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Measurements of visual binaries with PISCO2 at the Nice 76-cm refractor in 2011-2012

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We present relative astrometric and photometric measurements of visual binaries made in 2011-2012, with PISCO2 installed at the 76-cm refractor of Côte d’Azur Observatory in Nice (France). Our observing list contains orbital couples as well as binaries whose motion is still uncertain. Three different techniques have been used for obtaining those measurements: Lucky Imaging, Speckle Interferometry and the Direct Vector Autocorrelation method. From our observations of 3136 multiple stars, we obtained 3568 new measurements with angular separations in the range $0''.1 - 10''$ and an average accuracy of $0''.016$. The mean error on the position angles is $1^\circ.7$. Most of the position angles were determined without the usual 180° ambiguity with the application of the direct vector autocorrelation technique and/or by inspection of the Lucky images or the long integration files. We managed to routinely monitor faint systems ($m_V \approx 9 - 11$) with large magnitude difference (up to $\Delta m_V \approx 5$). We have thus been able to measure many systems containing red dwarf stars that had been poorly monitored since their discovery. We also measured the magnitude difference of the two components of 326 binaries with an estimated error of 0.2 mag. Except for a few objects that have been discussed, our measurements are in a good agreement with the ephemerides computed with published orbital elements, even for the binaries closer than the diffraction limit. Thanks to good seeing images and with the use of high-contrast numerical filters, we have also been able to obtain 196 measurements with an angular separation smaller than the diffraction limit of our instrumentation, and consistent with those obtained with larger telescopes. We also obtained new measurements of the 15th magnitude multiple system CON37, and discovered a faint new double star in its vicinity. Finally, we report 47 measurements of 28 new binaries found during our observations.

[†]Deceased in October 2018

76-cm refractor telescope of the “Observatoire de la Côte d’Azur”, (OCA) in Nice (France).

1 Introduction

This paper presents the results of speckle observations of visual binary stars made in 2011-2012 with the PISCO2 instrument (Pupil Interferometry Speckle camera and COronagraph, 2nd Version) installed at the

Built in 1887, when it was the largest refractor in the world, this famous telescope has a free aperture diameter of $D = 74$ cm and a focal length of 17.89 m. It is one of the largest refractors still in operation in 2012 in the world. The good quality of its optics makes Airy rings clearly visible when the seeing is good. And this happens very frequently, despite the vicinity to the city

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of Nice. It has mainly been devoted to binary observation since its construction.

PISCO2 is a speckle camera that was specially designed for this telescope and was used for the first time for those observations.

Our research program aims at obtaining high angular resolution measurements of binary stars with sensitive detectors, by using the good image quality of the site and the optics of the large Nice refractor, that often provides diffraction-limited images. The final purpose is to contribute to a better knowledge of the apparent relative motion of long-period binaries so that very accurate orbits could be determined in the future and fundamental parameters such as stellar masses could be inferred from them. The work presented here is the continuation of the program described in Gili & Prieur (2012) and Gili et al. (2020), that will be referred as Paper I and PaperII, hereafter.

We describe PISCO2 and the instrumental setup in Sect. 2 and the conditions of our observations in Sect. 3. We introduce our calibration and data-reduction procedures in Sects. 4–5. We present and discuss our relative astrometric and photometric measurements in Sect. 6. Then in Sect. 7 we compare our measurements with the ephemerides computed with published orbital elements, when available. We discuss the few cases of the largest residuals, and then focus on the measurements of binaries closer than the diffraction limit of our instrumentation. Finally in Sect. 8 we describe our observation of the 15th magnitude multiple system CON37, with new measurements and the discovery of a new binary.

2 PISCO2

PISCO2 is a simplified version of PISCO (see Prieur et al. (1998)), a multi-purpose focal instrument that was developed in 1993 for the 2-meter Bernard Lyot telescope (Pic du Midi Observatory, France). PISCO has been operated in 2004-2015 on a dedicated 1-meter telescope in Merate (Brera Observatory, Italy) (see e.g., Scardia et al., 2007, 2011) and since 2015 on the 1-meter Epsilon telescope of C2PU (Center for Pedagogy in Earth and Universe Sciences) on the Calern site of OCA (Scardia et al., 2019). PISCO has been mainly used for investigations on visual binary stars with a few thousand measurements and a series of more than twenty publications on that field.

Like PISCO, PISCO2 is a focal instrument that provides high angular resolution images using speckle interferometry techniques that partly overcome the degradation caused by atmospheric turbulence (Labeyrie, 1970). PISCO2 was entirely made at OCA between 2010 and 2012. It is described in detail in Gili et al. (2014).

Fitted with an external sensitive detector (see Figs. 1, 2), PISCO2 allows the acquisition of short exposure images that are processed in real time by our specially designed software. Two detectors are currently available, the Andor iXon DV885 and the Andor iXon DV897 cameras (see properties in Paper II, and in ANDOR, 2021). The observations presented here were obtained with the DV897 camera only. Two Risley prisms are used for correcting the atmospheric dispersion. Most optical settings, like focusing and Risley prism positioning, are remotely controlled.

The optical design of PISCO2 is shown in Fig. 2. It is similar to that of PISCO but the observing modes are reduced and are mainly limited to speckle observations and to the observation of visual binary stars in particular. Associated with an electronic detector, PISCO2 allows the acquisition of enlarged short exposure images exhibiting “speckles”. Those images can then be processed as first suggested by Labeyrie (1970), to provide high-angular resolution information.

3 Observations

3.1 Observing list

Our list of targets is the same as in Paper I and Paper II, and was presented in Paper I. It basically includes all the visual binaries of the “Washington Double Star Catalog” (Mason et al., 2001, hereafter: WDS) for which new measurements are needed to improve their orbits, and that are accessible with our instrumentation. Among those, we particularly favoured the objects discovered by Paul Couteau (see Couteau, 1999, and Le Contel et al., 2001), since they are not often measured by other observers because most of them are rather faint and have a small separation. Indeed they are particularly well suited to the 76-cm refractor and this site, since most of them were discovered in Nice.

The calendar of the observations made in 2011-2012 is reported in Table 1, with the distribution of the observations during those years and some comments. We indicate the epoch in the first column and the corresponding number of observations in Col. 2. We then give the night distribution of those observations during the month in Col. 3, the number of nights used for the observations in Col. 4, and some comments in Col. 5. In 2011-2012 we had to solve some problems, such as a dome shutter breakdown, a change of the DV897 eeprom circuit, dome maintenance, and right ascension tracking problems. Finally the Risley prisms used for the atmospheric correction (see Sect. 2) were implemented to PISCO2 in October 2012.

The distribution of the apparent magnitudes m_V of the primary components of the binaries observed in 2011-2012 is presented in Fig. 3a and the difference of magnitudes Δm_V between the two components in

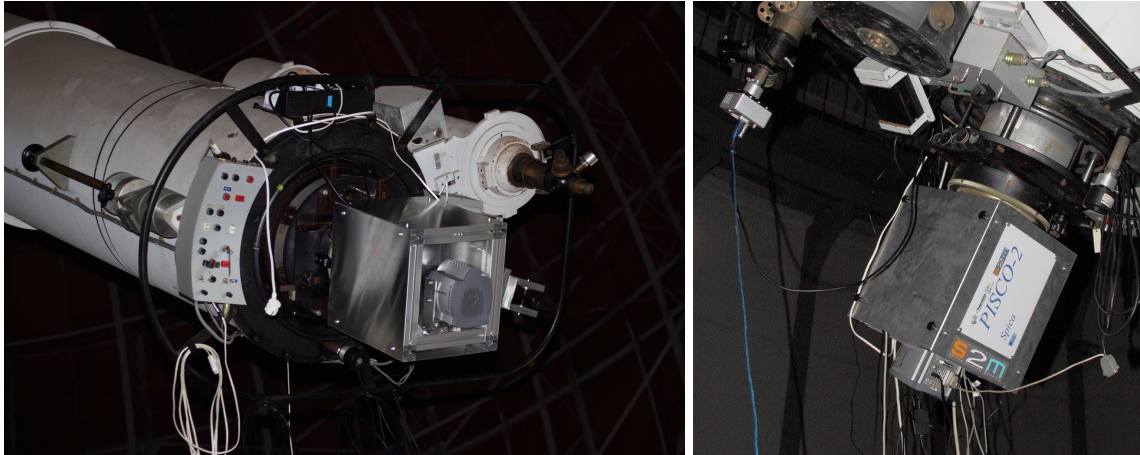


Fig. 1 PISCO2 with the ANDOR DV897 EMCCD camera at the focus of the 76-cm refractor.

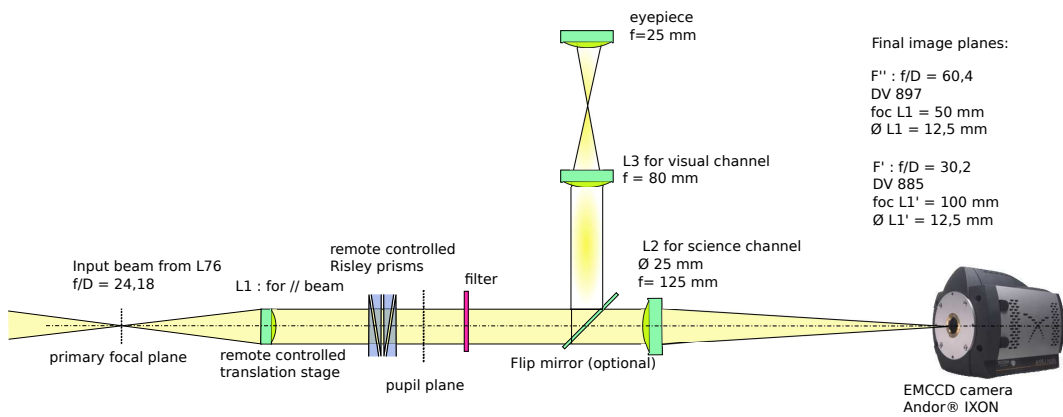


Fig. 2 PISCO2: optical layout, with the two configurations corresponding to the two available cameras that are fitted with the DV885 or the DV897 detectors. The data presented in this paper were obtained with the DV897 only.

Table 1 Calendar of the observations of double stars in 2011-2012.

Month	Nobs.	Night distribution during the month	Nights	Comments
2011-01	155	= 20+104+31	3	
2011-02	92	= 64+28	2	
2011-03	360	= 29+71+64+58+42+50+46	7	
2011-04	234	= 54+38+50+31+48+13	6	
2011-05	166	= 47+29+32+29+29	5	
2011-06	291	= 24+14+15+47+52+37+8+50+52	9	
2011-07	459	= 52+48+39+50+14+52+31+30+60+40+43	11	
2011-08	47		1	Shutter breakdown
2011-09	183	= 10+39+34+28+40+32	6	Resumption from Sept. 21st (with new stepper motor)
2011-10	245	= 40+52+44+50+31+28	6	DV897 eeprom replacement
2011-11	41	= 4+37	2	
2011-12	29	= 4+25	2	
Total in 2011	2302		60	
2012-01	80	= 31+49	2	
2012-02	88	= 33+31+24	3	
2012-03	236	= 26+32+52+31+17+22+20+33	8	
2012-04	57	= 17+19+21	3	
2012-05	178	= 30+20+26+38+41+23	6	
2012-06	79	= 7+31+18+23	4	Maintenance of the dome
2012-07	289	= 44+30+23+14+21+32+2+12+17+30+34	11	R.A. issues solved from July 21st
2012-08	211	= 29+29+31+33+31+20+28+10	8	
2012-09	147	= 20+30+22+12+1+12+10+2+24+14	10	
2012-10	105	= 21+24+10+50	4	Risley prisms used from Sept. 24th
2012-11	254	= 20+6+54+2+52+32+30+25+33	9	
2012-12	193	= 50+20+2+33+38+51	5	
Total in 2012	1917		73	

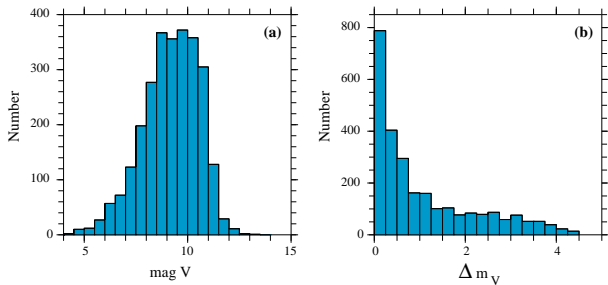


Fig. 3 Distribution of the WDS visual magnitudes of the primary components of the binary systems observed in 2011-2012 (a) and distribution of the WDS magnitude differences Δm_V between the two components (b).

Fig. 3b. Those data were retrieved from the WDS catalog. The telescope aperture and detector sensitivity led to a limiting magnitude of $m_V \approx 14$ for the faintest companions, which corresponded to about $m_V \approx 12$ for the binary systems (see Fig. 3a).

Using both the photometric data contained in the WDS catalog, and the Hipparcos parallaxes, we were able to construct the color-magnitude diagram of those binaries, which is displayed in Fig. 4. Out of the 1273 objects whose parallax was measured by Hipparcos, we plotted the 974 objects for which the relative uncertainty on the Hipparcos parallax was smaller than 50%. This plot shows that our observations well sampled most of the main sequence down to the faint red M stars. Indeed this is shown in Table 2, with the list of the 39 systems with red dwarf stars that have been observed in 2011-2012. This list was built from the spectral types found in the WDS catalog, by selecting the K and M stars of luminosity class V of Table 3. It should be considered as incomplete, since precise spectral types and luminosity classes are still missing for many binaries in the WDS catalog.

3.2 Optical setup and observing procedure

The observations reported here were made with PISCO2 mounted on the “Grand Equatorial” of OCA Observatory. Since its free aperture diameter is $D = 74$ cm, the limit of diffraction is $\rho_D = \lambda/D = 0''.16$, at $\lambda = 570$ nm, corresponding to the average central wavelength of the filter we used.

The PISCO2 instrument (see sect. 2) was used here with an ANDOR iXon DV897 EMCCD camera (ANDOR, 2021). The DV897 detector is a thin back illuminated CCD chip with a very good quantum efficiency, which is cooled down -80° by an elaborate cooling system (see Paper II).

The observations presented here were obtained with a dedicated acquisition and real time processing program `BuildSpeck1` that was developed by J.-L. Prieur.

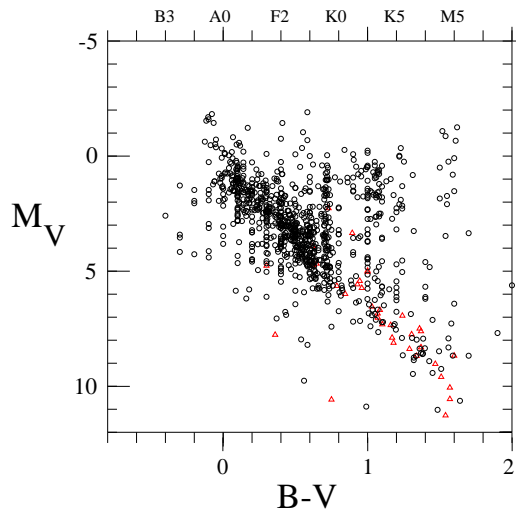


Fig. 4 Color-magnitude diagram of the binaries measured in Table 3, for which the Hipparcos parallaxes have a relative error smaller than 50% (i.e., 974 objects). In this figure, the systems containing red dwarf stars are plotted as red triangles, whereas the other objects are drawn as black circles.

This program was derived from our PISCO `vcrb` program that was used in Merate for the real time processing of the video analog signal produced by an ICCD camera (see Prieur et al., 2001). It also allowed a full control of all the available options of the ANDOR cameras. This program was written in C++ language with the Borland C++ (version 5.02) library.

Exposure times of individual frames were set in the range 20–30 msec for all objects, independently of their magnitudes. The standard format of the acquisition window on the DV897 that we used was 128×128 pixels which corresponded to a field of view of about $8'' \times 8''$. For faint objects or wide pairs, a wider field on the detector was used with a binning factor of 2×2 or 4×4 which thus amounted to the same format of 128×128 pixels for the individual frames. To avoid saturation with bright objects, the EM gain was reduced and sometimes even switched off, which corresponded to observing in conventional CCD mode.

For each object, we recorded FITS cubes of 1000 frames (FITS: Flexible Image Transport System). In average $1''.2$ seeing conditions, the typical limiting V magnitude was close to 13–14 with a binning mode of 1×1 .

As described in Paper I, the AF filter (anti-fringe or V-block) was mounted on the front window of the DV897 detector. This filter bandpass is 450–650 nm which considerably reduces the secondary spectrum of the 76-cm refractor, with no significant loss of energy in the V band. When combined with the transmission of the lenses and the quantum efficiency response of

Table 2 List of binary systems of Table 3 that contain a red dwarf star, and data derived from the WDS with the spectral type in Col. 3, the apparent V magnitude of the system in Col. 4, its $B - V$ index in Col. 5, the difference of V magnitude of the two components in Col. 6 and its absolute magnitude derived from Hipparcos parallax in Col. 7.

WDS	Name	Spectral type	mag V	$B - V$	Δm	Mag V
00014+3937	HLD60	K0V+K1V	8.61	0.79	0.68	5.16
00022+2705	BU733	G5Vb+K5V	9.84	0.70	3.07	2.00
01354+1126	HDS213	K7V:	11.82	1.30	0.08	6.89
03035+2304	HDS389	F8V+K0V	7.09	0.62	1.75	4.44
03119+6131	HDS407	M0V	10.14	1.36	2.13	7.31
04102+1722	HEI35	K2V+K6V	9.07	1.07	1.47	6.45
08044+1217	BU581	K0V	7.82	0.84	0.37	5.35
08286+3502	WOR19	M0V	10.20	1.57	0.04	8.74
09252+4606	HDS1353	K5V+M1.5V	9.16	1.10	2.13	7.11
10000+2433	CHR145	K0V	8.01	0.93	2.31	5.45
11374+4728	KU39	K4V	10.19	1.17	0.48	7.40
11544+1515	WOR20	M0V	10.50	1.18	0.21	7.41
12223+4826	YSC45	K8V	10.39	1.03	0.10	6.55
12422+2622	A1851	K4V	9.28	1.07	0.01	6.21
13063+2044	HU739	K4V	9.44	1.29	2.39	8.09
13198+4747	HU644	M2V	8.54	1.47	0.76	8.46
13320+3108	WOR24	M0V	10.30	1.60	0.23	7.83
13514+2620	SKF260	K6V	11.00	1.37	2.50	7.61
13514+2620	YSC50	K6V	11.00	1.37	0.40	7.61
14127+2349	YSC53	K0V	8.88	0.96	4.10	6.31
15038+4739	STF1909	F7V+K4V	4.83	0.65	0.90	4.30
15360+3948	STT298	K2V	7.65	0.95	1.28	5.91
17067-0749	RST3965	K5V	10.27	1.08	0.63	6.11
17247+3802	HSL1	G5V+K6V	8.60	0.30	2.50	5.08
17372+2754	KUI83	M0V:p	9.20	1.16	0.59	6.73
17465+2743	AC7	M3.5V	3.41	0.75	0.50	3.79
18500+1519	YSC12	F8+M2V	7.53	0.62	3.70	3.85
19074+3230	KUI90	M3V	5.21	0.36	0.59	2.17
19121+0254	AST1	M3.5V	11.09	1.54	1.82	11.05
19347+2854	COU1031	K0V	8.60	1.00	3.25	4.68
19347+2854	GII33	K0V	8.60	1.00	1.80	4.68
20302+2651	WOR9	M1V	9.69	1.34	0.13	7.87
20396+0458	KUI99	K5V	7.88	1.24	1.35	6.54
21000+4004	KUI103	M2V+M0.5V	10.14	1.51	1.91	9.24
22234+3228	WOR11	M3.0V	10.73	1.57	0.42	9.70
22281+1215	BU701	K0V	7.10	0.89	2.28	3.10
22536+3756	RUC15	G5V+K9V	8.95	0.73	2.59	4.40
23167+3441	HDS3315	K8V	10.50	0.81	0.50	5.61
23405+2959	HDS3363	K4V	10.40	1.15	2.82	6.55

the detector, the resulting transmission curve is close to a standard V filter with a maximum transmission at around 570 nm (see Paper I).

pling criteria (i.e. the diffraction diameter is sampled by more than two pixels).

