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Long-period variables in NGC 147 and NGC 185*

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ABSTRACT

Context. Previous studies on the stellar content of the two nearby dwarf galaxies NGC 147 and NGC 185 reveal a rich population of late-type giants in both systems, including a large number of carbon-rich objects. These stars are known to show pronounced photometric variability, which can be used for a more detailed characterisation of these highly evolved stars. Owing to their well-studied parameters, these Local Group members are ideal candidates for comparative studies.

Aims. Through photometric monitoring, we attempt to provide a catalogue of long-period variables (LPVs), including Mira variables, semi-regular variables, and even irregular variables in NGC 147 and NGC 185. We investigate the light variations and compare the characteristics of these two LPV populations with the results found for other galaxies, such as the LMC.

Methods. We carried out time-series photometry in the i-band of the two target galaxies with the Nordic Optical Telescope (NOT), covering a time span of ≈2.5 years. More than 30 epochs were available for a period search. These data were then combined with single-epoch K-band photometry, also obtained with the NOT. Narrow-band photometry data from the literature was used to distinguish between O-rich and C-rich stars.

Results. We report the detection of 513 LPVs in NGC 185 and 213 LPVs in NGC 147, showing amplitudes Δi of up to $\approx 2^{\rm mag}$ and periods ranging between 90 and 800 days. The period-luminosity diagram for each of our target galaxies exhibits a well populated sequence of fundamental mode pulsators. The resulting period-luminosity relations we obtained are compared to relations from the literature. We discuss the universality of those relations because of which, as a side result, a correction of the distance modulus of NGC 185 may be necessary. A value of $(m-M) = 24\overset{\rm m}{.}30$ seems to be more appropriate to match the observed data. Only one of our two galaxies, namely NGC 185, has a significant fraction of possibly first overtone pulsators. An interpretation of this finding in terms of differences in the star-formation histories is suggested.

Key words. stars: AGB and post-AGB – stars: late-type – stars: variables: general – Local Group – galaxies: individual: NGC 147 – galaxies: individual: NGC 185

1. Introduction

Asymptotic giant branch (AGB) stars are highly evolved stars with low to intermediate initial masses of ≈0.6–8 $M_\odot$ that have passed the helium-core burning phase. These stars are then powered by nuclear burning of hydrogen and helium in two thin shells on top of a core of carbon (C) and oxygen (O). During the early AGB phase these stars are O-rich, showing a photospheric C/O-ratio <1, and most of them can be classified as stars of spectral type M. For AGB stars with initial masses up to ≈4 $M_\odot$ the atmospheric chemical composition can change dramatically because processed elements, most notably ^{12}C, are dredged up to the surface by convective mixing after a thermal pulse. Depending on the C/O-ratio, their spectral type changes from K or M via S to C (C/O ≥ 1) (Groenewegen 2007). For AGB stars with initial masses ≳4 $M_\odot$ the temperature at the bottom of the convective envelope rises sufficiently high to transform C into N. This process, called hot-bottom-burning, causes some AGB star to remain O-rich.

Long-period variables (LPVs) is the generic term for variable stars known as Mira variables and semi-regular variables. They generally show periodic variations in brightness with periods of ≈30 up to a few thousands of days and amplitudes ranging from several tenths to approximately ten magnitudes in the visual. By studying LPVs in the Large Magellanic Cloud (LMC), Wood et al. (1999) and Wood (2000) were the first to discover that all LPVs seem to group around at least five almost parallel sequences in a period-luminosity-diagram (PLD), to which the authors assigned the letters A to E. Sequence C was explained as consisting of stars that pulsate in fundamental mode. Long-period variables on sequence B were explained as first and second overtone pulsators, and stars on sequence A as higher overtone variables. Later publications of period-luminosity relations (PLRs) of the LMC revealed that sequence B actually splits into two separate sequences, namely B and C′ (see Kiss & Bedding 2003; Ita et al. 2004). Meanwhile, different authors (e.g. Fraser et al. 2005; Soszyński et al. 2004a) are using different labels in a PLD; we use the original labelling of Wood et al. (1999) plus the additional sequence C′. For stars belonging to sequences E or D the variability cannot be attributed to radial pulsation. Stars on sequence E are thought to be related to close binary systems

* Appendix is available in electronic form at http://www.aanda.org
** Deceased, 2006 October 20.

showing ellipsoidal variability (see Soszyńsky et al. 2004b). Recently, Nicholls et al. (2010) confirmed this assumption by comparing the phased light and radial velocity curves of LMC red giant binaries. The results of this study also demonstrated that the variations of stars on sequence E and D are caused by different mechanisms. The LPVs on sequence D show periodicites on two time scales, where the long secondary period (LSP) is about ten times the shorter period. The origin of these LSPs is still unknown (Nicholls et al. 2009). By comparing a sample of sequence D stars with similar red giants (not showing LSPs), Wood & Nicholls (2009) found that such objects have a significant excess in the mid-infrared (8–24 μm), which is thought to originate from circumstellar dust. This is not the case for sequence E stars (Nicholls et al. 2010). Within the last decade, several studies were carried out to explore PLRs of LPVs in different stellar systems of the Local Group (see Groenewegen 2005 for an overview). Rejkuba et al. (2003) and Rejkuba (2004) were able to study LPVs even beyond the Local Group, namely in NGC 5128 in the Centaurus group. This growing sample of PLRs for LPVs raises the question whether these relations are universal or not and if they are indeed universal, they can, therefore, be used as an additional tool to measure distances. Here we aim to contribute to this discussion by investigating LPVs in the two dwarf galaxies NGC 147 and NGC 185.

The two target galaxies of our investigation, NGC 147 and NGC 185, were discovered by J. Herschel in September 1829 and by W. Herschel in November 1787, respectively, and are known to be members of the M 31 subgroup. Together with NGC 205, they are the most luminous dSphs in the Local Group and are located at an angular distance of approximately 12° from the Andromeda nebula (van den Bergh 1998; Corradi 2005). According to van den Bergh (1998), they are separated by only 58′on the sky without any indication of interaction (Battinelli & Demers 2004a; Geha et al. 2010). Although these galaxies appear fairly similar concerning their colour-magnitude diagrams (CMDs), some differences can be found in their star formation histories (SFHs), most notably for recent epochs (<1 Gyr see Mateo 1998). Because there are no main-sequence turn-off stars with $M_V < -1$, Han et al. (1997) mentioned that the most recent large-scale star-forming activity in NGC 147 occurred at least 1 Gyr in the past. According to broad-band near-infrared CMDs of Riebel (2010), this event happened ≈3 Gyr ago and Dolphin (2000) derived 4 Gyr using HST images. That there are no signs of dust and gas (Young & Lo 1997; Sage 1994) in this galaxy, which could serve as building material for new stars, also supports the idea that star formation ceased long ago. Using the relation between the K-magnitude of the AGB tip and age (as predicted from isochrones; Girardi et al. 2002), Sohn et al. (2006) find that most of the M-giants in NGC 147 formed between at $\log(t_{\rm yr})$ between 8.2–8.6. In contrast, various authors found a significant amount of gas and dust in the centre of NGC 185 (Young & Lo 1997; Lee et al. 1993; Martinez-Delgado & Aparicio 1998; Martinez-Delgado et al. 1998). Butler & Martinez-Delgado (2005) obtained an age of about 400 Myr for the youngest, centrally concentrated stars. Kang et al. (2005) speculate that the M-giant population in NGC 185 contains stars with a wide range of ages, possibly representing two different epochs of star formation at $\log(t_{\rm yr}) \approx 9.0$–9.4 and 7.8–8.5 dex. In the outer parts of NGC 185 stars with ages of at least 1 Gyr are found.

The red giant content of these galaxies was analysed by Nowotny et al. (2003, hereafter Paper I). The detected AGB stars were characterised according to the chemical properties of their atmospheres by applying an efficient method to single out C-rich stars, namely, the use of narrow-band wing-type filters that are centred around spectral molecular features of TiO and CN (at $\lambda \approx 0.8$ μm). Within a field of view (FOV) of 6.′5 × 6.′5, the authors identified 154 C-rich stars in NGC 185 and 146 C-rich stars in NGC 147 plus several hundred M-Type stars on the upper giant branch in both galaxies. This large number of identified AGB stars motivated a search for LPVs in these stellar systems. An interesting aspect was if the different metallicities and SFHs would be reflected in the PLRs of the LPVs in the two galaxies.

The main aim of this work was to identify LPVs in NGC 147 and NGC 185. In Sect. 3.3 we present a catalogue of red giant variables, the outcome of a photometric monitoring in the i-band. The results of this study are summarised in Sect. 4.

2. Observations

2.1. Photometric monitoring

We obtained multi-epoch observations in the *Gunn*-i-band with the 2.56 m Nordic Optical Telescope (NOT). The target galaxies were observed on 38 nights in service mode between October 2003 and February 2006 with the Andalucia Faint Object Spectrograph Camera (ALFOSC). It has a pixel scale of 0.19 arcsec/pixel resulting in a FOV of approximately 6.4 × 6.4 arcmin. At every epoch we obtained a single image pointing towards the centre of each galaxy. Our field covered a region corresponding to approximately one scale length derived from the stellar density distribution of NGC 147 (Battinelli & Demers 2004b) and NGC 185 (Battinelli & Demers 2004a), respectively. We obtained 35 images of NGC 147 and 34 frames of NGC 185 with a sampling period of ≈14 days. One example image of the time series for each of our science targets is shown in Fig. 1. The time series exhibits two larger gaps of approximately six months during which the targets were not observable. Calibration frames to correct for sky and bias were recorded for each night of observation. In the rare cases of missing sky flats, these were replaced by average flats from the previous and the following observation.

2.2. K_s-band photometry

As can be seen from spectral energy distributions of cool AGB stars (Nowotny et al. 2010), they emit most of their flux in near-infrared wavelengths. Hence, the K_s-band is a good measure of the bolometric flux. The most evolved, dust-enshrouded AGB stars can be detected only at infrared wavelengths. Therefore, the K_s-band has been widely used (e.g. Wood 2000) to construct PLRs of LPVs. To allow a comparison of our results with previous studies, we carried out single-epoch K_s-band photometry for our target systems using NOTCam during two consecutive nights in September 2004. This camera is equipped with a 1024 × 1024 HgCdTe Rockwell Hawaii array with a plate scale of 0.234 arcsec/pixel resulting in a FOV of 4 × 4 arcmin using the wide-field imaging mode of NOTCam. To resemble the FOV of ALFOSC, we obtained a mosaic of four partly overlapping dithered images per galaxy. Accordingly, the combined FOV of the four quadrants is ≈6 × 6 arcmin.

3. Data reduction

3.1. Monitoring data

All frames obtained for this study were bias-, sky- and flatfield-corrected using standard data reduction routines. As in Paper I,

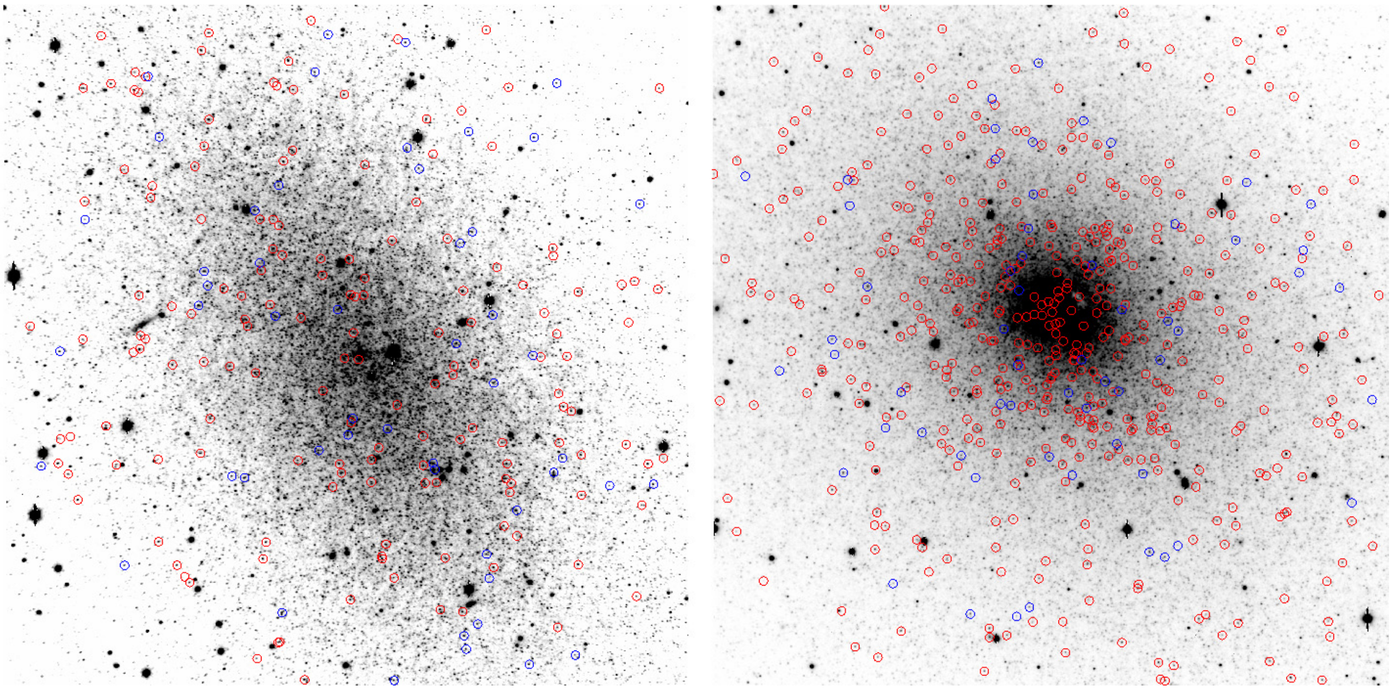

Fig. 1. Inverted CCD images of NGC 147 (*left panel*) and NGC 185 (*right panel*) obtained with NOT in the *i*-band. North is up and east is to the left. Designated with blue circles are objects that were identified as LPVs in this work and for which the narrow-band photometry in Paper I indicates C-rich atmospheric chemistry. The red circles mark all other stars (presumably O-rich) that were found to show long-period variability.

the whole sample of stars was corrected for interstellar reddening adopting the values from the NASA Extragalactic Database (NGC 147: $A_V = 0^{\mathrm{m}}.574$, $A_i = 0^{\mathrm{m}}.336$, $A_{K_s} = 0^{\mathrm{m}}.064$; NGC 185: $A_V = 0^{\mathrm{m}}.604$, $A_i = 0^{\mathrm{m}}.354$, $A_{K_s} = 0^{\mathrm{m}}.067$). Images taken in the *i*-band with ALFOSC also suffer from fringing. To compensate for this effect, it would have been necessary to obtain flatfield images before and after each integration of the science target to create a fringe map. Without these additional calibration images, a correction for this effect was not possible. The maximum amplitude of variations caused by fringing is, however, well below the minimum amplitude expected for LPVs. The detection of variable stars was carried out using the image subtraction tool ISIS 2.1[1] of Alard (2000). One carefully chosen *i*-band image was taken as reference frame to obtain differences in flux relative to each image of the time series. To produce light curves from these differences, we measured fluxes for each star on the reference frame by using a PSF fitting software written by Ch. Alard. Short descriptions of the code, which was originally developed for the DENIS project, can be found in Schuller et al. (2003) or Beaulieu et al. (2008). As can be seen in Fig. 1, the central region of NGC 185 is more compact towards the centre. Hence, the identification of variable stars towards central regions is incomplete because of crowding. The photometric zero-point correction was determined using a sample of constant stars on the reference frame that were cross-correlated with their counterparts in Paper I. To estimate a photometric error, two samples of randomly chosen constant stars common to all images of the time series were selected. Following the same approach as for the reference frame, mean zero-points were calculated from one sample of constant stars for each frame and subsequently used to remove zero-point variations between the various frames. Then, the differences between the corrected magnitudes of all stars of the second sample and the corresponding values from Paper I were determined. Their standard deviations served as an estimate for the photometric errors. The resulting errors in the *i*-band at a mean luminosity of $19^{\mathrm{m}}.5$ for the various epochs range between $0^{\mathrm{m}}.085$ for NGC 147 and $0^{\mathrm{m}}.094$ for NGC 185, respectively.

