2.671	2.543
6980.7042	3.184	3.059	2.670	2.543
6980.7538	3.179	3.056	2.665	2.539
6981.5406	3.184	3.082	2.679	2.560
6981.5805	3.181	3.057	2.666	2.541
6981.6178	3.189	3.063	2.672	2.546
6981.6534	3.191	3.065	2.675	2.548
6982.6475	3.181	3.054	2.665	2.541
6982.7029	3.190	3.063	2.674	2.547
6991.2889	2.789	2.745	2.652	2.568
6991.3332	2.778	2.752	2.654	2.567
6991.3824	2.785	2.764	2.665	2.574
6991.4262	2.775	2.767	2.668	2.574
6991.4767	2.788	2.763	2.666	2.580
6991.5284	2.804	2.756	2.680	2.567
6994.2640	2.798	2.766	2.662	2.570
6994.3079	2.805	2.774	2.677	2.587
6994.3521	2.794	2.783	2.684	2.592
6994.3969	2.804	2.775	2.669	2.572
6994.4398	2.781	2.764	2.678	2.591
6995.2572	2.811	2.791	2.692	2.600
6995.3071	2.812	2.783	2.681	2.592
6995.3568	2.807	2.787	2.682	2.594
6998.3006	2.785	2.767	2.669	2.582
6998.3034	2.777	2.767	2.665	2.579
6998.3524	2.777	2.760	2.658	2.576
6998.4011	2.788	2.764	2.672	2.588
6998.4470	2.784	2.762	2.678	2.590
6999.2550	2.772	2.779	2.675	2.588
6999.3035	2.794	2.782	2.690	2.596
6999.3479	2.785	2.772	2.675	2.589
6999.3909	2.776	2.763	2.669	2.580
6999 4336	2.772	2.763	2.668	2.577
7000.2527	2.775	2.760	2.668	2.583
7000.2970	2.775	2.761	2.665	2.579
7000.3403	2.778	2.761	2.663	2.575
7000.3967	2.790	2.762	2.671	2.577

HR 6451

HJD	u	v	b	y
6979.7579	5.769	5.570	5.247	5.230
6979.7812	5.765	5.564	5.239	5.219
6979.8023	5.758	5.557	5.231	5.216
6980.5082	5.790	5.584	5.262	5.244
6980.5553	5.776	5.576	5.252	5.234
6980.5912	5.765	5.565	5.242	5.222
6980.6404	5.753	5.555	5.228	5.207
6980.6985	5.768	5.566	5.239	5.218
6980.7474	5.787	5.587	5.262	5.243
6980.7832	5.790	5.591	5.266	5.248
6980.8154	5.784	5.585	5.259	5.243
6980.8365	5.766	5.590	5.255	5.249
6981.5334	5.766	5.569	5.242	5.225
6981.5746	5.782	5.584	5.260	5.243
6981.6107	5.784	5.583	5.259	5.239
6981.6488	5.768	5.571	5.244	5.226
6981.6955	5.755	5.550	5.224	5.207
6982.6339	5.757	5.558	5.235	5.215
6982.6950	5.789	5.590	5.265	5.245
6982.7504	5.812	5.607	5.282	5.265
6991.2715	5.371	5.282	5.249	5.265
6991.3153	5.375	5.275	5.252	5.266
6991.3652	5.389	5.297	5.265	5.285
6991.4078	5.394	5.290	5.265	5.289
6991.4563	5.384	5.289	5.260	5.286
6991.5073	5.370	5.262	5.243	5.272
6991.5439	5.380	5.273	5.239	5.276
6994.2463	5.356	5.234	5.222	5.245
6994.2910	5.375	5.278	5.248	5.262
6994.3344	5.401	5.314	5.266	5.285
6994.4229	5.409	5.301	5.269	5.288
6994.5155	5.371	5.251	5.228	5.246
6995.2400	5.434	5.325	5.295	5.322
6995.2848	5.435	5.320	5.294	5.316
6995.3344	5.385	5.276	5.245	5.277
6998.2788	5.388	5.288	5.255	5.288
6998.3340	5.396	5.301	5.273	5.301
6998.3833	5.376	5.280	5.256	5.282
6998.4289	5.372	5.268	5.240	5.264
6998.4640	5.364	5.262	5.238	5.256
6998.5145	5.380	5.273	5.256	5.273
6999.2370	5.404	5.288	5.268	5.298
6999.2848	5.381	5.275	5.252	5.273
6999.3312	5.390	5.283	5.257	5.283
6999.3745	5.394	5.294	5.266	5.295
6999.4167	5.412	5.304	5.285	5.310
6999.4654	5.411	5.300	5.268	5.290
6999.5151	5.386	5.272	5.256	5.275
7000.2363	5.409	5.305	5.282	5.294
7000.2806	5.412	5.304	5.281	5.302
7000.3240	5.404	5.289	5.272	5.289
7000.3762	5.388	5.279	5.257	5.287
7000.4285	5.393	5.290	5.253	5.284
7000.4809	5.416	5.303	5.281	5.311

HR 6451

HJD	u	v	b	y
6960.5582	5.770	5.577	5.252	5.226
6960.5760	5.775	5.582	5.257	5.231
6960.6044	5.791	5.594	5.270	5.245
6960.6343	5.796	5.599	5.274	5.248
6960.6595	5.800	5.605	5.279	5.251
6960.7063	5.789	5.590	5.265	5.239
6960.7254	5.786	5.585	5.262	5.236
6960.7279	5.782	5.583	5.259	5.235
6960.7482	5.777	5.573	5.249	5.227
6960.7918	5.761	5.562	5.239	5.217
6960.8347	5.755	5.564	5.240	5.219
6962.5317	5.758	5.557	5.232	5.209
6962.5501	5.761	5.551	5.228	5.205
6962.5722	5.753	5.552	5.227	5.203
6962.5864	5.750	5.550	5.223	5.201
6962.6002	5.752	5.552	5.225	5.201
6962.6175	5.756	5.556	5.230	5.205
6962.6322	5.764	5.560	5.236	5.210
6962.6563	5.766	5.567	5.243	5.218
6962.7068	5.773	5.576	5.252	5.227
6962.7285	5.774	5.577	5.253	5.230
6962.7498	5.770	5.577	5.252	5.230
6962.7746	5.771	5.572	5.250	5.225
6962.8086	5.760	5.558	5.236	5.213
6962.8271	5.757	5.555	5.232	5.212
6962.8443	5.758	5.556	5.230	5.210
6962.8718	5.761	5.559	5.232	5.214
6962.8903	5.767	5.565	5.238	5.216
6965.5363	5.792	5.581	5.254	5.235
6965.5745	5.778	5.567	5.240	5.219
6965.6184	5.780	5.573	5.247	5.224
6965.6575	5.787	5.582	5.256	5.233
6965.7407	5.791	5.591	5.265	5.245
6965.8020	5.767	5.559	5.235	5.216
6965.8323	5.749	5.539	5.215	5.197
6967.5235	5.782	5.580	5.255	5.238
6967.5531	5.783	5.583	5.258	5.238
6967.5859	5.782	5.582	5.258	5.240
6967.6228	5 780	5.580	5.255	5.236
6967.6618	5.772	5.568	5.243	5.221
6967.6922	5.764	5.562	5.238	5.217
6967.7191	5.756	5.556	5.232	5.211
6967.7605	5.757	5.560	5.236	5.214
6967.7992	5.772	5.578	5.254	5.233
6967.8350	5.781	5.586	5.263	5.242
6967.8593	5.784	5.588	5.263	5.242
6968.5079	5.782	5.585	5.258	5.232
6968.5400	5.763	5.574	5.248	5.224
6968.5766	5.753	5.565	5.241	5.217
6968.6180	5.759	5.572	5.247	5.222
6968.6564	5.761	5.568	5 244	5 218
6968.6848	5.759	5.566	5.241	5 215
6968.7327	5.769	5.572	5 246	5 217
6968.7713	5.771	5 573	5.248	5.220
6968.8126	5.777	5 579	5.255	5.228
6968 8419	5.789	5 593	5 269	5.242
6968.8680	5.786	5.588	5.266	5.236
6968.8879	5.775	5.581	5.257	5.231
6969.6081	5.761	5.568	5.243	5.225
6969.6413	5.753	5.568	5.243	5.226
6969.6705	5.755	5.566	5.241	5.223
6969.6978	5.741	5.551	5.225	5.207
6969.7373	5.733	5.542	5.217	5.195
6970.6136	5.765	5.562	5.235	5.218
6970.6469	5.769	5.572	5.246	5.227
6970.6872	5.793	5.594	5.269	5.248
6970.7202	5.796	5.593	5.270	5.248
6970.7602	5.773	5.572	5.250	5.230
6970.7981	5.758	5.558	5.235	5.214
6970.8204	5.756	5.556	5.232	5.210
6970.8382	5.744	5.549	5.224	5.205
6971.5076	5.805	5.599	5.256	5.256
6971.5427	5.815	5.610	5.265	5.265
6971.5800	5.800	5.590	5.246	5.243
6971.6191	5.790	5.580	5.235	5.228
6971.6554	5.788	5.576	5.230	5.224
6971.6964	5.792	5.584	5.238	5.230
6971.7497	5.812	5.609	5.265	5.254
6971.7920	5.822	5.617	5.274	5.264
6971.8262	5.809	5.601	5.259	5.248
6971.8523	5.790	5.582	5.241	5.233
6971.8680	5.784	5.569	5.229	5.218
6972.5075	5.762	5.563	5.240	5.226
6972.5429	5.770	5.573	5.249	5.237
6972.5779	5.767	5.570	5.247	5.235
6972.6249	5.771	5.571	5.247	5.233
6972.6592	5.774	5.570	5.246	5.233
6972.6980	5.768	5.565	5.240	5.225
6972.7432	5.770	5.564	5.242	5.227
6972.7864	5.773	5.573	5 249	5 236
6972.8178	5.782	5.583	5.257	5 242
6972.8474	5.796	5.597	5.271	5.256
6973 5021	5.792	5.577	5.253	5.234
6973.5345	5.789	5.580	5.255	5.242
6973.5773	5.773	5.573	5.251	5.234
6973.6215	5.762	5.560	5.239	5.221
6973 7013	5.774	5.574	5.248	5.228
6973.7582	5.777	5.575	5.251	5.231
6973 8027	5.791	5.589	5.264	5.240
6975.6122	5.775	5.568	5.241	5.223
6975 6286	5 772	5.566	5.241	5.220
6975 6480	5.776	5.573	5.246	5.229
6977.7319	5.776	5.571	5.248	5.226
6977 7638	5.771	5.567	5.243	5.222
6977 7930	5.769	5 563	5.240	5.218
6977 8219	5.766	5.566	5.242	5.222
6978.7573	5.777	5.581	5.257	5.234
6978 7862	5.767	5.571	5.244	5.228
6978 8111	5.767	5 566	5.238	5 222
6979.5186	5 779	5.578	5 250	5 234
6979 5569	5 787	5.582	5 257	5 239
6979.5999	5 784	5.583	5 258	5 236
6979 6347	5 787	5 581	5.254	5 235
6979 6647	5.781	5 578	5 251	5 232