4 Scale and position angle calibration

The astrometric calibration of the magnification scale of PISCO2 was done with a calibration grating mask (see Paper II). The scale value was found to be $0''.0738/\text{pixel}$ when the frames were not binned ($x_{\text{bin}}=1$, $y_{\text{bin}}=1$). In that case, the diffraction limit in V of $0''.16$ (see Sect. 3.2) corresponds to 2.17 pixels, which thus is in agreement with Shannon's sam-

The calibration of the origin of the position angles was done by recording star trails caused by the diurnal motion. The orientation of our images on the detector was approximately conventional, with North to the bottom, and East to the right. After measuring a series of star trail images, we found: $\theta_{\text{sky}} = 90.99 + \theta_{\text{frame}}$, where θ_{sky} and θ_{frame} are the angular positions on the sky and on the EMCCD frame in degrees, respectively.

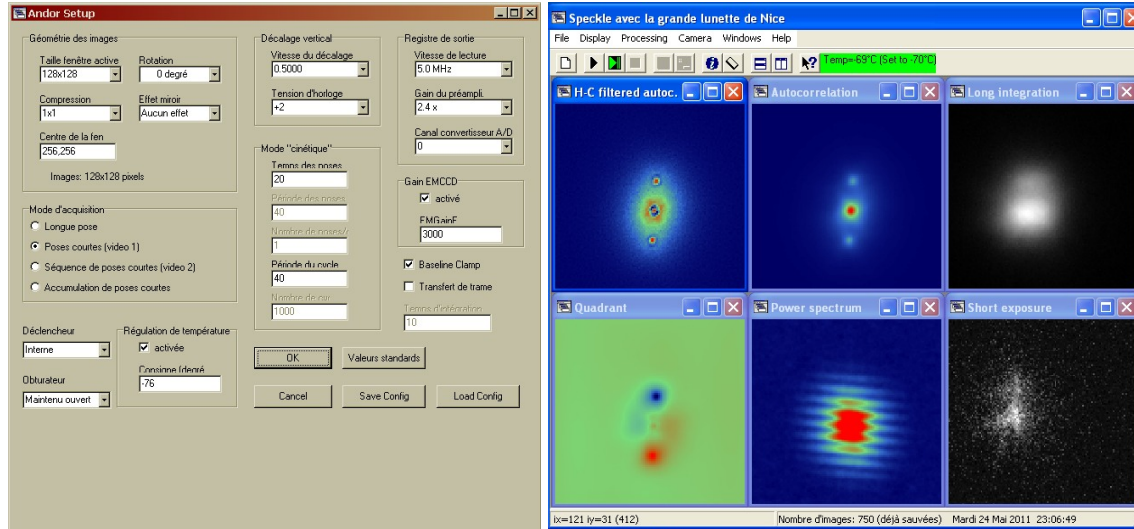


Fig. 5 Program **BuildSpeck1** used for data acquisition with ANDOR cameras and real-time processing. Left: camera setup; right: example of image processing of the binary star BU 1273 ($\rho = 1.''3$, $m_V = 9.6$ $\Delta m_V = 1.3$).

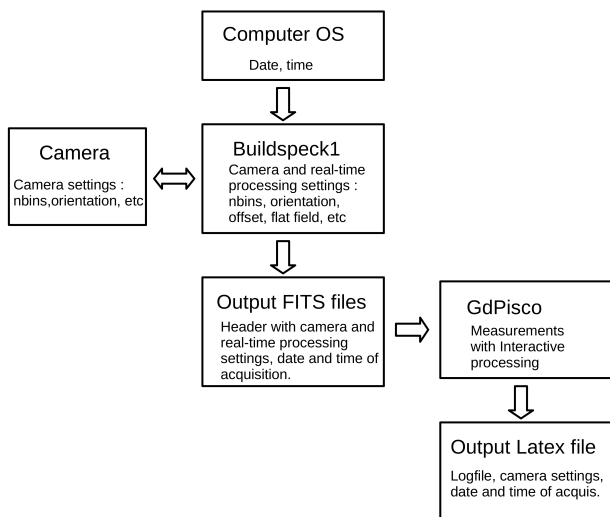


Fig. 6 Overview of the data acquisition and processing pipeline used for deriving the binary measurements. We have written two specific programs: **BuildSpeck1** for the acquisition and real-time processing and **GdPisco** for interactive processing and final measurements.

5 Data reduction procedure

The pioneering work of Labeyrie (1970) showed that high resolution information could be extracted from short-exposures by computing the average power spectrum of those exposures. This technique is known as “speckle interferometry” and has proved to be very efficient to observe binary stars even in poor seeing conditions. The observations presented here have been processed in this way. More precisely, we have used the method described in Worden et al.(1977), which works with a “flattened” autocorrelation, and is routinely used for PISCO (see Scardia et al., 2019, for

instance). As shown in Fig. 6, the whole processing was done in two steps: real-time processing with the **BuildSpeck1** program and post-processing with programs like **Gdpisco**.

An example of the display panels produced by **BuildSpeck1** are given in Fig. 5. This program both controls the camera and processes the data in real time by pre-processing the individual frames (with offset and flat-field corrections), computing Fast Fourier Transforms and generating all the average frames that are needed by our reduction procedure (for speckle analysis, or the Lucky-Imaging and Direct Vector Autocorrelation methods).

The **Gdpisco** program leads to final measurements using both the data and some information contained in the headers of the mean autocorrelation FITS files produced by **BuildSpeck1**. Indeed, those headers contain the epoch of observation, and some settings that have been used during the observations, like the binning factor of the images (for instance, a value of bin=2 indicates that one final pixel is 2×2 initial pixels).

As in Paper II, the 180° -ambiguity of speckle measurements related to the position angles of binaries was mostly solved by the direct vector autocorrelation (DVA) method, as proposed by Bagnuolo et al (1992), which computes the “oriented” autocorrelation function and takes into account the brightness level of the vector ends. The DVA both allows the quadrant determination and the measurement of Δm when the contrast is not too large (e.g. $\Delta m < 2$).

In the case of good seeing conditions, we obtained high resolution images with the Lucky Imaging method implemented in the REDUC software (Losse, 2021). This method was described in Paper I, and consists of shift-and-add processing a subset of selected good images. We experimentally found that a selection of about

3 to 10% of the best images of our 1000-frame cubes often led to very nice shift-and-add images, with clear Airy rings and a final resolution close to the diffraction limit of the 76-cm refractor. We could measure couples with very large differences of brightness, up to 3–4 magnitudes (see Sect. 6). Compared to the speckle interferometry, the main advantage of “Lucky imaging” is to provide a full image which is convenient for the determination of the quadrants (where the companion stands) and of the difference of magnitudes between the two components (see the example of Sect. 8).

6 Relative astrometric and photometric measurements

The relative astrometric and photometric measurements that we obtained with PISCO2 in 2011–2012 are displayed in Table 3. They concern 3136 visual binaries or multiple objects, with 3568 position measurements and 308 cases of unresolved observations.

In this table, for each binary we successively give its WDS name in Col. 1, the official double star designation in Col. 2 (sequence is “discoverer-number”, with ‘ND’ added in Col. 10 when it is a new double), the epoch of observation in Besselian years (Col. 3), the binning factor used by the detector when acquiring the image (Col. 4), the angular separation ρ (Col. 5) between the two components with its error (Col. 6) in arcseconds, and the position angle θ (Col. 7) with its error (Col. 8) in degrees, measured from the North and positive to the East, the measured difference of magnitudes Δm between the two components (Col. 9), and some notes in Col. 10 (‘ND’ for ‘New Double’ or ‘NR’ for ‘Not Resolved’).

The ($O - C$) (Observed minus Computed) residuals of the measurements for the systems with a known orbit are displayed in Cols. 12 and 13 for the residuals in angular separation and position angle, respectively. The orbital elements used for computing the ephemerides were retrieved from the “Sixth Catalogue of Orbits of Visual Binary Stars” (Hartkopf et al., 2001, and Matson et al., 2021, hereafter OC6). The corresponding authors are given in Col. 11, using the style of the OC6 references. For some objects, we have taken into account the orbits computed by Tokovinin (2021), that have not been inserted into the OC6 yet.

The difference of magnitudes Δm with the wide-band filter that we used for the observations (see Paper I), was obtained either from the Lucky Imaging or the DVA method, is reported in Col. 9, and concerns 326 objects (see Fig. 7b). By comparing measurements obtained for the same objects, we estimated the average (internal) errors at about 0.2 mag.

The distribution of the 3568 angular separations measured in this paper is displayed in Fig. 7a and

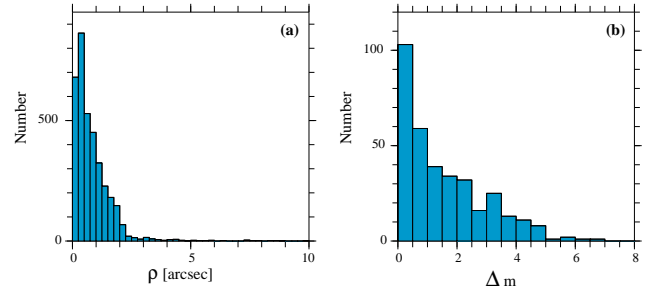


Fig. 7 Distribution of the angular separations of the measurements of Table 3 (a), and of the differences of magnitude Δm measured with Lucky Imaging and direct vector methods (b).

shows a maximum for $\rho \approx 0''.4$. The largest separation of $\rho = 10''.3$ was obtained for CON37A,CD. The smallest separation was measured for HDS2639 with $\rho = 0''.08$. This is smaller than the diffraction limit $\rho_D = \lambda/D = 0''.16$ (see Sect. 3.2), with our V filter (i.e. $\lambda = 570$ nm) and our refractor whose free aperture is $D = 0.74$ m. The residuals of our measurements with published orbits will be discussed in Sect. 7.

A superscript * was added to θ measurements in Col. 7 when we could determine the quadrants of the measurements, i.e., when our observations allowed us to solve the 180° ambiguity of the autocorrelation frames. When this was not possible, we used the quadrant of the last observations from the WDS catalog. Eventually when such observations were missing, we assumed that the quadrant was equal to 1 or 2 (i.e. the companion was lying in the $[0^\circ, 90^\circ]$ or $[90^\circ, 180^\circ]$ sectors).

A superscript Q was added to θ residuals in Col. 13 when the quadrants of our measurements were not in agreement with those used for the orbits.

The average errors determined by our `Gdpisco` program are $0''.016 \pm 0''.019$ and $1^\circ.7 \pm 2^\circ.6$ for ρ and θ respectively. Those errors were computed for each measurement by estimating the uncertainties on the background estimation and are consistent with the variations seen in repeat measurements of the same systems. Indeed the background removal on the autocorrelation spots is the critical step of our measurement procedure. Since the frame scale was $0''.0738/\text{pixel}$, those values indicate that the location of the secondary peaks of the autocorrelations was determined with a mean accuracy of about 1/5th of a pixel.

During our observations we have found some new stellar components around double stars that were previously known. This concerns 47 measurements of 28 new double stars that we discovered in 2011–2012, and it is indicated by “ND” in Col. 10 of Table 3. The subset of those measurements is reported in Table 4. This table has the same column description as Table 3, which was described in the beginning of this section. Some

Table 3 Table of speckle measurements obtained with PISCO2 in 2011-2012 and O-C residuals with published orbits (begin.)

WDS	Name	Epoch	Bin.	ρ ($''$)	σ_ρ ($''$)	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ ($''$)	$\Delta\theta(\text{O-C})$ ($^\circ$)
00003+6557	MLR280	2012.988	1	1.512	0.021	9.6*	0.3					
00004+2749	TDS1238	2012.840	1	0.818	0.007	86.4*	0.3					
00008+1659	BAG18	2012.840	1	0.674	0.007	177.5	0.4			Tok2019c	0.00	4.7
00014+3937	HLD60	2011.582	1	1.324	0.007	168.9*	0.3			Izm2019	0.02	0.5
00022+2705	BU733AB	2011.582	1	0.782	0.007	286.8	0.3			Sod1999	0.02	-0.5
00022+2705	BU733AB	2011.830	1	0.718	0.007	287.8*	0.3			Sod1999	-0.02	-2.0
00022+2705	BU733AB	2011.830	1	0.720	0.007	288.0	0.3			Sod1999	-0.02	-1.8
00022+2705	BU733AB	2012.854	1	0.667	0.007	300.3	0.3			Sod1999	0.03	-1.8
00024+1047	A1249	2011.751	1	0.235	0.011	257.3*	1.8			Zir2003	0.06	4.7
00026-0829	A428	2011.751	1	0.107	0.030	337.8	3.5			Tok2015c	-0.03	5.6
00026+1841	HDS2Aa,Ab	2011.830	1	0.156	0.040	150.5	8.0					
00026+1841	HDS2Aa,Ab	2012.840	1	0.156	0.040	144.4	8.0					
00026+1841	HDS2Aa,Ab	2012.854	1	0.126	0.040	149.7	8.0					
00026+1841	HDS2AB	2011.830	1	2.015	0.014	337.3	0.3					
00026+1841	HDS2AB	2012.854	1	2.026	0.010	337.4	0.3					
00026+1841	HDS2AB	2012.854	1	2.072	0.010	336.6*	0.3	4.69				
00039+2759	A429AB	2011.582	1	0.542	0.007	331.4*	0.3					
00039+2759	HJ1929AB,C	2011.582	1	4.684	0.023	249.9*	0.3					
00047+3547	HU800	2011.759	1	0.204	0.013	246.6*	1.0					
00054+3348	COU646	2012.840	1	0.468	0.007	150.8*	0.3					
00055+3406	HU1201	2011.582	1	0.185	0.040	305.6*	8.0			Zir2003	-0.00	-1.5
00055+3406	HU1201	2012.854	1	0.158	0.040	312.7	8.0			Zir2003	-0.02	5.7
00058+2855	HEL831	2011.584	1	1.897	0.011	136.4*	0.4					
00068+0427	BU1155	2012.980	1	0.662	0.007	75.9*	0.4					
00073+0742	HDS13	2012.980	1	0.376	0.007	141.6*	0.3					
00073+2058	HDS12	2012.840	1	1.872	0.009	7.4*	0.3					
00089+1332	TDS1313	2012.980	1	0.810	0.015	121.9*	0.8					
00092+0937	TDS1320	2012.980	1	0.596	0.007	217.6*	0.5					

Notes: In column 7, the superscript * indicates that the position angle θ could be determined without the 180° ambiguity. In column 13, the superscript ^Q indicates that our θ measurement quadrant was not compatible with the quadrant used for computing the orbit.

of them have been monitored since their discovery and were added to the list of René Gili’s new double stars discoveries (Gili, 2016). In Table 4, they correspond to the objects whose names start with GII. More observations are required to confirm the other new couples of this table.

7 Residuals from published orbits

7.1 Comparison with published ephemerides

The residuals from published orbits that have been computed with our measurements of Table 3 are plotted in Fig. 9a. Among those 625 residuals, this plot underlines the presence of eight objects with very large residuals, that will be discussed in Sect. 7.2: STF148, HO366AB, A2157, STT260, A700, COU1006, HU767, and HU374. The other residuals are well centered around the origin, with a rather large scatter.

The mean values computed with the residuals of Table 3 are $\langle \Delta\rho_{\text{O-C}} \rangle = 0''.007 \pm 0''.047$ and $\langle \Delta\theta_{\text{O-C}} \rangle = -0^\circ.01 \pm 3^\circ.9$ (after rejecting the outliers). In both cases, the offsets are very close to zero, with absolute values much smaller than the standard deviations which provides a validation of our calibration (see Sect. 3.2). The rather large standard deviation that can be explained by the poor quality of many orbits due to their old age and the lack of observations. Indeed we have checked that our measurements are in good agreement with the observations reported in the “Fourth Catalogue of Interferometric Measurements of Binary Stars” (Hartkopf et al., 2001, and Hartkopf et al., 2021, hereafter IC4), when they are present in this catalog.

The measurements with the largest residuals of Table 3, such that $\Delta\rho > 0.1''$ or $\Delta\theta_{\text{O-C}} > 10^\circ$, are reported in Table 5. Some examples of autocorrelations of

Table 4 Table of speckle measurements of new double stars: new measurements of the 28 'ND' objects that were discovered while observing known binaries.