3.2. Near-infrared data

K_s-band images taken with the NOTCam suffer from distortion that severely increases towards the edge of the frame. Thus, the frames had to be corrected for this effect before carrying out the standard image reduction steps. Gålfalk (2005) constructed a model of the NOTCam WF camera distortion based on his observations of B335. This NOTCam-model[2] was implemented in a software provided by Gålfalk (2005 written in IDL, which performs additional corrections), which was used for distortion correction of all K_s-band images. Subsequently, the usual reduction steps of near-IR imaging were applied to the dithered K_s-band images. All frames belonging to one quadrant were aligned and merged to one image to achieve a higher S/N. Point-spread functions fitting photometry was carried out using the DAOPHOT/ALLSTAR photometry package (Stetson & Harris 1988). The photometric zero-points to calibrate K_s were derived using constant stars in each quadrant of the target galaxy, which were also found in the 2MASS Point Source Catalogue (Cutri et al. 2003). K_s-magnitudes of the detected variables in both galaxies are listed in the fifth column of Tables A.1 and A.2, respectively. The corresponding mean photometric uncertainties after the calibration are listed in Table 1 for different bins of magnitude within the range $16 < K_s < 19$. In Fig. 2 the luminosity function (LF) in K_s of stars detected in NGC 147 and NGC 185 is shown as a black continuous line. The red dashed line represents the distribution of LPVs for which we were able to assign a

[1] http://www2.iap.fr/users/alard/package.html

[2] http://www.astro.su.se/~magnusg/NOTCam_dist/

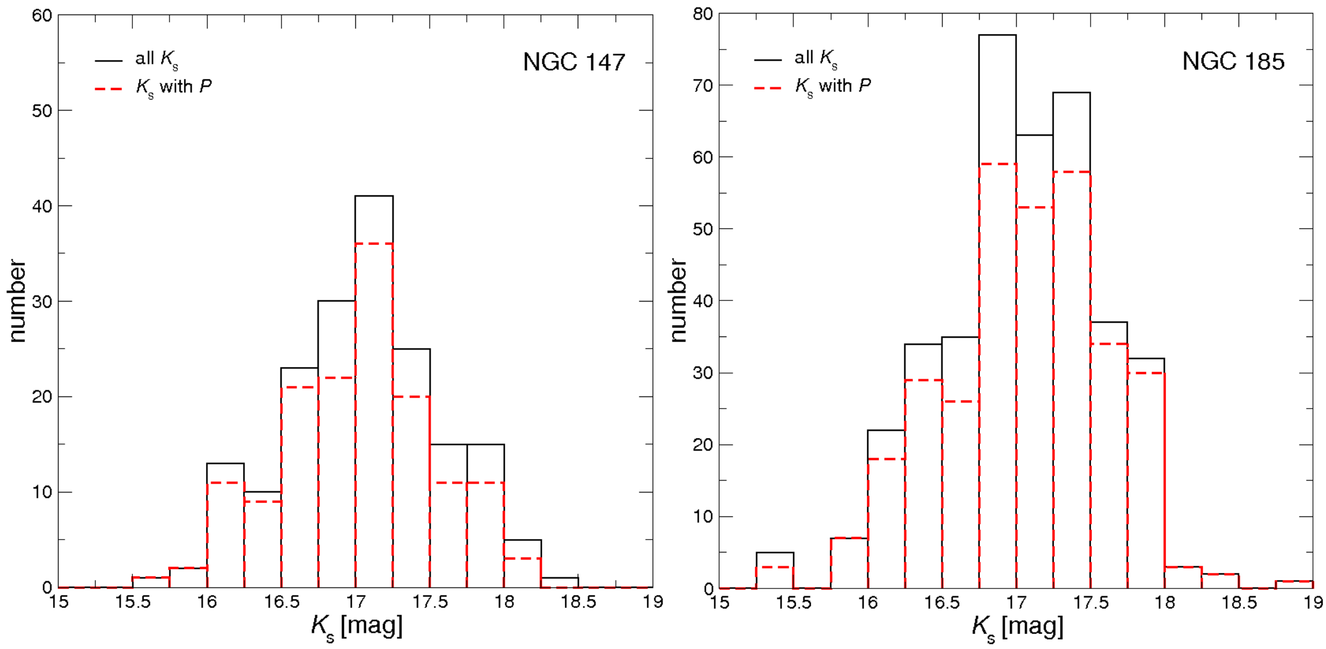

Fig. 2. K_s-luminosity functions of objects in NGC 147 and NGC 185. The black line shows the distribution for all detected LPVs with K_s-magnitudes available (182 in NGC 147 and 387 in NGC 185). The red dashed line represents LPVs for which it was additionally possible to determine a period (147 in NGC 147 and 323 in NGC 185) as described in Sect. 3.3.

Table 1. Photometric uncertainties for the two galaxies obtained in the i- and K_s-filters.

i	$e_{\rm phot}$	K_s	$e_{\rm phot}$
>19	0.03	>16	0.09
19–20	0.04	16–17	0.11
20–21	0.06	17–18	0.13
21–22	0.09	18–19	0.18
<22	0.16	<19	0.26

period as well. With the instrument setting mentioned above, the photometry in K_s for both galaxies is probably complete down to ≈17 mag. At a mean K-band luminosity of 17 mag, the typical photometric errors for NGC 147 and NGC 185 are $0\overset{\rm m}{.}15$ and $0\overset{\rm m}{.}16$, respectively.

3.3. Catalogue of variables

The i-band light curves were searched for periodicities using SIGSPEC[3] (Reegen 2007). A maximum of two periods was derived from the Fourier analysis if the criterion for significance was fulfilled. The significance (*sig*) of a period is defined in SIGSPEC as the inverse of the logarithmic scaled false-alarm-probability (FAP) that a discrete Fourier transform amplitude is caused by noise (see Reegen 2007 for details). A spectral significance of 5 therefore corresponds to an inverse FAP of 10^5 or, in other words, the risk of the amplitude being just caused by noise is $1{:}10^5$. Example light curves showing different types of LPVs from both galaxies together with our best model fit are shown in Fig. 3. The results of the period search are summarised in Tables A.1 and A.2. Beside the periods and corresponding significance of the detected LPVs, the table also lists the mean i-magnitudes that were obtained from the light curve. The corresponding photometric errors of the mean brightness in the i-band after the calibration are listed in Table 1 for different ranges of magnitude. We only used Fourier-amplitudes from the SIGSPEC-output to fit the light curves (see red line in Fig. 3). Additionally, we defined a σ-amplitude that is twice the statistical standard deviation from the mean brightness of the variable. A purely sinusoidal light curve, for example, with a peak-to-peak-amplitude $A = 1\overset{\rm m}{.}0$ would result in a corresponding σ-amplitude of $A_\sigma = 0\overset{\rm m}{.}701$ (hereafter Δi). This allows us to have a better understanding of the overall variability of the detected LPVs in both galaxies even for LPVs for which no significant period could be asserted. In addition, this parameter is not sensitive to outliers of the observed light curve mainly caused by dead pixels on the frame or cosmic rays during the integration. Depending on the results of the period search, we were able to assign one, two, or no period to each LPV. For some stars (starting from ID 147V000169 in Table A.1 and ID 185V000420 in Table A.2) it was not possible to detect a significant period, although they clearly are variable. Therefore, we listed their σ-amplitudes Δi to obtain a better impression of their variability.

3.4. Cross-correlation with photometry from Paper I (V, i, TiO, CN)

In Paper I, single epoch Vi photometry was discussed as part of a photometric survey of Local Group galaxies. Furthermore, narrow-band filters (wing-type) were used to derive information on the probable spectral types of the bright red giant stars in these galaxies. To discuss LPVs of NGC 147 and NGC 185 in more detail, a cross-correlation with the results obtained in Paper I was performed using the DENIS software "Cross Color" written by Ch. Alard (see Schuller et al. 2003). This allows us to distinguish C-rich LPVs from other detected variables in our sample and to study their distribution in consecutive diagrams. For approximately 75% of the identified variables we could

[3] http://www.sigspec.org/

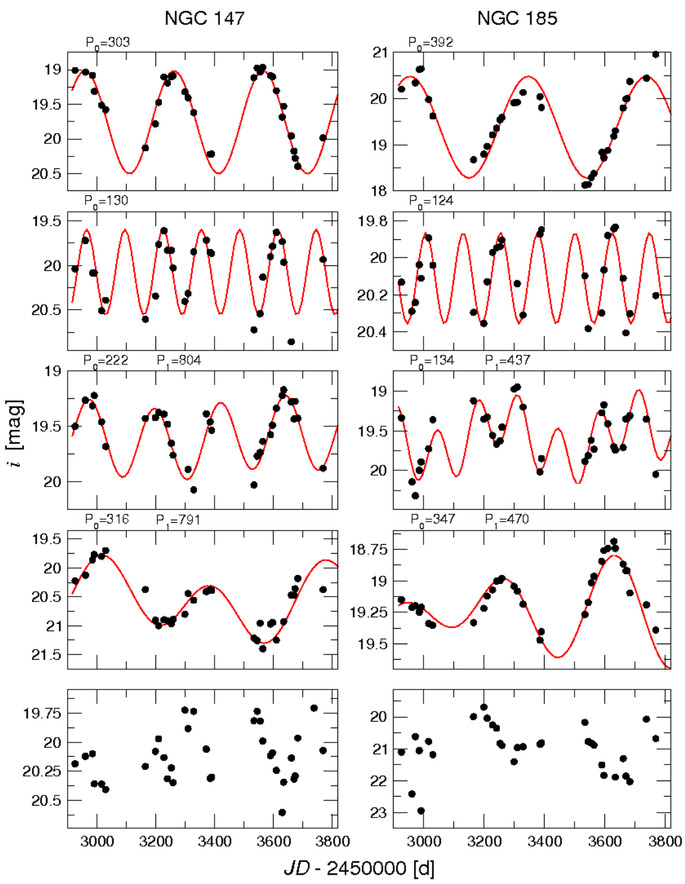

Fig. 3. Example light curves of detected LPVs in each of the target galaxies (NGC 147 on the left and NGC 185 on the right side). The black dots illustrate the observational data, while the red lines display the fitted light curve derived with SIGSPEC (Reegen 2007). Shown are different types of LPVs (mono-periodic variations, two periods, and LPVs with no significant period).

assign counterparts in Paper I. The reason for the incompleteness was threefold. First, some stars were obviously at light minimum and, thus, too weak at the epoch of the observations of Paper I. Second, we had to exclude all variables where the cross-correlation was ambiguous because of crowding. Third, a few stars visible on the frames studied in Paper I had photometric errors that were too large to be included in the final list there.

4. Results and discussion

4.1. Variable stars

In Tables 2 and 3 we list the number of objects in each of the two galaxies for which certain sets of data are available. We thereby describe the size of several sub-samples grouped according to the information available. For the 163 variables in NGC 147 and the 381 objects in NGC 185 where we have broad-band photometry from Nowotny et al. (2003), the locations in the CMDs are shown in Fig. 4 together with the full sample of Paper I. The LPVs are superimposed as red crosses and those classified as C-rich stars (according to Paper I) are drawn as black circles. Evidently, most of the identified LPVs are located in the upper region of the giant branch where AGB stars, and in particular classical carbon-rich stars, are expected. Approximately two thirds of the variable red giant stars in both galaxies clearly show

Table 2. Summary of detected variables in NGC 147, grouped according to the information available for different sub-samples.

LPVs	×	×	×	×	×	×	×
Period		×			×	×	×
V, i			×			×	×
TiO, CN						×	×
K_S				×	×		×
objects	213	168	163	182	147	122	113

Table 3. Same as Table 2 for NGC 185.

LPVs	×	×	×	×	×	×	×
Period		×			×	×	×
V, i			×			×	×
TiO, CN						×	×
K_S				×	×		×
objects	513	419	381	387	323	298	229

mono-periodic light variations. Two periods could be assigned to 20 variables of NGC 147, and for 45 LPVs of this system no significant period was found. In NGC 185 we find 38 LPVs exhibiting two periods and 94 LPVs for which no period could be detected. The light curves of LPVs without a significant period show a wide variety of shapes. A part of them definitely shows very long variations that exceed the length of our time series. On the other hand, we also have a short period limit because of the sampling interval of our observations, which amounts to approximately 90 days. We also found objects with irregular light variations, sometimes alternating with phases of comparably constant brightnesses. A selection of different LPV light curves detected in both galaxies is presented in Fig. 3. Mono-periodic cases can be found in the panels of the upper two rows. Examples of LPVs exhibiting two significant periods are plotted in the following two rows, which show a beating phenomenon in the second panel of the fourth row. In the last row of Fig. 3, two cases out of the ≈20% of our sample stars are given for which no significant period could be determined from the observations. However, taking into account their $(V-i)$, σ-amplitudes and the time scales of their light variations, they can still clearly be classified as LPVs.

Using the narrow-band photometry from Paper I, we can assign a probable atmospheric chemistry to most of the LPVs in our sample, and study the variability characteristics in relation to these defined subgroups. Of special interest are carbon stars, which we assume to be intrinsic post-third-dredge-up objects. Table 4 groups the identified variable stars according to the designated chemistry type. To search for possible correlations between the location of LPVs within the galaxy and their chemistry, we chose one of the CCD images from the i-band time series and indicated the detected variables as red circles and C-rich LPVs as blue circles (see Fig. 1). The radial distribution for identified AGB stars in NGC 147 and NGC 185 has been discussed in Paper I. The authors find similar distributions for all AGB stars and for only C-rich AGB stars. If the sample is reduced to detected LPVs in those galaxies, the trend in radial distribution for C-rich LPVs is similar as that for the full sample of

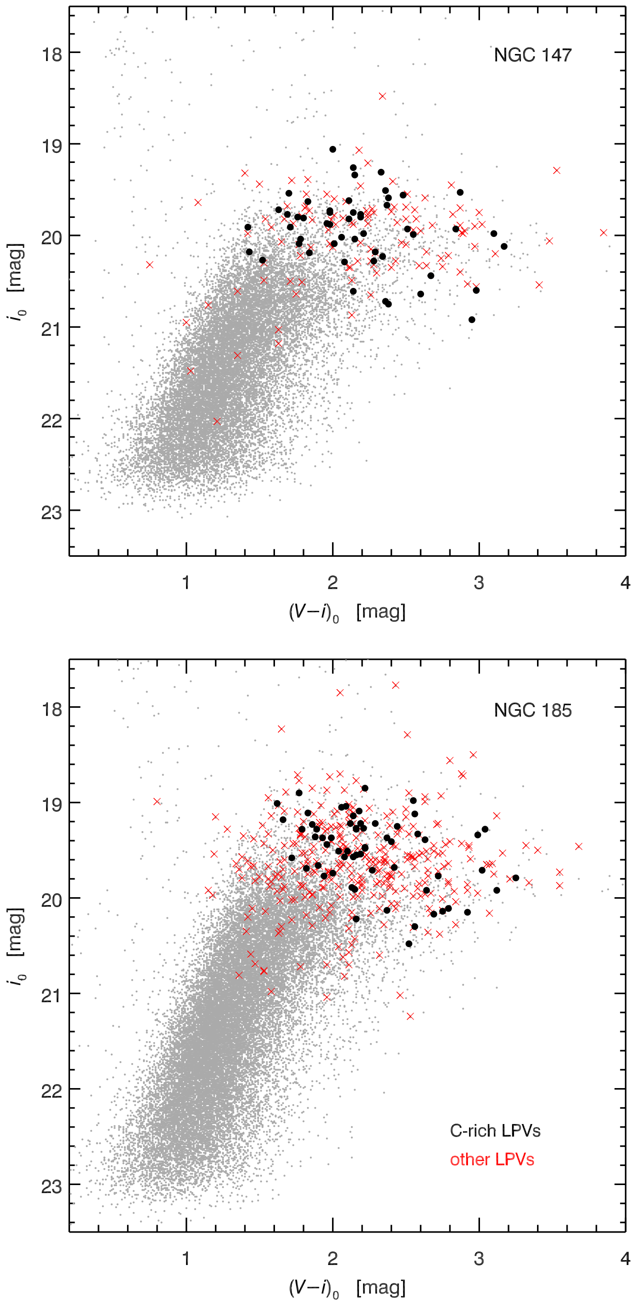

Fig. 4. Colour–magnetude diagrams of stars in NGC 147 (*upper panel*) and NGC 185 (*lower panel*) using data from Paper I (grey dots). Overplotted are identified LPVs of the present study (see legend).

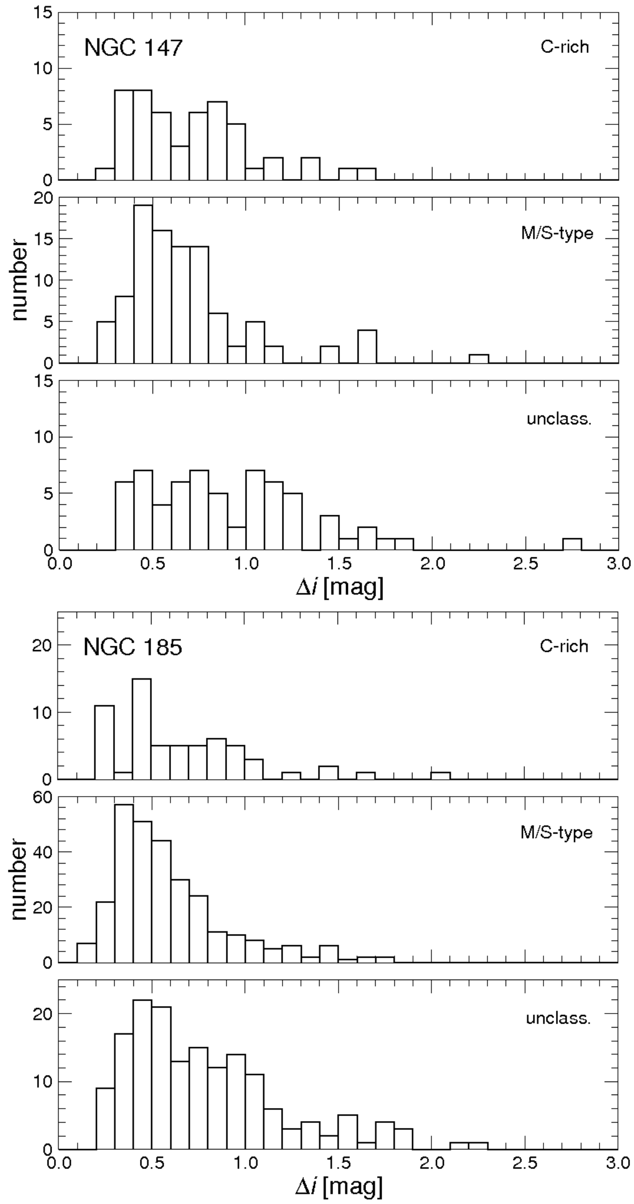

Fig. 5. Histogram of σ-amplitudes Δi of LPVs with different surface chemistry in NGC 147 and NGC 185. The first panel shows the distribution of C-rich, the second panel displays O-rich LPVs, and the last panel shows LPVs for which no chemical information was available (mainly because of missing narrow-band photometry).