HR 6510

HJD	u	v	b	y
6961.5995	3.390	3.143	2.814	2.793
6961.6184	3.391	3.144	2.814	2.791
6961.6452	3.389	3.140	2.810	2.787
6961.6663	3.390	3.142	2.811	2.787
6961.6902	3.392	3.145	2.815	2.787
6961.7133	3.395	3.147	2.818	2.791
6961.7527	3.399	3.152	2.824	2.797
6961.7718	3.401	3.155	2.826	2.798
6961.8022	3.397	3.152	2.823	2.796
6961.8241	3.395	3.151	2 824	2.798
6961.8382	3.391	3.145	2.817	2.792
6961.8522	3.387	3.143	2.815	2.792
6961.8662	3.387	3.140	2.812	2.792
6961.8855	3.381	3.130	2.802	2.783
6961.8988	3.382	3.129	2.803	2.782
6963.5652	3.384	3.137	2.803	2.787
6963.5826	3.386	3.137	2.806	2.788
6963.5998	3.387	3.137	2.803	2.786
6963.6283	3.387	3.138	2.804	2.787
6963.6534	3.391	3.144	2.809	2.790
6963.6759	3.395	3.148	2.816	2.794
6963.7161	3.399	3.156	2.825	2.801
6963.7459	3.402	3.158	2.825	2.799
6963.7661	3.397	3.155	2.823	2.800
6963.7994	3.390	3.145	2.815	2.792
6963.8256	3.383	3.136	2.805	2.785
6963.8449	3.382	3.133	2.801	2.782
6963.8555	3.379	3.131	2.800	2.781
6963.8663	3.380	3.132	2.800	2.784
6963.8678	3.381	3.130	2.800	2.782
6963.8721	3.380	3.130	2.801	2.783
6963.8894	3.384	3.128	2.799	2.781
6965.5436	3.385	3.132	2.803	2.784
6965.5785	3.387	3.137	2.806	2.789
6965.6226	3.397	3.148	2.818	2.795
6965.6641	3.406	3.158	2.827	2.804
6965.7573	3.393	3.144	2 813	2.791
6965.8062	3.378	3.126	2.798	2.777
6965.8356	3.371	3.120	2.793	2.776
6967.5284	3.373	3.128	2.798	2 781
6967.5565	3.378	3.134	2.803	2.785
6967.5893	3.388	3.143	2.813	2.792
6967.6265	3.396	3.153	2.822	2.800
6967.6649	3.396	3.152	2.821	2.797
6967.6952	3.395	3.148	2.817	2.794
6967.7224	3.388	3.142	2.813	2.789
6967.7646	3.379	3.132	2.804	2.781
6967.8028	3.373	3.131	2.800	2.780
6967.8395	3.373	3.132	2.802	2.782
6967.8635	3.372	3.130	2.801	2.778
6968.5119	3.378	3.128	2.796	2.774
6968.5439	3.376	3.129	2.800	2.777
6968.5797	3.382	3.139	2.809	2.787
6968.6216	3.395	3.150	2.820	2.792
6968.6598	3.397	3.151	2.820	2.793
6968.6876	3.393	3.148	2.817	2.789
6968.7359	3.395	3.148	2.816	2.788
6968 7741	3.378	3.134	2.804	2.777
6968.8160	3.364	3.123	2.792	2.767
6968.8453	3.376	3.136	2.808	2.784
6968.8717	3 366	3.126	2.798	2.771
6968.8893	3.372	3.131	2.803	2 775
6969.6120	3.398	3.154	2.821	2.802
6969.6453	3.392	3.148	2.815	2.795
6969.6734	3.388	3.141	2.812	2.790
6969.7007	3.382	3.140	2.807	2.785
6969.7408	3.374	3.132	2.801	2.781
6970.6165	3.394	3.148	2.814	2.794
6970.6506	3.388	3.144	2.812	2.792
6970.6898	3.385	3.140	2.810	2.788
6970.7231	3.385	3 139	2.808	2 787
6970.7641	3.379	3.136	2.807	2.788
6970.8026	3.371	3.126	2.800	2.779
6970.8245	3.372	3.126	2.798	2.779
6970.8413	3.371	3.124	2.796	2.776
6971.5119	3.432	3.180	2.831	2.829
6971.5462	3.415	3.163	2.812	2 811
6971 5831	3.430	3.174	2.825	2.820
6971.6228	3.424	3.166	2 815	2.809
6971.6611	3.425	3.171	2.820	2 811
6971 6993	3.414	3.158	2 809	2.800
6971.7527	3.402	3.148	2.801	2.793
6971.8003	3.394	3.138	2.791	2.783
6971.8319	3.391	3.135	2 788	2 782
6971 8554	3.390	3.134	2 788	2.780
6971.8714	3.392	3 136	2.790	2.782
6972.5110	3.407	3.151	2.823	2 808
6972.5468	3.408	3.154	2.824	2.810
6972.5862	3.407	3.155	2.826	2.809
6972.6284	3.399	3.151	2.821	2.806
6972.6639	3.387	3.143	2.814	2.801
6972.7009	3.374	3.133	2.806	2 791
6972.7464	3.373	3.128	2.801	2.785
6972.7897	3.370	3.122	2.795	2.782
6972.8264	3.378	3.128	2 800	2.788
6972.8512	3.385	3.137	2.807	2 795
6973.5064	3.409	3.149	2.818	2.798
6973.5386	3.411	3 153	2 824	2.807
6973.5801	3.399	3.148	2.821	2.803
6973.6249	3.386	3.142	2.814	2 797
6973.7041	3.373	3.128	2.800	2.779
6973.7611	3.365	3.122	2.795	2.776
6973.8079	3.382	3.133	2.803	2 783
6975.6151	3.388	3.144	2.813	2.794
6975.6317	3.384	3.137	2.807	2 790
6975.6511	3.374	3.129	2.799	2.783
6977.7358	3.379	3.134	2 805	2.784
6977.7669	3.386	3.139	2 813	2 791
6977.7960	3.387	3.142	2.815	2.794
6977.8234	3.392	3.144	2.817	2.797
6978.7623	3 377	3.138	2 808	2.787
6978.7911	3.382	3.141	2.810	2 791
6978.8139	3.389	3.143	2 813	2.795
6979.5239	3.393	3.149	2.820	2.801

TABLE IIb (*continued*)

HR 6510

HJD	u	v	b	y
6979.5612	3.379	3.137	2.808	2.789
6979.6038	3.376	3.132	2.803	2.785
6979.6389	3.368	3.126	2.797	2.778
6979.6691	3.372	3.129	2.800	2.780
6979.7630	3.382	3.142	2.814	2.792
6979.7849	3.380	3.139	2.810	2.791
6979.8055	3.388	3.145	2.816	2.797
6979.8229	3.381	3.138	2.807	2.789
6980.5152	3.390	3.146	2.818	2.803
6980.5613	3.373	3.128	2.801	2.784
6980.5973	3.368	3.121	2.792	2.773
6980.6465	3.363	3.119	2.790	2.771
6980.7029	3.374	3.134	2.804	2.782
6980.7524	3.385	3.142	2.814	2.793
6980.7886	3.386	3.144	2.812	2.793
6980.8206	3.387	3.143	2.811	2.796
6980.8422	3.392	3.148	2.814	2.797
6980.8589	3.395	3.151	2.814	2.798
6981.5389	3.374	3.132	2.801	2.785
6981.5793	3.361	3.119	2.789	2.775
6981.6156	3.365	3.121	2.792	2.775
6981.6555	3.371	3.127	2.797	2.778
6981.7019	3.381	3.141	2.809	2.791
6982.6456	3.385	3.137	2.807	2.788
6982.7014	3.390	3.145	2.816	2.798
6991.2734	2.996	2.847	2.818	2.838
6991.3172	2.984	2.835	2.810	2.826
6991.3672	2.976	2.826	2.795	2.819
6991.4106	2.967	2.827	2.802	2.823
6991.4586	2.980	2.840	2.811	2.835
6991.5105	2.994	2.844	2.813	2.836
6991.5463	3.002	2.836	2.810	2.837
6994.2482	2.996	2.838	2.821	2.833
6994.2929	2.982	2.839	2.801	2.826
6994.3365	3.004	2.857	2.805	2.829
6994.3805	2.973	2.836	2.808	2.835
6994.4248	2.993	2.833	2.810	2.829
6994.5173	3.003	2.846	2.806	2.838
6995.2419	2.997	2.836	2.805	2.833
6995.2867	3.005	2.853	2.827	2.845
6995.2914	2.983	2.835	2.810	2.829
6995.3362	2.991	2.846	2.814	2.848
6995.3404	3.002	2.844	2.809	2.835
6998.2810	2.994	2.829	2.811	2.835
6998.3360	2.996	2.848	2.823	2.847
6998.3853	2.994	2.846	2.817	2.839
6998.4308	3.002	2.843	2.816	2.837
6998.4661	3.003	2.854	2.821	2.843
6998.5166	3.027	2.873	2.843	2.862
6999.2389	2.984	2.840	2.811	2.833
6999.2880	2.987	2.846	2.818	2.839
6999.3330	3.002	2.853	2.819	2.850
6999.3764	3.005	2.849	2.821	2.844
6999.4189	2.998	2.858	2.826	2.850
6999.4672	3.000	2.863	2.835	2.852
6999.5172	3.021	2.865	2.833	2.844
7000.2380	2.978	2.839	2.810	2.829
7000.2826	2.983	2.839	2.806	2.837
7000.3259	2.984	2.834	2.809	2.833
7000.3787	2.986	2.843	2.815	2.841
7000.4304	2.997	2.850	2.820	2.843
7000.4828	2.998	2.861	2.826	2.863

HR 6747

HJD	u	v	b	y
6960.6384	6.641	6.578	6.207	6.112
6960.6734	6.640	6.582	6.207	6.115
6960.7090	6.642	6.580	6.207	6.114
6960.7307	6.646	6.583	6.212	6.121
6960.7540	6.643	6.584	6.213	6.122
6960.801A	6.641	6.581	6.209	6.115
6960.8388	6.644	6.579	6.207	6.111
6960.8646	6.643	6.582	6.210	6.117
6960.8659	6.647	6.580	6.207	6.113
6962.6031	6.642	6.582	6.209	6.110
6962.6208	6.634	6.576	6.201	6.106
6962.6352	6.633	6.575	6.202	6.104
6962.6677	6.627	6.568	6.194	6.101
6962.7103	6.626	6.568	6.195	6.102
6962.7310	6.624	6.565	6.194	6.102
6962.7523	6.630	6.567	6.198	6.103
6962.7771	6.633	6.572	6.202	6.108
6962.8125	6.637	6.575	6.206	6.110
6962.8325	6.637	6.578	6.207	6.110
6962.8498	6.635	6.576	6.205	6.107
6965.6157	6.642	6.586	6.212	6.116
6965.6545	6.640	6.583	6.209	6.115
6965.7382	6.639	6.580	6.207	6.112
6965.7872	6.651	6.584	6.211	6.116
6965.8299	6.650	6.590	6.218	6.123
6967.5837	6.622	6.564	6.188	6.094
6967.6197	6.634	6.575	6.202	6.110
6967.6594	6.634	6.577	6.201	6.112
6967.6899	6.637	6.580	6.205	6.114
6967.7171	6.640	6.584	6.211	6.118
6967.7582	6.643	6.583	6.211	6.118
6967.7972	6.642	6.583	6.212	6.117
6967.8337	6.639	6.584	6.210	6.109
6968.5742	6.629	6.573	6.198	6.103
6968.6121	6.642	6.582	6.207	6.118
6968.6542	6.644	6.587	6.211	6.120
6968.6825	6.645	6.581	6.208	6.116
6968.7303	6.652	6.590	6.215	6.119
6968.7691	6.643	6.582	6.208	6.112
6968.8114	6.635	6.577	6.201	6.105
6968.8403	6.642	6.583	6.209	6.110
6969.6052	6.641	6.583	6.211	6.117
6969.6384	6.635	6.577	6.204	6.108
6969.6677	6.628	6.570	6 197	6.104
6969.6956	6.623	6.565	6.192	6.098
6969.7350	6.624	6.566	6.193	6.099
6970.6106	6.639	6.584	6.207	6.111
6970.6429	6.639	6.585	6.208	6.114
6970.6840	6.643	6.588	6.212	6.116
6970.7178	6.644	6.587	6.212	6.117
6970.7570	6.647	6.592	6.217	6.119
6970.7886	6.644	6 587	6.216	6.118
6971.6138	6.631	6.574	6.199	6.109
6971.6523	6.639	6.580	6.207	6.113
6971.6934	6.640	6.583	6.206	6 112
6971.7369	6.630	6.572	6.198	6.103
6971.7881	6.622	6.565	6.192	6.096
6971.8227	6.617	6.563	6.189	6.092
6972.5718	6.640	6.582	6.206	6.110
6972.6196	6.638	6.581	6.206	6.110
6972.6567	6.629	6.574	6.200	6.107
6972.6952	6.625	6.573	6.198	6.107
6972.7409	6.628	6.575	6.202	6.108
6972.7828	6.628	6.574	6.203	6.108
6972.8149	6.633	6.580	6.206	6.113
6973.5728	6.653	6.591	6.217	6.121
6973.6193	6.645	6.584	6.209	6.116
6973.6990	6.660	6.598	6.222	6.122
6973.7555	6.678	6.599	6.233	6.135
6973.7997	6.668	6.609	6.234	6.132
6975.6747	6.648	6.584	6.212	6.114
6977.7287	6.633	6.580	6.207	6.111
6977.7608	6.637	6.585	6.211	6.115
6977.7903	6.631	6.583	6.209	6.112
6978 7537	6.621	6.570	6.196	6.105
6978.7831	6.622	6.569	6.195	6.104
6979.5535	6.642	6.580	6.207	6.108
6979.5972	6.636	6.580	6.207	6.113
6979.6322	6.636	6.578	6.203	6 113
6979.6623	6.637	6.580	6.205	6.112
6979 7562	6.629	6.570	6.195	6.104
6980.5536	6.657	6 580	6.210	6.116
6980.5899	6.654	6.576	6.207	6.115
6980 6385	6.636	6.568	6.191	6.098
6980.6970	6.647	6.575	6.201	6.108
6980 7454	6.650	6 578	6 204	6.111
6980 7816	6.648	6.576	6.204	6.109
6980 8132	6.649	6.580	6.207	6.108
6981.5319	6.643	6 589	6.211	6.114
6981.5734	6.636	6.579	6 204	6.108
6981.6093	6.641	6.581	6.206	6.110
6981.6476	6.652	6.588	6.214	6 118
6981 6936	6 649	6.594	6.216	6 123
6982.6914	6.649	6.589	6.215	6 122
6982.7489	6.682	6.628	6.253	6.157