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes
04334+1949	A2351AC	2011.113	1	3.076	0.015	173.1	0.3	3.18	
06283+2441	COU914AC	2012.142	2	8.911	0.045	28.8*	0.3		
08567+0130	GII39AC	2011.269	1	1.806	0.012	54.9	0.3		In HEI745 system
08567+0130	HEI745AC	2012.000	1	1.030	0.015	174.4	0.5		ND
09062+3314	GII37Ba,Bb	2011.179	1	0.340	0.007	88.6	0.3	0.06	In COU1560 system
09062+3314	GII37Ba,Bb	2011.179	1	0.342	0.007	88.7	0.3	0.06	In COU1560 system
09062+3314	GII37Ba,Bb	2011.184	1	0.338	0.007	89.6	0.3	0.10	In COU1560 system
09062+3314	GII37Ba,Bb	2011.184	1	0.331	0.007	90.1	0.3	0.10	In COU1560 system
09062+3314	GII37Ba,Bb	2012.252	1	0.323	0.007	94.4*	0.3	0.03	In COU1560 system
09094+2203	WRH16AC	2011.135	1	2.167	0.013	8.2	0.4		
11551+4629	A1777AC	2011.253	1	3.905	0.020	41.8*	0.3	2.46	
11551+4629	A1777AC	2011.253	1	3.900	0.020	41.7*	0.3		
13203+1746	A2166AC	2011.384	1	2.170	0.011	225.8*	0.3		
13276+2116	GII60AC	2012.361	1	2.881	0.014	127.8	0.3		ND
13276+2116	GII60AC	2012.362	1	2.897	0.014	127.9	0.3	3.83	ND
13276+2116	GII60AC	2012.397	1	2.896	0.014	126.9	0.3	4.22	ND
14111+3628	GII96Aa,Ab	2011.387	1	0.356	0.007	192.4	0.6		ND
15371+2646	HDS2199AC	2011.469	1	2.093	0.012	62.9	0.3		
16211+0250	HEI794AC	2011.521	2	3.749	0.037	33.8*	0.3		
16213+7434	HDS2310AC	2011.515	1	2.698	0.013	26.7	0.3		
16213+7434	HDS2310AC	2012.523	1	2.706	0.014	25.4*	0.3		
16213+7434	HDS2310AC	2012.523	1	2.733	0.014	26.3	0.5		
17006+2002	COU199AC	2011.556	1	1.300	0.007	331.4*	0.4		
17532+3243	GII43Aa,Ab	2011.556	1	0.261	0.010	29.7	2.0		In COU998 system
17532+3243	GII43Aa,Ab	2011.576	1	0.178	0.040	25.5	8.0	0.30	In COU998 system
17532+3243	GII43Aa,Ab	2012.479	1	0.187	0.040	22.4	8.0	0.47	In COU998 system
17532+3243	GII43Aa,Ab	2012.518	1	0.244	0.007	18.3	1.1		In COU998 system
18360+3452	GII48	2012.630	1	0.345	0.007	315.3*	0.3		Very close to TDT953
18360+3452	GII48	2012.632	1	0.359	0.010	316.1*	0.6		Very close to TDT953
19240+2437	TDS988AC	2012.605	1	3.279	0.016	55.6	0.3		
19240+2437	TDS988AC	2012.627	1	3.305	0.017	56.6*	0.3		
19264+2241	GII50	2012.641	1	0.396	0.010	184.8*	0.3		Close to CON37
19264+2241	GII50	2012.682	1	0.385	0.007	187.8	1.0		Close to CON37
20135+3526	COU2214AC	2011.573	1	3.420	0.018	263.6*	0.3		
20135+3526	COU2214AC	2011.576	1	3.404	0.017	263.3*	0.3		
20201+3700	TDT2183AC	2012.755	2	2.922	0.029	258.8	0.3	1.79	
20205+1634	HU360AC	2011.748	2	7.327	0.037	347.8*	0.3		
20205+1634	HU360AC	2011.751	2	7.324	0.037	348.2*	0.3		
20236+3854	GII51	2012.725	1	3.246	0.016	355.8*	0.3		Close to TDT2232
20236+3854	GII51	2012.728	1	3.192	0.016	356.6*	0.3		Close to TDT2232
20359+3617	GII52Aa,Ab	2012.726	1	0.354	0.007	216.2*	0.8		In TDT2405 system
21138+3711	COU1816AC	2012.726	2	10.038	0.050	336.1*	0.3		
22360+4515	GII55	2012.868	2	2.523	0.025	311.6*	0.6		Close to COU2242
23033+1129	GII71Aa,Ab	2012.889	1	0.139	0.040	30.7	8.0		
23110+3817	COU1199BC	2011.584	1	0.853	0.007	65.4	0.3	1.63	
23342+0759	TDT4102AC	2012.889	1	1.158	0.007	46.8	0.3	4.41	
23342+0759	TDT4102AC	2012.889	1	1.158	0.007	46.2	0.3		

Note: In column 7, the superscript * indicates that the position angle θ could be determined without the 180° ambiguity.

those binaries are shown in Fig. 8. The content of this table has the same notation as Table 3. In Col. 11, we reported some additional measurements obtained with PISCO2 in 2012-2016 and PISCO in 2020 (unpublished data yet), or from the IC4. Those measurements are noted as "P" followed by the epoch for the observations obtained with PISCO or PISCO2, or "IC", followed by the epoch for IC4 measurements.

In Table 5, we see that our measurements are in fair agreement with the additional measurements of Col. 11, even when the residuals are large, as we will see in the next section. The large residuals are thus an

indication that the orbits are still not definitive. Indeed most of those objects have been poorly monitored until now, and the orbits still need additional measurements to be more precise.

If we consider the best orbits only, for instance the orbits of Grade 1 in OC6, the plot of the residuals of Table 3 becomes much more concentrated (see Fig. 9b). This shows that the dispersion of Fig. 9a is caused by the poor quality of most of the orbits.

7.2 Discussion on the few cases of very large residuals

We discuss here the cases of measurements with very large residuals, that appear as outliers in Fig. 9a, i.e., STF148, HO366AB, A2157, STT260, A700, COU1006, HU767, and HU374.

The case of A700 is particular as the residuals over the last years have been increasing with time. As reported in the notes in the IC4: "Increasing residuals since the orbital solution by Heintz (1998) led to the determination by Parent et al. (2017) that the relative motion of the pair was better represented by a rectilinear fit. Thus the pair appears to be an optical double rather than a physical binary. Rectilinear solution was computed by Parent et al. (2017)."

For the other objects of that list with very large residuals, the observations are scarce in the IC4, and only small arcs of orbits have been monitored until now. As shown in Col. 11 of Table 5, our measurements are consistent with the others that are reported in the IC4 and with the other measurements made by PISCO and PISCO2 for similar epochs. Clearly more measurements are needed for obtaining reliable orbits of those objects.

7.3 Measurements under the diffraction limit

In Table 3, there are 196 measurements with an angular separation smaller than $0.16''$, which is the diffraction limit of our instrumentation (see Sect. 3.2). Some examples of autocorrelations of those binaries that have been processed with our high contrast numerical filters are shown in Fig. 11. As expected the autocorrelation peaks are not clearly divided, although the central peak is elongated. Our measurement was made by assuming that the lateral peaks were located on the very edges of that elongated peak.

When an orbit was known, we reported those measurements and the corresponding residuals in Table 6, with the same notation as in Table 3. In the last column, we also reported some additional measurements obtained with PISCO in 2020, and with PISCO2 in 2012-2016, or from the IC4, with the same notation as in Table 5.

The mean value of the angular separation from the 60 measurements of this table is $\langle \rho \rangle = 0''.133 \pm 0''.020$. With a scale of $0.0738''/\text{pixel}$ (see Sect. 4), this value corresponds to 1.8 pixels on the autocorrelation frames. The location of the autocorrelation peaks could be estimated with an average error of $0''.016$ (see Sect. 6). Hence the average error on the position angle corresponds to the angle of $0.016''$ seen at the distance of $0.133''$, which is therefore: $\arctan(0.016/0.133) \approx 7^\circ$.

The residuals from published orbits of the measurements of Table 6 are plotted in Fig. 10. We notice the presence of an outlier, HU767, that has been discussed in the previous section.

The mean values computed with the 60 residuals of Table 6 are $\langle \Delta\rho_{O-C} \rangle = -0''.002 \pm 0''.044$ and $\langle \Delta\theta_{O-C} \rangle = 2^\circ.2 \pm 7^\circ.6$ (after rejecting the outliers). Our measurements under the diffraction limit are therefore in good agreement with the ephemerids of published orbits, even though the uncertainties are larger in this case (as shown above, the expected average errors are $0''.02$ for ρ , and 7° for θ). Those measurements have been made possible by good observations obtained with good seeing conditions, and by the use of efficient high contrast filters. Those filters were proposed by R. Gili and implemented in the PISCO and PISCO2 programs by J.-L. Prieur. They are based on strioscopic Fourier filtering, which blocks the low frequency continuous component of the images.

8 Detailed study of CON37

We observed with PISCO2 the faint multiple system CON37 that was discovered in 2004 with the UKIRT 3.8 m-telescope (Connelley et al., 2008). The global magnitude of the AB pair is $m_V = 15.5$ (SIMBAD, 2021), which is at the limit of our instrumentation.

We confirmed the detection of the AB and CD components in the visible, when rather good seeing conditions allowed us to obtain some "Lucky" images of CON37 (see Fig. 12). Those images were processed with the IRIS software (Buil, 2021), in particular with wavelets filters.

CON37-AB was well resolved with PISCO2 on our images obtained on Aug 9th 2012 for example. We obtained the following measurement: ($\theta=325.3^\circ$, $\rho=1.556$, $\Delta m \approx 2.1$), with the B component in the 4th quadrant, whereas those components had the same brightness in K (Connelley et al. 2008). The CD pair which has an estimated magnitude $m_V \approx 18.5$, was detected on our images. It could not be measured accurately on that night, but seemed to have slightly rotated, when we compared with the observations of Connelley et al. (2008).

We also discovered a new couple that is located in the South-Western neighborhood of CON37 (see Fig. 13), which we called GII 50 (192640.720+224127.72, see Gili, 2016).

9 Conclusion

In 2011-2012, we obtained 3568 new position measurements of 3136 visual binaries or multiple systems with the 76-cm refractor in Nice, with an average accuracy of $0''.02$ for the angular separations and $1^\circ.7$ for the position angles. We have been able to routinely monitor faint systems $m_V = 9-11$ and the color-magnitude diagram of our observations shows that we have thus been able to measure red dwarf stars that had been poorly

Table 6 Measurements and residuals of the closest binaries observed in 2011-2012, with $\rho < 0''.16$ (i.e. smaller than the diffraction limit), for the objects having a known orbit.

WDS	Name	Epoch	ρ ($''$)	θ ($^\circ$)	Orbit	$\Delta\rho(\text{O-C})$ ($''$)	$\Delta\theta(\text{O-C})$ ($^\circ$)	Other measurements ρ ($''$) θ ($^\circ$)
00026-0829	A428	2011.751	0.107	337.8	Tok2015c	-0.03	5.6	P2020: unres. [IC2014: 0.120 317.6]
00055+3406	HU1201	2012.854	0.158	312.7	Zir2003	-0.02	5.7	P2014: 0.147 310.6 (O-C: -0.01 3.8)
00324+0657	MCA1Aa,Ab	2012.879	0.145	273.6	Msn2012a	0.03	10.1	P2020: unres. [IC2011: 0.153 269.2]
00324+0657	MCA1Aa,Ab	2012.999	0.108	273.8	Msn2012a	-0.01	11.0	P2020: unres. [IC2011: 0.153 269.2]
00516+2237	A1808	2011.582	0.151	197.9	Doc2005b	-0.05	-3.9	P2020: 0.224 204.6 (O-C: 0.01 -2.4)
00533+0405	A2307	2012.980	0.131	217.5	Tok2015c	-0.00	-6.5	P2020: unres. [IC2014: 0.117 232.9]
01072+3839	A1516	2011.582	0.154	5.8	Doc2017i	0.01	-1.8	P2020: 0.155 77.8 (O-C: 0.01 4.2)
01108+6747	HDS155	2012.988	0.154	165.3	Doc2018i	0.03	-0.7	[IC2012: 0.121 163.6]
01277+0521	BU1164AB	2012.999	0.156	172.7	Doc2010i	-0.01	-9.1	P2020: 0.386 166.9 (O-C: 0.01 -0.2)
02157+2503	COU79	2011.992	0.125	42.0	Mut2010e	-0.04	-8.5	P2020: 0.126 357.9 (O-C: 0.02 0.9)
02512+0141	A2338	2011.066	0.150	355.9	Doc2016a	0.03	7.3	P2020: 0.237 13.2 (O-C: 0.04 -18.6)
03035+2304	HDS389	2012.999	0.158	351.9	Bag2005	0.02	-9.0	P2020: 0.172 4.0 (O-C: -0.00 -6.6)
07336+1550	MCA32	2012.238	0.147	111.7	Zir2008	-0.05	4.3	P2020: unres. [IC2004: 0.20 105.8]
09123+1500	FIN347Aa,Ab	2011.135	0.118	141.8	Msn2018b	-0.04	0.6	P2020: unres. [IC2014: 0.148 0.128.4]
10083+3136	KUI48	2011.135	0.127	163.3	Hrt1996a	0.00	-1.1	P2020: unres. [IC2013: 0.206 169.7]
11322+3615	HU1134	2011.337	0.152	119.6*	Hrt2000b	0.09	-3.0 ^Q	P2014: 0.159 113.2 (O-C: 0.05 -8.1)
14138+3059	COU606	2011.387	0.145	220.5	Doc2008a	0.02	9.6	P2013: 0.227 345.2 (O-C: 0.11 -8.0)
14138+3059	COU606	2012.339	0.082	181.8	Doc2008a	-0.04	-5.0	P2013: 0.227 345.2 (O-C: 0.11 -8.0)
14260+4213	COU1757	2011.387	0.114	54.7	Hrt2014b	-0.01	5.3	P2020: 0.184 117.8 (O-C: -0.01 -6.3)
14260+4213	COU1757	2012.359	0.134	73.5	Hrt2014b	0.01	12.6	P2020: 0.184 117.8 (O-C: -0.01 -6.3)
14260+4213	COU1757	2012.362	0.087	71.0	Hrt2014b	-0.04	10.1	P2020: 0.184 117.8 (O-C: -0.02 -6.3)
14558+3939	A1627	2011.384	0.159	8.0	Baz1993a	-0.06	2.3	P2020: 0.221 205.5 (O-C: -0.02 3.5)
14588+3551	COU1136	2012.359	0.143	148.4	Gur2020	0.10	-11.3	[IC2008: 0.085 64.3]
16584+3943	COU1289	2012.479	0.131	63.1	Doc2013e	0.02	-3.3	[IC2010: 0.123 71.1]
17080+3556	HU1176	2012.517	0.114	98.1	Mut2010b	0.01	12.5	[IC2011: 0.124 97.9]
17155+1052	HDS2440	2011.526	0.131	192.9	Cve2014	0.03	2.9	[IC2010: 0.109 206.3]
17161+2316	COU315	2011.455	0.148	135.6	Doc2020b	0.07	14.7	P2016: 0.141 112.9 (O-C: 0.02 35.3)
17161+2316	COU315	2012.518	0.121	128.2	Doc2020b	0.05	17.8	P2016: 0.141 112.9 (O-C: 0.02 35.3)
17313+1901	COU499	2012.479	0.133	348.9	Tok2017c	0.04	1.1	[IC2015: 0.0927 333.0]
17326+3445	HU1181	2012.518	0.150	316.7	Sod1999	0.05	-2.2	[IC2012: 0.112 323.0]
17418+2130	COU114	2012.518	0.096	261.1	Cou1999b	-0.01	-8.4	P2015: 0.188 130.1 (O-C: 0.09 22.0)
18035+4032	COU1785	2012.520	0.145	19.4	Doc2008a	0.01	-7.1	P2015: 0.114 28.3 (O-C: -0.05 -5.2)
18043+4206	COU1786Aa,Ab	2012.518	0.125	169.0	Hrt2009	-0.04	2.2	[IC2009: 0.134 157.5]
18410+2450	A2988	2012.556	0.135	220.4	FMR2010f	0.01	-8.6	P2015: 0.142 221.6 (O-C: 0.00 0.2)
18466+3821	HU1191	2011.573	0.138	121.4	Doc2009g	0.04	7.0	P2015: 0.177 344.6 (O-C: -0.03 -10.3)
19027+4307	YSC13	2012.583	0.097	167.0	Doc2013j	0.01	-7.8	[IC2012: 0.083 174.6]
19069+4137	COU2197	2011.559	0.136	149.3*	Doc2016g	-0.05	14.1 ^Q	[IC2008: 0.211 :168]
19069+4137	COU2197	2012.627	0.148	146.8*	Doc2016g	-0.03	20.3 ^Q	[IC2008: 0.211 :168]
19302+5639	A712	2011.516	0.107	72.2	USN2006b	0.01	-1.6	[IC2009: 0.16 93.]
19350+2328	A162	2012.635	0.153	8.0	Mdz2017	0.00	9.5	[IC2015: 0.143 114.8]
19411+1349	KUI93	2011.510	0.141	319.5	Tok2021	-0.03	5.0	P2020: 0.150 318.4 (O-C: 0.04 0.2)
19550+4152	HO581	2012.712	0.115	229.7	Sod1999	-0.04	3.1	[IC2006: 0.286 312.8]
20311+1548	A1675	2011.808	0.105	324.5	Baz1987d	-0.09	7.6	[IC2015: 0.151 306.4]
21001+0731	KUI102	2012.816	0.135	287.4	Hrt2014b	-0.01	-0.6	P2020: 0.234 192.4 (O-C: 0.01 -1.6)
21135+1559	HU767	2011.748	0.086	165.3	Hrt1996a	0.05	89.8	[IC2008: 0.154 171.0]
21135+1559	HU767	2011.827	0.114	170.6	Hrt1996a	0.08	95.0	[IC2008: 0.154 171.0]
21423+0555	HU280	2012.870	0.152	184.7	USN2006a	-0.01	-3.1 ^Q	P2020: unres. [IC2014: 0.121 193.1]
21510+2911	A889	2011.726	0.156	126.1	Hei1984b	0.05	5.9	P2020: 0.206 4.5 (O-C: 0.07 17.0)
21539+2821	WSI8	2011.740	0.111	142.2	HIP1997d	0.02	2.5	P2020: unres. [IC2007: 0.115 :78.7]
21573+3241	A1226	2011.740	0.103	180.9*	Cou1987c	-0.09	-3.9 ^Q	[IC1996: 0.132 215.5]
21593+4606	COU2138	2012.764	0.129	145.3	Doc2012c	-0.01	8.9	P2020: 0.162 36.0 (O-C: -0.02 2.0)
22029+1547	HDS3129	2011.827	0.154	158.4	Tok2015c	0.06	-1.2	P2020: unres. [IC2014: 0.100 140.6]
22045+1551	BU696	2012.870	0.156	356.8	FMR2013d	-0.04	4.3	P2020: 0.333 354.7 (O-C: 0.00 0.7)
22384+2943	HO480	2012.854	0.131	317.8	FMR2014b	0.02	-11.8	P2020: unres. [IC1991: 0.323 255.0]
22408-0333	KUI114	2011.754	0.116	130.2	Doc2016d	0.02	14.5	P2020: 0.383 128.7 (O-C: 0.02 0.7)
22474+1749	WSI93	2012.854	0.159	138.2	Tok2017c	-0.08	-1.2	P2020: unres. [IC2014: 0.187 162.0]
22474+1749	WSI93	2012.870	0.137	141.6	Tok2017c	-0.10	2.0	P2020: unres. [IC2014: 0.187 162.0]
22546+1054	HDS3257	2012.816	0.131	67.3	Tok2015c	-0.03	-3.8	P2020: unres. [IC2014: 0.145 75.1]
22570+2441	COU542Aa,Ab	2012.854	0.128	85.4	Doc2016b	-0.04	3.8	P2020: unres. [IC2008: 0.239 45.7]
23020+4800	A194	2012.868	0.130	287.3	Doc2017e	0.02	7.0	P2015: 0.113 289.1 (O-C: 0.04 13.2)

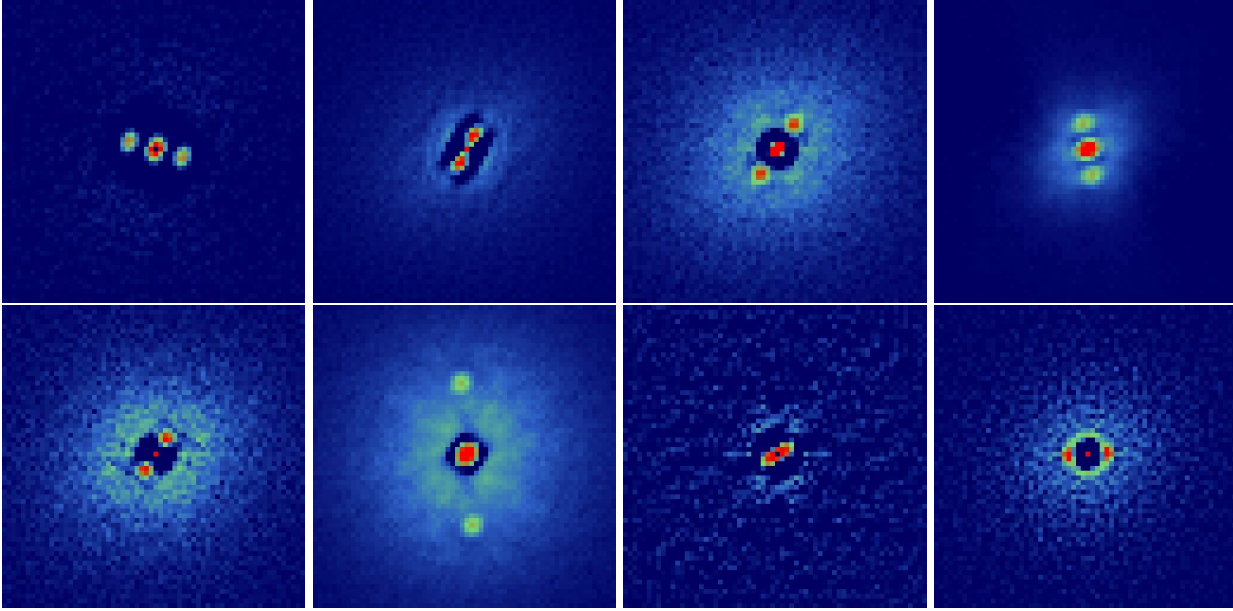


Fig. 8 Autocorrelations of some binaries with large residuals from Table 5. From left to right and top to bottom: A1247, BU367, COU1006, COU1271, COU2197, HO303, HU374, and MLR182Aa,Ab (2011). North direction is to the bottom and East to the right.