Table 4. LPVs identified in the two target galaxies grouped according to their chemical types as derived from the narrow-band photometry of Paper I.

	NGC 147	NGC 185
C	51	61
M/S	98	288
unclass.	64	164
Σ	213	513

LPVs. The number ratio of carbon-rich over oxygen-rich LPVs amounts to 0.52 for NGC 147 and 0.21 for NGC 185, respectively. These values fall between the corresponding ratios for the whole population and the ratios when limiting the O-rich sample to spectral types M5 and later, as presented in Paper I. Thereby, our sample selected on variability provides a good representation of the AGB population with which the LPV class is typically associated. If we look at the histograms in Fig. 5, we notice that the amplitude distributions of the O-rich objects is dominated by small-amplitude variables. Indeed, the histograms suggest that the peak at $0\overset{\mathrm{m}}{.}35$ is not real, but that we are missing stars with the shortest amplitudes owing to the limited sampling rate of our monitoring. In contrast, C-rich stars exhibit a much flatter distribution in these plots. For the sake of completeness, the distribution of LPVs without narrow-band photometry is given in the last panels of Fig. 5 for each of the galaxies. The period distributions of the LPVs in the two galaxies can be seen in the Δi vs. log P diagrams in Fig. 6. Here, we plotted only the first significant period of all detected LPVs. The range of periods covered by

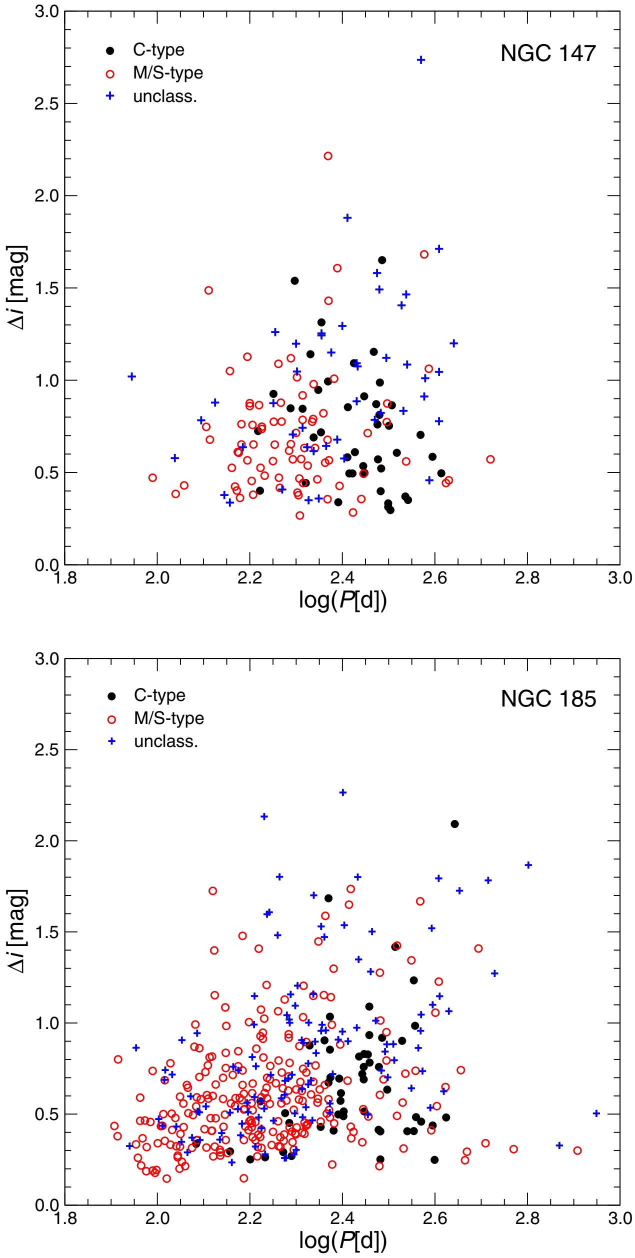

Fig. 6. Photometric amplitudes Δi versus periods for LPVs identified in NGC 147 (*upper panel*) and NGC 185 (*lower panel*). C-rich objects are indicated by black filled circles, while M/S-type stars are plotted with red open circles, and unclassified LPVs are drawn as blue crosses.

the variables is similar in both systems ($\approx$90–600$^{\rm d}$) and a weak tendency of larger amplitudes with increasing period may be visible. Considerably more LPVs with shorter periods were found in NGC 185. In this galaxy, we also found a small group of stars with very long periods and small amplitudes. These are likely candidates for LSPs, but no other significant periodicities were found from our times series. Splitting up the stars according to their chemistry reveals a concentration of C-rich targets around $\log P = 2.5$, while the O-rich stars are found predominantly at shorter periods. This behaviour is expected from theory.

4.2. Period-luminosity relations

To construct PLDs for both target systems, NGC 147 and NGC 185, the datasets of the i-band time series and the $K_{\rm s}$-band photometry were combined. This resulted in 182 LPVs with $K_{\rm s}$-magnitudes and detected periods in NGC 147 and 387 LPVs in NGC 185, respectively, which could be used for the construction of the PLDs. The resulting $K_{\rm s}$-log P diagrams for both galaxies are shown in Fig. 7. Different symbols denote the various classes of LPVs, namely C-rich, O-rich, and unclassified variables according to the narrow-band photometry adopted from Paper I. Furthermore, the amplitude was used to group the variables into four sub-samples indicated by the symbol sizes in Fig. 7. Obviously, most LPVs in both galaxies seem to form a distinct sequence at the very same location in the PLDs as the sequence of fundamental mode pulsators (labeled sequence C; cf. Sect. 1) found by various authors for the Magellanic Clouds. For illustration purposes, we overplotted the relations of Ita et al. (2004). To shift their relations according to the difference in distance between the Magellanic Clouds and our galaxies, we adopted the distance moduli determined via the brightness of horizontal branch stars for our target systems by Butler et al. (2005). They derived distance moduli of $(m-M)_0 = 24.^{\rm m}38 \pm 0.^{\rm m}01$ and $24.^{\rm m}09 \pm 0.06$ mag for NGC 147 and NGC 185, respectively. For the LMC we adopted the distance modulus obtained by Pietrzyński et al. (2009) of $(m-M)_0 = 18.^{\rm m}50 \pm 0.^{\rm m}06$. With respect to the atmospheric chemistry, we find O-rich stars along the whole sequence (with a slight thinning in number towards the top), while C-rich stars mainly occupy the upper part of the sequence. This agrees with findings of other studies (e.g., Wood 2000; or Ita et al. 2004). After applying a 3.0σ clipping to exclude stars that are considered not to belong to sequence C, a least-squares fitting was performed to obtain PLRs for this sample of stars. The linear regression ($m_K = a \log P + b$); black dashed lines in Fig. 7 of this selection resulted in a slope a of -3.55 for NGC 147 and -3.47 for NGC 185. For the intercepts b of each relation we obtained $25.^{\rm m}46$ and $25.^{\rm m}22$ for NGC 147 and NGC 185, respectively. In Table 5 we contrast PLRs derived by different studies with those found here. This comparison of results for different stellar systems is of interest for studying the aspect of the universality of the PLRs of Sequence C stars, which may then serve as an additional tool to measure distances in extragalactic systems. Owing to the limited number of carbon stars in our samples, we did not analyse C-rich and O-rich stars separately. However, for comparison reasons we calculated PLRs for our samples with and without C-rich LPVs. The small differences of the values demonstrate that the results are robust against slight changes of the sample selection. For additional calculations we only consider the results of the complete 3.0σ clipping sample. The slopes a found for NGC 147 and NGC 185 are close to those given for the combined samples in other stellar systems.

In Fig. 7 an obvious offset between the shifted LMC-PLRs and those derived for NGC 185 can be seen. The numbers in Table 5 suggest that this shift amounts to approximately $0.^{\rm m}2$–$0.^{\rm m}4$ (depending on sample selection and regression method). A mild difference in the zero-point b is expected owing to the difference in metallicity (Wood 1990). However, for the lower metallicity of NGC 185 relative to the LMC, a star should be brighter at a given period, making the discrepancy even larger. A simple but not necessarily final explanation for this difference would be an error in the distance modulus of NGC 185. When attempting to bring our observations in line with the LMC relations of Ita et al. (2004), a distance modulus of $24.^{\rm m}30$ seems to be more appropriate for this galaxy. This value is obtained by

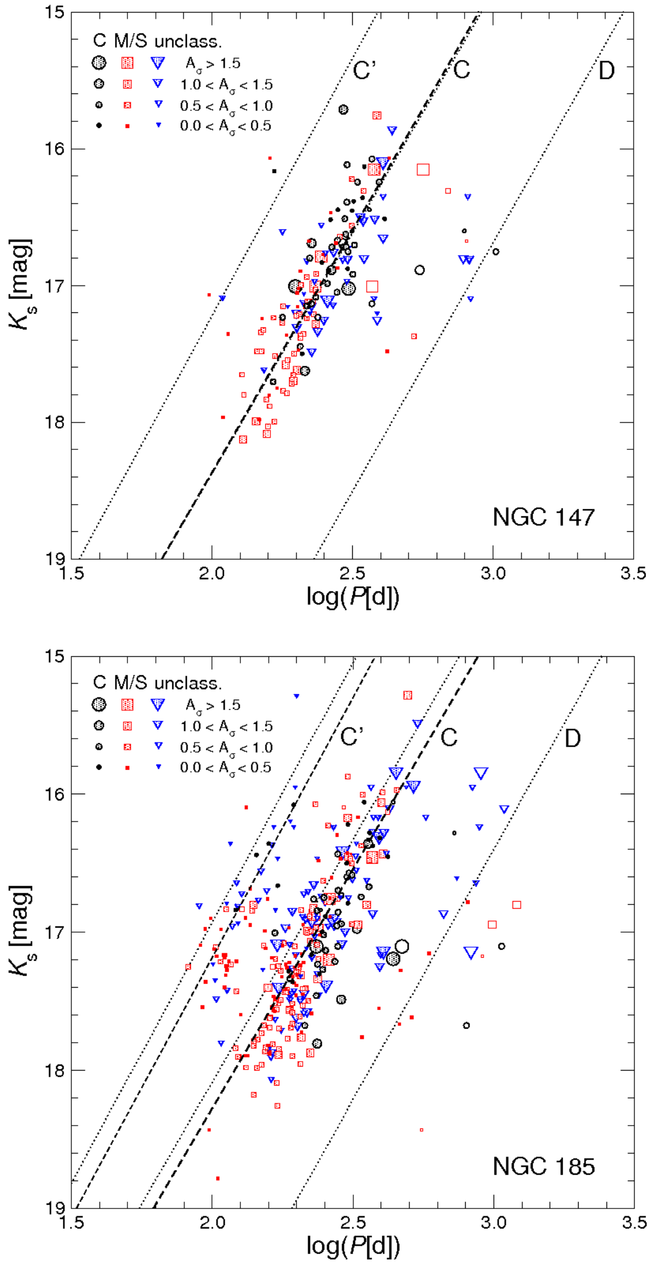

Fig. 7. Period-K_s-diagram of NGC 147 (*upper panel*) and NGC 185 (*lower panel*). C-type LPVs are plotted as black circles, M/S-type LPVs as red squares and unclassified variable red giant stars as blue triangles. The sizes of the plot symbols are scaled corresponding to the photometric amplitudes A_σ (see legend). For LPVs with two detected periods, open symbols indicate the second, longer period of both. The black dotted lines (C′, C, D) mark the PLRs found for the LMC by Ita et al. (2004). They were adopted and shifted according to the distance moduli differences between the LMC and our galaxies (see text). The black thick dashed line shows the PLRs derived by using the LPVs identified in this work. The black thin dashed line in the lower panel is plotted for demonstration purpose only (see text).

subtracting the resulting K_s-magnitudes derived from the relation of Ita et al. (2004) and from this work at a constant value of $\lg P = 2.31$. For NGC 147, the distance modulus from the literature excellently agrees with our data. The zero-point problem for NGC 185 needs further exploration. However, if the reason for the offset PLRs is indeed an error in the distance modulus, this would be the first correction of a distance to a galaxy based on PLRs of LPVs.

Table 5. Comparison of our *P*-*L* relations with literature values for different stellar systems

	$M_{K_s} = a \log P + b$			
	a	b	$(m-M)$	Refs.
Galactic	−3.56 ± 0.17	1.14 ± 0.42		1
LMC all	−3.52 ± 0.03	1.04 ± 0.08	18.50	2
LMC				
all	−3.34 ± 0.02	0.40 ± 0.05	18.50	3
O-rich	−3.31 ± 0.04	0.47 ± 0.09		3
C-rich	−3.16 ± 0.04	−0.10 ± 0.11		3
LMC				
all	−3.57 ± 0.16	1.20 ± 0.39	18.50	4
O-rich	−3.47 ± 0.19	0.98 ± 0.45		4
C-rich	−3.30 ± 0.40	0.48 ± 0.98		4
Cen A	−3.37 ± 0.11	0.80 ± 0.29	27.87	5
NGC 147				
all	−3.55 ± 0.15	1.08 ± 0.36	24.38	6
O-rich	−3.81 ± 0.25	1.68 ± 0.58	24.38	6
NGC 185				
all	−3.47 ± 0.11	1.13 ± 0.27	24.09	6
O-rich	−3.72 ± 0.16	1.68 ± 0.38	24.09	6

Notes. All relations were shifted to an absolute scale M_K using the distance moduli given in the text.

References. (1) Groenewegen & Whitelock (1996); (2) Ita et al. (2004); (3) Riebel et al. (2010); (4) Feast et al. (1989); (5) Rejkuba (2004); (6) this work.

For NGC 185 there are indications of another parallel sequence of LPVs shifted towards shorter periods (sequence C′). On average, stars on this sequence exhibit smaller amplitudes than objects on sequence C (see lower panel of Fig. 7). A similar PLR was found in the LMC (e.g. Ita et al. 2004; Fraser et al. 2008) and is associated with first overtone pulsation. The smaller light amplitude of this group identified in our sample agrees with this interpretation. Note that the trend for the zero point of sequence C is also visible for sequence C′ but the number of detected LPVs populating sequence C′ in NGC 185 prohibits another linear regression. For demonstration purpose only, we plotted sequence C′ of Ita et al. (2004) and shifted it according to the difference in distance obtained for sequence C. This line is drawn as thin dashed line in Fig. 7. A handful of targets in NGC 147 may also be located on this sequence. Variables corresponding to higher overtone pulsation were not accessible to our study owing to the sampling rate limitations.

From studies in various stellar systems it is known that the LSPs, visible in a significant fraction of all LPVs, form another sequence to the right of sequence C in the PLD. This sequence D, taken from Ita et al. (2004), is overplotted in both panels of Fig. 7 as well. Evidently, we found objects in our variability study for which LSPs derived from the light curve seem to cluster around this sequence D. In these cases, the primary period is typically located close to the fundamental mode pulsation sequence. Note that a detailed determination of these LSPs in our sample is hampered by the limited length of our time series. As described in Sect. 1, the interpretation of this kind of variability is still a matter of debate. Picking up the results of Wood & Nicholls (2009) that LSP-stars show a significant mid-infrared excess (circumstellar dust), the corresponding targets from our monitoring could be expected to be promising candidates for detecting signatures of circumstellar material.

4.3. A hidden link to the star-formation history?

The similar datasets for the two galaxies with comparable properties (cf. Sect. 1) encouraged us to make a detailed comparison of the derived PLDs (Fig. 7). Besides the different number of LPVs detected (Table 4), which is likely related to the different masses of the systems, the most obvious distinction is the fraction of luminous stars found along sequence C′. For NGC 185 roughly 10% of all LPVs can be attributed to this sequence for first overtone pulsation, while only less than 3% of these stars were detected in NGC 147. This raises the question whether some fundamental differences between the two galaxies are mirrored in the recognised discrepancy. A possible interpretation of the lack of stars on sequence C′ in NGC 147 could involve a difference in the mass distribution of these objects. Linear pulsation models (Fox & Wood 1982) as well as observational results from LPVs in stellar clusters (Lebzelter & Wood 2005, 2007) suggest an evolutionary path of an AGB star through the PLD starting on an overtone sequence and later, at higher luminosities, switching to the fundamental mode sequence. Because there are variables in NGC 185 on sequence C′ with the same luminosity as the bulk of the stars along sequence C, this points towards a higher mass of these stars.

How can this difference in the mass distribution be explained? The most obvious approach would be to assume that the two galaxies differ in their SFH. Indications for this were found in previous studies and become apparent, for example, in the SFH diagrams of Mateo (1998, Fig. 8). Hints for a recent star-formation episode can be found for NGC 185, namely a small population of younger stars concentrated in the central regions, a significant amount of interstellar gas, and prominent dust patches (Sect. 1 and Paper I). On the other hand, NGC 147 seems to be free of dust and gas, and there are no indications for a population younger than 1 Gyr (Han et al. 1997, Paper I). Another hint in this direction may be the possible detection of a small shift in the light amplitude distribution of the LPVs (Fig. 5) in the two systems. A younger system is expected to contain more stars with higher masses and, thus, smaller amplitudes (Lebzelter & Wood 2007) compared to older systems.