HR 8260

HJD	u	v	b	y
6963.7250	4.978	4.674	4.355	4.421
6963.7493	4.975	4.673	4.355	4.420
6963.7710	4.979	4.675	4.358	4.423
6963.8057	4.980	4.676	4.360	4.425
6963.8321	4.980	4.677	4.362	4.425
6963.8511	4.981	4.678	4.362	4.424
6963.8612	4.981	4.677	4.362	4.426
6963.8825	4.977	4.677	4.361	4.422
6963.8836	4.981	4.674	4.361	4.422
6963.8935	4.987	4.675	4.363	4.423
6963.8983	4.978	4.674	4.358	4.420
6965.8128	4.974	4.674	4.357	4.420
6965.8380	4.972	4.671	4.355	4.419
6965.8556	4.973	4.671	4.355	4.417
6965.8787	4.971	4.668	4.353	4.416
6965.8922	4.965	4.663	4.347	4.411
6967.7304	4.976	4.682	4.361	4.426
6967.7698	4.979	4.681	4.362	4.425
6967.8095	4.990	4.676	4.364	4.424
6967.8422	4.972	4.674	4.355	4.416
6967.8662	4.968	4.672	4.352	4.413
6968.7023	4.942	4.645	4.327	4.395
6968.7415	4.967	4.666	4.348	4.413
6968.7790	4.968	4.666	4.349	4.414
6968.8182	4.974	4.671	4.354	4.419
6968.8474	4.984	4.682	4.364	4.428
6968.8742	4.974	4.674	4.356	4.419
6968.8963	4.976	4.675	4.357	4.420
6969.7062	4.972	4.670	4.354	4.417
6969.7467	4.972	4.666	4.351	4.414
6970.7291	4.972	4.676	4.358	4.421
6970.7692	4.971	4.675	4.358	4.421
6970.8042	4.967	4.669	4.353	4.415
6970.8267	4.965	4.665	4.350	4.410
6970.8559	4.953	4.658	4.340	4.402
6970.8655	4.952	4.654	4.338	4.401
6970.8765	4.953	4.653	4.339	4.400
6970.8920	4.952	4.653	4.337	4.399
6971.6679	4.997	4.690	4.369	4.431
6971.7047	4.988	4.678	4.360	4.422
6971.7595	4.985	4.679	4.359	4.424
6971.8035	4.980	4.679	4.360	4.424
6971.8336	4.981	4.678	4.360	4.424
6971.8571	4.977	4.672	4.357	4.421
6971.8791	4.973	4.670	4.353	4.416
6971.8907	4.973	4.671	4.353	4.417
6971.9033	4.970	4.667	4.351	4.414
6972.6695	4.979	4.674	4.358	4.417
6972.7063	4.979	4.678	4.361	4.420
6972.7512	4.979	4.675	4.359	4.420
6972.7971	4.977	4.674	4.360	4.417
6972.8292	4.979	4.676	4.360	4.419
6972.8686	4.983	4.679	4.365	4.422
6972.8934	4.992	4.687	4.372	4.427
6973.6667	4.951	4.657	4.348	4.402
6973.7093	4.968	4.674	4.359	4.412
6977.7445	4.940	4.652	4.331	4.398
6977.7797	4.941	4.655	4.334	4.398
6977.8097	4.941	4.654	4.333	4.398
6977.8324	4.941	4.655	4.335	4.398
6977.8487	4.946	4.658	4.337	4.403
6977.8605	4.948	4.657	4.338	4.403
6977.8818	4.950	4.662	4.342	4.407
6977.8915	4.955	4.667	4.347	4.411
6978.7653	4.948	4.656	4.336	4.399
6978.7964	4.947	4.658	4.339	4.402
6978.8194	4.951	4.662	4.342	4.407
6979.6764	4.948	4.661	4.344	4.405
6979.7671	4.952	4.659	4.345	4.406
6979.7904	4.951	4.664	4.347	4.410
6979.8106	4.954	4.661	4.347	4.407
6979.8259	4.951	4.661	4.344	4.406
6979.8384	4.953	4.660	4.344	4.407
6979.8553	4.959	4.662	4.347	4.410
6979.8712	4.952	4.661	4.344	4.407
6979.8872	4.949	4.659	4.341	4.405
6979.9017	4.957	4.663	4.347	4.408
6980.6548	4.949	4.657	4.339	4.404
6980.7112	4.950	4.653	4.336	4.400
6980.7928	4.953	4.659	4.341	4.403
6980.8240	4.959	4.665	4.346	4.410
6980.8454	4.963	4.668	4.350	4.415
6980.8648	4.963	4.668	4.349	4.413
6980.8875	4.963	4.670	4.351	4.415
6980.8994	4.966	4.668	4.349	4.414
6981.6626	4.946	4.652	4.332	4.391
6982.6561	4.972	4.641	4.324	4.384
6982.7111	4.981	4.654	4.340	4.404
6982.7561	4.970	4.644	4.331	4.393
6991.5808	4.547	4.380	4.387	4.462
6991.6331	4.559	4.386	4.393	4.469
6998.4835	4.537	4.364	4.370	4.443
6998.5354	4.574	4.383	4.394	4.462
6998.5941	4.568	4.374	4.380	4.452
6998.6498	4.551	4.369	4.368	4.445
6999.4862	4.540	4.361	4.363	4.436
6999.5498	4.542	4.365	4.373	4.438
6999.5995	4.554	4.360	4.368	4.435
6999.6528	4.567	4.375	4.376	4.450
7000.4987	4.571	4.380	4.382	4.455
7000.5268	4.554	4.368	4.369	4.442
7000.5631	4.540	4.371	4.367	4.442
7000.6191	4.559	4.363	4.369	4.441

HR 8402

HJD	u	v	b	y
6961.7577	5.813	5.046	4.668	4.694
6961.7766	5.816	5.048	4.670	4.694
6961.8066	5.821	5.050	4.673	4.698
6961.8284	5.817	5.049	4.670	4.697
6961.8419	5.820	5.051	4.673	4.697
6961.8561	5.818	5.051	4.673	4.698
6961.8677	5.819	5.049	4.673	4.696
6961.8869	5.819	5.049	4.672	4.694
6961.8998	5.818	5.049	4.671	4.693
6962.7533	5.839	5.045	4.667	4.678
6962.7772	5.819	5.048	4.661	4.675
6962.8141	5.818	5.047	4.662	4.678
6962.8324	5.817	5.047	4.662	4.676
6962.8585	5.814	5.042	4.657	4.671
6962.8795	5.811	5.041	4.654	4.669
6962.8944	5.810	5 041	4.655	4.667
6962.9036	5.807	5.039	4.650	4.663
6963.7513	5.801	5.038	4.658	4.673
6965.8195	5.801	5.039	4.659	4.676
6965.8432	5.800	5.037	4.658	4.676
6965.8612	5.797	5.037	4.657	4.675
6965.8831	5.794	5.035	4.656	4.674
6965.8965	5.792	5.031	4.652	4.669
6967.7340	5.822	5.057	4.677	4.702
6967.7733	5.827	5.055	4.678	4.702
6967.8130	5.828	5.055	4.678	4.703
6967.8459	5.822	5.053	4.675	4.700
6967.8702	5.821	5.052	4.675	4.699
6968.7452	5.785	5.029	4.649	4.676
6968.7843	5.787	5.029	4.650	4.678
6968.8217	5.787	5.029	4.649	4.678
6968.8505	5.802	5.044	4.663	4.692
6968.8775	5.798	5.036	4.658	4.684
6968.8998	5.801	5.037	4.660	4.685
6969.7500	5.820	5.048	4.671	4.697
6970.7729	5.811	5.047	4.669	4.695
6970.8086	5.808	5.042	4.664	4.690
6970.8304	5.803	5.041	4.662	4.686
6970.8587	5.797	5.039	4.661	4.686
6970.8689	5.794	5.033	4.656	4.681
6970.8842	5.791	5.032	4.654	4.679
6970.8951	5.790	5.034	4.655	4.681
6971.7081	5.818	5.054	4.674	4.698
6971.7630	5.811	5.048	4.667	4.695
6971.8069	5.809	5.045	4.665	4.693
6971.8371	5.818	5.054	4.674	4.700
6971.8609	5.813	5.046	4.667	4.696
6971.8834	5.818	5.051	4.672	4.698
6971.8952	5.815	5.049	4.669	4.697
6971.9065	5.814	5.044	4.666	4.691
6972.7093	5.834	5.061	4.682	4.705
6972.7542	5.827	5.054	4.676	4.701
6972.8000	5.826	5.052	4.675	4.700
6972.8348	5.828	5.053	4.676	4.700
6972.8733	5.824	5.054	4.676	4.703
6972.8977	5.826	5.055	4.677	4.703
6973.7125	5.794	5.036	4.659	4 685
6977.7483	5.813	5.055	4.676	4.701
6977.7834	5.813	5.054	4.675	4.701
6977.8132	5.810	5.052	4.673	4.698
6977.8360	5.809	5.051	4.671	4.697
6977.8525	5.808	5.053	4.675	4.700
6977.8648	5.808	5.050	4.672	4.699
6977.8851	5.803	5.048	4.670	4.696
6977.8949	5.800	5.046	4.669	4.695
6978.7698	5.801	5.038	4.659	4.685
6978.8014	5.790	5.036	4.654	4.682
6978.8272	5.793	5.036	4.656	4.684
6979.7715	5.816	5.049	4.670	4.696
6979.7946	5.821	5.049	4.670	4.697
6979.8150	5.826	5.055	4.675	4.703
6979.8301	5.829	5.058	4.679	4.705
6979.8435	5.824	5.055	4.674	4.703
6979.8631	5.826	5.055	4.675	4.703
6979.8758	5.827	5.055	4.676	4.701
6979.8920	5.832	5.055	4.678	4.703
6979.9072	5.824	5.055	4.675	4.699
6980.7156	5.826	5.055	4.677	4.703
6980.7969	5.812	5.044	4.665	4.691
6980.8291	5.814	5.047	4.669	4.695
6980.8504	5.811	5.042	4.666	4.692
6980.8691	5.808	5.041	4.665	4.691
6980.8921	5.809	5.043	4.667	4.691
6980.9035	5.806	5.044	4.668	4.694
6982.7157	5.855	5.067	4.687	4.723
6982.7619	5.853	5.064	4.683	4.716
6991.5976	5.412	4.733	4.672	4.711
6991.6497	5.403	4.742	4.680	4.718
6998.5024	5.417	4.738	4.695	4.722
6998.5534	5.423	4.749	4.682	4.713
6998 6129	5.418	4.745	4.686	4.718
6999.5039	5.397	4.717	4.658	4.686
6999 5676	5.389	4.716	4.661	4.689
6999.6189	5.387	4.721	4.658	4.686
7000.4688	5.401	4.724	4.670	4.706
7000.5186	5.409	4.738	4.680	4.705
7000.5379	5.396	4.734	4.673	4.694
7000.5813	5.407	4.739	4.677	4.704
7000.6387	5.413	4.745	4.675	4.710