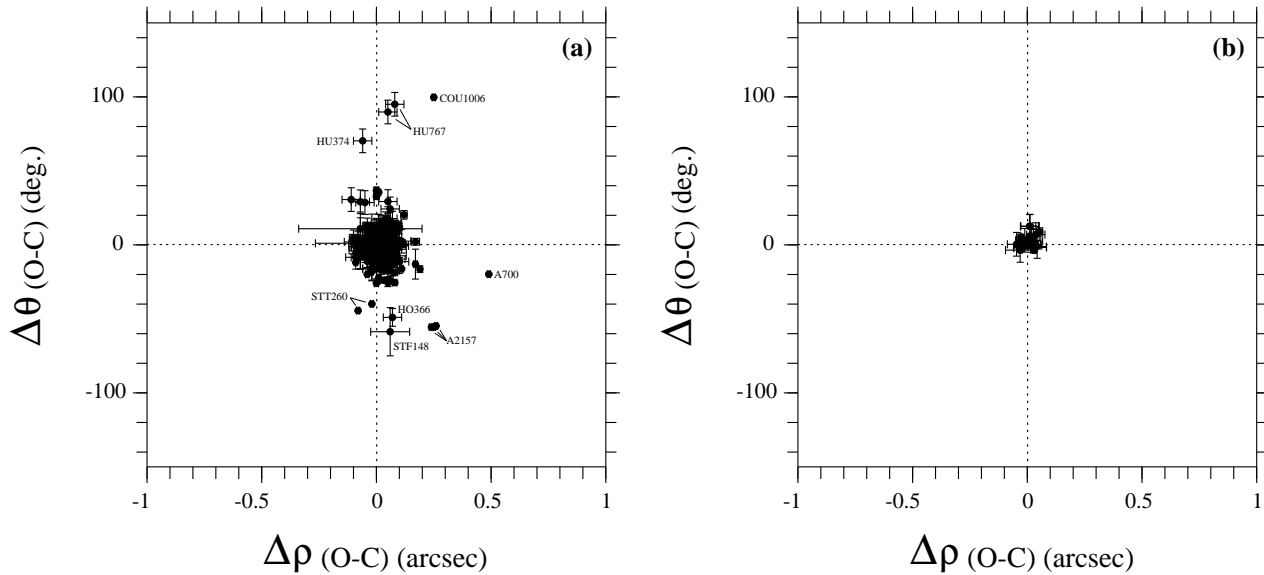


Fig. 9 Residuals from published orbits of our measurements reported in Table 3: (a) with all orbits, and (b) with the best orbits only (i.e., of Grade 1 in OC6).

monitored until now. By using the Direct Vector Autocorrelation method, we have measured the difference of magnitude of the two components for 326 objects with an estimated error of 0.2 mag. Thanks to good seeing images and with the use of high-contrast numerical filters, we have also been able to obtain 196 measurements with an angular separation smaller than the diffraction limit of our instrumentation, and consis-

tent with those obtained with larger telescopes. During good seeing conditions, we obtained new measurements of the 15th magnitude faint multiple system CON37 with the Lucky-imaging technique. We also found a new binary close to that system. As a result, we report 47 measurements of 28 new binaries that we have found during our observations in 2011-2012.

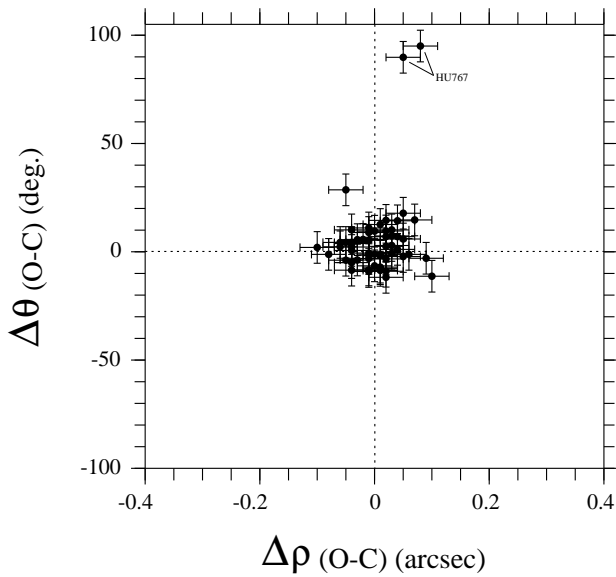


Fig. 10 Residuals from published orbits of our measurements with angular separations smaller than the diffraction limit (from Table 6, with all orbits).

This work is thus a good contribution to the continuing monitoring of long period visual binary systems, which is important for refining systemic stellar masses. It validates the technical and data processing investment that we have made in the preceding years. This work is fully integrated in the observation efforts of the Commission G1, "Binary and Multiple Star Systems" of the International Astronomical Union. Our measurements will be added to the worldwide database of this Commission G1, which is currently maintained by the U.S. Naval Observatory.

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This work has made use of the "Fourth Catalogue of Interferometric Measurements of Binary Stars" (<http://www.astro.gsu.edu/wds/int4.html>), the "Sixth Catalogue of Orbits of Visual Binary Stars" (<http://www.astro.gsu.edu/wds/orb6.html>), the Washington Double Star Catalogue maintained at the U.S. Naval Observatory, (<http://www.astro.gsu.edu/wds/>), the SIDONie (Site Informatique des étoiles DOoubles de Nice) <http://sidonie.obs-nice.fr> and the SIMBAD data base (<http://simbad.u-strasbg.fr/simbad>) operated by the *Centre de Données Astronomiques de Strasbourg* (France). This research has made use of "Aladin sky atlas" developed at CDS, Strasbourg Observatory, France.

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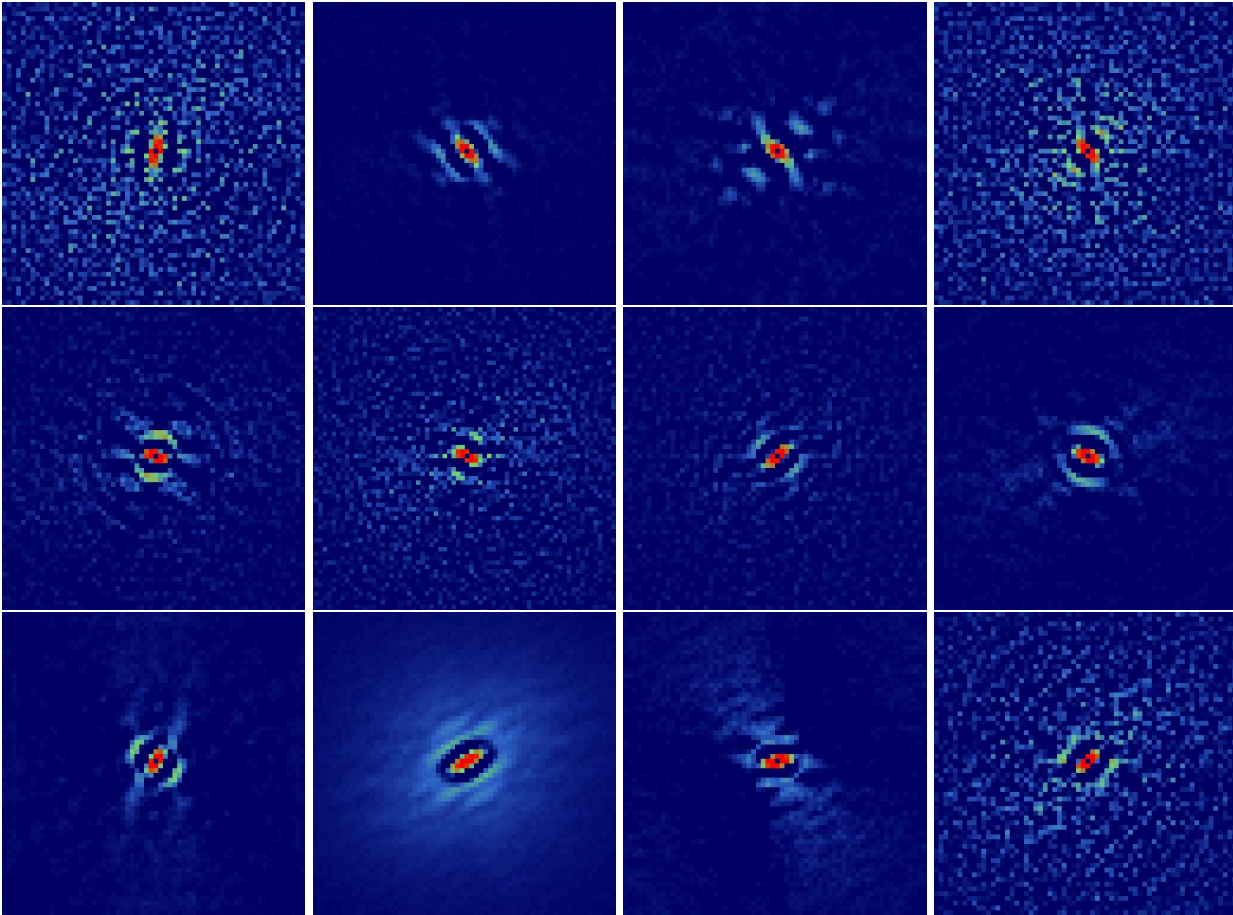


Fig. 11 Autocorrelations of some binaries with separations closer than the diffraction limit from Table 6. From left to right and top to bottom: A428, COU79, COU114, COU606, COU1289, COU1757, HO480, HO581, HU767, HU1134, HU1176 (2011), and WSI8. North direction is to the bottom and East to the right.

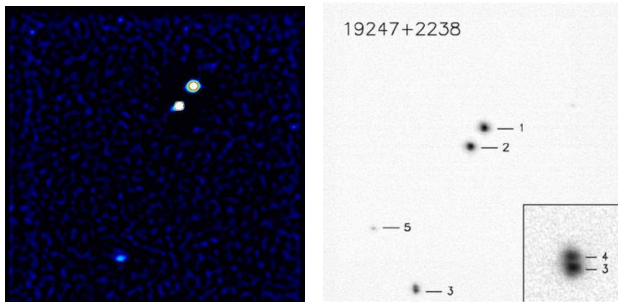


Fig. 12 Lucky image obtained with PISCO2 of the multiple system CON37 (left) compared to the $20'' \times 20'' L'$ field centered on IRAS 19247+2238 published by Connelley et al., 2008 (right). North direction is to the top and East to the left.

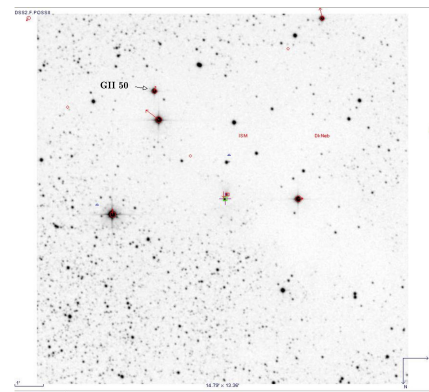


Fig. 13 Location of the new double star GII 50 that was discovered in the field of CON37AB. This image was produced by the Aladin software (Bonnarel et al., 2000) with DDS2 (centered on IRAS 19247+2238, with a field of view of $14.79' \times 13.36'$). North direction is to the bottom and East to the right.

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Table 3 Table of speckle measurements obtained with PISCO2 in 2011-2012 and O-C residuals with published orbits (cont.)