Theory predicts a linear trend between the mean metallicity and the ratio of C-type to M-type stars of a galaxy, which has been confirmed by observations (Iben & Renzini 1983; Mouhcine & Lançon 2003). For systems with lower mean metallicities the production of C-type stars is favoured. According to the values obtained in Paper I, NGC 185 is considered as the more metal-poor galaxy. However, the number of C-type stars is approximately the same in both systems, which leads to a much lower C/M ratio for NGC 185 than for NGC 147 (0.21 and 0.52, respectively). Note that one has to be careful with the interpretation of this result because Battinelli & Demers (2005) clearly demonstrated how severely the C/M ratio depends on the selection criterion (see their Figs. 3 and 4). In addition, the mean metallicity of a galaxy is an elusive parameter because galaxies consist of multiple populations with a mixture of ages and metallicities. The small separation (within the uncertainties) of our target galaxies in Fig. 3 of Battinelli & Demers (2005) does not allow us to draw any conclusions.

The SFHs of the two galaxies should be explored in more detail to arrive at a final interpretation of this question. Because both galaxies, NGC 147 and NGC 185, are comparable in properties (distance, luminosity, C-star content) but differ in their SFHs, they appear to be ideal candidates to shed light on this challenging topic.

5. Conclusions

A photometric monitoring in the *i*-band of the two Local Group dwarf galaxies NGC 147 and NGC 185 led to the identification of 213 and 513 LPVs, respectively. Narrow-band photometry adopted from Paper I allowed us to investigate the number of C-rich and O-rich stars among this variability class. Thus, our study is one of the few (e.g., Groenewegen 2004) that uses a more elaborated chemistry separation than the often used broad-band colour criterion (e.g., $(J-K) > 1.4$). Because the attribute of long-period variability is more significant than a pure brightness limit to select the AGB stars among all late-type giants of a population, the ratio of C-/M-type LPVs is a more reliable measure of the corresponding ratio on the AGB. From our study we determine a value of 0.52 for NGC 147 and 0.21 for NGC 185. Our substantial sample of LPVs allowed us to investigate the corresponding PLRs in the K_s-log P-plane as well. Most variables in both galaxies are located along sequence C, where fundamental mode pulsators are theoretically expected. A linear regression ($m_K = a \log P + b$) was fitted to the data of these stars. The resulting fit parameters agree well with the corresponding values found for the LMC in the literature (e.g., Ita et al. 2004). This allows us to speculate further about the universality of the P-L-relation of LPVs. However, we noticed a discrepancy in b for NGC 185, which may point to an error in the previously derived distance modulus of this galaxy. This would be the first correction of a distance to a galaxy based on PLRs of LPVs. The most significant difference between the PLDs of the two target systems is the presence of a group of first overtone pulsators in NGC 185, which is almost completely missing in NGC 147. We speculate that this effect may be explained by a difference in the star-formation history and, accordingly, a different mass distribution on the AGB. According to our sampling interval, periods shorter than 90 days could not be determined. We intend to extend our monitoring by obtaining more observations at a higher sampling rate, which will allow the detection of these periods. Moreover, these additional data points would increase the chance to properly describe the LSPs that are likely present in a significant fraction of our LPV sample.

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Appendix A:

Table A.1. Period search results of NGC 147.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
147V000001	00 33 30.99	48 32 18.07	20.06	—	241	1.01	2.1	—	—	S	00971672
147V000002	00 33 28.57	48 29 33.85	20.20	—	258	0.85	4.6	—	—	C	02190795
147V000003	00 33 27.59	48 29 48.00	20.47	—	206	0.74	5.3	—	—	u	—
147V000004	00 33 27.66	48 30 33.00	19.70	16.66	300	0.57	5.7	—	—	C	02691110
147V000005	00 33 27.19	48 29 29.93	19.91	—	196	0.71	5.6	—	—	u	02920773
147V000006	00 33 26.68	48 29 16.68	19.88	17.30	211	0.54	4.6	—	—	M	03180702
147V000007	00 33 26.43	48 30 38.81	20.60	16.55	314	0.87	4.3	—	—	S	03351141
147V000008	00 33 25.15	48 32 50.78	20.12	17.24	231	0.55	4.5	—	—	M	04081845
147V000009	00 33 24.73	48 29 34.89	20.36	—	158	0.86	5.3	—	—	S	04220799
147V000010	00 33 24.32	48 27 28.13	20.04	—	168	0.74	3.6	—	—	M	04390122
147V000011	00 33 23.95	48 32 47.62	19.70	17.39	206	0.79	5.8	—	—	M	04711828
147V000012	00 33 23.63	48 31 01.95	20.16	17.31	234	1.43	5.5	—	—	M	04841264
147V000013	00 33 23.26	48 32 54.61	20.34	16.65	299	0.76	5.2	—	—	C	05081865
147V000014	00 33 21.58	48 28 43.51	19.92	17.42	203	0.47	5.8	—	—	M	05870523
147V000015	00 33 20.96	48 30 52.56	19.89	16.77	245	1.61	5.4	—	—	M	06251212
147V000016	00 33 20.82	48 32 08.39	20.11	17.30	178	0.56	4.3	—	—	M	06351618
147V000017	00 33 20.57	48 30 56.92	19.84	16.15	167	0.40	4.6	—	—	C	06461236
147V000018	00 33 20.53	48 33 08.16	19.71	17.51	150	0.61	4.5	—	—	M	06531937
147V000019	00 33 20.30	48 30 28.00	19.87	16.98	233	0.68	6.1	—	—	S	06591081
147V000020	00 33 20.30	48 31 14.54	19.79	16.27	329	0.61	6.6	—	—	C	06601330
147V000021	00 33 20.13	48 31 07.14	20.12	16.69	280	0.91	5.6	—	—	C	06691290
147V000022	00 33 20.13	48 32 32.56	19.68	16.25	313	0.77	6.2	—	—	M	06731747
147V000023	00 33 19.30	48 31 05.73	19.77	17.26	166	0.87	5.5	—	—	S	07131282
147V000024	00 33 18.81	48 29 29.38	19.89	17.10	218	0.69	6.4	—	—	C	07350767
147V000025	00 33 18.15	48 29 28.57	19.86	16.30	343	0.37	4.7	—	—	C	07700763
147V000026	00 33 18.08	48 30 46.26	19.58	—	183	0.47	4.8	—	—	S	07771178
147V000027	00 33 17.74	48 31 45.94	20.17	15.74	293	1.15	6.0	—	—	C	07971497
147V000028	00 33 17.65	48 30 22.56	19.85	16.64	276	0.36	5.7	—	—	M	07991051
147V000029	00 33 17.46	48 31 18.94	21.18	17.05	306	1.65	5.3	—	—	C	08111352
147V000030	00 33 17.03	48 28 55.63	20.13	16.59	285	0.71	6.1	—	—	S	08280586
147V000031	00 33 16.75	48 31 26.32	21.23	16.52	337	1.41	3.7	—	—	u	08491392
147V000032	00 33 16.53	48 31 58.91	20.38	16.42	302	0.81	5.2	—	—	C	08621566
147V000033	00 33 16.28	48 32 11.16	19.83	16.09	427	0.46	4.6	—	—	S	08761631
147V000034	00 33 16.08	48 33 03.13	19.98	17.08	212	0.35	3.7	—	—	u	08891909
147V000035	00 33 15.83	48 32 16.86	20.13	16.96	217	0.79	5.2	—	—	M	09001662
147V000036	00 33 15.82	48 32 48.11	19.85	16.90	280	0.49	4.9	—	—	S	09021829
147V000037	00 33 15.43	48 29 37.70	20.09	17.22	218	0.98	5.3	—	—	M	09140810
147V000038	00 33 15.01	48 27 45.25	19.93	17.34	114	0.43	5.2	—	—	M	09320209
147V000039	00 33 14.71	48 32 57.13	20.44	16.54	297	0.87	5.7	—	—	C	09611877
147V000040	00 33 14.37	48 29 42.97	20.18	16.50	411	0.50	5.1	—	—	C	09710838
147V000041	00 33 14.18	48 30 13.77	19.96	—	152	0.65	5.2	—	—	M	09821003
147V000042	00 33 13.31	48 29 36.14	19.57	17.26	151	0.36	5.5	—	—	M	10270801
147V000043	00 33 13.20	48 29 31.41	18.96	16.45	265	0.28	5.4	—	—	M	10320776
147V000044	00 33 13.21	48 32 45.73	19.82	17.08	201	0.39	4.1	—	—	S	10401815
147V000045	00 33 13.09	48 30 30.14	19.60	16.90	206	0.44	5.3	—	—	M	10401090
147V000046	00 33 12.83	48 31 21.27	19.66	16.59	245	0.68	5.8	—	—	u	10561364
147V000047	00 33 12.69	48 28 26.45	20.45	17.60	200	1.02	5.7	—	—	M	10560428
147V000048	00 33 12.72	48 29 57.35	19.11	16.05	161	0.38	6.4	—	—	M	10580915
147V000049	00 33 12.14	48 31 02.73	20.10	17.61	183	1.09	5.7	—	—	M	10921264
147V000050	00 33 12.14	48 32 09.62	21.03	18.16	129	1.49	4.9	—	—	M	10951622
147V000051	00 33 11.67	48 29 38.35	20.20	17.14	229	0.82	4.7	—	—	M	11130813
147V000052	00 33 11.30	48 29 44.64	20.09	17.77	171	0.48	5.8	—	—	S	11330846
147V000053	00 33 11.07	48 28 47.60	20.10	17.68	194	0.65	5.1	—	—	M	11430541
147V000054	00 33 10.89	48 28 54.96	19.56	17.01	203	0.27	4.5	—	—	S	11530580
147V000055	00 33 10.47	48 28 37.76	20.07	17.82	130	0.68	3.8	—	—	S	11750488
147V000056	00 33 10.42	48 27 45.13	19.91	16.06	370	0.70	5.5	—	—	C	11750206
147V000057	00 33 10.49	48 33 14.27	20.10	17.18	216	0.78	5.8	—	—	M	11851968
147V000058	00 33 10.09	48 33 12.70	19.70	16.55	264	0.50	5.6	—	—	C	12061959
147V000059	00 33 09.02	48 29 35.53	20.22	17.90	161	0.76	5.0	—	—	S	12540797
147V000060	00 33 08.99	48 32 33.29	19.93	17.38	149	0.61	5.4	—	—	S	12631748
147V000061	00 33 08.50	48 29 36.66	19.65	16.44	316	0.31	4.2	—	—	C	12810802
147V000062	00 33 08.43	48 29 33.56	20.65	16.99	198	1.54	4.9	—	—	C	12850786
147V000063	00 33 08.46	48 30 17.49	20.06	17.68	195	1.12	5.4	—	—	S	12851021
147V000064	00 33 07.85	48 28 48.17	20.12	18.00	147	0.42	5.6	—	—	M	13130543

Table A.1. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
147V000065	00 33 07.53	48 30 22.15	20.04	17.67	128	0.75	5.7	—	—	M	13341046
147V000066	00 33 07.14	48 29 49.17	20.01	17.23	205	0.57	5.5	—	—	M	13530869
147V000067	00 33 07.22	48 31 29.62	20.25	16.28	394	0.59	5.1	—	—	C	13541407
147V000068	00 33 06.92	48 28 20.66	20.06	18.01	167	0.53	5.9	—	—	M	13610395
147V000069	00 33 07.05	48 31 05.04	20.25	17.24	200	1.20	5.8	—	—	u	13621275
147V000070	00 33 06.84	48 28 08.27	19.93	16.92	260	0.50	6.4	—	—	C	13650329
147V000071	00 33 06.74	48 28 01.40	19.73	16.94	317	0.75	6.0	—	—	C	13700292
147V000072	00 33 06.83	48 32 26.95	19.77	16.42	319	0.30	4.8	—	—	C	13771714
147V000073	00 33 06.61	48 31 35.60	20.04	16.84	223	0.95	6.4	—	—	C	13861439
147V000074	00 33 06.44	48 30 27.95	19.51	15.78	386	1.06	6.5	—	—	M	13921076
147V000075	00 33 06.15	48 28 14.38	20.33	—	194	0.85	6.0	—	—	C	14020361
147V000076	00 33 05.73	48 28 50.21	19.64	16.90	304	0.40	6.1	—	—	C	14260553
147V000077	00 33 05.36	48 28 43.42	19.93	18.05	159	0.88	4.6	—	—	M	14450516
147V000078	00 33 05.32	48 31 17.48	19.75	17.03	208	0.63	5.4	—	—	S	14541341
147V000079	00 33 04.98	48 29 47.57	20.25	16.94	235	0.57	5.2	—	—	M	14680860
147V000080	00 33 04.72	48 29 36.61	20.17	17.82	160	0.45	4.3	—	—	M	14810801
147V000081	00 33 04.81	48 32 49.75	20.14	17.19	179	0.78	5.7	—	—	M	14851835
147V000082	00 33 04.50	48 29 26.70	19.78	17.34	152	0.76	6.4	—	—	M	14920748
147V000083	00 33 03.50	48 27 53.84	20.44	17.11	234	0.99	5.8	—	—	C	15410250
147V000084	00 33 03.44	48 30 32.32	20.07	17.01	258	0.58	6.0	—	—	C	15511099
147V000085	00 33 03.47	48 32 24.17	19.53	16.15	303	0.99	6.9	—	—	C	15551698
147V000086	00 33 03.04	48 30 31.54	19.74	16.80	248	0.43	5.1	—	—	M	15721095
147V000087	00 33 02.87	48 30 54.07	20.01	17.53	196	0.57	4.9	—	—	M	15821215
147V000088	00 33 02.46	48 31 27.43	19.88	17.09	234	0.36	4.2	—	—	M	16061394
147V000089	00 33 02.44	48 31 23.39	20.17	18.12	157	1.13	4.0	—	—	S	16071372
147V000090	00 33 02.24	48 30 43.61	20.48	17.52	421	0.44	4.4	—	—	M	16151159
147V000091	00 33 02.11	48 30 13.02	20.49	17.57	186	0.78	5.6	—	—	M	16210995
147V000092	00 33 01.88	48 29 39.69	19.73	17.07	278	0.54	6.1	—	—	C	16310817
147V000093	00 33 01.12	48 27 58.71	20.23	17.72	165	0.73	5.8	—	—	C	16670275
147V000094	00 33 01.14	48 31 05.04	20.06	17.55	168	0.75	5.4	—	—	S	16741274
147V000095	00 33 01.01	48 28 45.23	20.11	17.74	193	0.62	4.6	—	—	S	16750524
147V000096	00 32 58.55	48 30 49.40	20.53	17.34	200	1.05	5.7	—	—	u	18111189
147V000097	00 32 58.26	48 31 10.67	20.07	—	161	0.65	5.5	—	—	S	18271303
147V000098	00 32 58.02	48 31 50.20	20.54	17.66	214	1.14	4.4	—	—	C	18421515
147V000099	00 32 57.77	48 29 15.81	20.19	17.79	179	0.65	4.3	—	—	M	18480687
147V000100	00 32 57.48	48 29 36.95	20.04	17.81	185	0.88	5.4	—	—	M	18640800
147V000101	00 32 57.19	48 29 26.57	20.34	17.46	206	0.85	5.1	—	—	C	18790745
147V000102	00 32 57.06	48 31 06.58	20.07	17.42	206	0.92	4.8	—	—	S	18911281
147V000103	00 32 57.06	48 32 49.75	20.64	—	180	1.26	4.5	—	—	u	18951834
147V000104	00 33 23.57	48 30 34.46	19.51	17.13	270	0.89	6.4	—	—	u	—
147V000105	00 33 17.39	48 31 15.19	19.94	17.36	238	1.15	4.6	—	—	u	—
147V000106	00 33 09.47	48 31 50.70	19.69	17.15	211	0.64	5.3	—	—	u	—
147V000107	00 33 09.20	48 27 27.16	20.16	16.77	271	1.08	2.9	—	—	u	—
147V000108	00 33 04.56	48 29 21.92	19.72	17.22	387	0.46	4.2	—	—	u	—
147V000109	00 33 29.20	48 30 45.91	20.51	—	270	1.09	3.6	—	—	u	—
147V000110	00 33 26.54	48 32 48.50	19.93	17.12	219	0.63	7.7	—	—	S	03341833
147V000111	00 33 26.41	48 31 40.98	20.61	16.71	321	0.86	7.3	—	—	C	03381473
147V000112	00 33 25.68	48 33 15.14	21.92	16.09	406	1.71	4.4	—	—	u	—
147V000113	00 33 25.27	48 29 54.83	19.76	—	140	0.38	3.5	—	—	u	—
147V000114	00 33 24.44	48 32 06.63	21.38	17.15	226	1.25	4.3	—	—	u	—
147V000115	00 33 24.26	48 28 43.27	19.86	17.50	209	0.44	7.0	—	—	C	04450523
147V000116	00 33 23.93	48 32 56.76	20.54	—	149	0.40	2.9	—	—	S	04731877
147V000117	00 33 23.75	48 32 46.45	19.96	17.07	98	0.47	4.0	—	—	M	04821822
147V000118	00 33 23.38	48 32 54.19	21.67	—	298	1.58	5.6	—	—	u	—
147V000119	00 33 22.53	48 28 55.57	19.94	16.73	304	0.82	6.5	—	—	u	—
147V000120	00 33 21.94	48 30 56.48	21.40	—	124	0.78	2.4	—	—	u	—
147V000121	00 33 21.89	48 30 26.45	20.07	17.96	110	0.38	4.7	—	—	S	05751073
147V000122	00 33 20.41	48 29 41.12	19.93	—	143	0.34	5.1	—	—	u	06510831
147V000123	00 33 19.94	48 29 58.91	20.25	17.48	226	1.24	8.4	—	—	u	—
147V000124	00 33 16.79	48 31 41.36	20.52	15.86	438	1.20	5.7	—	—	u	—
147V000125	00 33 16.82	48 32 51.88	21.99	—	88	1.02	1.7	—	—	u	08491849
147V000126	00 33 16.69	48 32 49.67	22.21	—	313	1.12	6.2	—	—	u	08551837
147V000127	00 33 16.49	48 31 38.27	20.64	16.65	406	1.05	4.2	—	—	u	—
147V000128	00 33 16.26	48 28 04.49	20.08	17.20	223	0.36	5.3	—	—	u	—
147V000129	00 33 16.31	48 31 23.08	20.41	16.51	341	0.83	6.0	—	—	u	—