TABLE IIb (*continued*)

HR 8408

HJD	u	v	b	y
6960.7686	6.688	6.225	5.891	5.942
6960.7697	6.689	6.220	5.888	5.939
6960.8037	6.699	6.232	5.900	5.951
6960.8410	6.699	6.231	5.900	5.952
6960.8676	6.695	6.230	5.900	5.951
6960.8785	6.697	6.231	5.901	5.953
6960.8869	6.692	6.229	5.899	5.951
6960.8946	6.695	6.226	5.899	5.949
6960.9011	6.693	6.229	5.898	5.949
6960.9084	6.696	6.229	5.901	5.950
6960.9141	6.697	6.230	5.898	5.951
6960.9203	6.697	6.230	5.901	5.951
6965.8142	6.673	6.213	5.882	5.936
6965.8165	6.679	6.217	5.886	5.938
6965.8397	6.676	6.216	5.886	5.939
6965.8571	6.675	6.215	5.884	5.936
6965.8799	6.671	6.216	5.884	5.936
6965.8939	6.674	6.217	5.883	5.938
6967.7317	6.680	6.216	5.881	5.937
6967.7711	6.682	6.222	5.887	5.942
6967.8108	6.684	6.228	5.892	5.946
6967.8441	6.679	6.223	5.888	5.941
6967.8674	6.676	6.219	5.886	5.935
6968.7034	6.679	6.215	5.882	5.939
6968.7425	6.697	6.232	5.897	5.953
6968.7800	6.692	6.223	5.890	5.946
6968.8194	6.687	6.222	5.887	5.942
6968.8485	6.697	6.230	5.897	5.949
6968.8753	6.685	6.217	5.884	5.937
6968.8973	6.686	6.220	5.887	5.940
6969.7085	6.685	6.223	5.891	5.943
6969.7479	6.690	6.221	5.891	5.942
6970.7308	6.689	6.226	5.892	5.944
6970.7703	6.696	6.218	5.892	5.944
6970.8057	6.686	6.221	5.888	5.941
6970.8280	6.685	6.222	5.888	5.942
6970.8571	6.686	6.221	5.890	5.944
6970.8669	6.690	6.227	5.896	5.950
6970.8780	6.690	6.227	5.895	5.949
6970.8933	6.689	6.227	5.895	5.948
6971.7058	6.695	6.224	5.888	5.944
6971.7605	6.691	6.216	5.884	5.942
6971.8049	6.689	6.219	5.885	5.942
6971.8347	6.696	6.220	5.889	5.945
6971.8582	6.694	6.222	5.890	5.945
6971.8813	6.698	6.226	5.893	5.947
6971.8926	6.700	6.227	5.893	5.947
6971.9044	6.698	6.225	5.892	5.949
6972.6706	6.701	6.224	5.894	5.942
6972.7073	6.699	6.224	5.896	5.948
6972.7523	6.689	6.216	5.888	5.940
6972.7981	6.686	6.214	5.886	5.937
6972.8313	6.694	6.220	5.890	5.943
6972.8698	6.695	6.224	5.895	5.943
6972.8952	6.699	6.230	5.899	5.950
6973.6677	6.673	6.209	5.886	5.934
6973.7103	6.697	6.226	5.900	5.947
6977.7457	6.687	6.220	5.886	5.943
6977.7809	6.697	6.232	5.896	5.952
6977.8109	6.701	6.236	5.901	5.952
6977.8336	6.696	6.233	5.898	5.953
6977.8498	6.697	6.231	5.895	5.953
6977.8618	6.693	6.230	5.895	5.950
6977.8829	6.695	6.229	5.893	5.947
6977.8927	6.696	6.226	5.894	5.947
6978.7668	6.687	6.220	5.888	5.939
6978.7979	6.680	6.220	5.889	5.940
6978.8208	6.681	6.218	5.886	5.939
6979.7685	6.701	6.232	5.903	5.953
6979.7918	6.696	6.231	5.900	5.947
6979.8120	6.695	6.231	5.902	5.951
6979.8272	6.696	6.228	5.899	5.948
6979.8398	6.698	6.235	5.904	5.953
6979.8591	6.695	6.232	5.901	5.950
6979.8727	6.696	6.233	5.901	5.952
6979.8891	6.694	6.232	5.901	5.950
6979.9039	6.697	6.235	5.905	5.956
6980.6571	6.694	6.227	5.892	5.946
6980.7127	6.682	6.213	5.880	5.936
6980.7941	6.679	6.212	5.880	5.932
6980.8254	6.680	6.214	5.882	5.935
6980.8467	6.682	6.217	5.886	5.938
6980.8670	6.683	6.219	5.886	5.939
6980.8896	6.679	6.219	5.886	5.940
6980.9005	6.680	6.218	5.883	5.938
6981.6654	6.692	6.222	5.887	5.936
6982.6586	6.721	6.225	5.894	5.943
6982.7129	6.728	6.236	5.906	5.959
6982.7584	6.701	6.208	5.881	5.932
6991.5826	6.300	5.950	5.939	6.007
6991.6348	6.297	5.956	5.936	6.003
6998.4855	6.267	5.921	5.908	5.983
6998.5373	6.268	5.909	5.899	5.963
6998.5959	6.280	5.919	5.905	5.972
6998.6524	6.286	5.922	5.905	5.981
6999.4879	6.285	5.925	5.904	5.975
6999.5515	6.291	5.930	5.920	5.984
6999.6013	6.294	5.928	5.908	5.975
6999.6545	6.281	5.935	5.907	5.984
7000.5010	6.275	5.905	5.911	5.962
7000.5293	6.252	5.903	5.887	5.958
7000.5648	6.262	5.915	5.898	5.963
7000.6218	6.265	5.917	5.894	5.965

HR 8858

HJD	u	v	b	y
6961.7780	5.234	4.668	4.313	4.370
6961.8076	5.235	4.668	4.315	4.373
6961.8295	5.235	4.666	4.313	4.372
6961.8431	5.241	4.671	4.318	4.375
6961.8581	5.242	4.675	4.319	4.378
6961.8695	5.244	4.676	4.321	4.378
6961.8883	5.263	4.671	4.324	4.381
6961.9007	5.262	4.672	4.325	4.380
6962.7792	5.250	4.676	4.319	4.373
6962.8157	5.231	4.666	4.308	4.371
6962.8336	5.225	4.661	4.303	4.367
6962.8626	5.232	4.661	4.307	4.369
6962.8809	5.233	4.665	4.309	4.374
6962.8960	5.237	4.667	4.312	4.376
6962.9082	5.237	4.670	4.313	4.380
6963.7719	5.264	4.692	4.328	4.373
6965.8206	5.269	4.691	4.334	4.384
6965.8447	5.268	4.691	4.334	4.385
6965.8626	5.264	4.687	4.331	4.380
6965.8841	5.263	4.686	4.330	4.381
6965.8989	5.267	4.687	4.333	4.382
6967.7744	5.261	4.682	4.330	4.387
6967.8146	5.259	4.683	4.326	4.387
6967.8466	5.261	4.680	4.327	4.387
6967.8707	5.260	4.681	4.327	4.387
6968.7853	5.239	4.673	4.318	4.378
6968 8226	5.245	4.676	4.320	4.382
6968.8511	5.257	4.689	4.332	4.393
6968.8782	5.256	4.685	4.329	4.390
6968.9003	5.251	4 679	4.323	4.383
6970.7738	5.253	4.682	4.327	4.386
6970.8097	5.252	4.679	4.324	4.384
6970.8313	5.255	4.681	4.326	4.386
6970.8595	5.248	4.676	4.319	4.380
6970.8698	5.248	4.673	4.319	4.379
6970.8863	5.250	4.675	4.321	4.380
6970.8956	5.252	4.677	4.322	4.382
6971.7635	5.276	4.699	4.341	4.400
6971.8075	5.255	4.682	4.326	4.386
6971.8378	5.250	4.677	4.321	4.384
6971.8616	5.246	4.674	4.318	4.382
6971.8842	5.248	4.672	4.317	4.379
6971.8957	5.245	4.671	4.315	4.378
6971.9073	5.248	4.671	4.317	4 377
6972.7551	5.269	4.690	4.334	4.392
6972.8013	5.263	4.684	4 330	4.391
6972.8357	5.255	4.680	4.324	4.384
6972.8763	5.248	4.676	4.322	4.383
6972.8985	5.249	4.677	4.323	4.382
6973.7722	5.279	4.693	4.344	4.402
6977.7843	5.238	4.679	4.324	4.384
6977.8139	5.235	4.679	4.323	4.385
6977.8367	5.239	4.677	4.322	4.385
6977.8534	5.235	4 673	4.320	4.382
6977.8660	5.228	4.673	4.318	4.381
6977.8859	5.233	4.674	4.320	4.381
6977.8993	5.229	4.673	4.316	4.379
6978.7713	5.271	4.694	4.335	4.396
6978.8033	5.260	4.689	4.329	4.390
6978.8292	5.258	4.691	4.331	4.394
6979.7727	5.276	4.695	4.341	4.398
6979.7958	5.267	4.686	4.331	4.391
6979.8163	5.263	4.689	4.330	4.394
6979.8317	5.266	4.685	4.331	4.391
6979.8446	5.266	4.687	4.330	4.393
6979.8648	5.264	4.683	4.328	4.389
6979.8775	5.257	4.683	4.325	4.389
6979.8936	5.256	4.680	4.324	4.387
6979.9086	5.250	4.674	4.318	4.380
6980.7984	5.263	4.683	4.326	4.387
6980.8307	5.263	4.685	4.329	4.391
6980.8520	5.258	4.683	4.327	4.388
6980.8701	5.255	4.678	4.324	4.385
6980.8936	5.253	4.677	4.322	4.382
6980.9044	5.251	4.674	4.320	4.381
6982.7232	5.293	4.698	4.339	4.403
6991.6139	4.877	4.391	4.361	4.424
6991.6622	4.864	4.402	4.367	4.429
6998.5703	4.857	4.369	4.329	4.397
6998.6287	4.854	4.372	4.338	4.393
6999.5803	4.844	4.357	4.322	4.380
6999.6321	4.842	4.365	4.331	4.391
7000.5960	4.832	4.371	4.324	4.380

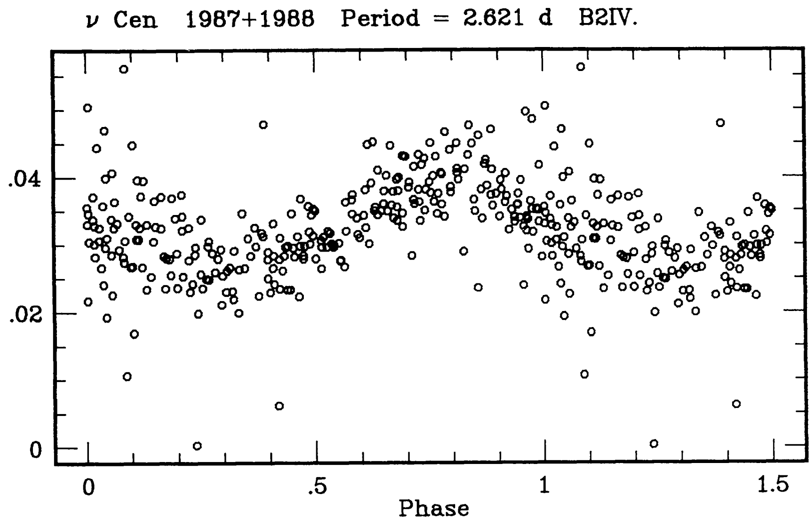

FIGURE 1. — Light curve of ν Cen ($P = 2.621$ d). In this and subsequent figures, the scale is in magnitudes and the epoch of phase zero is JD2446000.000.