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
00093+7943	STF2	2012.988	1	0.900	0.007	17.4*	0.3			Hei1997	0.01	1.6
00095+1907	COU247	2011.582	1	0.313	0.015	233.3*	1.7			Doc2012i	-0.01	-9.9
00095+1907	COU247	2012.840	1	0.280	0.007	232.8*	0.6			Doc2012i	-0.06	-5.1
00100+0835	A1801	2012.980	1	0.269	0.007	201.2*	2.2					
00101+3825	HDS23Da,Db	2011.584	1	—	—	—	—		NR			
00101+3825	HDS23Da,Db	2011.830	1	0.219	0.007	146.1	2.7			Cve2017b	0.09	2.5
00101+3825	SKF495DB	2011.830	1	4.377	0.027	296.8*	0.3					
00110+2908	COU346	2011.584	1	0.225	0.021	305.8*	2.1					
00110+2908	BAG19	2012.873	1	—	—	—	—		NR			
00132+1144	HDS30	2012.920	1	0.317	0.007	260.5*	0.8					
00134+2659	STT2	2011.582	1	0.445	0.009	160.8*	1.0			Hrt2008	0.04	2.5
00134+2659	STT2	2012.840	1	0.425	0.007	160.0*	0.3			Hrt2008	0.02	2.7
00137+1838	A2201	2012.879	1	1.178	0.007	199.1	0.3	3.13				
00137+1838	A2201	2012.879	1	1.202	0.007	199.3*	0.3					
00138+7233	MLR282	2012.988	1	0.436	0.007	166.7*	0.5					
00145+1638	YSC78	2011.879	1	0.694	0.012	44.6*	0.3					
00145+1638	YSC78	2012.841	1	0.658	0.007	42.4*	0.6					
00149+2133	BU1027	2012.879	1	1.700	0.010	12.0*	0.3					
00151+1907	A2202	2012.999	1	0.613	0.007	153.8*	0.3					
00151+7854	MLR301	2012.988	1	1.573	0.016	229.5*	0.3					
00153+4412	A1256AB	2011.582	1	—	—	—	—		NR			
00156+3751	COU848	2011.582	1	0.779	0.007	297.9*	0.4					
00159+2103	TDS1373	2011.879	1	0.777	0.007	59.4*	0.3	0.10				
00162+3331	COU651	2012.841	1	0.373	0.010	109.2*	0.5					
00162+3331	COU651	2011.828	1	0.310	0.011	111.5*	0.8	0.20				
00167+3629	STT4	2011.582	1	0.180	0.040	70.2*	8.0			Sca2000b	-0.01	-7.2
00174+1002	A1804	2011.584	1	1.275	0.022	25.0*	0.3					
00174+1852	HDS39	2011.830	1	1.522	0.010	248.7*	0.5					
00176+3946	COU1048	2011.828	1	0.400	0.010	314.9*	0.6					
00187+1559	STF25	2011.584	1	1.088	0.007	196.1*	0.3					
00187+1559	TDS1397	2011.879	1	—	—	—	—		NR			
00206+1219	BU1015	2011.585	1	0.497	0.007	104.5*	0.6			Hrt2010a	0.01	-0.7
00206+1219	BU1015	2012.879	1	0.504	0.007	105.7*	0.4			Hrt2010a	0.01	-0.5
00209+1059	BU1093	2012.980	1	0.770	0.007	118.1*	0.3			Lin2010c	0.01	-0.6
00210+6740	HJ1018	2012.988	1	1.694	0.008	87.4*	0.3			Sod1999	-0.07	-0.3
00213+3553	COU747	2011.582	1	1.072	0.007	148.6*	0.3					
00220+4033	A1502	2012.868	1	0.945	0.007	244.0*	0.3					
00221+6211	HDS49	2012.988	1	0.306	0.017	226.0*	2.2					
00222+1114	HEI301	2012.980	1	1.705	0.009	280.5*	0.3					
00233+0556	HDS53	2012.873	1	0.624	0.007	345.6*	0.5					
00233+1645	HEI16	2012.879	1	0.258	0.007	19.2*	0.9					
00233+1645	HEI16	2011.585	1	0.340	0.017	11.9*	2.5					
00233+5132	TDS1431	2012.868	1	0.209	0.007	121.2*	1.2					
00233+5132	HDS55	2012.868	1	—	—	—	—		NR			
00246+1659	YSC80	2012.841	1	0.889	0.007	208.8	0.3	4.06				
00246+1659	YSC80	2012.841	1	0.945	0.007	208.5*	0.7					
00260+1905	HDS59	2012.999	1	0.808	0.007	264.2*	0.3					
00263+6515	MLR80	2012.988	1	0.255	0.007	194.6*	0.9					
00271+1852	TDS19	2011.879	1	0.880	0.009	138.8*	0.3	0.40				
00272+2115	BU1225	2012.999	1	1.387	0.010	190.9*	0.3					
00279+2334	BU779	2012.980	1	0.640	0.007	244.3*	0.4					
00283+6344	HU1007	2012.988	1	0.392	0.007	97.8*	1.0			Msn2017a	-0.02	3.4
00284+0553	HEI610	2012.870	0	1.037	0.007	92.4	0.3					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
00284+0553	HEI610	2012.873	1	1.025	0.007	272.6*	0.3					
00284+0553	HEI610	2012.879	1	1.037	0.007	271.6*	0.4					
00290+4825	HDS64	2012.868	1	0.135	0.040	37.6	8.0					
00298+3650	COU1049	2011.582	1	2.869	0.014	332.0*	0.3					
00298+3650	COU1049	2011.582	1	0.749	0.007	37.9*	0.5					
00307+1339	HDS66	2012.999	1	0.952	0.007	267.6*	1.6					
00308+4732	BU394	2012.868	1	0.686	0.007	276.3*	0.3			Zul1997b	-0.03	-0.2
00310+2839	CTU1	2011.879	1	0.884	0.007	224.1*	0.4	1.40				
00310+5015	HDS68	2012.868	1	0.389	0.007	354.2*	0.8					
00317+1929	HDS70	2012.999	1	0.300	0.007	66.7*	0.8					
00320+2740	COU547	2011.582	1	—	—	—	—			NR		
00324+0657	MCA1Aa,Ab	2012.879	1	0.145	0.040	93.6	4.0			Msn2012a	0.03	10.1
00324+0657	MCA1Aa,Ab	2012.999	1	0.108	0.040	93.8	4.0			Msn2012a	-0.01	11.0
00324+2147	HDS72	2011.828	1	0.205	0.007	27.5	1.4					
00326+0729	MCT1	2012.879	2	1.104	0.016	162.1	3.7					
00331+1558	HEI17	2011.585	1	1.872	0.016	219.8*	0.7					
00344+1844	COU250	2012.999	1	1.299	0.017	38.7*	0.3					
00345+3015	COU654	2011.582	1	0.269	0.007	208.7*	0.3					
00349+2627	COU548	2011.582	1	0.156	0.040	169.8	8.0					
00352+1452	HLD61	2012.879	1	1.610	0.008	240.2*	0.3					
00359+7549	HDS83	2012.988	1	0.315	0.008	199.3*	2.1					
00360+3708	COU850	2011.585	1	0.396	0.007	314.4*	0.3					
00360+3708	COU850	2011.828	1	0.367	0.007	137.3*	0.5					
00365+3724	A1505	2012.868	1	0.167	0.040	219.0*	8.0					
00372+0806	FOX54	2012.879	1	1.494	0.007	153.4*	0.3					
00374+3635	COU851	2011.585	1	0.401	0.007	213.4*	0.3					
00385+4022	COU1050	2011.582	1	0.636	0.007	93.1*	0.6					
00390+4037	WOR31	2011.585	1	0.260	0.007	124.4	0.9					
00390+4037	WOR31	2012.000	1	1.050	0.007	173.8	0.5					
00390+4040	BU1159	2012.868	1	0.156	0.040	157.9*	8.0					
00395+4426	COU1652	2012.868	1	0.658	0.008	99.8*	0.8					
00402+4117	TDS1562	2012.920	1	1.669	0.008	307.8*	0.3					
00407+3707	COU852	2011.585	1	0.906	0.010	250.6*	0.3					
00408+1308	HEI302	2012.999	1	0.618	0.007	89.3*	0.5					
00408+1308	HEI302	2011.879	1	—	—	—	—			NR		
00408+3844	COU853	2011.585	1	0.888	0.007	89.7*	0.3					
00416+1452	HEI92	2011.879	1	1.179	0.007	109.9*	0.3	3.60				
00419+1751	A2303	2012.879	1	1.097	0.007	218.9*	0.3					
00423+0449	HDS92	2012.873	1	0.190	0.040	167.1	8.0					
00425+4808	COU1854	2012.920	1	1.058	0.007	86.7	0.3					
00428+1249	HDS93	2012.873	1	0.284	0.015	33.6*	3.0			Cve2017b	-0.01	-5.5
00429+2047	A2205	2012.879	1	0.351	0.007	188.0*	0.3			Msn2017a	-0.01	2.6 ^Q
00431+7659	HU1012	2012.988	1	0.432	0.008	121.4*	0.3			USN2002	-0.07	2.3
00433+0634	HDS96	2012.873	1	0.242	0.015	324.2*	0.4					
00443+0554	HDS97	2012.873	1	1.427	0.024	141.2	1.4					
00448+7700	HU1014	2012.988	1	0.723	0.007	162.1*	0.6					
00457+0654	A2002	2012.879	1	0.177	0.040	114.0	8.0					
00458+5108	BU493	2012.920	1	0.860	0.007	54.0*	0.3					
00463+4715	COU2002	2012.920	1	0.168	0.040	92.0	8.0					
00465+1558	HEI19	2012.879	1	0.618	0.007	245.7*	0.5					
00470+2315	HU413	2012.879	1	0.325	0.008	321.5*	1.1			Ole2003d	-0.05	0.8
00477+4017	COU1206	2011.585	1	0.370	0.015	260.8*	0.7					
00484+4701	COU2003	2012.868	1	0.711	0.007	207.1*	0.3					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
00487+1841	BU495AB	2011.582	1	0.300	0.028	250.3*	0.7			Sca2000b	-0.03	2.2
00487+1841	BU495AB	2011.582	1	0.291	0.026	249.4*	2.1			Sca2000b	-0.04	1.3
00487+3604	COU1207	2011.585	1	1.758	0.009	323.6*	0.3					
00487+3604	TDS1627	2011.879	1	—	—	—	—		NR			
00494+1104	HDS108	2011.879	1	0.243	0.007	162.9*	2.3					
00495+4018	HDS110	2012.920	1	0.544	0.007	16.2	0.3	2.22				
00495+4018	HDS110	2012.920	1	0.565	0.007	9.6	1.1					
00496+4128	COU1503	2012.920	1	1.015	0.007	296.1*	0.5					
00508+3203	A922Aa,Ab	2011.582	1	0.567	0.007	154.3*	0.3			Msn2001c	0.07	-5.6 ^Q
00512+1405	YSC18	2012.879	1	0.135	0.040	48.6	8.0					
00516+2237	A1808	2012.980	1	0.197	0.040	194.5*	8.0			Doc2005b	-0.00	-8.2
00516+2237	A1808	2011.582	1	0.151	0.069	197.9*	8.0			Doc2005b	-0.05	-3.9
00516+6859	BU781	2012.988	1	1.065	0.007	23.0*	0.3					
00516+6859	A924	2011.582	1	—	—	—	—		NR			
00521+4326	COU1653	2012.868	1	0.199	0.040	21.1*	8.0					
00525+1740	A2306	2012.980	1	1.390	0.007	302.1*	0.3					
00533+0405	A2307	2012.980	1	0.131	0.040	217.5	8.0			Tok2015c	-0.00	-6.5
00533+0405	COU1654	2012.868	1	—	—	—	—		NR			
00544+4148	COU1355	2012.868	1	0.452	0.007	121.9*	0.4					
00546+1911	STT20AB	2011.582	1	0.584	0.007	182.4*	0.3			Doc2014a	0.01	1.3
00549+1928	A2208	2012.980	1	1.559	0.008	90.9*	0.3					
00567+1010	HDS126	2012.999	1	0.796	0.010	65.1*	0.4					
00571+1239	HEI304	2011.879	1	0.760	0.007	267.6*	0.3	0.20				
00575+3738	COU1054	2011.585	1	0.355	0.007	149.7	0.5					
00581+4751	COU2253	2012.868	1	1.043	0.010	13.6*	0.4					
00583+2124	BU302	2012.999	1	0.246	0.007	209.7	0.3			Cve2006e	0.04	-17.4
00583+2124	BU302	2012.999	1	0.255	0.034	212.0*	3.8			Cve2006e	0.05	-15.1
00585+4843	COU2254	2012.920	1	0.466	0.007	161.9*	0.6					
00599+4257	COU1655	2012.868	1	1.250	0.007	2.8*	0.3					
01005+1841	HDS132	2012.999	1	0.384	0.007	137.6*	0.3					
01007+0929	STF82AB	2011.991	1	1.807	0.009	304.8*	0.3	5.40				
01007+1659	HEI96	2012.879	1	0.399	0.007	66.5*	0.7					
01007+4344	COU1656	2012.920	1	1.556	0.008	25.5*	0.5					
01010+4830	COU2256	2012.868	1	0.585	0.007	127.2*	0.3					
01014+1155	BU867	2012.980	1	0.669	0.007	354.6*	0.5			Hrt2008	0.04	0.9
01014+3535	COU854	2011.585	1	0.176	0.040	16.4	8.0			Hrt2009	0.04	-3.7
01021+3847	COU1210	2012.920	1	0.412	0.007	81.4*	0.5					
01021+3847	A2003	2012.879	1	—	—	—	—		NR			
01024+0504	HDS135	2012.999	1	0.717	0.007	80.8*	0.7			Tok2015c	-0.01	-0.6
01026+4900	COU1855	2012.868	1	0.936	0.007	104.2*	0.3					
01026+4900	MLR372	2012.988	1	—	—	—	—		NR			
01039+4004	COU1055	2011.585	1	1.374	0.007	297.1*	0.3					
01049+3649	A1515	2011.582	1	0.191	0.040	310.0	8.0			Doc2009g	0.01	-0.3
01050+5029	COU1856	2012.868	1	0.118	0.040	100.1	8.0					
01054+4340	COU1657	2012.920	1	0.277	0.007	81.0	0.3					
01055+2107	AG14	2012.980	1	0.801	0.007	312.5*	0.3			FMR2014f	0.01	-0.8
01055+2107	AG14	2011.585	1	0.765	0.007	314.5*	0.3			FMR2014f	-0.01	-0.0
01064+8005	MLR445	2012.988	1	0.258	0.007	163.6*	3.2					
01065+2834	VK12	2011.585	1	2.013	0.010	185.4*	0.4					
01072+3839	A1516	2011.582	1	0.154	0.040	5.8	8.0			Doc2017i	0.01	-1.8
01072+3839	A1516	2011.582	1	—	—	—	—		NR			
01080+1204	A2101	2012.999	1	0.618	0.007	79.6*	0.3					

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01088+3024	HDS149	2011.879	1	0.441	0.030	188.8*	2.1					
01088+3441	COU662	2011.585	1	1.059	0.007	251.0*	0.3					
01105+3917	COU1212	2012.585	1	—	—	—	—		NR			
01105+3917	COU1212	2012.868	1	—	—	—	—		NR			
01108+6747	HDS155	2012.988	1	0.154	0.040	165.3*	8.0			Doc2018i	0.03	-0.7
01108+6747	HO215	2011.585	1	—	—	—	—		NR			
01117+0835	HDS158	2012.879	1	0.257	0.011	138.6*	1.3					
01131+2942	A1260	2011.879	1	0.214	0.010	244.0*	2.2			Msn2017a	-0.03	3.6 ^Q
01131+2942	A1260	2011.991	1	0.201	0.010	231.4*	1.2			Msn2017a	-0.04	-9.1 ^Q
01131+2942	TDS1809	2012.980	1	—	—	—	—		NR			
01154+3829	HO6	2011.991	1	1.273	0.007	122.8*	0.3					
01158+0947	A2102	2011.582	1	0.283	0.007	116.5*	1.9			RAO2015	-0.00	2.0
01158+0947	A2102	2012.879	1	0.204	0.015	112.5*	1.0			RAO2015	-0.07	0.5
01158+0947	HDS167	2012.988	1	—	—	—	—		NR			
01184+6333	HDS171	2012.988	1	0.937	0.007	88.6*	1.5					
01185+7323	A814	2012.988	1	0.220	0.007	193.5*	0.3					
01189+3347	COU664	2011.879	1	2.095	0.010	324.2*	0.3	1.30				
01197+1209	CHR196	2012.999	1	0.154	0.046	136.2	8.0			Tok2018i	0.06	14.1
01213+1132	BU4AB	2011.582	1	0.590	0.007	108.0*	0.3			Sca2015b	0.01	-0.2
01213+1132	BU4AB	2011.991	1	0.605	0.007	106.5*	0.4			Sca2015b	0.03	-1.6
01213+1132	BU4AB	2012.980	1	0.580	0.007	107.4*	0.3			Sca2015b	-0.00	-0.5
01221+0939	HEI428	2012.879	1	1.204	0.007	339.8*	0.3					
01226+1449	MRL1	2011.879	1	0.239	0.008	125.8*	0.5	0.10				
01226+1449	MRL1	2012.879	1	0.252	0.007	117.1*	0.3					
01230+4005	COU1213	2012.920	1	1.468	0.007	99.4*	0.3					
01238+0630	HDS180	2012.879	1	0.183	0.040	174.5*	8.0					
01244+3653	HDS181	2011.991	1	0.230	0.009	174.8	1.1					
01246+4310	A3001	2012.920	1	0.647	0.007	89.9*	0.3					
01251+4537	A939	2012.920	1	0.175	0.040	189.6*	8.0			Msn2014b	-0.03	-6.5
01255+7407	HDS185	2012.988	1	0.209	0.007	227.8*	1.4					
01255+7407	TOK11	2011.879	1	—	—	—	—		NR			
01260+1315	HEI305	2012.879	1	0.461	0.007	143.8*	0.3					
01264+1451	HEI205	2012.980	1	0.810	0.007	64.3*	0.6					
01276+2104	COU148	2011.991	1	1.223	0.007	247.2*	0.3	0.80				
01277+0521	BU1164AB	2011.582	1	0.179	0.040	172.7*	8.0			Doc2010i	0.07	-12.9
01277+0521	BU1164AB	2011.582	1	0.162	0.040	176.5*	8.0			Doc2010i	0.05	-9.1
01277+0521	BU1164AB	2012.999	1	0.156	0.040	169.1	8.0			Doc2010i	-0.01	-9.1
01284+0758	YR7	2012.980	1	0.508	0.007	40.9*	0.3					
01286+4509	A941CD	2012.920	1	0.770	0.007	358.3*	0.6					
01292+2004	A2214	2011.991	1	0.729	0.007	212.0*	0.9					
01292+4321	COU1359	2012.920	1	0.943	0.007	140.0*	0.3					
01297+2250	A1910	2011.585	1	0.200	0.007	182.4*	0.6			Hrt1996a	0.01	-0.4
01298+1014	CHR197	2012.980	1	0.232	0.007	13.3	0.7					
01298+6908	MLR295	2012.988	1	0.308	0.007	177.8*	1.1					
01308+2311	HDS197	2012.999	1	0.125	0.040	161.5	8.0					
01317+1506	CHR198	2012.980	1	0.446	0.007	358.8*	0.3	1.66				
01317+1506	CHR198	2012.980	1	0.404	0.007	357.6	0.6					
01328+3551	STF133AB	2011.030	1	3.060	0.015	192.0*	0.3					
01328+3551	A1911	2011.991	1	0.286	0.007	358.9*	1.5					
01334+7438	HDS204	2012.988	1	0.255	0.008	37.7	1.2					
01345+3440	A1913	2011.879	1	0.405	0.010	311.1*	2.0	0.00		Mnt1999a	0.08	3.8 ^Q
01345+3440	HDS211	2012.988	1	—	—	—	—		NR			

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01354+1126	HDS213	2012.999	1	0.176	0.269	198.8*	11.3			Cve2017b	-0.07	10.9
01356+7227	A816	2012.988	1	0.906	0.007	129.1*	0.3					
01356+7227	HEI306	2011.880	1	—	—	—	—		NR			
01377+1836	COU254	2011.991	1	1.675	0.008	23.8*	0.3	0.20				
01384+3828	COU1215	2011.991	1	0.494	0.007	154.3*	0.4	0.20				
01385+3448	COU1059	2011.991	1	0.351	0.007	133.3*	0.5	0.40				
01385+3448	COU1059	2011.880	1	0.329	0.007	128.9*	0.5					
01388+3453	COU1060	2011.991	1	0.536	0.007	191.7*	0.8	1.00				
01390+0407	A2403	2012.980	1	0.673	0.007	93.2*	1.1					
01395+3310	COU749	2012.920	1	2.295	0.011	16.9*	0.3					
01409+1117	A2320	2012.980	1	0.226	0.007	103.8*	1.0			Doc2007a	0.02	0.8 ^Q
01425+6606	HDS225	2012.988	1	0.234	0.012	259.5*	5.2					
01432+0520	A2008	2012.980	1	0.281	0.007	176.3*	1.7					
01432+3130	COU449	2011.991	1	0.179	0.040	15.8	8.0					
01432+3130	COU449	2011.880	1	0.196	0.040	144.0*	8.0					
01435+1927	COU256	2012.999	1	0.165	0.040	92.8	8.0					
01435+1927	HDS231	2012.988	1	—	—	—	—		NR			
01437+0934	BU509	2012.980	1	0.723	0.007	45.3*	0.3			Hrt2010a	-0.03	-1.5
01437+3950	COU1217	2011.991	1	0.537	0.007	333.4*	0.4	0.40				
01445+0749	HEI430	2012.980	1	1.032	0.007	74.3*	0.3					
01447+1906	COU257	2011.880	1	1.505	0.008	335.3*	0.3					
01449+1951	A2322	2012.999	1	0.197	0.040	195.9*	8.0					
01450+2703	COU750	2011.880	1	0.297	0.007	28.0*	1.2			Doc2005c	-0.06	-2.4
01459+0411	A2405	2012.980	1	0.923	0.007	221.6*	0.3					
01461+6349	STF148	2012.988	1	0.266	0.085	56.6*	16.3			Nov2007d	0.06	-58.7 ^Q
01474+5113	COU2676	2011.521	1	1.130	0.007	338.3	0.3	1.56		Hei1997	0.08	-2.9 ^Q
01499+8053	STT34	2012.988	1	0.511	0.007	109.5*	0.5					
01509+4037	COU1361	2012.920	1	1.162	0.007	280.7*	0.3					
01510+2551	COU452	2011.880	1	0.204	0.015	177.2*	1.7					
01518+1817	COU2557	2011.992	1	1.212	0.007	79.6	0.3					
01518+1817	HU1213	2012.980	1	—	—	—	—		NR			
01523+3711	COU1066	2012.920	1	0.902	0.007	145.3*	0.9					
01544+1754	COU352	2012.999	1	0.960	0.007	21.8	0.5					
01544+1754	COU352	2011.880	1	1.001	0.007	21.2*	0.3					
01546+1405	HEI208	2012.980	1	1.391	0.007	180.2	0.5					
01547+4426	COU1508	2012.920	1	0.313	0.007	49.9*	0.5					
01563+2520	COU453	2011.030	1	0.687	0.007	280.3*	0.5					
01572+7143	HDS264	2012.988	1	0.565	0.010	92.5	0.5					
01581+3444	COU859	2011.880	1	0.242	0.007	2.8	0.3					
01585+1048	YSC85	2012.980	1	0.274	0.010	174.1*	0.9					
01585+1048	YSC85	2011.992	1	0.168	0.040	168.9*	8.0					
01588+3730	COU1364	2012.920	1	0.480	0.007	53.4*	0.9					
01596+3044	COU669	2011.992	1	0.994	0.007	289.4*	0.5	0.20				
02005+3958	HDS268	2011.992	1	0.927	0.007	18.4	0.3					
02012+1634	BU515	2011.880	1	0.390	0.007	102.7	1.1					
02012+1634	BU515	2011.880	1	—	—	—	—		NR			
02012+1634	BU515	2011.992	1	0.379	0.030	99.5	2.0					
02019+4831	COU2009	2012.920	1	0.580	0.007	59.0*	0.6					
02019+4831	A3106	2012.038	1	—	—	—	—		NR			
02026+0905	MCA4	2012.999	1	0.176	0.040	154.9	8.0					
02029+1938	COU2677	2011.992	1	1.576	0.008	90.4*	0.3					
02055+1029	HEI436	2012.999	1	2.078	0.050	55.5*	0.9					
02062+2507	STF212	2011.030	1	1.926	0.010	162.3*	0.3					