Table A.1. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{\rm Paper\ I}$
147V000130	00 33 15.33	48 30 50.77	20.48	17.99	143	1.05	4.6	—	—	S	09231201
147V000131	00 33 14.93	48 33 23.72	20.24	17.22	200	0.71	6.3	—	—	M	09502019
147V000132	00 33 14.24	48 31 12.86	19.98	17.84	157	0.57	4.8	—	—	S	09811319
147V000133	00 33 12.79	48 31 02.92	20.70	16.51	379	1.01	8.6	—	—	u	—
147V000134	00 33 12.64	48 29 59.52	19.71	16.83	246	0.34	5.3	—	—	C	10630926
147V000135	00 33 12.58	48 31 01.90	20.81	16.53	346	1.47	4.4	—	—	u	—
147V000136	00 33 12.36	48 30 29.70	20.33	17.10	257	1.88	6.7	—	—	u	—
147V000137	00 33 11.09	48 28 48.81	20.04	16.60	178	0.88	5.7	—	—	u	—
147V000138	00 33 09.02	48 29 50.59	21.02	—	133	0.88	6.6	—	—	u	—
147V000139	00 33 08.32	48 29 26.70	20.24	17.09	109	0.58	5.2	—	—	u	—
147V000140	00 33 08.07	48 28 21.69	19.84	17.16	202	0.38	5.2	—	—	M	13000401
147V000141	00 33 07.87	48 31 32.07	20.11	17.15	186	0.41	3.7	—	—	u	—
147V000142	00 33 07.19	48 32 37.74	20.11	17.48	145	0.53	6.0	—	—	M	13581771
147V000143	00 33 06.40	48 29 55.81	20.65	17.37	525	0.57	4.2	—	—	S	13930904
147V000144	00 33 02.05	48 29 47.60	20.16	16.82	218	0.62	4.0	—	—	u	—
147V000145	00 33 01.85	48 30 06.08	20.23	17.61	153	0.64	5.7	—	—	u	—
147V000146	00 32 58.61	48 29 46.87	19.64	17.36	184	0.42	5.5	—	—	M	18050854
147V000147	00 32 57.69	48 27 41.80	20.10	16.76	254	0.58	4.5	—	—	u	18480183
147V000148	00 33 04.22	48 29 12.83	19.42	16.15	348	0.35	4.5	—	—	C	15070673
147V000149	00 33 14.36	48 31 21.40	19.92	16.34	345	0.56	4.3	690	3.0	S	09751365
147V000150	00 33 10.37	48 30 06.46	20.38	16.33	406	0.78	6.2	813	0.7	u	—
147V000151	00 33 20.48	48 31 41.33	20.44	17.04	234	2.22	3.5	373	1.5	M	06521473
147V000152	00 33 20.35	48 32 18.83	19.52	16.70	222	0.46	4.5	804	0.8	M	06611673
147V000153	00 33 14.07	48 33 16.54	20.25	17.16	226	0.72	3.2	371	1.5	C	09951980
147V000154	00 33 07.38	48 30 38.03	20.40	17.26	178	0.93	4.2	238	1.4	C	13431131
147V000155	00 33 22.65	48 32 23.44	19.95	16.74	267	0.61	5.0	293	2.5	C	05391698
147V000156	00 33 16.18	48 28 19.31	19.75	16.43	280	0.50	4.9	363	0.7	C	08710392
147V000157	00 33 12.89	48 29 50.98	19.75	16.58	316	0.33	5.3	790	1.0	C	10500881
147V000158	00 33 05.44	48 30 18.10	20.49	16.71	226	1.31	4.9	293	0.9	C	14451023
147V000159	00 33 02.32	48 29 32.13	19.76	16.77	305	0.52	5.0	1023	1.2	C	16080776
147V000160	00 33 00.92	48 29 41.43	19.66	16.17	378	1.68	6.1	564	3.3	M	16820825
147V000161	00 33 00.66	48 27 40.70	21.40	—	371	2.74	3.2	446	1.0	u	16900179
147V000162	00 32 59.44	48 29 25.74	20.41	16.91	266	1.09	4.4	548	0.8	C	17600741
147V000163	00 32 56.70	48 29 39.82	20.60	17.11	377	0.91	4.9	832	1.0	u	19060816
147V000164	00 33 04.76	48 29 29.04	19.48	16.98	232	0.64	4.6	302	1.4	u	—
147V000165	00 33 22.99	48 31 58.23	21.21	16.80	348	1.09	9.1	784	2.2	u	—
147V000166	00 33 16.37	48 28 04.20	20.46	16.81	292	0.79	8.1	822	3.5	u	—
147V000167	00 33 07.47	48 30 26.76	20.09	17.25	250	1.29	7.2	388	5.6	u	—
147V000168	00 33 04.17	48 28 59.64	20.22	16.80	304	1.49	7.2	822	4.7	u	—
147V000169	00 33 18.39	48 31 01.83	20.06	17.11	—	0.55	—	—	—	M	07611261
147V000170	00 33 17.44	48 31 41.06	21.09	16.22	—	1.63	—	—	—	S	08131471
147V000171	00 33 05.58	48 28 37.77	21.54	17.33	—	1.39	—	—	—	C	14330486
147V000172	00 33 27.70	48 29 35.30	19.78	17.36	—	0.73	—	—	—	M	02650802
147V000173	00 33 26.44	48 31 50.12	20.02	—	—	0.44	—	—	—	M	03371522
147V000174	00 33 23.51	48 30 41.14	19.71	17.25	—	0.26	—	—	—	M	04891152
147V000175	00 33 20.93	48 28 34.61	19.96	—	—	0.56	—	—	—	M	06210475
147V000176	00 33 20.07	48 33 17.28	20.01	17.36	—	0.61	—	—	—	S	06781986
147V000177	00 33 18.96	48 30 25.85	19.70	16.75	—	0.50	—	—	—	M	07291069
147V000178	00 33 17.45	48 27 55.86	19.90	16.75	—	0.46	—	—	—	M	08030267
147V000179	00 33 17.18	48 28 47.15	19.75	17.27	—	0.34	—	—	—	u	—
147V000180	00 33 16.90	48 30 57.62	19.98	17.63	—	0.54	—	—	—	S	08401238
147V000181	00 33 13.63	48 29 24.23	20.09	17.06	—	0.39	—	—	—	u	—
147V000182	00 33 13.46	48 30 55.17	20.01	16.83	—	0.44	—	—	—	C	10221224
147V000183	00 33 12.63	48 30 43.45	19.83	17.01	—	0.48	—	—	—	u	—
147V000184	00 33 10.85	48 29 54.19	19.69	17.23	—	0.53	—	—	—	C	11570897
147V000185	00 33 10.70	48 31 30.87	20.54	16.99	—	1.67	—	—	—	S	—
147V000186	00 33 09.98	48 32 18.45	20.10	17.84	—	0.49	—	—	—	C	12091669
147V000187	00 33 09.34	48 32 07.84	20.28	16.67	—	0.75	—	—	—	C	12431612
147V000188	00 33 08.27	48 32 43.73	20.24	17.63	—	0.44	—	—	—	u	—
147V000189	00 33 06.62	48 30 49.13	19.84	18.09	—	0.60	—	—	—	S	13841190
147V000190	00 33 05.96	48 33 19.34	19.66	18.04	—	0.36	—	—	—	S	14261994
147V000191	00 33 05.62	48 32 19.62	20.01	17.01	—	0.60	—	—	—	u	—
147V000192	00 33 05.50	48 30 52.88	19.28	16.20	—	0.37	—	—	—	C	14431210
147V000193	00 33 02.33	48 32 52.16	20.12	16.78	—	0.81	—	—	—	C	16161848
147V000194	00 33 01.70	48 30 31.87	19.78	16.78	—	0.30	—	—	—	M	16441096

Table A.1. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
147V000195	00 32 58.91	48 31 08.84	20.30	17.64	—	0.67	—	—	—	S	17931293
147V000196	00 32 58.00	48 28 28.95	20.09	17.86	—	0.51	—	—	—	M	18330436
147V000197	00 33 08.90	48 29 26.45	21.20	—	—	1.70	—	—	—	u	—
147V000198	00 33 04.84	48 29 04.69	21.17	—	—	1.64	—	—	—	u	—
147V000199	00 33 27.10	48 29 49.27	21.28	—	—	0.75	—	—	—	u	—
147V000200	00 33 23.90	48 30 32.65	21.31	—	—	0.71	—	—	—	u	04691107
147V000201	00 33 23.28	48 30 39.71	20.90	—	—	0.59	—	—	—	u	05011145
147V000202	00 33 23.07	48 31 52.27	20.24	16.87	—	0.53	—	—	—	u	—
147V000203	00 33 22.59	48 29 37.69	20.75	—	—	0.62	—	—	—	S	05350813
147V000204	00 33 21.17	48 28 37.66	21.64	—	—	0.99	—	—	—	u	—
147V000205	00 33 18.20	48 30 50.04	21.13	17.85	—	1.16	—	—	—	u	—
147V000206	00 33 16.65	48 30 51.67	20.01	17.86	—	0.30	—	—	—	C	08531206
147V000207	00 33 12.08	48 31 11.36	19.74	16.41	—	0.43	—	—	—	u	—
147V000208	00 33 11.67	48 29 26.87	20.10	17.69	—	0.42	—	—	—	M	11130751
147V000209	00 33 08.64	48 32 15.42	21.41	18.31	—	1.16	—	—	—	u	—
147V000210	00 33 03.98	48 31 08.43	21.46	—	—	1.12	—	—	—	u	—
147V000211	00 33 02.06	48 28 12.73	20.26	19.19	—	0.49	—	—	—	u	—
147V000212	00 33 01.44	48 30 03.94	20.12	17.01	—	0.45	—	—	—	u	—
147V000213	00 33 00.88	48 29 20.82	19.72	16.98	—	0.26	—	—	—	M	16840715

Notes. This table lists in the first five columns the internal IDs, the coordinates (J2000), mean i magnitudes (obtained from the time series) as well as K_s-magnitudes. Periods, σ-amplitudes, and the SIGSPEC-significance are found in the next three columns. Long-period variables exhibiting two significant periods have entries in the ninth and tenth columns listing the second period and its SIGSPEC-significance. The last two columns give the types of different chemistry and the IDs carried out by the authors of Paper I.

Table A.2. Same as Table A.1 but for NGC 185.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000001	00 39 14.67	48 20 40.97	19.68	—	139	0.43	4.0	—	—	S	01961242
185V000002	00 39 14.42	48 18 37.24	19.84	—	114	0.43	4.4	—	—	S	02020584
185V000003	00 39 14.12	48 21 31.49	20.03	—	153	0.66	2.8	—	—	M	02281511
185V000004	00 39 13.29	48 20 28.43	19.58	—	147	0.55	5.7	—	—	M	02681175
185V000005	00 38 52.03	48 20 10.21	19.28	16.31	371	0.46	6.0	—	—	C	13961070
185V000006	00 39 13.12	48 19 25.54	19.57	17.48	163	0.46	5.6	—	—	S	02740840
185V000007	00 39 12.54	48 17 54.78	20.41	—	311	0.84	6.1	—	—	u	02990357
185V000008	00 39 12.44	48 21 06.86	20.41	—	123	0.86	3.8	—	—	M	03161379
185V000009	00 39 11.84	48 19 43.23	20.18	16.89	277	0.72	5.9	—	—	C	03430934
185V000010	00 39 11.74	48 21 11.84	19.70	18.04	169	0.91	5.9	—	—	M	03531405
185V000011	00 39 11.78	48 21 46.36	19.31	17.54	226	0.46	4.8	—	—	M	03531589
185V000012	00 39 11.23	48 19 53.03	20.06	—	109	0.48	4.5	—	—	S	03760986
185V000013	00 39 11.12	48 20 20.59	19.99	17.85	124	0.58	5.0	—	—	M	03831132
185V000014	00 39 10.87	48 20 17.89	19.58	17.09	588	0.31	3.7	—	—	M	03961118
185V000015	00 39 10.41	48 20 52.43	20.78	—	168	1.07	4.9	—	—	M	04231301
185V000016	00 39 09.69	48 19 44.06	20.35	—	120	0.87	4.9	—	—	S	04570937
185V000017	00 39 09.65	48 19 42.87	19.67	—	203	0.87	6.1	—	—	S	04590931
185V000018	00 39 09.79	48 21 01.08	19.66	—	142	0.29	3.9	—	—	M	04561347
185V000019	00 39 09.34	48 20 26.12	19.68	17.93	144	0.56	4.4	—	—	M	04781161
185V000020	00 39 09.09	48 18 42.08	19.27	17.25	200	0.43	5.3	—	—	M	04860607
185V000021	00 39 09.18	48 19 59.60	19.47	17.24	240	0.41	6.3	—	—	C	04851020
185V000022	00 39 09.03	48 19 51.86	19.95	16.54	301	0.76	6.0	—	—	C	04930978
185V000023	00 39 09.17	48 22 56.02	19.51	17.21	204	0.68	5.8	—	—	S	04951959
185V000024	00 39 08.91	48 23 00.90	19.43	17.21	185	0.32	3.4	—	—	M	05091985
185V000025	00 39 08.53	48 18 50.95	19.55	16.96	249	0.57	5.6	—	—	C	05160654
185V000026	00 39 08.46	48 21 22.09	20.30	16.40	421	0.48	4.4	—	—	C	05281459
185V000027	00 39 08.51	48 22 17.14	19.89	17.50	391	0.41	4.5	—	—	M	05281752
185V000028	00 39 08.35	48 19 57.81	19.73	17.50	169	0.95	5.7	—	—	M	05291010
185V000029	00 39 08.33	48 21 08.51	20.55	16.69	338	0.90	4.8	—	—	C	05341386
185V000030	00 39 08.18	48 19 39.03	19.32	17.45	168	0.55	6.4	—	—	S	05370910
185V000031	00 39 08.23	48 21 25.98	19.70	17.72	186	0.73	4.0	—	—	M	05401479
185V000032	00 39 08.15	48 21 21.75	19.35	17.27	176	0.33	2.7	—	—	M	05441457
185V000033	00 39 07.84	48 17 21.27	19.55	—	148	0.59	5.1	—	—	M	05480176
185V000034	00 39 07.79	48 20 34.30	19.25	16.63	137	0.27	4.0	—	—	M	05611204
185V000035	00 39 07.46	48 20 20.22	19.97	17.78	154	0.53	4.7	—	—	S	05771129
185V000036	00 39 07.47	48 22 28.94	20.04	16.70	305	0.74	5.1	—	—	u	05841814
185V000037	00 39 07.19	48 19 04.86	19.69	17.34	215	0.61	4.3	—	—	M	05880728
185V000038	00 39 07.08	48 22 16.59	19.50	17.32	195	0.40	5.7	—	—	M	06041748
185V000039	00 39 06.81	48 18 30.65	20.25	17.52	217	1.16	6.6	—	—	u	—
185V000040	00 39 06.67	48 17 15.92	19.65	—	313	0.88	3.5	—	—	u	06090147
185V000041	00 39 06.77	48 21 46.92	19.80	17.29	237	1.14	6.7	—	—	M	06181590
185V000042	00 39 06.67	48 22 51.48	19.30	17.19	172	0.65	5.3	—	—	M	06271934
185V000043	00 39 06.69	48 23 05.96	19.73	16.89	288	0.78	4.7	—	—	C	06272011
185V000044	00 39 06.36	48 18 23.61	19.50	17.33	199	0.39	5.9	—	—	M	06300508
185V000045	00 39 06.40	48 19 14.30	20.37	16.91	326	1.42	6.1	—	—	C	06300777
185V000046	00 39 06.36	48 19 19.69	20.04	—	128	0.77	6.1	—	—	S	06320806
185V000047	00 39 05.93	48 17 54.05	20.10	17.28	189	0.51	5.8	—	—	C	06510350
185V000048	00 39 06.05	48 20 45.86	19.89	17.38	122	0.59	3.7	—	—	M	06541265
185V000049	00 39 06.13	48 22 56.61	19.32	16.01	399	1.06	5.0	—	—	M	06561961
185V000050	00 39 05.92	48 21 08.54	19.75	17.39	183	0.79	6.3	—	—	M	06621386
185V000051	00 39 05.68	48 20 01.49	19.79	—	161	0.67	5.3	—	—	M	06711028
185V000052	00 39 05.62	48 19 32.81	20.01	17.21	247	0.70	5.9	—	—	C	06720876
185V000053	00 39 05.50	48 20 21.72	19.71	17.92	132	0.60	6.5	—	—	M	06811136
185V000054	00 39 05.34	48 19 35.25	19.12	16.92	95	0.19	3.9	—	—	M	06870889
185V000055	00 39 05.35	48 21 07.57	19.86	16.70	262	0.43	5.2	—	—	M	06921380
185V000056	00 39 05.26	48 21 19.33	20.30	—	133	1.15	5.3	—	—	M	06971443
185V000057	00 39 05.12	48 20 04.63	20.60	18.13	141	0.98	5.0	—	—	M	07011045
185V000058	00 39 04.74	48 18 16.68	19.60	—	107	0.33	3.5	—	—	S	07150470
185V000059	00 39 04.86	48 22 15.07	19.46	17.23	467	0.29	3.9	—	—	M	07211739