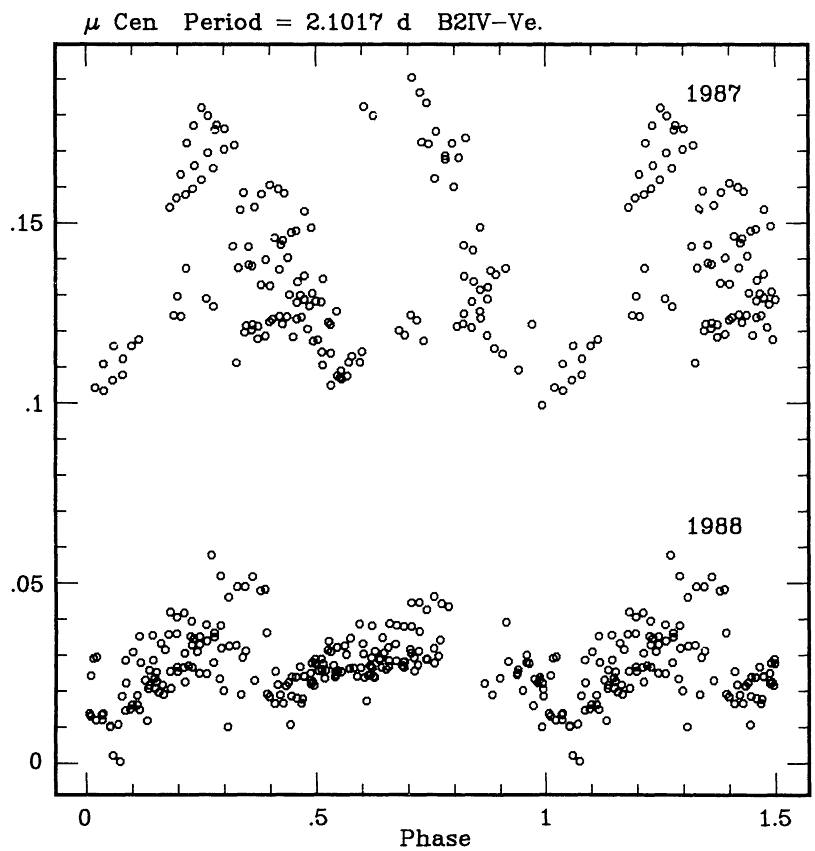

FIGURE 2. — Light curve of μ Cen ($P = 2.1017$ d).

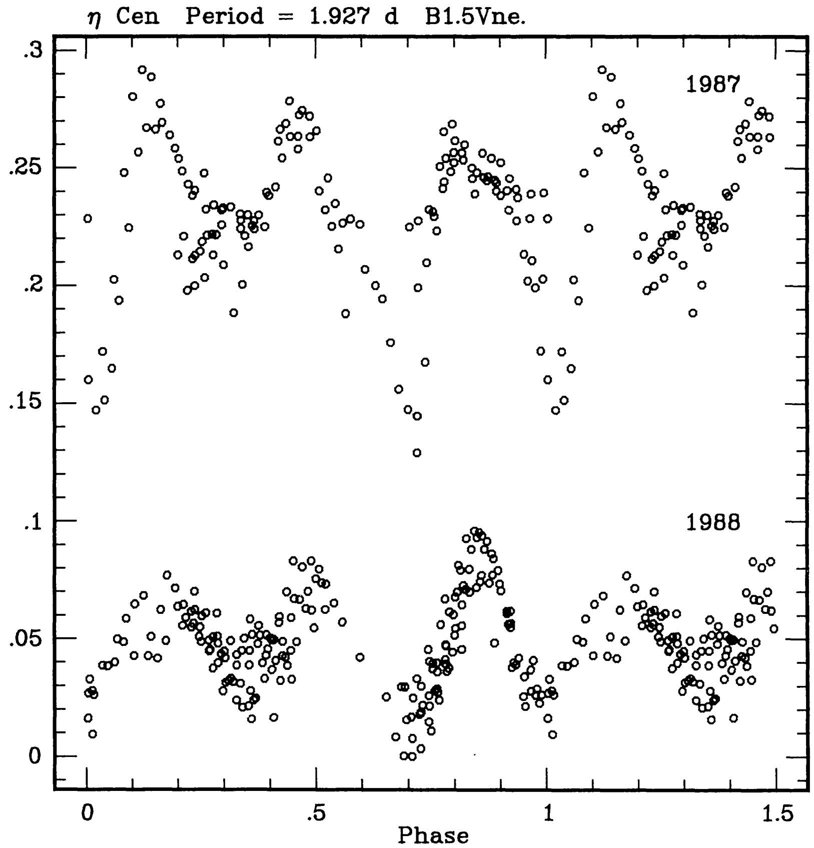

FIGURE 3. — Light curve of η Cen ($P = 1.927$ d).

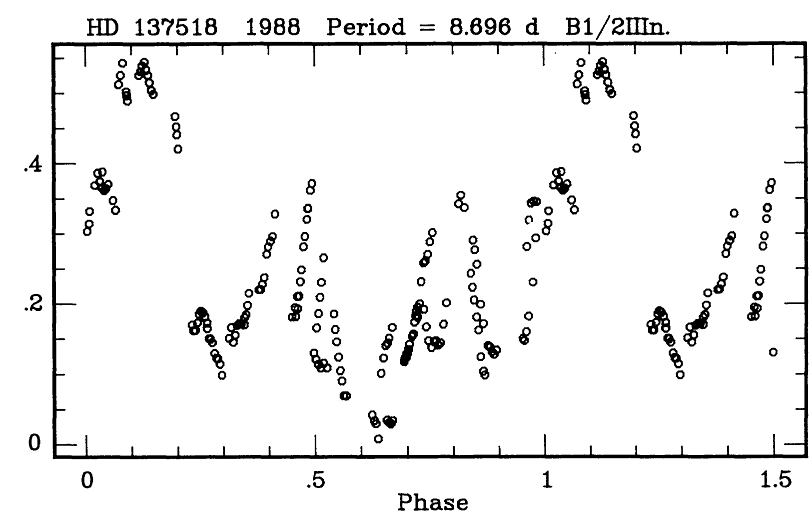

FIGURE 4. — Light curve of HD137518 ($P = 8.696$ d).

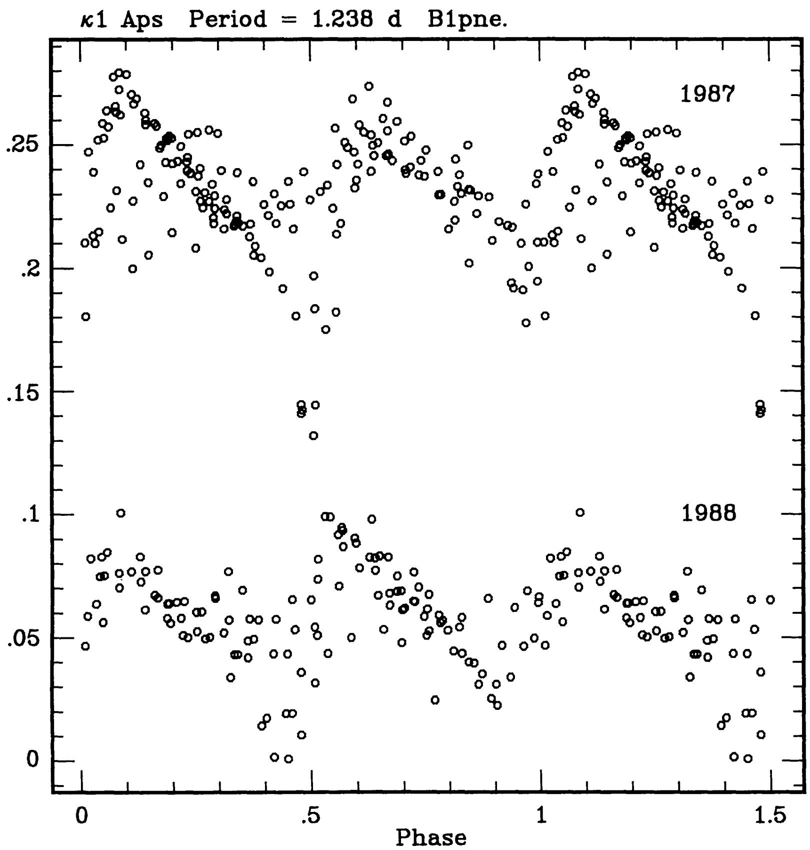

FIGURE 5. — Light curve of κ^1 Aps ($P = 1.238$ d).

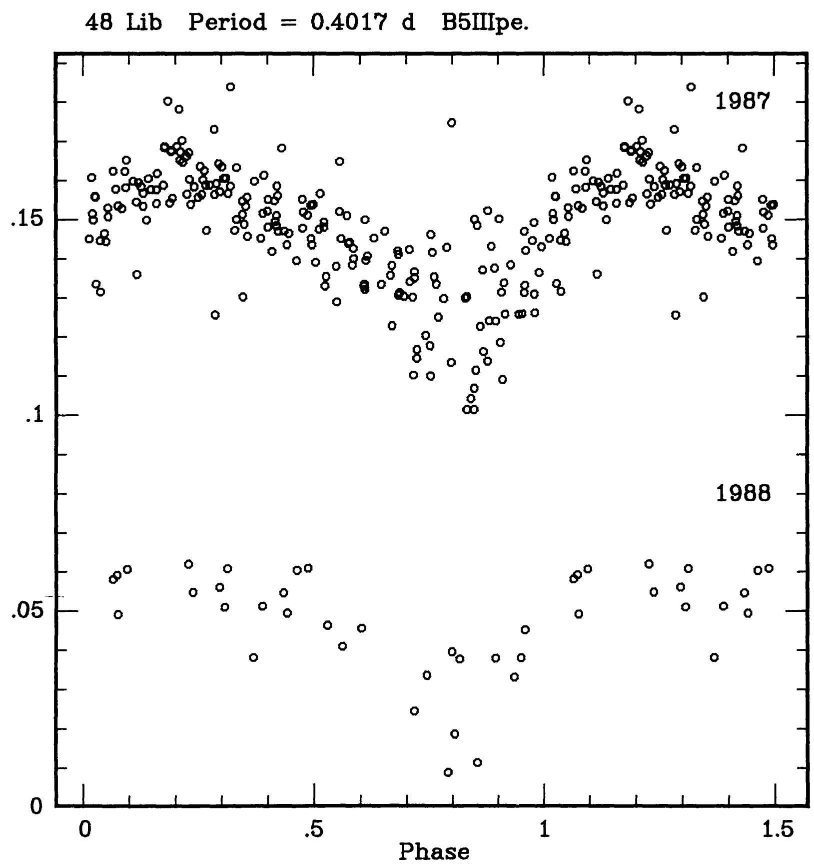

FIGURE 6. — Light curve of 48 Lib ($P = 0.4017$ d).