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02071+6957	STF204	2012.988	1	0.187	0.040	34.6*	8.0					
02085+4959	COU2562	2012.920	1	1.139	0.007	175.3*	0.4					
02085+5852	HDS284	2012.038	1	0.231	0.007	76.3*	1.0					
02085+5852	HEI437	2012.999	1	—	—	—	—		NR			
02089+7032	MLR376	2012.988	1	0.334	0.007	30.0*	0.5					
02090+3540	COU1067	2011.992	1	0.176	0.040	35.5	8.0					
02090+3540	TDS2139	2012.999	1	—	—	—	—		NR			
02105+8129	STT37	2012.988	1	1.175	0.007	208.7*	0.4					
02126+1548	HU1215	2012.999	1	1.573	0.010	334.7*	0.3					
02140+2342	HU424	2012.999	1	1.350	0.007	335.9*	0.3					
02140+3431	STF229	2011.030	1	2.476	0.012	356.0*	0.3					
02140+3431	HDS297	2012.999	1	—	—	—	—		NR			
02144+3810	ES230	2011.030	1	2.768	0.024	302.1*	0.3					
02150+5903	MLR447	2012.038	1	0.666	0.007	341.7*	0.3	1.70				
02156+5932	MLR448	2012.038	1	0.162	0.040	134.7	8.0					
02157+2503	COU79	2011.992	1	0.125	0.040	42.0	8.0			Mut2010e	-0.04	-8.5
02162+0919	HEI438	2012.999	1	0.696	0.007	163.1*	0.7					
02180+1251	HEI310	2012.999	1	1.238	0.010	177.6*	0.7					
02181+5731	BU1170BC	2012.038	1	0.471	0.010	129.4*	1.3					
02211+8044	STF223	2012.988	1	0.806	0.007	47.8*	0.4					
02212+2136	HU425	2011.992	1	0.616	0.008	146.4*	0.6	0.90				
02212+2751	COU457	2011.992	1	0.484	0.008	161.1*	0.4	1.10				
02217+7623	STF233	2012.988	1	1.961	0.010	272.4*	0.4					
02225+0948	HEI439	2012.999	1	1.427	0.007	32.6	0.3					
02231+7021	MLR377	2012.988	1	0.677	0.008	140.3*	0.5			Msn2017e	-0.02	2.5
02277+7147	MLR305	2012.988	1	0.210	0.013	79.6	3.6					
02277+7147	HJ1116AB	2012.988	1	4.362	0.023	131.8*	0.3					
02278+0426	A2329	2012.999	1	0.297	0.007	305.0*	0.3			Ana2007	-0.03	1.9
02278+0426	HU428	2012.999	1	—	—	—	—		NR			
02284+1722	A2330	2012.999	1	1.210	0.007	209.8*	0.4			Izm2019	0.01	2.3
02287+0840	A2016	2012.999	1	0.416	0.007	179.7*	0.3					
02291+2331	VBS6	2012.999	1	0.458	0.007	48.8*	1.3					
02291+2331	HDS327	2012.988	1	—	—	—	—		NR			
02303+7025	HDS327	2012.030	1	1.565	0.014	179.8*	0.4					
02361+7944	MLR449	2012.038	1	0.294	0.007	202.1*	0.5					
02379+2003	A2219	2011.066	1	0.480	0.009	146.4*	0.3			Msn2017a	0.04	-0.9
02392+1822	COU2679	2012.999	1	1.367	0.007	118.7*	0.3					
02396+6229	MLR32	2011.521	1	1.871	0.009	147.3	0.3					
02402+0436	HDS347	2012.999	1	0.515	0.015	317.6*	1.8			Cve2020b	-0.04	-0.2 ^Q
02404+5248	HDS348	2012.038	1	0.903	0.007	80.9*	0.4					
02404+5248	COU462	2011.030	1	—	—	—	—		NR			
02409+0452	STT45	2011.030	1	0.795	0.007	263.8*	0.3			Izm2019	-0.00	2.6
02410+5222	MLR657	2012.038	1	1.691	0.008	135.2	0.3					
02429+1754	COU23	2011.066	1	1.072	0.007	138.1*	0.3					
02434+3148	A825	2011.030	1	1.887	0.009	128.8	0.3					
02439+2059	HU430	2011.066	1	0.689	0.020	191.8*	0.8					
02439+2538	BU306AB	2011.030	1	2.953	0.015	19.1*	0.3					
02441+1658	HEI97	2011.066	1	0.525	0.007	291.1*	0.6					
02441+1658	TDS2345	2012.999	1	—	—	—	—		NR			
02450+1414	HU1046	2011.030	1	0.843	0.007	122.5*	0.3					
02454+5634	MLR599	2012.038	1	0.177	0.040	7.0*	8.0					
02459+0714	A2024	2011.030	1	1.433	0.007	54.3	0.4					
02463+1958	A2221	2011.030	1	0.367	0.013	45.6*	1.5					
02469+5744	HDS360	2012.038	1	0.328	0.007	15.2	0.5					

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02471+0417	HEI624	2012.999	1	0.951	0.007	66.6	0.3					
02477+0142	A2411AB	2011.066	1	0.362	0.007	279.5*	0.6					
02477+0142	A2411AC	2011.066	1	2.106	0.011	9.2	0.3					
02477+0142	HDS362	2012.038	1	—	—	—	—		NR			
02492+0040	A2412	2011.066	1	0.370	0.007	104.8*	0.9					
02512+0141	A2338	2011.066	1	0.150	0.040	355.9	3.1			Doc2016a	0.03	7.3
02529+5300	A2906	2011.521	1	1.547	0.013	135.9	1.1					
02529+5300	A2906	2011.521	1	1.575	0.008	314.0	0.3	0.64				
02532+0742	A2025	2011.066	1	0.215	0.007	23.9	2.0					
02544+0946	A2341	2012.999	1	1.390	0.007	5.2*	0.3					
02551+3236	COU678	2011.066	1	1.320	0.007	140.5*	0.3					
02561+2003	COR1Aa,Ab	2012.999	1	—	—	—	—		NR			
02572+0153	A2413	2011.066	1	0.564	0.007	160.3*	0.5			Jte2018	0.00	1.3
02589+2137	BU525	2011.066	1	0.573	0.007	269.9*	0.4			Rbr2018	0.03	-2.4
03027+7236	A827	2012.038	1	0.176	0.040	40.7	8.0					
03032+7436	MLR387	2012.038	1	0.414	0.007	119.9*	1.4	0.70				
03035+2304	HDS389	2012.999	1	0.158	0.040	351.9*	8.0			Bag2005	0.02	-9.0
03052+0713	A2029	2012.999	1	0.808	0.007	41.0*	0.7					
03054+2515	STF346AB	2011.066	1	0.463	0.007	252.1*	0.4			Hei1981a	-0.00	-4.8
03069+2052	AG61	2012.999	1	0.537	0.007	23.3*	0.6					
03076+5230	MLR658	2012.038	1	0.407	0.013	86.2*	1.2	0.80				
03076+5230	HDS400	2012.038	1	—	—	—	—		NR			
03090+7635	MLR452	2012.038	1	0.601	0.010	354.5*	0.7	1.50				
03096+0512	A2030	2012.999	1	0.280	0.007	356.3*	0.3			Sta1978b	-0.01	0.1
03119+6131	HDS407	2012.038	1	0.522	0.007	185.7*	0.8			Cve2020b	-0.01	2.7
03126+6914	HDS411	2012.038	1	0.395	0.038	36.0	2.2					
03143+2257	BU530	2011.030	1	1.931	0.010	192.4*	0.3					
03151+1618	HU1055	2012.999	1	0.475	0.007	119.3*	0.3			Hrt2000a	0.06	-2.4
03151+1618	HU1055	2012.999	1	0.475	0.007	119.3	0.3			Hrt2000a	0.06	-2.4
03168+0501	A2032	2011.030	1	2.550	0.018	271.3*	0.3					
03169+1715	COU361	2011.066	1	1.842	0.009	17.4*	0.3					
03181+0803	HDS414	2012.999	1	0.893	0.007	309.4*	0.8					
03209+0110	HO320	2011.030	1	2.142	0.011	173.6*	0.3					
03222+6856	MLR389	2012.030	1	0.340	0.009	25.1	2.2					
03222+6856	WOR4	2011.030	1	—	—	—	—		NR			
03253+6029	A978	2011.521	1	2.412	0.023	66.0	0.3					
03253+6029	A978	2011.521	1	2.340	0.012	242.7	0.3	4.81				
03291+5732	MLR663	2012.030	1	0.631	0.007	21.5*	0.5	1.10				
03318+0749	A1931	2011.030	1	0.862	0.008	49.0	0.6					
03336+0705	A1932	2011.066	1	0.198	0.040	227.0*	8.0					
03344+2428	STF412	2011.030	1	0.742	0.007	354.5*	0.5			Sca2002a	0.01	1.5
03344+2428	STF412	2011.461	1	0.741	0.022	353.8	2.5			Sca2002a	0.01	1.0
03350+6002	STF400	2012.030	1	1.587	0.008	267.7*	0.3			Izm2019	0.00	0.8
03359+0840	HEI451	2011.066	1	1.103	0.007	248.6*	0.3					
03372+0121	A2419	2011.066	1	0.835	0.010	99.8*	0.6					
03379+5110	COU2573	2012.030	1	0.509	0.007	136.6*	0.3	0.20				
03399+6017	MLR38	2012.030	1	0.150	0.040	139.8*	8.0					
03404+1144	HEI316	2011.066	1	0.919	0.007	278.9*	0.3					
03414+1650	HEI100	2011.066	1	0.860	0.007	166.1*	0.3					
03426+0838	HDS472	2011.066	1	0.565	0.007	245.4*	0.3					
03426+0838	HDS472	2011.066	1	4.179	0.021	262.7	0.3	0.71				
03427+6950	STF419AB	2012.030	1	2.891	0.014	72.8*	0.3					
03427+6950	A984BC	2012.030	1	0.418	0.007	95.1	0.3	1.39				
03427+6950	A984BC	2012.030	1	0.438	0.007	97.6*	0.3					
03444+2030	COU261	2011.066	1	1.179	0.007	241.9*	0.3					

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03456+2839	COU692	2011.066	1	1.712	0.009	318.4*	0.3					
03460+7302	MLR457	2012.030	1	0.934	0.007	4.5*	0.3					
03480+6840	KUI13BC	2012.030	1	0.763	0.007	26.3*	0.3	0.20				
03486+2411	BU1105	2011.066	1	0.193	0.040	40.5	8.0					
03503+2535	STT65	2011.066	1	0.280	0.007	199.5*	0.8			DRs2012	-0.01	1.3
03522+5357	MLR665	2012.038	1	0.355	0.008	154.4*	0.6	0.50				
03522+5357	HDS490	2012.030	1	—	—	—	—		NR			
03562+5939	HDS497Aa,Ab	2012.038	1	0.480	0.007	85.5	0.4					
03562+5939	HDS497Aa,Ab	2012.038	1	0.349	0.009	24.3	1.4					
03570+5427	MLR659	2012.030	1	0.618	0.007	158.2*	0.6	0.70				
03589+7152	A994	2012.030	1	0.723	0.007	15.3*	0.3	0.40				
03590+0947	HU27	2011.066	1	0.427	0.013	333.9*	0.3			Hrt2010a	0.02	4.1
04017+5611	HDS507	2012.038	1	0.538	0.011	134.9*	0.5	0.10				
04021+6417	HEI638	2012.870	1	1.829	0.009	257.6*	0.3					
04021+6417	HU210	2012.030	1	—	—	—	—		NR			
04029+6225	HDS512	2012.038	1	0.437	0.007	182.1*	1.2					
04038+6212	MLR110	2012.030	1	0.973	0.007	259.6*	0.3					
04038+6212	MLR110	2012.038	1	0.973	0.007	259.4*	0.3					
04054+2309	COU563	2011.066	1	0.393	0.023	105.6*	1.4					
04068+7110	MLR458	2012.030	1	0.577	0.018	265.9*	1.4					
04102+1722	HEI35	2011.066	1	0.417	0.008	334.8*	1.2			Tok2021	-0.04	1.6
04199+1631	STT79	2011.066	1	0.479	0.007	173.9*	0.3			Sod1999	-0.02	-1.7 ^Q
04204+7355	MLR397	2012.030	1	0.191	0.040	171.2	8.0					
04212+0614	A1834	2011.066	1	0.461	0.007	283.2*	1.1					
04216+0658	A1835	2011.066	1	0.188	0.040	3.6*	8.0			Zir2010	-0.02	-16.3
04230+5937	KUI16	2012.030	1	1.247	0.007	200.5*	0.3					
04232+7510	MLR459	2012.030	1	0.404	0.007	109.8*	0.3	0.20				
04233+1123	STF535	2011.066	1	1.143	0.007	272.8*	0.3			Izm2019	-0.00	-0.5
04233+1123	STF535	2011.066	1	1.134	0.015	272.6	0.4			Izm2019	0.01	-0.3
04274+5218	COU2360	2012.038	1	0.804	0.007	13.2*	0.3	0.60				
04280+6709	HDS573	2012.038	1	0.677	0.021	110.7	0.7					
04301+1538	STF554	2011.113	1	1.539	0.030	15.9	0.7			Trr2019	-0.01	1.1
04301+1538	STF554	2011.113	1	1.532	0.008	17.5	0.3			Trr2019	-0.00	-0.4
04302+5343	A1300	2012.038	1	0.876	0.007	150.1*	0.3					
04306+3227	STT83A,BC	2012.362	1	5.584	0.028	129.4	0.3	4.03				
04306+3227	HDS581	2012.038	1	—	—	—	—		NR			
04334+1949	A2351AB	2011.113	1	1.010	0.011	174.4	0.8					
04334+1949	A2351AB	2011.113	1	1.004	0.007	174.0	0.4					
04334+1949	A2351AC	2011.113	1	3.076	0.015	173.1	0.3	3.18	ND			
04341+7604	MLR462	2012.038	1	0.953	0.007	173.3*	0.4	1.50				
04383+7853	MLR463	2012.038	1	0.195	0.040	165.5	8.0					
04422+3731	STF577	2011.134	1	0.747	0.027	340.6	1.3			RAO2015	0.02	1.0
04441+0601	HEI841	2011.134	1	0.723	0.010	30.2	1.6					
04449+5026	COU2460	2012.030	1	0.469	0.007	304.5*	0.4	0.80				
04453+6340	MLR124	2012.030	1	0.692	0.007	250.1*	0.3					
04457+6141	MLR111	2012.030	1	0.125	0.040	84.0	8.0					
04481+7810	MLR464	2012.030	1	1.218	0.008	204.4*	0.4	0.50				
04486+6303	MLR39	2012.030	1	0.368	0.007	128.1*	0.4	0.20				
04529+7543	MLR465	2012.030	1	0.928	0.007	220.0*	0.3					
04539+5603	HU818	2012.038	1	0.466	0.007	72.2*	0.3	0.50				
04560+5619	HDS638	2012.038	1	0.132	0.040	125.9	8.0					
04586+6725	MLR398	2012.030	1	0.193	0.040	168.7	8.0					
04591+6322	HU1090	2012.030	1	0.206	0.010	290.8*	0.5	0.10		Msn2014b	0.00	6.8
04598+7542	MLR466	2012.038	1	0.338	0.007	216.4*	0.7	0.20				

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04598+7542	MLR466	2012.030	1	0.349	0.009	216.7	0.3					
05001+6958	MLR399	2012.030	1	0.279	0.007	345.8*	0.5	0.40				
05005+0506	STT93	2011.134	1	1.544	0.008	244.0	0.3			WSI2015	0.02	-0.0
05012+3430	COU1229	2011.143	1	1.745	0.018	47.0	0.5					
05012+3430	COU1229	2012.000	1	1.713	0.021	46.5	0.4					
05014+0852	A2041	2011.143	1	0.821	0.024	119.0	2.5					
05017+2640	A1844	2011.143	1	0.363	0.011	13.3	1.4			Msn2005	0.03	3.4
05017+2640	A1844	2011.143	1	0.310	0.024	10.8	1.5			Msn2005	-0.02	0.9
05020+0137	A2630	2011.134	1	0.213	0.024	172.6	3.6					
05036+7935	MLR491	2012.038	1	0.623	0.007	66.6*	0.5					
05041+0257	A2632	2011.134	1	0.894	0.007	123.8	0.7					
05047+7404	STT89	2012.030	1	0.326	0.010	306.0*	1.0	0.80		Alz1998a	0.06	-0.4
05058+0811	A1945	2011.134	1	0.153	0.040	42.3	8.0					
05100+7541	A841	2012.038	1	0.766	0.007	236.4*	0.3	1.00				
05100+7541	MLR563	2012.038	1	—	—	—	—		NR			
05198+7009	MLR401	2012.038	1	1.170	0.007	103.4*	0.3					
05212+3235	COU1232	2011.143	1	1.128	0.017	65.1	0.5					
05219+3934	COU2037	2011.143	1	0.346	0.010	143.6	1.9					
05226+0236	A2641	2011.143	1	1.116	0.054	158.0	1.3			Izm2019	0.01	1.1
05227+0008	A2642	2011.143	1	0.519	0.015	59.3	3.0					
05227+0008	A843	2012.038	1	—	—	—	—		NR			
05239-0052	A847BC	2011.143	1	3.077	0.025	159.9	0.3					
05239-0052	A847BC	2011.143	1	3.073	0.015	160.0	0.3					
05239-0052	MLR667	2012.038	1	—	—	—	—		NR			
05239-0052	MLR600	2012.038	1	—	—	—	—		NR			
05296+0309	BU557BC	2011.143	1	0.288	0.038	22.6	2.5					
05297+3523	HU217	2011.134	1	0.577	0.023	73.4	3.0					
05357+3654	COU2042	2011.134	1	1.588	0.010	116.7	0.3					
05360+1933	HDS749	2011.135	1	0.814	0.030	70.7	1.2					
05372+7928	MLR492	2012.038	1	1.351	0.007	125.4*	0.3	0.20				
05373+6642	MLR314	2012.038	1	0.209	0.040	290.2	8.0			Doc2017c	-0.02	12.8
05379+0857	A2708	2011.135	1	0.589	0.020	139.8	0.6					
05450+7156	MLR403	2012.038	1	0.452	0.007	62.1	1.3	0.20				
05458+5143	COU2591	2012.038	1	0.605	0.007	263.2*	0.3					
05506-0126	BU1188AB	2011.143	1	1.024	0.012	91.2	1.0					
05513-0634	RST4287AB	2011.143	1	1.342	0.026	33.2	0.5					
05537-0542	HDS793	2011.143	1	0.542	0.016	123.0	2.5					
05551+1506	HEI111	2011.135	1	0.123	0.047	177.7	21.6					
05551+7646	MLR469	2012.038	1	0.224	0.009	101.6*	2.2	0.20				
05557+7755	HDS798	2012.038	1	0.688	0.007	59.2*	0.5					
05592+7749	MLR470	2012.038	1	0.979	0.007	174.6*	0.3	0.50				
06004+1156	TDS213	2011.135	1	1.043	0.023	177.0	2.1					
06032+5813	A1315	2012.038	2	0.850	0.010	87.4*	0.9	0.20		Doc1984b	-0.05	-1.8 ^Q
06041+1101	J335	2012.142	1	1.260	0.007	271.2*	0.3			Ole2002a	0.06	-4.2
06045+2208	COU162	2011.135	1	1.070	0.021	133.5	0.3					
06049+3211	HU827	2012.142	1	0.250	0.008	75.6*	0.7					
06060-6518	HDS831	2011.560	1	0.314	0.021	60.6*	2.4					
06074+3616	STT131	2011.178	1	1.508	0.018	96.2	1.4					
06075+0755	A1953	2011.178	1	0.340	0.008	75.3	2.1					
06075+0755	A1953	2012.000	1	0.330	0.044	77.1	2.4					
06097+1630	A2514	2011.135	1	0.226	0.080	113.2	19.4					