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000060	00 39 04.73	48 20 50.01	19.83	16.78	229	1.15	6.6	—	—	S	07241286
185V000061	00 39 04.53	48 19 12.11	19.47	16.83	252	0.49	6.0	—	—	C	07290765
185V000062	00 39 04.43	48 21 38.13	20.13	16.65	219	0.90	6.2	—	—	u	07421543
185V000063	00 39 04.11	48 18 00.35	20.33	—	107	0.78	3.9	—	—	S	07480383
185V000064	00 39 04.18	48 20 08.44	19.51	17.52	192	0.94	6.7	—	—	M	07501065
185V000065	00 39 04.21	48 22 19.71	20.14	17.73	146	0.72	4.5	—	—	M	07561764
185V000066	00 39 03.99	48 20 03.78	20.18	16.49	325	0.80	6.3	—	—	u	07601040
185V000067	00 39 03.53	48 19 06.36	19.72	—	92	0.59	4.2	—	—	S	07820734
185V000068	00 38 41.55	48 19 30.40	19.98	17.17	237	0.70	5.5	—	—	C	19500854
185V000069	00 38 42.10	48 19 40.52	19.78	17.71	340	0.31	4.4	—	—	M	19210908
185V000070	00 39 03.20	48 18 06.89	19.87	—	157	0.51	5.5	—	—	u	07960417
185V000071	00 39 03.33	48 21 40.27	19.58	17.52	167	0.37	4.4	—	—	M	08011554
185V000072	00 39 03.15	48 20 33.42	19.39	—	140	0.50	5.0	—	—	M	08071198
185V000073	00 39 03.21	48 21 22.16	19.85	17.31	95	0.32	1.8	—	—	M	08061457
185V000074	00 39 03.08	48 19 47.34	19.69	16.41	286	0.49	4.2	—	—	S	08080952
185V000075	00 39 02.69	48 21 44.92	20.08	—	139	0.58	4.9	—	—	M	08351578
185V000076	00 39 02.52	48 19 00.32	21.15	16.31	358	1.23	4.5	—	—	C	08350701
185V000077	00 39 02.58	48 20 31.21	19.39	—	151	0.59	5.9	—	—	S	08371186
185V000078	00 39 02.28	48 19 18.53	20.45	16.07	420	0.65	5.4	—	—	S	08490798
185V000079	00 39 02.29	48 20 48.95	19.80	—	159	0.47	5.5	—	—	M	08531280
185V000080	00 39 01.98	48 17 38.70	19.70	17.11	225	0.43	5.4	—	—	C	08600266
185V000081	00 39 02.17	48 21 00.07	19.61	17.47	210	0.73	6.2	—	—	M	08601339
185V000082	00 39 02.06	48 20 56.13	19.25	16.90	235	0.58	6.3	—	—	M	08661318
185V000083	00 39 01.77	48 18 48.91	19.70	16.79	280	0.52	6.3	—	—	C	08740640
185V000084	00 39 01.92	48 21 55.53	19.28	17.53	127	0.42	4.4	—	—	S	08761635
185V000085	00 39 01.76	48 19 34.17	18.93	16.42	239	0.22	4.1	—	—	M	08770881
185V000086	00 39 01.75	48 19 32.45	19.48	16.82	222	0.56	6.2	—	—	M	08780872
185V000087	00 39 01.70	48 20 38.90	19.75	16.84	131	0.41	3.9	—	—	M	08841226
185V000088	00 39 01.59	48 19 07.12	19.65	16.32	339	0.56	5.2	—	—	S	08850737
185V000089	00 39 01.66	48 23 08.84	19.38	17.17	183	0.32	3.1	—	—	S	08942025
185V000090	00 39 01.01	48 17 31.20	19.19	16.93	154	0.15	2.8	—	—	M	09110226
185V000091	00 39 00.93	48 19 59.41	19.09	16.37	302	0.22	5.4	—	—	S	09231016
185V000092	00 39 00.98	48 22 01.18	20.23	17.45	192	0.92	5.3	—	—	M	09271664
185V000093	00 39 00.93	48 21 48.81	19.63	16.37	280	0.69	6.6	—	—	C	09281598
185V000094	00 39 00.91	48 21 33.04	20.14	16.78	236	0.85	5.2	—	—	C	09281514
185V000095	00 39 00.68	48 19 01.60	20.16	16.56	315	0.70	4.9	—	—	u	09330707
185V000096	00 39 00.66	48 20 57.39	19.38	17.27	193	0.43	5.4	—	—	S	09401324
185V000097	00 39 00.68	48 21 36.07	20.17	—	121	0.99	4.9	—	—	S	09411530
185V000098	00 39 00.53	48 19 16.75	20.07	—	127	0.73	3.9	—	—	S	09420788
185V000099	00 39 00.53	48 19 27.13	20.65	17.43	287	1.09	5.4	—	—	C	09420843
185V000100	00 39 00.58	48 20 26.85	19.23	15.22	494	1.41	6.5	—	—	S	09431162
185V000101	00 39 00.42	48 18 00.55	20.78	—	133	1.40	5.9	—	—	S	09430382
185V000102	00 39 00.57	48 20 52.10	19.65	17.79	121	0.54	4.1	—	—	S	09451296
185V000103	00 39 00.57	48 21 20.26	19.25	16.93	224	0.64	5.2	—	—	M	09461446
185V000104	00 39 00.36	48 20 32.63	18.96	15.81	302	0.61	5.8	—	—	S	09551192
185V000105	00 39 00.10	48 20 28.07	19.46	16.70	230	0.66	5.5	—	—	S	09681168
185V000106	00 39 00.03	48 22 19.33	19.71	16.10	330	0.49	5.6	—	—	S	09781761
185V000107	00 38 59.62	48 17 37.61	20.62	17.40	234	0.67	4.6	—	—	C	09850259
185V000108	00 38 59.86	48 21 47.85	19.50	17.24	192	0.63	5.9	—	—	M	09851593
185V000109	00 38 59.73	48 20 11.69	20.28	17.25	206	1.03	2.8	—	—	M	09871081
185V000110	00 38 59.67	48 19 47.12	20.16	16.51	306	0.92	6.3	—	—	C	09890950
185V000111	00 38 59.54	48 19 46.21	19.72	16.74	140	1.09	6.5	—	—	M	09960945
185V000112	00 38 59.58	48 20 39.46	19.33	17.34	111	0.26	3.3	—	—	S	09961228
185V000113	00 38 59.55	48 20 58.61	19.29	16.56	248	0.88	5.7	—	—	M	09991330
185V000114	00 38 59.50	48 20 43.15	19.39	16.94	167	0.57	3.9	—	—	C	10011248
185V000115	00 38 59.39	48 21 47.63	19.04	17.51	165	0.32	6.2	—	—	S	10101592
185V000116	00 38 59.27	48 20 11.89	19.63	17.64	172	0.59	5.0	—	—	M	10121081
185V000117	00 38 59.21	48 20 57.33	19.67	16.27	358	0.41	5.7	—	—	C	10171324
185V000118	00 38 59.28	48 22 54.66	20.09	17.03	103	0.50	3.2	—	—	S	10191949
185V000119	00 38 58.97	48 19 26.65	19.07	16.89	137	0.30	3.2	—	—	M	10250840

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000120	00 38 59.03	48 21 42.05	19.44	16.52	314	0.63	6.6	—	—	C	10291562
185V000121	00 38 58.78	48 17 34.79	20.65	17.55	199	1.10	4.8	—	—	u	—
185V000122	00 38 58.97	48 21 15.09	19.68	17.15	273	0.82	6.9	—	—	C	10311418
185V000123	00 38 58.67	48 19 56.06	19.88	17.17	116	0.65	3.7	—	—	M	10420997
185V000124	00 38 58.49	48 21 15.74	19.88	16.93	217	1.15	6.7	—	—	M	10561421
185V000125	00 38 58.30	48 19 22.84	19.65	17.60	192	0.71	6.0	—	—	M	10600820
185V000126	00 38 58.17	48 18 06.23	19.97	17.22	202	0.58	5.6	—	—	M	10640411
185V000127	00 38 58.22	48 19 04.48	20.53	—	104	0.69	3.0	—	—	S	10640722
185V000128	00 38 58.18	48 19 37.05	20.01	17.56	511	0.34	4.0	—	—	M	10670895
185V000129	00 38 58.14	48 19 30.85	19.27	17.09	208	0.39	6.2	—	—	S	10690862
185V000130	00 38 58.04	48 18 59.95	19.88	17.07	253	0.52	5.1	—	—	C	10730698
185V000131	00 38 58.10	48 20 07.57	18.69	16.01	232	0.50	4.9	—	—	S	10731058
185V000132	00 38 58.14	48 20 48.40	19.46	16.23	277	0.35	4.9	—	—	M	10731276
185V000133	00 38 58.02	48 19 39.68	19.24	17.06	155	0.43	5.8	—	—	M	10760909
185V000134	00 38 58.05	48 20 59.64	20.11	17.82	223	1.45	6.7	—	—	S	10781336
185V000135	00 38 57.95	48 19 41.21	20.10	16.91	240	1.30	5.8	—	—	M	10800917
185V000136	00 38 57.73	48 22 09.78	19.96	—	119	0.50	3.7	—	—	S	10991709
185V000137	00 38 57.53	48 20 09.41	19.00	16.70	157	0.41	3.6	—	—	M	11041068
185V000138	00 38 57.51	48 21 37.74	19.38	17.13	168	0.59	4.2	—	—	S	11091538
185V000139	00 38 42.59	48 21 41.79	20.33	16.37	323	0.88	4.6	—	—	u	19001556
185V000140	00 38 57.35	48 18 56.01	19.53	17.40	199	0.39	6.0	—	—	S	11100676
185V000141	00 38 57.26	48 17 35.11	19.94	—	130	0.81	4.7	—	—	S	11100245
185V000142	00 38 42.56	48 21 23.55	19.92	—	185	0.56	6.0	—	—	M	19011458
185V000143	00 38 57.07	48 19 33.09	19.56	16.94	246	0.50	5.2	—	—	C	11260874
185V000144	00 38 56.91	48 19 07.43	20.64	17.44	206	0.64	5.2	—	—	u	11330737
185V000145	00 38 42.52	48 19 17.57	19.83	17.84	134	0.48	4.8	—	—	M	18980786
185V000146	00 38 57.03	48 21 51.90	19.86	17.43	175	0.69	5.9	—	—	M	11351614
185V000147	00 38 56.75	48 20 48.19	20.18	17.15	211	0.45	3.7	—	—	M	11471274
185V000148	00 38 56.69	48 20 40.91	20.12	15.94	343	0.72	4.6	—	—	S	11501235
185V000149	00 38 56.84	48 22 59.45	19.62	17.38	209	0.44	5.8	—	—	M	11491974
185V000150	00 38 56.51	48 18 59.92	20.33	16.81	231	1.59	6.2	—	—	M	11540697
185V000151	00 38 56.16	48 18 25.41	20.25	—	166	1.41	5.8	—	—	S	11710513
185V000152	00 38 56.01	48 18 12.58	20.17	17.68	150	0.85	6.4	—	—	M	11780444
185V000153	00 38 56.13	48 20 33.95	18.83	17.03	178	0.40	4.9	—	—	S	11791198
185V000154	00 38 56.03	48 19 19.52	20.85	—	132	1.73	6.2	—	—	M	11810801
185V000155	00 38 56.01	48 19 56.10	19.93	16.37	406	1.23	6.1	—	—	S	11840996
185V000156	00 38 56.09	48 20 53.50	19.26	16.94	217	0.68	6.5	—	—	M	11821302
185V000157	00 38 55.84	48 19 06.82	19.84	17.10	112	0.32	4.9	—	—	M	11900733
185V000158	00 38 55.99	48 22 38.72	19.86	17.91	150	0.76	5.6	—	—	S	11931863
185V000159	00 38 55.79	48 19 26.22	19.72	17.37	182	1.06	6.8	—	—	M	11940837
185V000160	00 38 42.54	48 18 37.26	20.94	16.62	361	0.99	3.8	—	—	C	18950571
185V000161	00 38 55.77	48 19 15.06	20.08	—	114	0.56	5.7	—	—	S	11940777
185V000162	00 38 55.77	48 20 50.61	20.14	—	116	0.66	4.0	—	—	S	11991287
185V000163	00 38 55.72	48 21 40.91	19.55	16.68	285	0.50	6.1	—	—	u	—
185V000164	00 38 55.47	48 20 35.56	19.26	15.91	453	0.74	4.6	—	—	S	12141206
185V000165	00 38 55.25	48 20 56.07	19.98	16.39	370	1.67	6.9	—	—	M	12271316
185V000166	00 38 55.19	48 20 18.10	19.94	16.41	361	0.74	3.0	—	—	M	12281113
185V000167	00 38 55.10	48 19 15.63	19.96	17.15	107	0.50	3.7	—	—	M	12300780
185V000168	00 38 55.14	48 21 35.46	19.85	16.41	308	0.69	6.3	—	—	S	12351525
185V000169	00 38 55.08	48 20 59.78	19.32	15.92	402	0.54	6.0	—	—	S	12361335
185V000170	00 38 55.03	48 20 05.16	20.34	16.83	272	1.35	6.2	—	—	u	—
185V000171	00 38 55.05	48 20 47.04	19.16	17.03	91	0.26	2.7	—	—	S	12371267
185V000172	00 38 55.04	48 21 21.21	19.81	—	176	0.76	6.3	—	—	M	12391450
185V000173	00 38 55.02	48 21 42.04	20.32	16.67	287	0.93	5.6	—	—	C	12411561
185V000174	00 38 42.54	48 18 27.86	19.80	17.56	160	0.56	6.1	—	—	M	18950520
185V000175	00 38 54.81	48 19 33.64	19.82	17.61	153	0.74	5.6	—	—	M	12460876
185V000176	00 38 54.59	48 19 06.97	19.64	16.26	394	0.44	5.4	—	—	C	12570734
185V000177	00 38 54.23	48 17 24.52	19.71	17.45	170	1.02	5.9	—	—	M	12710187
185V000178	00 38 54.38	48 20 15.87	19.78	16.63	280	0.83	6.2	—	—	C	12711101
185V000179	00 38 54.31	48 21 14.94	19.83	16.93	296	1.01	6.1	—	—	u	—