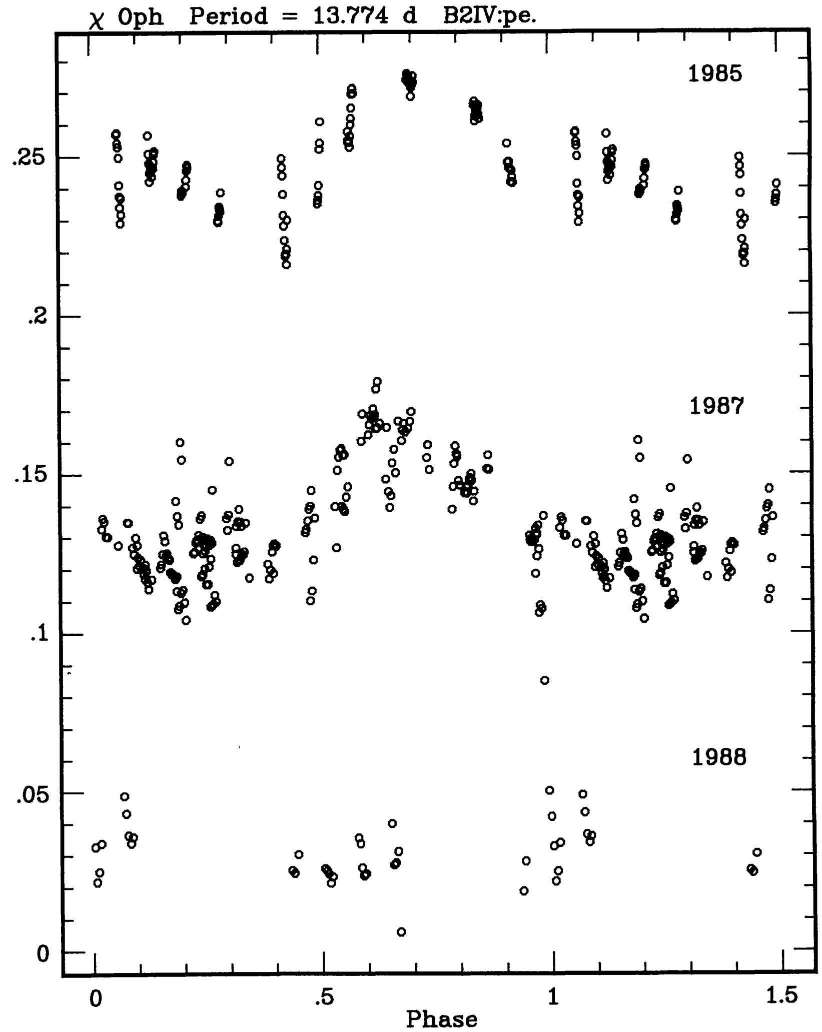

FIGURE 7. — Light curve of χ Oph ($P = 13.774$ d).

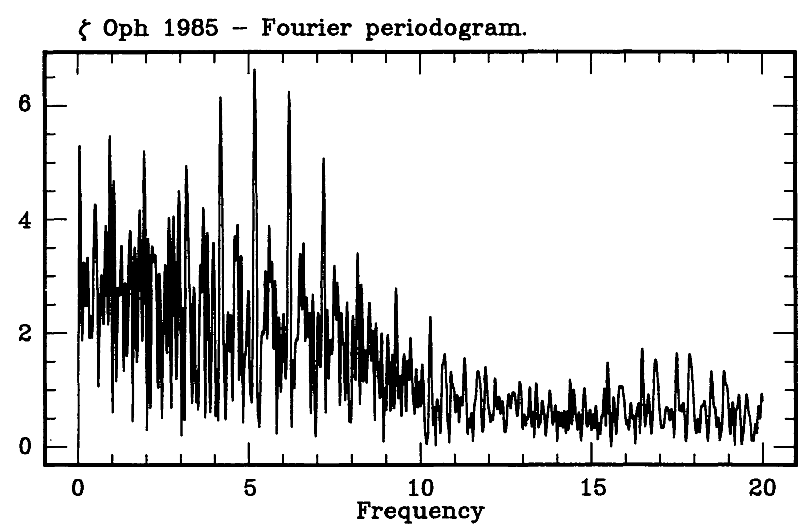

FIGURE 8a. — Fourier periodogram for 1985 data of ζ Oph. The frequency is in cycles d^{-1} and the semi-amplitude in millimagnitudes.

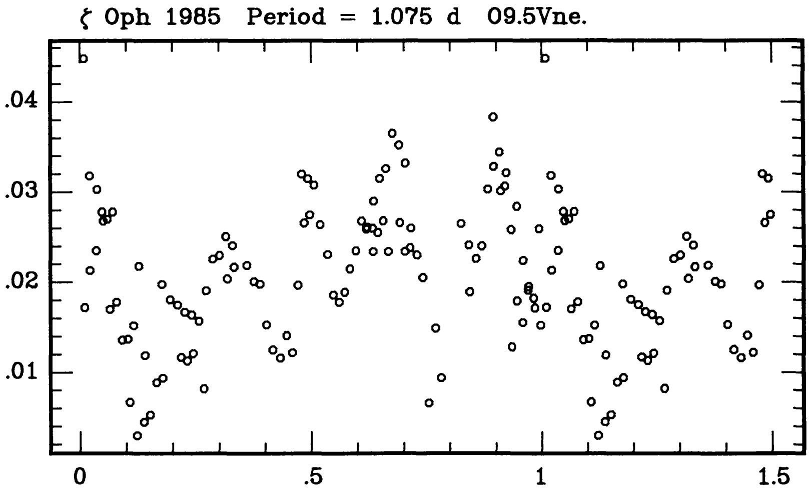

FIGURE 8b. — Light curve of ζ Oph for 1985 ($P = 1.075$ d).

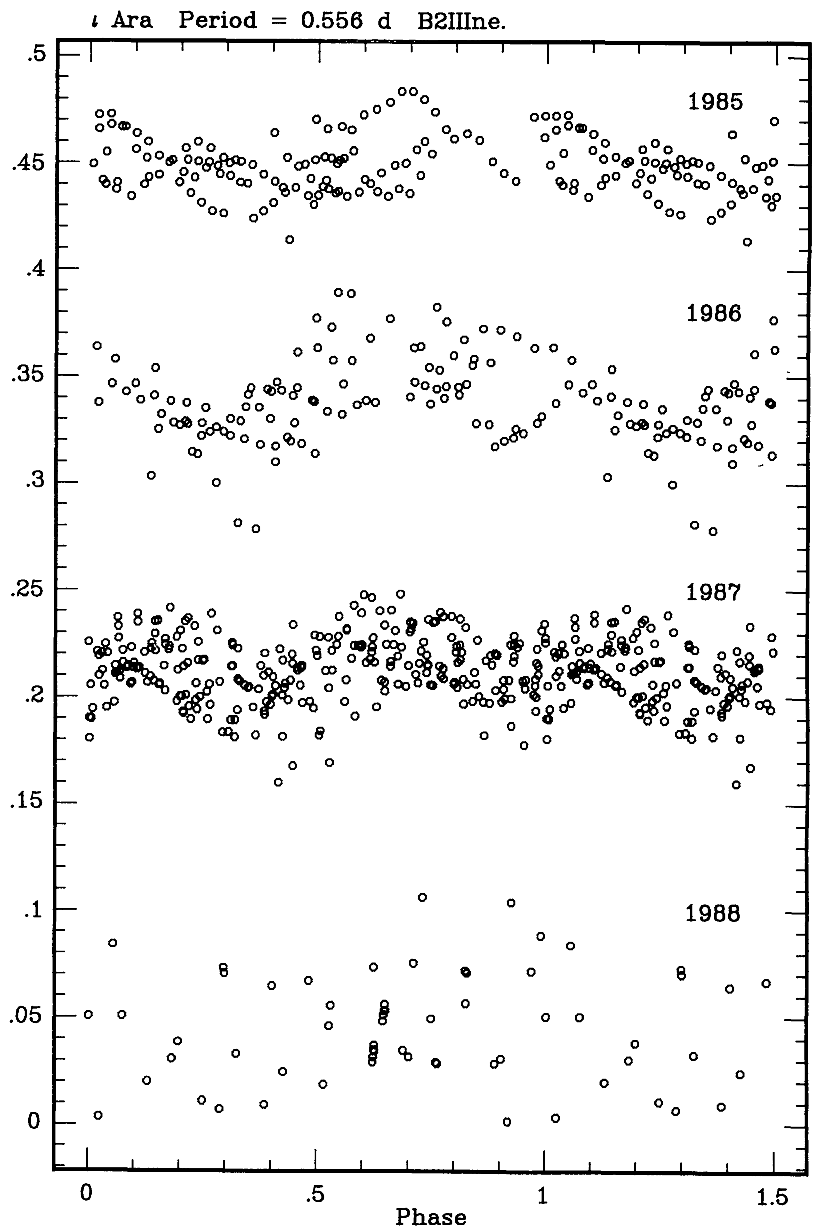

FIGURE 9. — Light curve of ι Ara ($P = 0.556$ d).

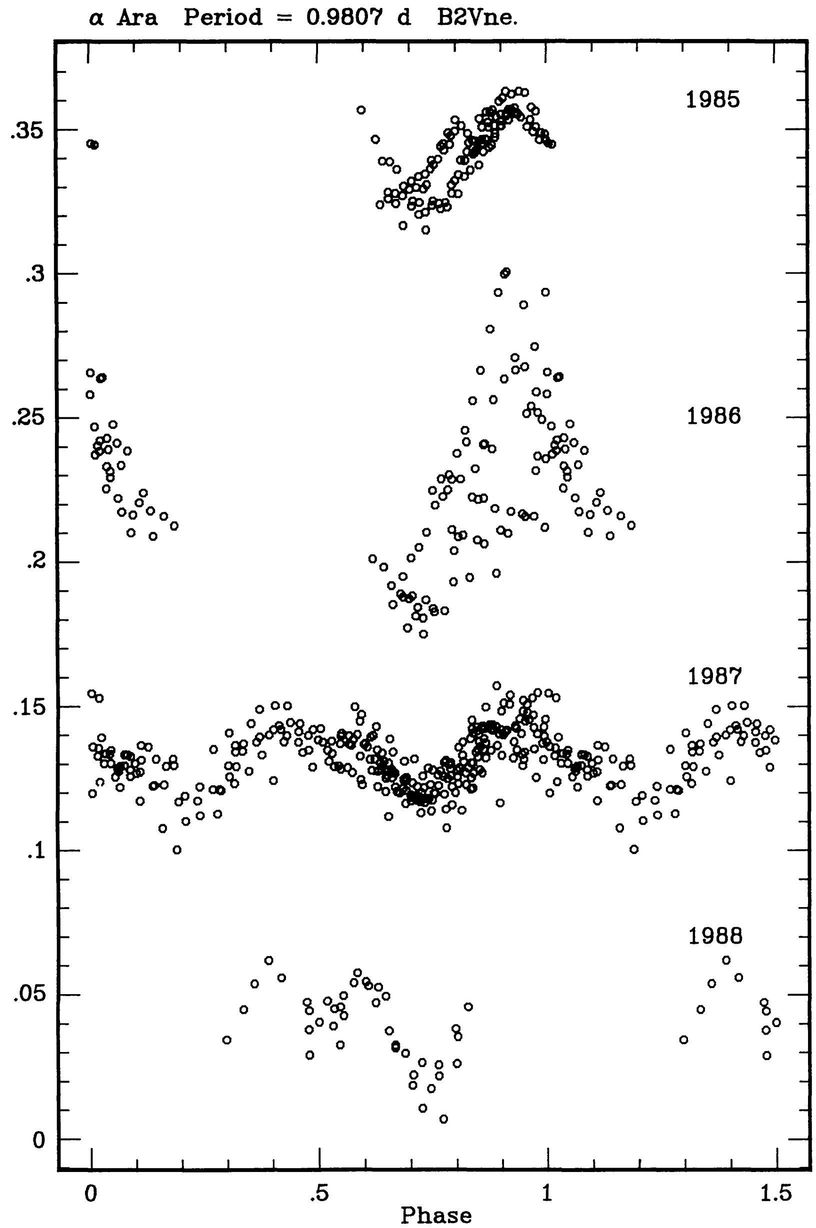

FIGURE 10. — Light curve of α Ara ($P = 0.9807$ d).