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06097+1630	A2514	2011.135	1	0.258	0.039	104.5	1.2					
06097+1630	A2514	2011.135	1	0.241	0.066	109.2	15.0					
06145+1754	KUI24	2011.135	1	0.339	0.009	144.0	1.7			Zir2013a	0.01	0.8
06145+6458	HDS854	2012.038	1	0.275	0.007	192.3*	0.4	0.30				
06156+6609	MLR316	2012.038	1	0.271	0.010	314.9*	0.6	0.50				
06171+0957	FIN331	2011.178	1	0.360	0.021	80.1	2.3					
06186+2151	HU451	2011.178	1	0.549	0.011	168.0	1.0					
06203+0743	A2719	2011.143	1	0.334	0.018	59.5	2.9					
06207+1832	A2516	2011.143	1	0.751	0.022	108.3	1.0					
06209+3250	COU1542	2012.142	1	1.053	0.007	187.6*	0.3	0.80				
06218+1317	HEI469	2012.142	1	1.138	0.007	176.7*	0.4					
06240+2017	HU703	2012.142	1	0.407	0.007	33.8*	0.3					
06243+3207	COU1543	2012.142	1	1.447	0.016	103.9*	0.4					
06253+0801	A2812A,BC	2012.142	2	9.889	0.049	56.9	0.3					
06253+0801	A2812AB	2012.142	1	0.561	0.007	190.5*	0.3					
06253+0801	COU914	2012.142	2	—	—	—	—		NR			
06283+2441	COU914AC	2012.142	2	8.911	0.045	28.8*	0.3		ND			
06317+2823	BU1021	2012.199	1	0.694	0.007	74.6*	0.3					
06317+2823	BU1021	2012.197	1	0.694	0.007	75.9*	0.9					
06318+1434	HEI329	2012.199	1	0.328	0.009	149.9	1.0					
06318+1434	HEI329	2012.197	1	0.303	0.007	325.6*	0.7					
06323+1542	STT145	2012.199	1	1.360	0.007	336.0*	0.3					
06323+5225	WOR6	2012.202	1	0.771	0.007	159.6*	0.4			Hrt2009	0.02	3.0
06330+5547	MLR669	2012.202	1	0.995	0.007	46.5*	0.3					
06336+1032	A2818	2012.199	1	1.432	0.007	343.4*	0.3	0.20				
06344+1445	STF932	2012.197	1	1.655	0.008	306.0*	0.3			Hop1960a	0.02	4.7
06350+0816	HDS899	2012.197	1	0.392	0.024	50.9	2.1					
06352+3348	COU1545	2011.184	1	0.744	0.030	74.0	0.5					
06358+3621	COU1875	2011.184	1	1.332	0.015	150.9	0.3					
06363+1536	HEI119	2012.199	1	1.094	0.009	149.6*	1.5					
06366+7756	HDS905	2012.202	1	0.455	0.014	316.0*	0.9					
06375+2435	HDS910	2011.184	1	0.486	0.007	61.9	0.7					
06380+1442	HEI220	2012.199	1	0.856	0.008	139.8*	0.7					
06380+1442	HDS916	2012.202	1	—	—	—	—		NR			
06385+1020	HEI702	2012.199	1	0.822	0.008	42.2*	0.6					
06389+3515	COU1550	2012.142	2	1.340	0.015	213.3*	0.7					
06389+3515	COU1550	2011.184	1	1.314	0.015	33.5	1.0					
06396+2816	STT152	2012.200	1	0.865	0.007	34.8*	0.3					
06404+2505	A1053	2011.135	1	1.024	0.018	155.2	1.3					
06406+2314	COU86	2011.184	1	1.133	0.012	36.5	0.3					
06410+2045	COU582	2011.184	1	1.088	0.007	151.9	0.9					
06418+3041	A218	2011.135	1	0.160	0.040	39.0	8.0			Msn2017a	-0.08	0.9
06418+3041	A218	2011.135	1	0.232	0.018	30.9	4.3			Msn2017a	-0.01	-7.2
06422+7429	HDS929	2012.202	1	0.176	0.040	194.4*	8.0					
06425+7035	MLR405	2012.202	1	0.371	0.007	256.4*	0.6					
06439+1533	HEI120	2012.200	1	1.007	0.007	259.0*	1.3					
06439+1533	HEI120	2011.143	1	1.009	0.022	78.1	1.3					
06442+0612	A2729	2011.143	1	0.410	0.015	139.1	4.4					
06442+0612	A2729	2012.000	1	0.630	0.008	139.3	2.9					
06452+0941	A2827	2012.142	2	0.739	0.015	176.9*	0.8					
06452+2913	COU1240	2012.142	2	0.490	0.015	86.7	0.3					
06455+2922	A122	2011.135	1	0.441	0.008	26.7	0.3			Sca2020d	-0.01	-0.8
06455+2922	A122	2011.135	1	0.441	0.009	29.3	1.5			Sca2020d	-0.01	1.8

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
06456+5420	A1735	2012.202	1	0.322	0.007	240.4*	0.4					
06463+1812	HO238	2011.135	1	0.368	0.007	170.5	2.0					
06467+1755	COU916	2011.135	1	1.646	0.014	68.3	0.4					
06470+7347	MLR475	2012.202	1	0.459	0.007	2.3*	1.2					
06470+7347	A2828	2012.142	2	—	—	—	—		NR			
06477+2338	COU87	2012.142	2	0.391	0.018	96.6	2.8					
06477+2338	A1955	2012.142	2	—	—	—	—		NR			
06487+0737	A2731AB	2011.143	1	1.304	0.019	65.8	0.5			Izm2019	-0.02	0.4
06489+0707	A2732	2011.143	1	0.305	0.007	122.7	1.3					
06494+6425	MLR566	2012.202	1	0.227	0.007	246.2*	1.6					
06539+6945	MLR406	2012.202	1	0.921	0.007	118.2*	0.3					
06552+2721	COU946	2011.184	1	0.924	0.025	77.2	1.4					
06555+3010	STF981	2011.184	1	1.071	0.008	123.6	0.7			Kiy2017	0.01	0.9
06560+6514	MLR132	2012.202	1	1.208	0.007	222.8*	0.3					
06575+0253	A2681	2011.143	1	0.448	0.008	318.3	2.4			USN2007b	0.04	3.2
06575+0253	MLR133Aa,Ab	2012.202	1	—	—	—	—		NR			
06592+1843	BU899	2012.197	1	0.742	0.007	263.2*	0.3					
06594+1308	HEI336	2012.197	1	1.342	0.007	341.4*	0.3					
07002+0900	A2838	2012.156	2	2.015	0.015	11.8*	0.3					
07008+2716	BU1022	2012.197	1	0.355	0.007	216.0*	1.3					
07012+1146	STT163AB	2011.143	1	0.233	0.069	112.4	4.0			Zul1996b	0.01	-0.2
07012+1146	STT163AB	2011.143	1	0.200	0.016	115.1	2.8			Zul1996b	-0.02	2.5
07012+1146	TDS4390	2012.156	2	—	—	—	—		NR			
07015+1009	HEI717	2011.184	1	1.052	0.012	168.0	0.4					
07017+1220	HEI470	2012.156	2	0.472	0.015	99.6*	1.7					
07052+7039	HDS987	2012.202	1	0.723	0.007	194.1*	0.4					
07054+2444	A1065	2012.197	1	0.183	0.040	142.6*	8.0					
07066+3132	COU1106	2011.135	1	1.556	0.010	75.3	0.5					
07066+3132	COU1106	2011.184	1	1.468	0.181	72.8	3.4					
07078+1130	A2843	2012.197	1	0.812	0.007	99.1*	0.7					
07082+6339	HDS990	2012.202	1	0.184	0.040	8.8	8.0					
07082+6339	HDS990	2012.202	1	—	—	—	—		NR			
07085+1040	A2844	2011.184	1	0.318	0.016	43.4	3.7					
07089+1412	HEI126	2011.184	1	1.292	0.012	177.0	0.8					
07104+0618	A2846	2012.142	1	0.399	0.007	49.9	0.9					
07104+0618	A2846	2012.197	1	—	—	—	—		NR			
07134+1610	HDS1003	2011.135	1	2.152	0.034	7.2	0.9					
07138+2830	STT520	2012.197	1	0.568	0.007	29.6*	0.3			PkO2018b	-0.04	1.6
07141+0220	HEI724	2011.143	1	0.645	0.041	60.5	2.0					
07150+3731	COU1882	2012.142	1	0.903	0.007	61.4*	0.3					
07154+1414	TDS4633	2012.156	2	3.879	0.021	70.9	0.4					
07162+5618	MLR567	2012.202	1	0.187	0.040	20.8	8.0					
07164+1227	A2853	2012.197	1	0.483	0.007	132.3*	0.4					
07166+0920	A2854	2012.197	1	0.201	0.012	7.8	0.8					
07171+0447	TDS4674	2012.156	2	0.889	0.022	181.8*	0.9					
07173+3744	COU1883	2012.142	1	0.685	0.010	242.6*	0.6					
07175+1324	A2856	2012.156	2	0.567	0.015	132.8*	1.6					
07175+1324	A2856	2012.197	1	0.497	0.007	128.1	0.5					
07182+2157	COU276	2011.135	1	1.052	0.034	49.7	1.5					
07190+3804	COU2069	2012.142	1	0.350	0.007	106.5*	0.5					
07192+5908	HDS1018	2012.202	1	0.131	0.040	62.0	8.0					
07214+0908	A2940	2012.156	2	1.232	0.094	181.2*	0.9					
07219+0838	HEI726	2012.156	2	0.967	0.055	168.8*	1.5					
07229+7407	MLR477	2012.202	1	0.235	0.010	102.2*	0.9					

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07237+0953	HEI727	2012.156	2	1.075	0.019	72.5*	0.9					
07238+1831	WS14	2011.184	1	0.607	0.007	142.6	1.6					
07239+2212	COU277	2012.142	1	0.952	0.007	247.5*	0.3					
07239+3125	COU1243	2012.142	1	1.574	0.008	210.5*	0.3					
07244+3041	COU1244	2011.184	1	1.052	0.044	93.9	1.4					
07261+0747	A2944	2012.142	1	0.235	0.007	217.2*	0.6					
07267+7144	MLR408	2012.202	1	1.529	0.008	260.3*	0.3					
07268+3221	COU1413	2012.142	1	0.404	0.007	130.6*	1.0					
07270+7901	MLR495	2012.202	1	0.940	0.007	347.5*	0.3					
07292+1253	A2868	2012.156	2	0.654	0.015	197.2*	0.3					
07304+1352	STF1102AB	2011.219	2	7.693	0.038	45.8	0.3					
07305+0743	A2869	2012.238	1	0.173	0.007	119.1	2.1			Msn2011c	-0.03	-2.1
07308+3033	COU1246	2011.219	2	1.715	0.032	7.4	1.1					
07318+3151	COU1414	2011.219	2	1.978	0.022	8.0	0.9					
07320+7520	A1069	2012.235	1	0.737	0.007	350.2*	0.3					
07320+7520	TDS4903	2012.156	2	—	—	—	—			NR		
07322+1405	HU1244	2011.135	1	0.323	0.038	275.4	2.3			Hrt2012a	-0.02	2.7
07326+2405	COU89	2011.219	2	1.818	0.018	74.9	1.6					
07336+1550	MCA32	2012.238	1	0.147	0.040	111.7	8.0			Zir2008	-0.05	4.3
07336+1550	TDS4944	2012.156	2	—	—	—	—			NR		
07344+3307	BU579AB	2011.228	1	0.861	0.017	35.1	1.1					
07346+1156	A2873	2011.228	1	1.719	0.011	113.8	0.3					
07354+1950	COU475	2011.135	1	1.052	0.026	19.6	2.0					
07358+3549	COU1887	2011.228	1	1.903	0.018	173.4	0.3					
07370+2025	COU381	2011.184	1	0.381	0.007	121.4	0.5					
07378+1522	HEI50	2011.178	1	0.786	0.010	172.3	0.7					
07378+1522	HEI50	2012.156	2	0.756	0.031	168.9*	1.4					
07379+7745	MLR478AB	2012.235	1	1.914	0.010	32.2*	0.3					
07383+5205	MLR671	2012.202	1	0.138	0.040	25.1	8.0					
07387+1302	A2875CD	2011.178	1	0.875	0.007	115.5	0.7					
07387+1302	A2875CD	2011.230	1	0.902	0.028	114.7	0.9					
07387+1302	SHB1	2012.241	1	—	—	—	—			NR		
07397+0117	A2532	2012.238	1	0.542	0.007	278.5*	1.0					
07398+0516	BRD2AB	2011.230	1	0.874	0.008	7.8	1.1					
07414+8240	HU839	2012.235	1	0.215	0.007	118.7	1.3					
07417+0942	STF1130	2011.184	1	0.473	0.012	50.7	2.4			Msn1999a	0.02	-0.8
07417+1803	A2876	2011.135	1	0.438	0.026	51.4	0.9					
07417+3726	STT177	2011.228	1	0.549	0.010	149.2	1.1			Sca2018e	0.01	0.5
07418+6734	HDS1087Aa,Ab	2012.202	1	0.356	0.007	346.6*	0.9					
07420+1145	A2877	2011.178	1	0.684	0.035	59.5	1.9					
07420+1145	A2877	2011.178	1	0.669	0.027	61.2	1.1					
07421+0217	HEI733	2011.230	1	0.811	0.015	93.0	0.7					
07421+0217	HEI733	2011.230	1	0.821	0.014	93.7	0.5					
07423+0319	HEI734	2012.238	1	1.291	0.007	143.0	0.3					
07425+1315	HU1245	2011.230	1	1.731	0.010	82.5	0.3					
07429+6517	HU843	2012.202	1	0.249	0.014	61.9*	2.4					
07449+6112	MLR43	2012.202	1	0.204	0.007	233.2*	3.2					
07449+6112	MLR43	2012.235	1	0.172	0.040	52.1	8.0					
07452+7548	STF1107	2012.230	1	1.214	0.007	215.1*	0.3					
07453+2802	BU580CD	2011.228	1	1.337	0.049	131.8	2.9					
07454+0251	A2878	2011.230	1	1.227	0.026	114.1	0.3					
07461+2107	HO247	2012.244	1	0.482	0.011	257.4*	0.5			USN1999b	-0.03	0.4

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07466+0151	A2879	2011.230	1	1.265	0.007	151.5	0.3	3.43				
07466+0151	A2879	2011.230	1	1.220	0.014	155.3	2.3					
07476+2528	HO36	2012.246	1	0.607	0.007	125.9*	0.9					
07480+6018	HU1247	2012.202	1	0.168	0.040	44.9	8.0			Sod1999	-0.01	-3.5 ^Q
07480+6018	HU1247	2012.202	1	0.167	0.040	45.1	8.0			Sod1999	-0.01	-3.3 ^Q
07484+5310	A1330	2012.230	1	0.512	0.007	117.2*	0.7					
07486+2308	WRH15	2011.135	1	0.173	0.044	22.8	8.0			USN2002	-0.09	-8.4
07486+2308	WRH15	2012.238	1	0.234	0.007	30.5*	2.3			USN2002	-0.03	0.1
07486+2308	BU1062AB,C	2012.238	1	4.337	0.025	33.4	0.3					
07505+1205	HEI342	2011.219	2	0.921	0.018	144.4	2.7					
07506+0650	A2743	2012.156	2	0.595	0.015	204.1*	1.3					
07513+3849	STF1145	2011.219	2	1.349	0.015	41.5	1.2					
07519+1820	COU43	2012.156	2	1.097	0.208	144.1*	6.1					
07519+2215	COU927	2012.142	1	0.942	0.011	209.7*	0.3					
07527+6247	MLR135	2012.202	1	0.534	0.007	281.2*	0.3					
07532+0811	A2952	2012.142	1	0.342	0.007	63.1*	0.8					
07536+1531	HEI54	2011.184	1	0.494	0.009	120.0	2.4					
07545+6008	HDS1123	2012.230	1	0.755	0.007	175.0*	0.6					
07550+1023	A2953	2011.230	1	1.911	0.021	161.6	0.3					
07550+1023	A2953	2012.156	2	2.062	0.015	162.6*	0.3					
07550+1023	A2953	2012.241	1	1.901	0.010	162.0*	0.3					
07555+2422	A2537	2012.241	1	0.182	0.040	33.0	8.0			Zir2012b	-0.03	-5.0
07556+5831	A1072	2012.230	1	0.159	0.040	13.9	8.0					
07558+2420	A2538	2012.241	1	0.721	0.007	307.3*	0.3					
07560+2342	COU929	2012.238	1	0.226	0.015	21.3*	1.4			Hrt2009	-0.03	-2.5
07560+2342	COU929	2012.142	1	0.215	0.011	22.8*	2.2	0.30		Hrt2009	-0.04	-0.8
07560+2742	HDS1129	2011.184	1	0.325	0.022	43.1	2.8					
07560+2742	HDS1129	2011.184	1	0.375	0.021	48.0	1.0					
07563+1052	A2882	2012.142	1	2.029	0.010	214.7*	0.3					
07563+5345	HDS1130	2012.235	1	0.198	0.040	242.3*	8.0					
07564+0335	HEI736	2011.230	1	0.840	0.009	74.9	1.1	0.59				
07564+0335	HEI736	2011.230	1	0.854	0.007	77.0	1.0					
07566+1954	COU930	2012.156	1	0.492	0.038	148.2*	1.4					
07566+6634	HU846	2012.235	1	0.419	0.007	214.8*	1.5					
07567+0721	HDS1132	2012.238	1	0.927	0.007	264.1*	0.5					
07571+2058	HO250	2012.246	1	0.776	0.007	146.7*	0.3					
07571+2058	HO250	2011.178	1	0.819	0.032	147.7	0.4					
07583+1321	HEI136	2011.178	1	1.310	0.007	84.9	0.3					
07583+2009	HU847	2011.228	1	0.544	0.021	29.1	1.0					
07590+3528	COU1741	2011.219	2	1.008	0.027	96.3	0.7					
07593+3817	COU2076	2011.228	1	0.500	0.007	96.9	0.7					
07594+1021	HEI737	2011.228	1	1.353	0.007	103.7	0.3					
07594+1021	HEI737	2011.228	1	1.356	0.007	103.4	1.6					
07594+1021	OSO20	2012.241	1	—	—	—	—			NR		
08015+1402	HEI138	2011.184	1	0.745	0.021	74.5	1.1					
08015+1402	HEI138	2011.178	1	0.748	0.023	75.0	0.9					
08021+5437	STF1165AB	2012.235	1	0.225	0.012	318.2*	1.6					
08025+6305	HDS1142	2012.230	1	0.188	0.040	17.6	8.0					
08026+2706	COU1113	2012.142	1	0.878	0.007	293.4*	0.3					
08030+1843	COU477	2011.184	1	0.858	0.007	140.6	0.8					
08031+6138	HDS1146	2012.235	1	0.696	0.021	96.6	0.3					
08033+2153	COU163	2011.184	1	0.542	0.012	47.1	0.4					
08034+2151	COU164	2011.184	1	0.165	0.040	41.1	8.0					
08041+3302	STT187	2012.238	1	0.386	0.007	340.7	0.6			Msn1999a	-0.03	1.7