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000180	00 38 54.06	48 19 19.72	19.68	17.50	187	0.64	6.4	—	—	M	12850801
185V000181	00 38 54.01	48 18 58.37	19.62	17.82	154	0.53	5.8	—	—	M	12870688
185V000182	00 38 53.77	48 20 39.45	19.57	16.54	739	0.33	3.5	—	—	u	13041226
185V000183	00 38 53.44	48 17 52.39	19.54	16.25	392	1.52	6.5	—	—	u	—
185V000184	00 38 53.43	48 17 54.60	19.04	16.83	263	0.37	6.4	—	—	S	13150347
185V000185	00 38 53.34	48 18 58.91	20.06	17.76	141	0.75	5.6	—	—	M	13230690
185V000186	00 38 53.29	48 20 00.66	19.39	17.25	112	0.20	4.5	—	—	M	13281019
185V000187	00 38 53.25	48 21 22.94	20.27	—	97	0.46	3.4	—	—	S	13341458
185V000188	00 38 53.13	48 19 42.43	20.41	16.39	303	1.01	5.6	—	—	M	13360922
185V000189	00 38 53.24	48 22 21.16	20.18	—	92	0.46	4.5	—	—	S	13371769
185V000190	00 38 52.86	48 18 11.09	19.62	16.44	300	0.41	6.1	—	—	C	13460435
185V000191	00 38 52.84	48 19 14.08	19.83	—	94	0.47	3.3	—	—	S	13500771
185V000192	00 38 52.85	48 19 20.93	19.95	—	154	0.61	5.0	—	—	M	13500807
185V000193	00 38 52.43	48 19 50.16	18.90	—	397	0.25	4.2	—	—	C	13740963
185V000194	00 38 52.49	48 22 57.80	20.22	17.81	172	1.21	4.7	—	—	S	13791964
185V000195	00 38 52.35	48 20 14.19	19.19	17.16	115	0.22	2.6	—	—	M	13791091
185V000196	00 38 52.09	48 18 08.68	20.34	17.76	236	1.04	5.5	—	—	C	13860422
185V000197	00 38 52.08	48 19 15.15	19.31	16.97	241	0.45	4.8	—	—	M	13900776
185V000198	00 38 52.06	48 19 58.40	19.53	16.17	257	0.68	6.4	—	—	S	13931007
185V000199	00 38 51.78	48 20 17.38	19.57	17.01	180	0.67	5.7	—	—	S	14091108
185V000200	00 38 51.42	48 18 14.65	19.93	16.88	285	0.83	6.0	—	—	C	14220453
185V000201	00 38 51.40	48 20 58.43	19.49	16.76	206	0.75	6.1	—	—	S	14311327
185V000202	00 38 51.34	48 20 19.89	20.11	17.01	289	1.28	5.0	—	—	u	14321121
185V000203	00 38 51.04	48 20 36.08	19.38	17.41	168	0.31	4.0	—	—	M	14491208
185V000204	00 38 50.65	48 18 17.71	19.71	17.15	122	0.36	4.6	—	—	M	14640469
185V000205	00 38 50.47	48 20 23.29	19.52	17.22	200	0.64	4.6	—	—	S	14791139
185V000206	00 38 50.31	48 17 36.98	19.19	17.18	205	0.40	6.8	—	—	M	14800252
185V000207	00 38 50.36	48 18 53.58	19.67	17.67	208	0.45	4.6	—	—	M	14810661
185V000208	00 38 50.45	48 20 52.35	19.39	17.02	152	0.58	4.8	—	—	M	14811294
185V000209	00 38 50.24	48 19 32.47	19.82	17.82	161	0.37	4.2	—	—	M	14890868
185V000210	00 38 49.94	48 17 39.17	19.83	—	119	0.32	3.8	—	—	S	14990263
185V000211	00 38 50.03	48 22 15.85	19.87	17.32	158	1.01	5.6	—	—	S	15071739
185V000212	00 38 49.93	48 20 34.82	18.61	16.43	312	0.79	6.4	—	—	S	15081200
185V000213	00 38 49.84	48 21 05.87	19.56	17.42	220	0.77	6.4	—	—	S	15151366
185V000214	00 38 49.43	48 18 27.55	19.73	18.21	171	0.62	5.8	—	—	S	15290521
185V000215	00 38 49.37	48 19 28.71	19.59	17.16	188	0.39	4.8	—	—	M	15340848
185V000216	00 38 49.41	48 20 15.68	19.61	17.56	205	0.63	4.9	—	—	M	15341098
185V000217	00 38 49.10	48 17 28.60	19.75	17.82	160	0.45	5.8	—	—	M	15430207
185V000218	00 38 49.02	48 18 15.42	19.59	17.64	190	0.57	6.1	—	—	S	15500456
185V000219	00 38 48.86	48 21 05.05	19.43	17.17	112	0.39	3.9	—	—	M	15661361
185V000220	00 38 48.63	48 18 34.52	19.56	—	133	0.32	4.8	—	—	M	15710558
185V000221	00 38 48.60	48 20 52.10	18.91	16.14	303	0.25	5.0	—	—	C	15791292
185V000222	00 38 48.49	48 19 13.87	19.67	17.49	92	0.22	2.1	—	—	M	15810768
185V000223	00 38 48.30	48 17 34.86	19.82	17.75	164	0.86	5.1	—	—	M	15860240
185V000224	00 38 48.18	48 20 04.06	19.75	16.91	187	0.35	4.5	—	—	M	15991036
185V000225	00 38 48.11	48 20 10.83	20.24	16.89	313	0.95	5.8	—	—	S	16031072
185V000226	00 38 47.96	48 19 56.27	19.69	17.76	158	0.46	5.1	—	—	M	16110994
185V000227	00 38 47.75	48 20 23.68	19.72	17.84	123	0.70	5.1	—	—	S	16231140
185V000228	00 38 47.65	48 21 36.64	19.51	—	100	0.34	4.6	—	—	S	16321530
185V000229	00 38 47.38	48 20 47.94	20.17	—	167	0.93	6.1	—	—	S	16441270
185V000230	00 38 42.88	48 20 49.54	19.74	16.98	222	0.58	4.9	—	—	M	18831277
185V000231	00 38 47.08	48 19 24.84	19.86	17.70	207	1.20	6.0	—	—	M	16560826
185V000232	00 38 46.93	48 18 50.94	19.96	17.84	193	0.78	6.8	—	—	M	16620645
185V000233	00 38 46.95	48 22 11.21	19.91	17.71	141	0.84	5.4	—	—	S	16711714
185V000234	00 38 46.67	48 17 15.30	19.70	—	191	1.04	5.1	—	—	u	16720135
185V000235	00 38 43.03	48 20 04.03	19.15	16.89	211	0.44	5.9	—	—	S	18731034
185V000236	00 38 46.61	48 21 03.26	19.70	—	185	0.37	3.8	—	—	M	16851351
185V000237	00 38 46.56	48 20 30.31	20.03	17.84	131	0.41	3.7	—	—	S	16871175
185V000238	00 38 46.21	48 18 29.68	20.26	17.19	393	1.10	6.0	—	—	u	17000531
185V000239	00 38 46.33	48 22 40.02	19.29	17.61	160	0.62	5.3	—	—	M	17051867

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper I}$
185V000240	00 38 43.00	48 18 06.39	19.36	17.14	238	0.99	5.3	—	—	M	18690406
185V000241	00 38 45.99	48 18 31.54	19.33	17.89	206	0.57	5.9	—	—	S	17120541
185V000242	00 38 45.92	48 19 01.99	19.00	16.11	303	1.28	6.3	—	—	M	17160704
185V000243	00 38 45.86	48 18 32.29	19.58	17.15	259	1.65	6.6	—	—	M	17180545
185V000244	00 38 43.25	48 20 28.08	19.58	16.68	249	0.62	6.3	—	—	C	18621162
185V000245	00 38 43.58	48 19 30.92	19.99	17.35	210	0.90	5.8	—	—	S	18420857
185V000246	00 38 45.68	48 22 06.22	19.80	17.38	165	0.39	3.9	—	—	S	17381687
185V000247	00 38 43.63	48 19 18.87	19.74	17.57	161	0.52	5.5	—	—	M	18390793
185V000248	00 38 45.54	48 21 18.22	19.58	16.68	279	0.53	4.3	—	—	M	17431431
185V000249	00 38 45.36	48 19 57.27	20.38	16.97	231	0.96	6.4	—	—	u	17490999
185V000250	00 38 43.60	48 17 28.18	19.75	17.26	206	0.48	3.9	—	—	u	18360202
185V000251	00 38 45.33	48 20 35.60	19.77	17.21	187	0.29	4.0	—	—	C	17521203
185V000252	00 38 45.14	48 20 47.11	20.41	16.68	229	0.91	6.4	—	—	C	17631265
185V000253	00 38 44.80	48 20 54.68	19.44	17.11	163	0.36	5.6	—	—	M	17811305
185V000254	00 38 44.34	48 19 18.45	20.06	—	117	0.51	5.0	—	—	S	18010791
185V000255	00 38 44.27	48 23 04.59	20.59	—	104	0.74	3.9	—	—	u	18151998
185V000256	00 38 44.13	48 21 17.99	19.75	—	140	0.36	4.1	—	—	S	18181429
185V000257	00 38 43.69	48 17 36.07	20.04	—	129	0.59	4.7	—	—	S	18310244
185V000258	00 38 44.05	48 20 02.83	19.80	17.78	172	0.70	6.5	—	—	M	18191028
185V000259	00 39 07.40	48 19 35.47	20.77	16.70	262	1.74	4.6	—	—	M	05780891
185V000260	00 39 05.60	48 19 20.89	21.08	—	634	1.87	2.5	—	—	u	—
185V000261	00 39 01.11	48 22 04.11	21.76	17.13	439	2.09	3.1	—	—	C	09201680
185V000262	00 38 59.26	48 19 39.42	20.45	17.50	188	1.13	5.5	—	—	S	10110908
185V000263	00 38 59.20	48 19 57.65	20.36	17.34	173	1.60	5.3	—	—	u	—
185V000264	00 38 58.08	48 19 49.24	20.91	16.70	146	0.76	2.0	—	—	u	10730960
185V000265	00 38 56.89	48 19 41.08	20.70	17.21	194	1.16	4.4	—	—	u	11360916
185V000266	00 38 55.78	48 19 18.83	20.55	16.35	291	1.50	4.9	—	—	u	—
185V000267	00 38 55.67	48 20 14.19	20.43	16.84	215	0.69	5.1	—	—	u	—
185V000268	00 39 06.88	48 18 11.59	19.55	17.39	212	1.00	6.4	—	—	u	—
185V000269	00 39 04.82	48 20 17.53	19.98	17.12	227	0.99	6.3	—	—	u	—
185V000270	00 39 03.86	48 21 55.50	19.56	17.06	216	0.47	3.2	—	—	u	—
185V000271	00 39 03.32	48 19 40.79	20.32	—	122	0.94	5.0	—	—	u	—
185V000272	00 39 02.78	48 20 29.63	19.73	16.50	149	0.53	5.4	—	—	u	—
185V000273	00 39 02.17	48 20 08.29	20.34	17.20	246	0.91	4.6	—	—	u	—
185V000274	00 39 02.14	48 22 11.45	20.17	16.85	226	1.53	6.6	—	—	u	—
185V000275	00 39 01.49	48 20 00.86	19.86	17.12	226	0.96	6.0	—	—	u	—
185V000276	00 39 01.05	48 19 59.55	20.42	16.30	163	0.76	4.9	—	—	u	—
185V000277	00 39 00.71	48 18 13.05	19.79	17.24	236	0.51	5.9	—	—	u	—
185V000278	00 39 00.61	48 20 15.23	20.49	17.31	253	1.54	2.9	—	—	u	—
185V000279	00 39 00.32	48 20 38.44	20.38	17.85	162	0.99	4.7	—	—	u	—
185V000280	00 38 59.76	48 18 46.22	19.83	17.38	192	0.70	5.7	—	—	u	—
185V000281	00 38 59.41	48 19 25.57	20.00	16.64	156	0.56	5.1	—	—	u	—
185V000282	00 38 58.96	48 18 57.15	19.85	18.00	162	0.59	5.2	—	—	u	—
185V000283	00 38 58.91	48 19 34.50	20.61	16.22	408	1.15	5.7	—	—	u	—
185V000284	00 38 57.20	48 19 09.35	19.67	17.57	167	0.57	5.6	—	—	u	—
185V000285	00 38 56.52	48 21 23.72	20.32	17.80	162	1.15	4.6	—	—	u	—
185V000286	00 38 55.80	48 20 57.65	19.78	16.89	258	0.90	6.4	—	—	u	—
185V000287	00 38 55.61	48 19 40.35	19.78	17.36	196	0.72	6.4	—	—	u	—
185V000288	00 38 54.64	48 20 50.72	19.75	16.83	236	0.56	5.1	—	—	u	—
185V000289	00 38 54.48	48 19 04.08	20.18	16.11	389	0.54	6.6	—	—	u	—
185V000290	00 38 54.30	48 20 42.92	19.99	16.21	371	0.96	5.6	—	—	u	—
185V000291	00 38 52.79	48 19 17.12	20.30	17.77	160	0.81	5.6	—	—	u	—
185V000292	00 38 52.72	48 19 21.51	19.92	17.65	176	0.72	5.5	—	—	u	—
185V000293	00 38 52.48	48 18 53.38	19.60	16.56	354	0.64	6.7	—	—	u	—
185V000294	00 38 52.35	48 17 14.19	19.57	—	205	0.91	4.0	—	—	u	—
185V000295	00 38 52.23	48 17 05.67	19.56	—	251	0.95	4.4	—	—	u	—
185V000296	00 38 50.70	48 20 23.70	21.07	16.68	252	2.27	5.6	—	—	u	—
185V000297	00 38 50.52	48 18 44.91	20.22	—	184	1.80	5.7	—	—	u	—
185V000298	00 38 49.13	48 20 44.39	20.28	16.86	271	1.80	6.3	—	—	u	—
185V000299	00 38 48.63	48 22 34.45	19.57	17.19	151	0.38	5.0	—	—	u	—

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000300	00 38 43.38	48 19 21.84	19.70	17.43	189	0.68	5.6	—	—	u	—
185V000301	00 38 43.23	48 19 12.78	19.64	17.23	193	1.00	5.3	—	—	u	—
185V000302	00 38 59.61	48 19 50.13	20.12	16.87	124	0.36	4.1	—	—	u	—
185V000303	00 38 58.87	48 20 22.17	20.58	17.35	113	0.91	3.7	—	—	u	—
185V000304	00 38 58.44	48 20 12.75	20.88	16.90	182	1.48	4.1	—	—	u	—
185V000305	00 38 56.56	48 20 22.39	21.44	17.02	170	2.13	4.9	—	—	u	—
185V000306	00 38 53.27	48 20 08.36	19.75	16.37	416	0.63	6.1	—	—	u	—
185V000307	00 38 52.60	48 20 58.65	20.56	17.63	201	1.21	5.8	—	—	u	—
185V000308	00 39 15.40	48 19 25.31	19.58	—	169	0.81	4.4	—	—	M	01530840
185V000309	00 39 15.30	48 20 16.03	19.45	17.28	175	0.56	6.0	—	—	S	01611110
185V000310	00 39 14.86	48 19 27.66	19.69	—	236	0.48	5.0	—	—	M	01820852
185V000311	00 39 11.83	48 21 37.69	20.06	—	56	0.51	5.6	—	—	S	03501543
185V000312	00 39 11.18	48 21 52.31	19.52	17.27	113	0.24	5.0	—	—	S	03851620
185V000313	00 39 08.95	48 21 18.59	21.69	15.93	519	1.78	5.0	—	—	u	—
185V000314	00 39 09.01	48 22 53.98	19.35	16.44	144	0.30	6.9	—	—	C	05041948
185V000315	00 39 08.57	48 17 39.76	20.43	—	220	0.84	7.7	—	—	u	—
185V000316	00 39 07.74	48 19 26.81	19.16	17.18	111	0.27	4.8	—	—	S	05600845
185V000317	00 39 07.39	48 20 27.02	19.16	16.66	171	0.26	4.4	—	—	C	05811165
185V000318	00 39 05.46	48 21 55.99	19.86	—	137	0.36	5.4	—	—	u	—
185V000319	00 39 04.98	48 20 51.17	19.85	17.12	102	0.43	5.3	—	—	M	07111293
185V000320	00 39 04.66	48 20 56.25	20.09	16.72	127	0.54	4.3	—	—	u	—
185V000321	00 39 04.50	48 20 30.15	19.66	—	164	0.27	3.7	—	—	M	07351181
185V000322	00 39 04.32	48 21 13.31	20.13	—	130	0.48	3.9	—	—	S	07471410
185V000323	00 39 03.93	48 19 46.72	20.18	17.45	239	0.72	7.1	—	—	u	—
185V000324	00 39 03.68	48 22 40.07	19.75	—	128	0.32	3.5	—	—	S	07851872
185V000325	00 39 03.36	48 20 26.12	20.09	17.10	197	0.52	4.0	—	—	M	07951159
185V000326	00 39 02.72	48 20 16.13	20.23	17.23	101	0.47	4.6	—	—	u	—
185V000327	00 39 01.72	48 19 14.40	20.13	16.84	139	0.70	3.3	—	—	M	08780776
185V000328	00 39 01.23	48 17 09.18	19.76	17.58	212	0.66	6.7	—	—	u	08980109
185V000329	00 39 01.47	48 21 48.87	19.65	—	168	0.42	3.9	—	—	S	09001599
185V000330	00 39 00.98	48 17 26.66	19.87	—	128	0.60	4.5	—	—	M	09120202
185V000331	00 39 00.77	48 19 23.14	19.96	17.09	235	0.52	4.8	—	—	M	09300822
185V000332	00 39 00.81	48 20 49.14	19.94	—	143	0.51	5.3	—	—	u	—
185V000333	00 39 00.66	48 19 39.05	19.84	16.79	113	0.35	4.2	—	—	u	—
185V000334	00 39 00.45	48 19 45.57	20.71	—	131	0.82	5.4	—	—	M	09480942
185V000335	00 38 59.83	48 18 27.74	19.68	—	160	0.43	5.5	—	—	M	09760527
185V000336	00 38 59.65	48 19 58.49	19.50	—	152	0.45	6.5	—	—	u	—
185V000337	00 38 58.49	48 17 57.21	19.76	17.25	196	0.35	3.8	—	—	M	10460363
185V000338	00 38 57.85	48 20 19.06	18.94	15.29	200	0.30	4.9	—	—	u	—
185V000339	00 38 57.72	48 19 52.26	19.71	16.90	99	0.18	3.5	—	—	M	10930976
185V000340	00 38 57.75	48 20 43.55	19.90	16.24	890	0.50	7.1	—	—	u	—
185V000341	00 38 57.18	48 18 47.20	20.28	17.09	188	0.61	4.0	—	—	u	—
185V000342	00 38 57.18	48 20 29.45	22.09	—	175	1.61	3.0	—	—	u	—
185V000343	00 38 57.05	48 23 12.68	20.36	16.65	229	1.47	3.9	—	—	u	—
185V000344	00 38 56.79	48 19 49.73	19.37	16.60	266	0.40	6.0	—	—	M	11420962
185V000345	00 38 56.71	48 19 52.85	19.08	16.19	189	0.26	3.3	—	—	u	—
185V000346	00 38 56.66	48 19 57.68	19.51	16.78	809	0.30	5.0	—	—	M	11491005
185V000347	00 38 56.59	48 19 23.10	19.97	17.35	102	0.44	4.7	—	—	u	—
185V000348	00 38 56.46	48 19 20.99	19.57	17.17	197	0.30	4.8	—	—	S	11580809
185V000349	00 38 56.42	48 21 44.64	20.16	—	154	0.36	3.2	—	—	S	11671575
185V000350	00 38 56.43	48 21 53.15	19.90	17.36	193	0.45	5.0	—	—	C	11671620
185V000351	00 38 56.34	48 20 07.43	20.12	16.24	270	0.97	6.6	—	—	u	—
185V000352	00 38 56.28	48 20 38.37	20.23	16.72	212	0.78	6.5	—	—	u	—
185V000353	00 38 56.14	48 19 25.17	19.21	16.08	195	0.27	6.4	—	—	C	11750831
185V000354	00 38 56.03	48 19 30.98	20.15	17.41	182	0.46	4.0	—	—	M	11810862
185V000355	00 38 55.94	48 20 38.78	19.14	16.36	159	0.25	4.4	—	—	C	11901224
185V000356	00 38 55.36	48 20 57.89	20.44	16.88	209	0.54	3.1	—	—	u	—
185V000357	00 38 54.96	48 20 26.88	19.58	17.17	110	0.32	4.6	—	—	M	12411160
185V000358	00 38 54.56	48 19 52.00	20.62	—	207	0.89	4.9	—	—	u	—
185V000359	00 38 54.42	48 22 48.90	19.65	18.78	105	0.15	4.1	—	—	S	12761917