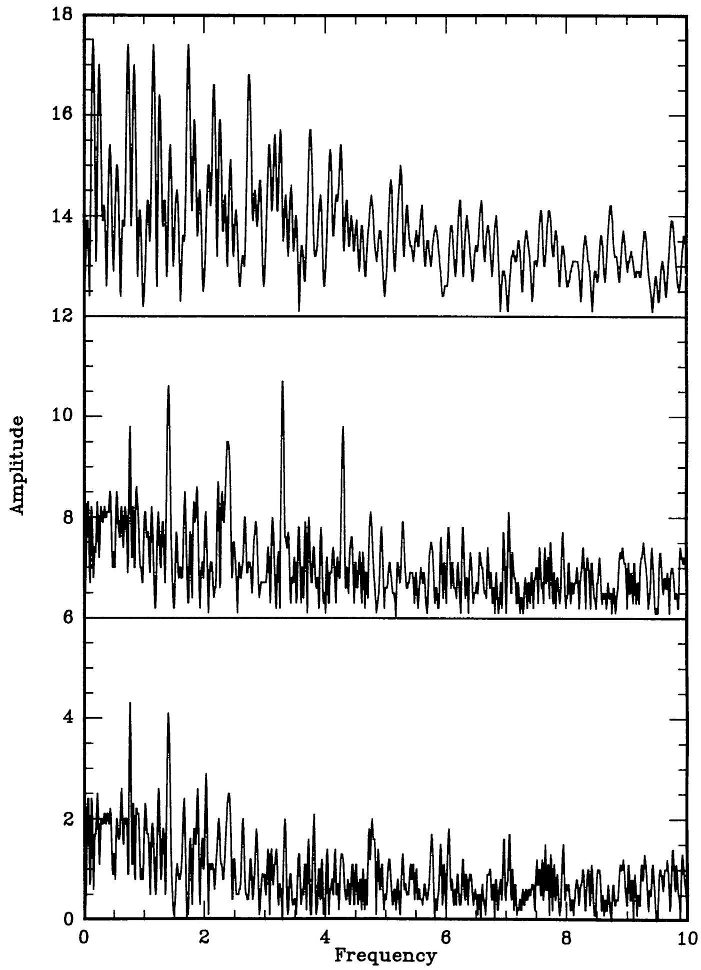

FIGURE 11a. — Fourier periodograms for V986 Oph. Top panel - 1985 data ; middle panel - 1987 data ; bottom panel - 1987 data prewhitened by 3.30 d^{-1}. The frequency is in cycles d^{-1} and the semi-amplitude in millimagnitudes.

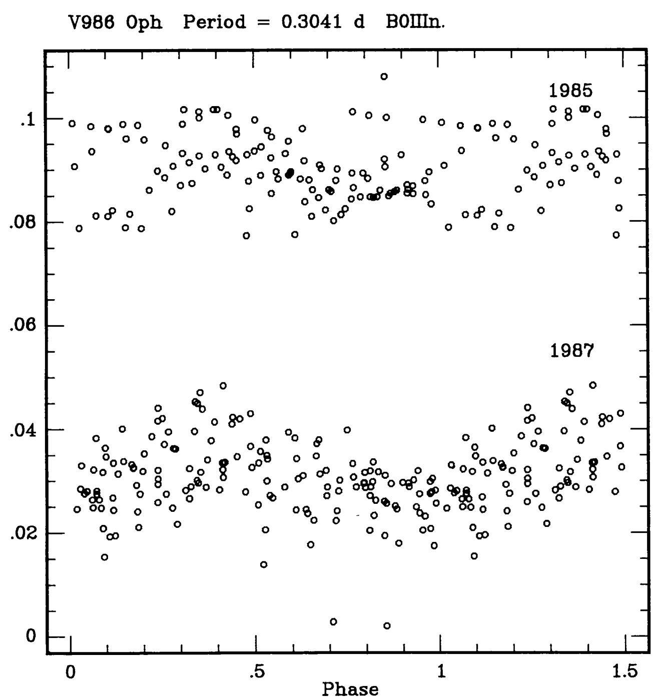

FIGURE 11b. — Light curve of V986 Oph ($P = 0.3041$ d).

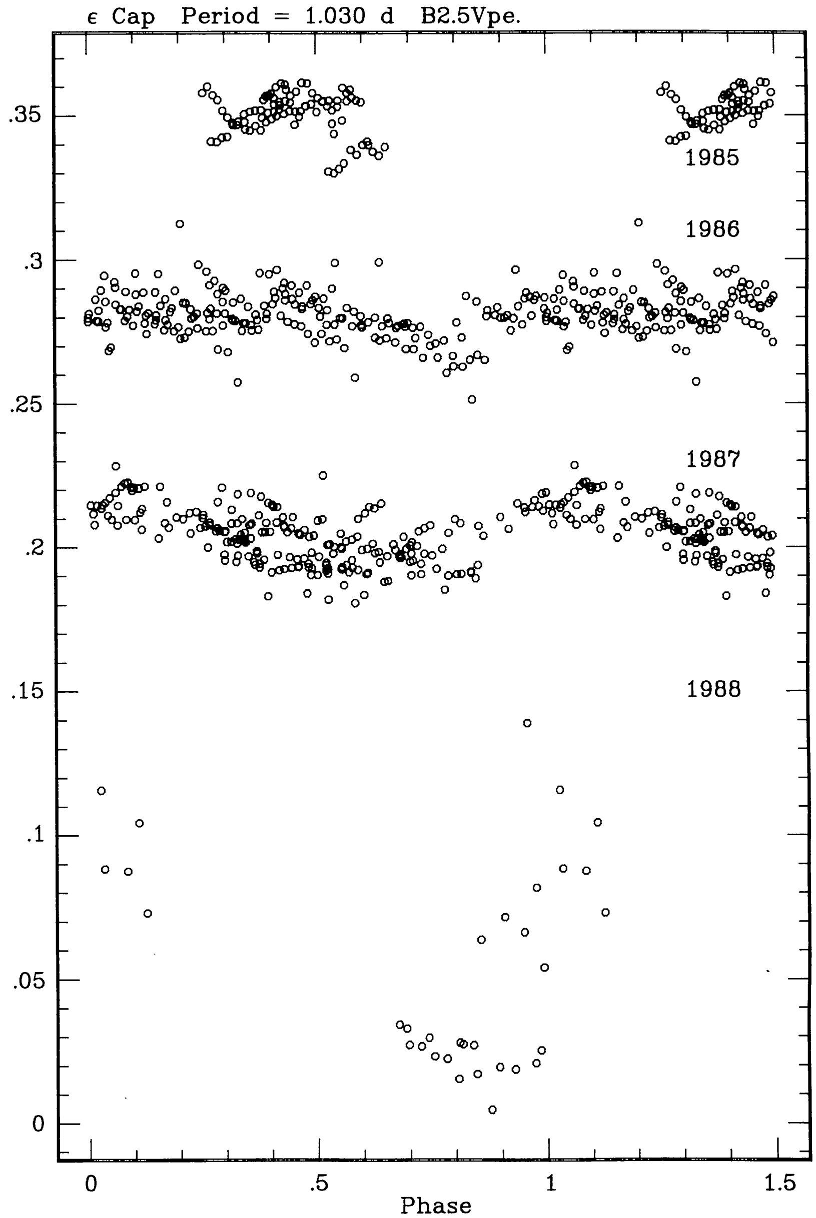

FIGURE 12. — Light curve of ϵ Cap ($P = 1.030$ d).

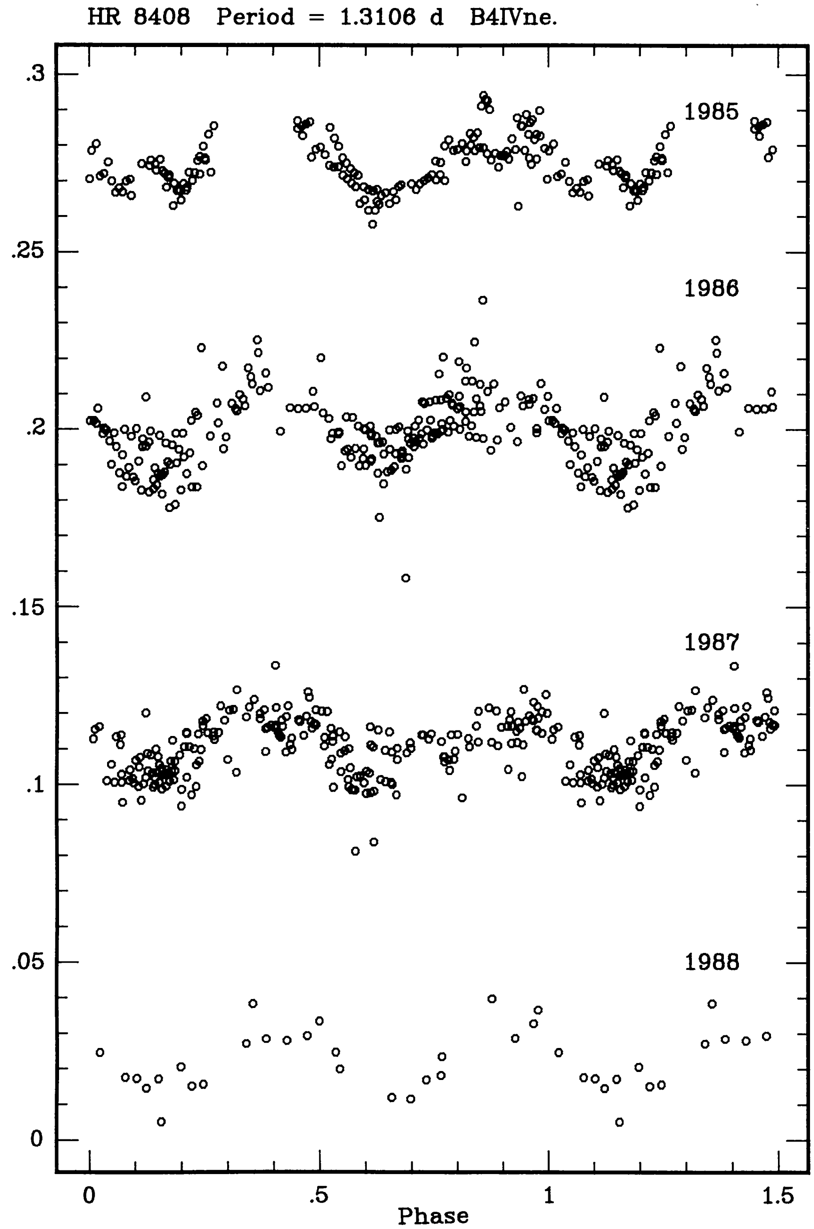

FIGURE 13. — Light curve of HR 8408 ($P = 1.3106$ d).

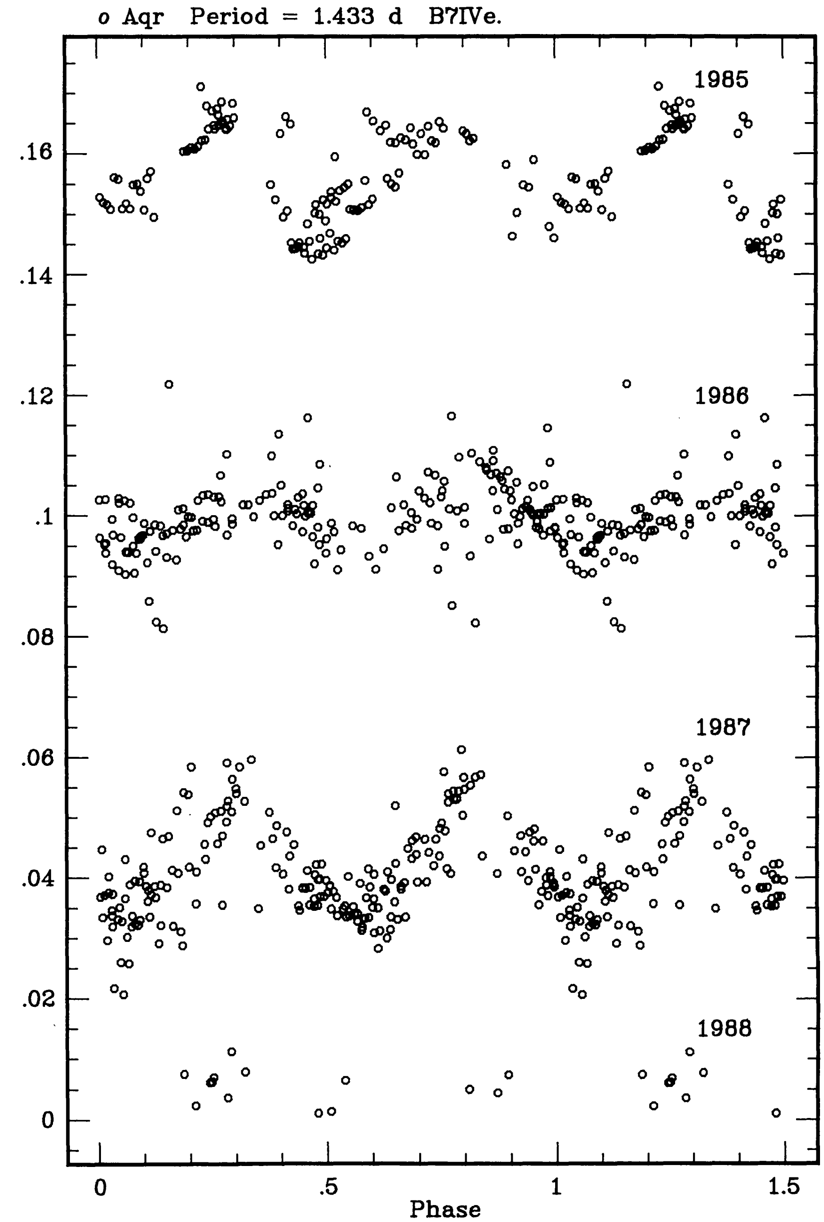

FIGURE 14. — Light curve of o Aqr ($P = 1.433$ d).