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000360	00 38 54.21	48 20 00.68	20.05	—	150	0.74	5.7	—	—	u	—
185V000361	00 38 54.10	48 20 57.57	20.21	—	170	0.53	5.2	—	—	u	—
185V000362	00 38 54.01	48 20 01.80	20.43	16.81	123	0.51	3.8	—	—	u	—
185V000363	00 38 53.86	48 19 13.71	20.03	—	87	0.33	4.0	—	—	u	—
185V000364	00 38 52.64	48 18 59.56	20.51	17.80	108	0.72	3.9	—	—	u	—
185V000365	00 38 52.67	48 20 52.47	21.53	—	218	1.70	4.6	—	—	u	—
185V000366	00 38 52.01	48 17 04.84	19.60	—	138	0.40	3.9	—	—	u	—
185V000367	00 38 52.10	48 19 35.18	19.61	17.46	188	0.26	6.5	—	—	u	—
185V000368	00 38 51.93	48 19 34.25	19.65	—	82	0.38	3.9	—	—	S	13990878
185V000369	00 38 51.55	48 17 12.81	19.54	—	163	0.32	5.1	—	—	u	14120124
185V000370	00 38 51.70	48 21 00.12	19.57	16.79	303	0.41	6.9	—	—	C	14151336
185V000371	00 38 48.89	48 21 58.67	19.92	16.98	108	0.41	3.6	—	—	M	15671647
185V000372	00 38 48.46	48 18 24.96	19.65	—	145	0.24	5.5	—	—	u	—
185V000373	00 38 48.27	48 19 16.59	20.53	—	98	0.74	6.1	—	—	M	15930783
185V000374	00 38 46.10	48 20 28.43	19.54	—	99	0.19	4.5	—	—	M	17111165
185V000375	00 38 45.60	48 17 07.01	20.11	—	178	0.46	2.5	—	—	u	17280090
185V000376	00 38 45.05	48 19 46.28	19.78	17.67	462	0.25	4.6	—	—	S	17640940
185V000377	00 38 41.45	48 18 15.15	19.91	—	103	0.44	5.2	—	—	S	19520452
185V000378	00 38 57.76	48 20 03.72	20.78	15.48	535	1.27	5.8	—	—	u	10911037
185V000379	00 38 52.32	48 19 25.86	20.91	16.75	90	0.86	1.5	—	—	u	—
185V000380	00 38 55.08	48 20 40.45	19.99	16.84	168	0.42	3.0	—	—	u	—
185V000381	00 38 49.06	48 21 22.88	19.55	—	137	0.29	3.6	—	—	M	15561457
185V000382	00 39 00.10	48 20 35.47	19.63	16.22	363	0.48	4.5	725	2.9	C	09691207
185V000383	00 39 04.47	48 18 12.81	19.10	15.78	450	1.73	6.1	899	1.1	u	—
185V000384	00 39 03.30	48 19 44.34	21.32	17.25	82	0.80	1.7	164	4.1	S	07960936
185V000385	00 39 00.01	48 19 26.39	19.43	16.84	121	0.34	2.5	243	5.1	C	09700839
185V000386	00 38 58.19	48 19 29.57	19.83	—	81	0.44	2.4	161	4.9	M	10670855
185V000387	00 38 56.96	48 20 15.41	19.53	17.16	198	0.50	1.1	397	3.9	u	11341099
185V000388	00 38 56.46	48 19 18.01	20.59	—	60	0.45	1.4	120	2.9	M	11580793
185V000389	00 38 56.42	48 19 44.63	20.11	16.96	118	0.60	2.2	236	5.3	u	—
185V000390	00 39 05.52	48 17 29.54	19.33	16.74	354	1.34	5.4	1204	4.6	M	06710219
185V000391	00 38 58.97	48 17 42.37	19.63	17.04	279	0.76	4.3	1067	3.9	C	10200285
185V000392	00 38 51.50	48 20 05.26	19.08	16.00	347	0.41	4.3	440	3.2	C	14231043
185V000393	00 39 00.18	48 19 36.15	19.56	16.89	329	1.43	6.8	985	3.1	M	09610891
185V000394	00 38 51.45	48 21 15.53	19.63	—	134	0.66	4.2	437	4.7	M	14291418
185V000395	00 38 48.07	48 21 21.79	19.78	17.60	213	0.88	4.4	800	3.8	C	16091450
185V000396	00 38 44.76	48 21 10.92	20.57	17.02	234	1.69	5.6	472	1.0	C	17841392
185V000397	00 39 02.92	48 19 33.16	20.56	—	153	1.48	3.4	414	1.0	S	08160876
185V000398	00 39 04.35	48 21 00.38	19.94	16.05	427	1.07	3.0	1088	0.6	u	—
185V000399	00 39 04.06	48 20 43.22	21.59	17.09	406	1.79	4.2	829	1.3	u	—
185V000400	00 38 51.26	48 19 49.71	20.76	16.80	372	1.05	4.0	664	1.5	u	—
185V000401	00 38 43.97	48 17 05.80	18.17	—	185	0.59	3.1	873	2.7	u	—
185V000402	00 38 43.78	48 17 56.79	19.72	17.42	103	0.69	1.0	205	5.2	u	—
185V000403	00 39 00.68	48 20 13.99	19.74	16.10	374	0.74	5.9	574	2.2	u	—
185V000404	00 39 00.53	48 19 34.64	20.17	15.89	367	0.86	6.5	840	3.1	u	—
185V000405	00 38 55.52	48 20 26.87	18.98	16.29	116	0.29	2.6	325	4.1	u	—
185V000406	00 38 52.07	48 22 30.33	20.53	16.77	193	1.02	3.2	234	1.8	u	—
185V000407	00 39 12.39	48 20 22.12	19.66	—	110	0.43	4.3	131	3.6	u	—
185V000408	00 39 10.98	48 21 16.09	20.10	—	93	0.37	3.4	963	3.3	M	03941428
185V000409	00 39 03.42	48 19 13.30	20.23	16.83	112	0.60	2.3	127	4.7	M	07880771
185V000410	00 38 57.77	48 19 43.34	19.57	18.43	98	0.19	3.2	553	4.0	S	10900929
185V000411	00 38 56.85	48 19 49.68	20.05	16.23	166	0.48	3.5	195	4.9	u	—
185V000412	00 38 57.06	48 21 18.17	19.06	15.95	197	0.28	4.5	489	3.0	u	11321434
185V000413	00 38 55.34	48 19 27.73	19.59	16.10	132	0.27	5.5	293	4.1	M	12180845
185V000414	00 38 54.19	48 19 59.79	19.63	—	119	0.37	4.2	749	4.6	u	—
185V000415	00 38 53.77	48 19 14.80	19.46	16.46	171	0.28	3.2	236	3.8	u	—
185V000416	00 38 52.64	48 21 16.71	19.88	—	122	0.36	3.7	416	4.3	S	13661425
185V000417	00 38 52.37	48 19 13.63	20.51	16.64	122	0.52	2.6	865	4.5	u	—
185V000418	00 38 52.03	48 21 31.35	19.79	—	90	0.33	3.2	397	6.5	S	14001503
185V000419	00 38 51.41	48 18 37.93	19.83	17.17	104	0.35	3.0	911	4.7	M	14240578

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper I}$
185V000420	00 39 13.96	48 18 20.15	20.24	—	—	0.43	—	—	—	S	02260493
185V000421	00 39 13.33	48 20 23.69	19.03	16.96	—	0.34	—	—	—	S	02661150
185V000422	00 38 41.24	48 20 24.20	19.72	—	—	0.47	—	—	—	S	19691141
185V000423	00 39 10.02	48 22 25.13	20.48	—	—	0.64	—	—	—	u	04481795
185V000424	00 39 04.25	48 21 04.40	19.72	—	—	0.52	—	—	—	S	07501363
185V000425	00 39 02.12	48 20 29.88	19.91	17.29	—	0.35	—	—	—	M	08611178
185V000426	00 39 00.38	48 20 05.65	19.44	16.54	—	0.23	—	—	—	C	09521049
185V000427	00 38 59.83	48 21 11.05	19.64	17.30	—	0.35	—	—	—	M	09851397
185V000428	00 38 59.66	48 20 25.67	20.99	16.75	—	0.87	—	—	—	C	09921155
185V000429	00 38 58.56	48 21 40.59	19.94	17.83	—	0.28	—	—	—	M	10541554
185V000430	00 38 57.37	48 19 59.50	20.24	17.30	—	0.92	—	—	—	S	11111015
185V000431	00 38 55.17	48 20 54.15	19.10	—	—	0.35	—	—	—	S	12311305
185V000432	00 38 54.94	48 20 41.41	19.76	16.77	—	0.38	—	—	—	u	—
185V000433	00 38 54.79	48 21 19.01	19.92	17.38	—	0.74	—	—	—	M	12521438
185V000434	00 38 53.24	48 18 51.51	19.49	17.09	—	0.24	—	—	—	C	13270651
185V000435	00 38 49.41	48 19 40.18	19.52	17.49	—	0.31	—	—	—	M	15330909
185V000436	00 38 49.20	48 20 06.23	19.55	17.15	—	0.41	—	—	—	M	15451048
185V000437	00 38 45.95	48 17 47.61	19.75	—	—	0.32	—	—	—	M	17120307
185V000438	00 38 56.84	48 18 50.58	21.32	16.80	—	1.45	—	—	—	C	11360647
185V000439	00 38 55.32	48 20 01.70	20.11	16.66	—	0.66	—	—	—	M	12211026
185V000440	00 38 54.45	48 20 49.69	20.95	—	—	1.24	—	—	—	S	12691281
185V000441	00 39 06.45	48 20 52.64	19.52	16.78	—	0.46	—	—	—	u	—
185V000442	00 39 01.54	48 21 10.56	19.80	16.83	—	0.63	—	—	—	u	—
185V000443	00 38 57.97	48 20 58.10	19.64	17.38	—	0.43	—	—	—	u	—
185V000444	00 38 56.04	48 18 04.53	19.76	17.14	—	0.44	—	—	—	u	—
185V000445	00 38 55.83	48 19 15.82	20.50	17.01	—	0.75	—	—	—	u	—
185V000446	00 38 54.99	48 19 00.60	19.90	16.70	—	0.48	—	—	—	u	—
185V000447	00 38 51.60	48 19 06.70	20.01	16.62	—	0.60	—	—	—	u	—
185V000448	00 38 51.43	48 20 17.92	20.33	16.88	—	0.75	—	—	—	u	—
185V000449	00 38 59.82	48 20 36.92	20.23	—	—	0.50	—	—	—	u	—
185V000450	00 38 57.74	48 19 54.99	19.61	17.26	—	0.41	—	—	—	u	—
185V000451	00 38 57.65	48 20 25.18	19.69	17.51	—	0.48	—	—	—	u	—
185V000452	00 39 15.30	48 21 24.61	20.11	—	—	0.37	—	—	—	S	01651474
185V000453	00 39 13.68	48 21 23.58	20.44	16.90	—	1.05	—	—	—	C	02511468
185V000454	00 39 12.29	48 22 22.82	19.58	—	—	0.33	—	—	—	S	03281783
185V000455	00 39 10.59	48 21 57.83	19.74	—	—	0.32	—	—	—	S	04171650
185V000456	00 39 10.41	48 19 31.99	19.80	—	—	0.49	—	—	—	M	04180873
185V000457	00 39 07.73	48 19 57.15	20.26	—	—	0.38	—	—	—	M	05621006
185V000458	00 39 07.45	48 21 29.86	19.65	—	—	0.39	—	—	—	M	05821500
185V000459	00 39 06.89	48 18 24.18	20.83	—	—	0.69	—	—	—	u	06010511
185V000460	00 39 06.88	48 18 52.43	18.61	15.44	—	1.13	—	—	—	u	—
185V000461	00 39 06.88	48 22 37.38	19.50	17.23	—	0.24	—	—	—	M	06151859
185V000462	00 39 06.71	48 20 44.67	19.39	16.65	—	0.32	—	—	—	u	—
185V000463	00 39 04.62	48 20 10.86	20.00	17.09	—	0.40	—	—	—	u	—
185V000464	00 39 03.37	48 20 47.83	20.40	—	—	0.39	—	—	—	S	07961274
185V000465	00 39 03.11	48 19 03.15	20.11	17.43	—	0.47	—	—	—	M	08040717
185V000466	00 39 03.08	48 22 04.28	19.76	17.28	—	0.28	—	—	—	M	08151681
185V000467	00 39 02.87	48 20 42.50	20.55	17.30	—	0.52	—	—	—	M	08221246
185V000468	00 39 02.81	48 20 14.76	19.16	16.99	—	0.20	—	—	—	M	08241098
185V000469	00 39 02.69	48 18 54.96	21.99	—	—	1.36	—	—	—	u	—
185V000470	00 39 02.50	48 21 10.82	19.81	—	—	0.26	—	—	—	M	08431397
185V000471	00 39 02.15	48 19 09.34	19.83	16.71	—	0.42	—	—	—	S	08560749
185V000472	00 39 01.98	48 20 08.93	19.03	16.80	—	0.21	—	—	—	u	—
185V000473	00 39 01.80	48 19 44.05	21.32	16.95	—	1.10	—	—	—	u	—
185V000474	00 39 01.77	48 20 16.48	21.36	—	—	0.85	—	—	—	u	—
185V000475	00 39 01.72	48 22 55.08	19.69	17.78	—	0.28	—	—	—	S	08901952
185V000476	00 39 01.36	48 20 22.39	20.39	17.18	—	0.53	—	—	—	u	—
185V000477	00 39 01.19	48 20 47.22	20.59	—	—	0.55	—	—	—	M	09111270
185V000478	00 39 01.14	48 21 30.87	19.44	—	—	0.30	—	—	—	S	09161503
185V000479	00 39 00.74	48 18 26.45	21.75	—	—	0.98	—	—	—	u	09280520

Table A.2. continued.

ID	RAJ2000 h:m:s	DEJ2000 d:m:s	i [mag]	K_s [mag]	P_0 [d]	Δi [mag]	sig_0	P_1 [d]	sig_1	type	$ID_{Paper\ I}$
185V000480	00 39 00.80	48 20 51.49	20.64	—	—	0.46	—	—	—	M	09321293
185V000481	00 39 00.10	48 17 27.80	19.86	17.33	—	0.59	—	—	—	M	09590207
185V000482	00 38 59.09	48 20 50.51	19.75	17.37	—	0.44	—	—	—	u	—
185V000483	00 38 58.86	48 20 13.25	18.70	15.50	—	0.23	—	—	—	u	—
185V000484	00 38 58.76	48 22 22.87	19.17	16.41	—	0.26	—	—	—	C	10451779
185V000485	00 38 58.47	48 20 18.18	20.44	16.93	—	1.06	—	—	—	u	—
185V000486	00 38 58.13	48 20 19.74	19.91	16.38	—	0.68	—	—	—	M	10721123
185V000487	00 38 57.95	48 20 14.51	19.46	16.01	—	0.51	—	—	—	u	—
185V000488	00 38 57.77	48 20 08.43	19.77	16.47	—	0.48	—	—	—	u	—
185V000489	00 38 57.72	48 20 34.95	20.15	—	—	0.46	—	—	—	u	—
185V000490	00 38 57.60	48 20 21.92	20.35	16.01	—	0.84	—	—	—	u	—
185V000491	00 38 57.11	48 17 19.14	19.91	17.14	—	0.47	—	—	—	u	11180160
185V000492	00 38 57.21	48 20 26.79	19.26	16.21	—	0.31	—	—	—	u	—
185V000493	00 38 57.11	48 19 24.40	20.77	17.09	—	0.64	—	—	—	u	11240828
185V000494	00 38 57.02	48 21 44.51	20.81	—	—	0.52	—	—	—	S	11351574
185V000495	00 38 56.81	48 19 53.50	21.09	16.85	—	1.32	—	—	—	u	—
185V000496	00 38 56.43	48 19 50.15	19.46	16.11	—	0.28	—	—	—	C	11610965
185V000497	00 38 56.41	48 20 55.93	19.73	—	—	0.51	—	—	—	M	11651315
185V000498	00 38 56.13	48 19 53.30	21.46	16.76	—	1.00	—	—	—	u	11770981
185V000499	00 38 55.91	48 17 45.91	21.61	—	—	1.34	—	—	—	u	—
185V000500	00 38 55.82	48 19 43.96	19.60	16.72	—	0.36	—	—	—	u	11930931
185V000501	00 38 55.68	48 20 21.70	19.76	16.74	—	0.36	—	—	—	u	—
185V000502	00 38 55.22	48 19 39.14	19.76	16.98	—	0.43	—	—	—	C	12240905
185V000503	00 38 54.95	48 20 41.27	19.74	16.76	—	0.37	—	—	—	u	—
185V000504	00 38 54.50	48 19 33.95	19.44	16.41	—	0.42	—	—	—	C	12620877
185V000505	00 38 54.37	48 22 32.96	20.75	17.74	—	0.68	—	—	—	S	12781832
185V000506	00 38 54.22	48 20 18.55	20.71	16.99	—	1.11	—	—	—	u	—
185V000507	00 38 52.70	48 21 22.57	19.98	16.38	—	0.40	—	—	—	u	13631456
185V000508	00 38 52.56	48 19 38.45	19.63	16.67	—	0.29	—	—	—	u	—
185V000509	00 38 47.95	48 22 24.99	21.63	—	—	0.91	—	—	—	u	—
185V000510	00 38 47.26	48 18 52.42	19.59	—	—	0.35	—	—	—	S	16450653
185V000511	00 38 46.32	48 18 54.72	22.33	—	—	1.49	—	—	—	M	16950665
185V000512	00 38 45.09	48 18 50.49	19.79	—	—	0.31	—	—	—	M	17600642
185V000513	00 38 45.18	48 20 43.02	20.36	16.86	—	0.37	—	—	—	S	17601243