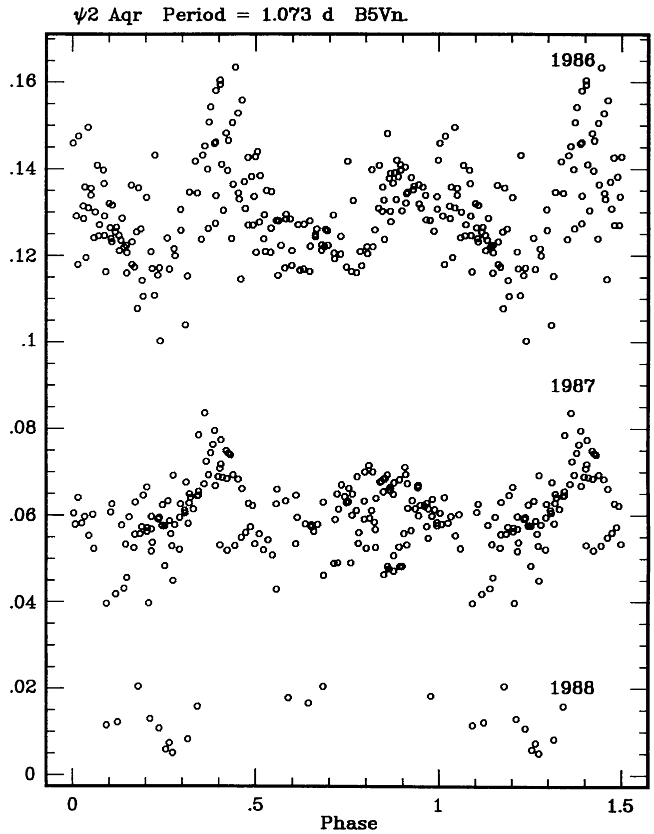

FIGURE 15. — Light curve of ψ^2 Aqr ($P = 1.073$ d).

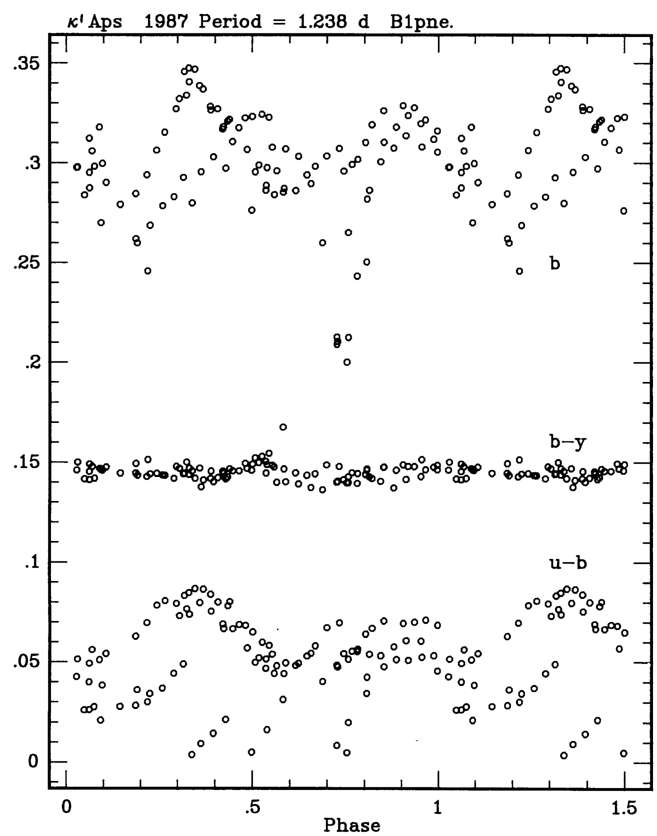

FIGURE 16. — Light and colour variations in κ^1 Aps ($P = 1.238$ d). In this and subsequent figures the colour and light variations are plotted according to the astronomical convention, i.e. with more negative values (bluer colour) upwards.

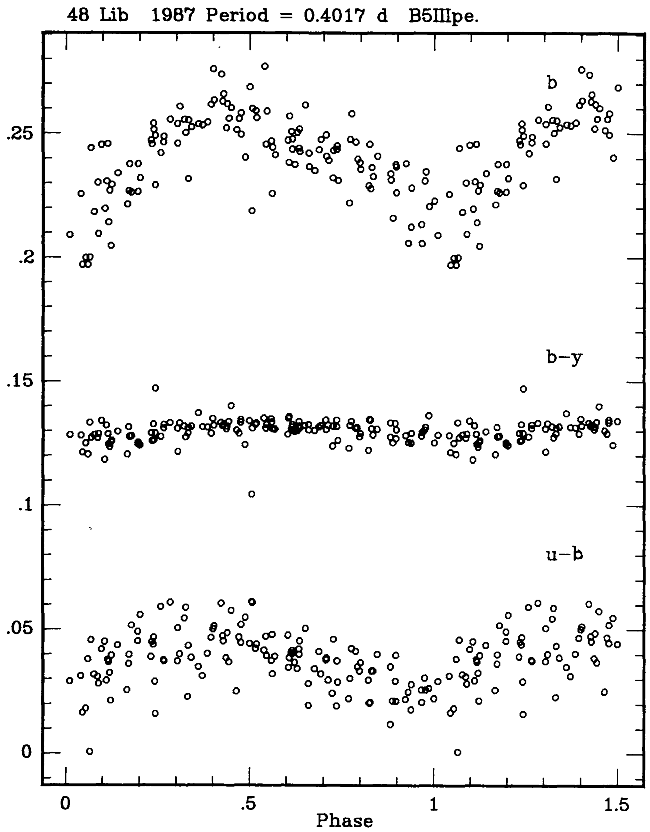

FIGURE 17. — Light and colour variations in 48 Lib ($P = 0.4017$ d).

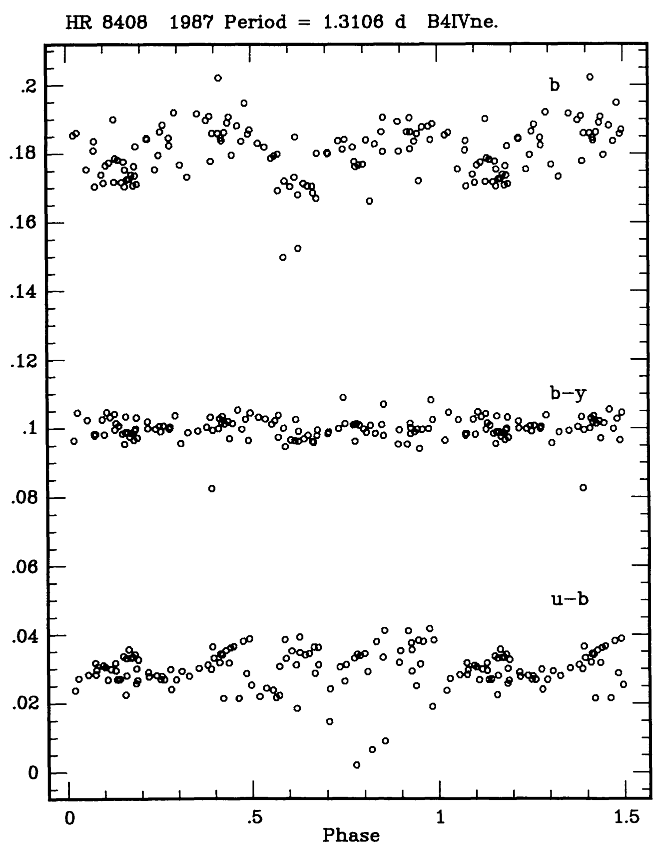

FIGURE 18. — Light and colour variations in HR 8408 ($P = 1.3106$ d).

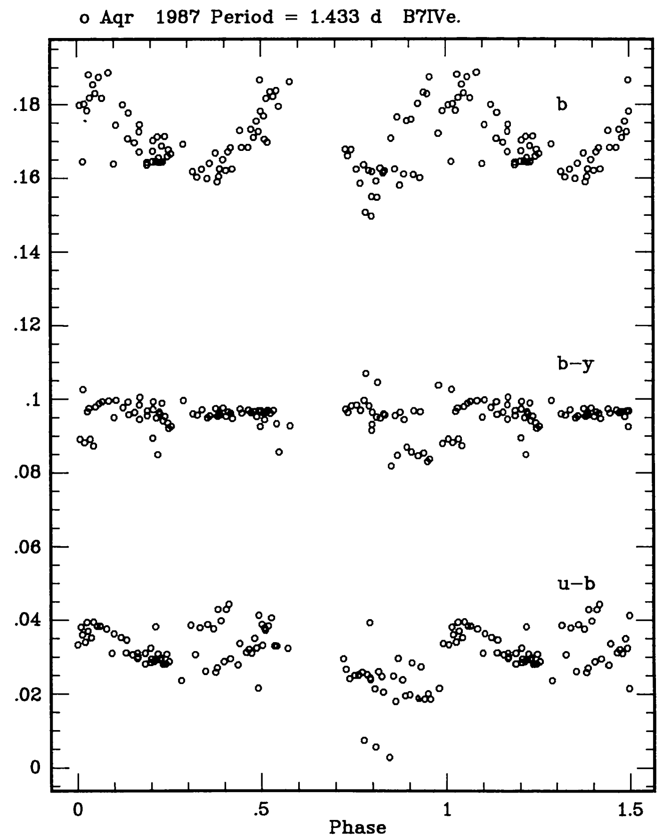

FIGURE 19. — Light and colour variations in o Aqr ($P = 1.433$ d).

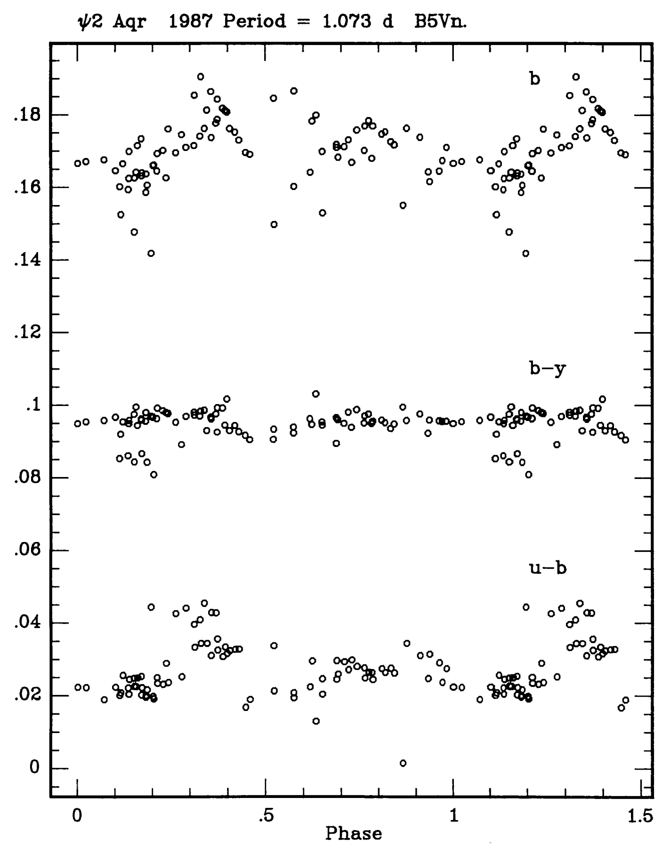

FIGURE 20. — Light and colour variations in ψ^2 Aqr ($P = 1.073$ d).