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08044+1217	BU581AB	2012.238	1	0.355	0.007	185.5*	0.4			Hrt2000b	0.00	2.1
08044+1217	BU581AB,C	2012.238	1	5.184	0.026	41.4	0.3					
08044+3538	COU1889	2011.219	2	0.902	0.021	28.8	3.7					
08050+5825	A1073	2012.230	1	0.337	0.007	135.9*	0.7			Msn2017a	-0.02	0.2
08057+1516	HEI56	2012.244	1	1.529	0.008	241.3*	0.3					
08062+3213	COU1555	2011.219	1	0.181	0.040	84.3	8.0					
08062+3213	HDS1153	2012.230	1	—	—	—	—		NR			
08070+0853	A2957	2012.244	1	0.573	0.007	64.2*	0.6					
08070+3538	COU1890	2011.219	1	0.880	0.007	12.0	0.6					
08071+5407	A1333	2012.235	1	0.441	0.010	24.9*	0.3					
08073+1213	HEI473	2012.156	2	1.528	0.029	162.9*	8.3					
08073+1213	HEI473	2012.156	2	1.941	0.026	211.6*	8.3					
08076+3432	COU1556	2012.142	1	0.908	0.007	327.0*	0.5					
08081+5627	HDS1154Aa,Ab	2012.235	1	0.107	0.040	118.0	8.0					
08081+5627	HDS1154Aa,Ab	2012.235	1	0.175	0.040	116.6	8.0					
08095+5339	MLR698	2012.230	1	0.955	0.007	32.5*	0.3					
08108+3443	HDS1164	2011.228	1	0.364	0.014	19.8	2.6					
08108+3443	HDS1164	2012.244	1	0.303	0.009	197.9*	0.6					
08113+7422	A1074	2012.235	1	0.937	0.007	33.3*	0.3					
08115+2209	COU278	2011.230	1	1.836	0.024	135.3	0.8	1.51				
08115+2209	COU278	2011.230	1	1.813	0.009	135.9	1.1					
08122+1739	STF1196AB	2011.178	1	1.091	0.012	34.9	0.3			Izm2019	0.02	0.5
08126+2849	COU1114	2012.244	1	0.101	0.040	15.8	8.0					
08130+1547	A2544	2011.228	1	1.327	0.007	129.0	0.3					
08136+1023	BU204	2012.244	1	0.749	0.007	288.8*	0.8					
08142+1741	BU1243AB	2011.228	1	1.688	0.010	149.8	0.3					
08152+1550	HEI140	2011.228	1	0.354	0.007	2.2	0.4					
08155+0738	A2958	2011.184	1	0.125	0.040	181.9	8.0					
08155+0738	A2958	2011.184	1	0.410	0.018	113.8	1.6					
08155+2124	COU279	2012.238	1	0.188	0.040	115.4	8.0					
08160+1842	HO524AB	2012.142	2	4.416	0.022	341.9	0.3					
08160+1842	HO524AB	2012.244	1	4.383	0.022	342.0*	0.3					
08160+1842	JCT3	2012.142	1	—	—	—	—		NR			
08160+1842	JCT3	2012.244	1	—	—	—	—		NR			
08160+1842	HO524AB	2012.142	1	4.379	0.022	341.9*	0.3					
08161+7648	MLR496	2012.230	1	0.252	0.007	142.0*	1.7					
08164+3326	COU1557	2011.184	1	0.391	0.007	87.0	1.1					
08164+3326	COU1557	2011.178	1	0.378	0.007	87.2	1.5					
08170+7158	MLR497	2012.230	1	0.805	0.007	301.6*	0.3					
08176+1050	A2959	2011.230	1	0.802	0.009	87.4	0.6					
08176+1050	A2959	2011.230	1	0.777	0.018	85.0	0.7	1.38				
08190+7624	MLR498	2012.230	1	0.773	0.007	131.3*	0.4					
08191+1810	COU952	2011.184	1	0.141	0.040	38.4	8.0					
08191+1810	COU952	2012.142	1	0.114	0.040	27.7	8.0					
08193+4052	A2362	2011.252	1	0.590	0.007	171.5*	0.6					
08198+0357	FIN346	2011.230	1	0.288	0.024	48.7	4.4	0.16				
08198+0357	FIN346	2011.230	1	0.156	0.040	58.6	8.0					
08199+2155	COU280	2012.244	1	1.587	0.010	155.4*	0.3					
08201+7153	MLR499	2012.230	1	0.118	0.040	8.0	8.0					
08201+7153	MLR499	2012.235	1	—	—	—	—		NR			
08204+0540	A2891	2011.230	1	1.052	0.085	40.7	6.7	0.13				
08204+0540	A2891	2011.230	1	1.118	0.027	40.7	0.6					
08209+1149	HEI475	2011.228	1	1.181	0.038	69.5	0.8					
08215+6947	MLR411	2012.235	1	0.837	0.007	229.2*	0.7					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(O-C)$ (")	$\Delta\theta(O-C)$ (°)
08220+5314	MLR699	2012.235	1	0.345	0.007	32.5*	0.4					
08221+1551	HEI142	2011.178	1	0.662	0.015	24.8	0.9					
08231+2001	HO525AB	2011.228	1	0.443	0.016	347.8	2.8			FMR2013e	0.03	2.2
08244+6453	HU853	2012.230	1	0.390	0.007	168.8*	0.3					
08247+4200	HDS1197	2011.258	1	0.296	0.025	83.0*	2.3					
08251+1210	HEI477	2011.179	1	1.013	0.015	39.2	0.5					
08254+7450	MLR479	2012.230	1	0.604	0.007	304.5*	0.8					
08254+7607	MLR547	2012.230	1	1.332	0.007	227.8*	0.3					
08262+3528	COU1891	2011.179	1	0.843	0.031	160.1	1.2					
08264+1749	COU953	2011.184	1	0.863	0.007	33.1	1.5					
08267+8136	HDS1202	2012.235	1	0.632	0.010	145.4	0.6					
08268+1610	HEI143	2012.156	2	2.624	0.022	306.1*	0.5					
08269+3212	HU714Ba,Bb	2012.252	1	0.758	0.007	312.9*	0.3			Msn2017c	0.00	0.9
08269+3212	HU714Ba,Bb	2011.179	1	0.759	0.015	132.0	2.0			Msn2017c	-0.00	1.6
08273+3802	HDS1205	2011.219	1	0.741	0.011	87.1	2.9					
08279+0313	HDS1206	2011.230	1	1.662	0.009	146.3	0.3					
08286+3502	WOR19	2012.246	1	0.506	0.007	199.1*	0.3			FMR2012j	-0.01	-1.7
08286+5439	MLR672	2012.235	1	0.125	0.040	106.7	8.0					
08292+3852	COU2081	2011.252	1	1.926	0.027	29.4*	0.7					
08292+3852	COU2081	2011.252	1	1.961	0.010	28.7	0.4					
08297+7017	MLR413	2012.235	1	1.160	0.008	199.9*	0.3					
08303+4022	COU2497	2011.258	1	0.548	0.015	77.7	0.7					
08304+7134	MLR414	2012.235	1	0.667	0.007	323.6*	0.3					
08304+7134	SKF207	2012.252	1	—	—	—	—		NR			
08313+1151	HDS1217	2012.244	1	0.144	0.040	284.9*	8.0					
08313+1151	HDS1217	2012.244	1	0.241	0.007	272.2*	1.6					
08330+0958	A2895AB	2011.230	1	0.835	0.007	54.9	1.1	0.04				
08330+0958	A2895AB	2011.230	1	0.841	0.007	55.6	0.4					
08334+1319	HEI346	2011.228	1	0.765	0.007	187.2	0.3					
08334+1319	HEI346	2012.156	2	0.754	0.024	185.7*	1.6					
08334+1319	HDS1228	2012.230	1	—	—	—	—		NR			
08351+4349	COU2615	2011.252	1	0.151	0.040	125.2	8.0					
08351+4349	BOV29	2012.244	2	—	—	—	—		NR			
08360+2050	BOV29	2012.241	1	0.295	0.014	118.5	1.1					
08364+2441	SKF690	2012.244	2	1.734	0.015	355.5	0.3	2.12				
08364+2441	SKF690	2012.244	2	1.805	0.019	356.6*	2.2					
08364+2441	SKF690	2012.244	2	1.703	0.015	355.3	0.3	2.45				
08364+2441	BOV31	2012.241	1	—	—	—	—		NR			
08364+2441	BOV32	2012.244	2	—	—	—	—		NR			
08364+2441	BOV33	2012.241	1	—	—	—	—		NR			
08382+1158	HU858	2011.230	1	0.722	0.010	152.4	0.3	0.81				
08382+1158	HU858	2011.230	1	0.759	0.013	152.9	1.0					
08384+1256	HDS1243	2011.179	1	0.443	0.013	21.7	2.1					
08384+1256	BOV36	2012.241	1	—	—	—	—		NR			
08395+7314	A1079	2012.230	1	0.485	0.010	183.3*	0.3					
08396+1926	BOV39	2012.244	2	0.928	0.025	140.4	1.1					
08396+1926	BOV39	2012.241	1	—	—	—	—		NR			
08401+5629	MLR673	2012.235	1	0.574	0.007	282.8*	0.3					
08402+4105	A2128	2011.258	1	1.706	0.009	113.0*	0.3					
08403+1947	BOV40	2012.246	1	—	—	—	—		NR			
08403+1947	BOV41	2012.238	1	0.235	0.007	247.1*	1.3					
08403+4617	A1748	2011.252	1	0.762	0.011	143.4	1.2					
08403+4617	A1748	2011.252	1	0.781	0.013	144.3	0.3					
08403+4617	A1748	2011.252	1	0.762	0.007	144.3	0.3					

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08403+4617	BOV42	2012.241	1	—	—	—	—			NR		
08403+4617	BOV43	2012.241	1	—	—	—	—			NR		
08403+4617	BOV43	2012.241	1	—	—	—	—			NR		
08403+4617	BOV46	2012.246	2	—	—	—	—			NR		
08407+3449	HDS1249	2011.228	1	1.015	0.010	65.5	0.3					
08407+3449	HDS1249	2011.219	1	1.021	0.013	63.3	1.3					
08409+4226	HDS1251	2011.252	1	0.733	0.009	37.1*	0.8					
08411+1904	BOV48	2012.241	1	0.360	0.007	120.0	0.3					
08411+1904	BOV48	2012.241	1	0.383	0.007	117.8	0.3	0.65				
08411+4352	A1749	2012.246	1	0.587	0.009	107.8*	1.2					
08413+2029	BU585	2011.266	1	0.285	0.010	75.5*	1.3					
08415+1852	BOV49	2012.241	1	1.850	0.009	230.5	0.3	4.46				
08417+4617	COU2616	2011.263	1	0.737	0.015	141.3	1.5					
08425+2342	TDS6051	2011.266	1	1.578	0.008	333.8*	0.3					
08425+3656	COU2082	2011.219	1	0.492	0.015	26.2	1.0					
08427+2603	HO354	2011.266	1	0.944	0.007	186.8*	0.3					
08427+2603	BOV51	2012.252	1	—	—	—	—			NR		
08432+3849	BU209	2011.263	1	1.271	0.007	8.6*	0.3					
08435+3341	POP97	2011.228	1	0.959	0.018	96.4	0.5					
08439+4403	A1752	2011.263	1	0.330	0.013	72.2*	0.6					
08441+1357	HEI145BC	2012.246	1	0.900	0.051	165.4*	0.4					
08444+1555	A2472	2011.266	1	0.796	0.007	81.2	0.3					
08445+4057	HDS1257	2011.252	1	0.210	0.016	212.5*	7.1					
08452+1941	BOV54	2012.238	1	0.428	0.007	232.8*	0.6					
08454+7039	HDS1263	2012.203	1	0.296	0.082	155.8	9.8					
08456+2916	COU1250	2011.179	1	1.055	0.015	3.8	0.8					
08456+8442	A1078	2012.235	1	0.497	0.007	142.7*	0.3			Lin2010c	-0.09	-11.8
08462+1811	HDS1268	2011.219	1	0.375	0.061	6.9	2.9					
08462+1811	HDS1268	2011.228	1	0.312	0.018	9.7	2.2					
08468+0625	SP1AB	2012.238	1	0.244	0.009	172.8*	0.6			Sod1999	-0.03	-1.0
08468+0625	SP1AB,C	2012.238	1	2.722	0.014	124.0	0.3					
08472+1110	STF1276	2011.263	1	1.249	0.007	88.5*	0.3					
08488+5406	MLR674	2012.203	1	0.275	0.007	127.0*	0.4					
08491+2357	COU1118	2011.179	1	2.100	0.010	130.4	0.3					
08491+2357	COU1118	2011.179	1	2.097	0.015	129.8	0.5					
08495+0852	BU1068	2011.266	1	0.325	0.010	324.7*	0.5			Hrt2010a	-0.04	2.8
08502+0647	HEI744	2011.266	1	0.336	0.075	174.4	1.0					
08502+0647	HDS1280	2012.235	1	—	—	—	—			NR		
08507+1800	A2473	2011.179	1	0.215	0.014	84.1	1.3			Doc2016d	-0.03	-0.9
08510+3124	HO40	2011.220	1	0.885	0.063	96.1	1.5					
08526+4212	COU2618	2012.246	1	0.347	0.010	163.5*	0.8					
08526+4212	COU2618	2011.252	1	0.379	0.007	338.1*	1.5					
08527+4437	COU2617	2012.252	1	0.762	0.007	226.9*	0.3					
08531+5457	A1584	2012.235	1	0.675	0.007	87.3*	0.3			Msn2014a	0.01	-0.9
08536+1210	HEI480	2011.272	1	1.555	0.008	90.1*	0.5					
08536+1210	HEI480	2011.272	1	1.570	0.008	93.6*	0.3					
08536+1210	HEI480	2012.238	1	1.535	0.008	272.8*	0.3					
08536+1210	COU773	2011.179	1	—	—	—	—			NR		
08542+1935	HDS1286	2011.228	1	0.871	0.016	171.8	2.9					
08542+3035	STF1291	2011.263	1	1.513	0.008	310.5*	0.3			Izm2019	-0.01	0.1
08544+3647	ES2105	2011.263	1	1.784	0.009	112.7*	0.3					
08544+3647	MLR140	2012.203	1	—	—	—	—			NR		
08547+4919	HDS1287	2011.252	1	1.694	0.017	202.3*	0.5					
08547+4919	HDS1287	2011.252	1	1.703	0.013	22.6	0.3					

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08547+4919	HDS1287	2011.252	1	1.683	0.008	201.5*	0.3					
08548+1446	HDS1288	2011.228	1	0.275	0.052	54.8	3.6					
08561+4341	STF3120	2011.258	1	1.365	0.007	181.6*	0.3					
08563+4745	HDS1292	2011.252	1	0.169	0.040	140.1	13.2					
08567+0130	GII39AC	2011.269	1	1.806	0.012	54.9	0.3		ND			
08568+4228	A2133	2011.263	1	1.331	0.007	179.7*	0.3					
08579+6419	HDS1298	2012.203	1	0.134	0.040	169.3	8.0					
08580+3014	HO252	2011.179	1	0.112	0.040	37.5	8.0					
08580+3726	HU860	2011.258	1	0.852	0.013	6.3	0.6					
08581+2634	A1973	2012.246	1	1.167	0.007	102.2*	0.3					
08585+3548	COU1897	2011.252	1	0.182	0.040	268.8	8.0			Doc2013b	0.09	-7.4
08585+3707	COU2083	2012.246	1	0.776	0.007	306.1*	0.6					
08588+1414	HU861	2011.179	1	0.170	0.040	24.6	8.0					
08588+8117	HDS1300	2012.235	1	0.156	0.040	16.4	8.0					
08589+4607	COU2685	2011.252	1	1.160	0.018	200.7*	1.0					
08593+3457	STF1296	2011.263	1	1.768	0.009	75.2*	0.4					
09002+1351	HU862	2011.135	1	0.529	0.024	53.6	3.2					
09007+3208	COU1253	2011.179	1	0.754	0.024	8.3	0.9					
09017+3943	HDS1311	2011.252	1	0.533	0.014	39.8*	1.0					
09018+0321	HEI746	2011.266	1	0.321	0.014	260.8*	4.4					
09027+0252	HEI747	2011.266	1	0.875	0.025	121.6	1.3					
09027+0252	HEI747	2011.266	1	0.895	0.010	303.3*	0.8					
09037+4531	COU2686	2011.263	1	0.439	0.007	98.9*	0.6					
09042+0547	A2971	2011.266	1	0.294	0.007	158.8	0.5					
09042+0547	COU2498	2011.258	1	—	—	—	—		NR			
09044+1451	HEI57	2011.272	1	1.776	0.009	131.7	0.3					
09044+7024	MLR415	2012.230	1	1.221	0.008	127.8*	0.3					
09048+6455	MLR322	2012.203	1	1.132	0.007	157.1*	0.3					
09050+6216	MLR141	2012.203	1	0.745	0.007	284.8*	0.4					
09050+7702	HDS1317	2012.203	1	1.027	0.007	273.5*	0.3					
09058+3607	HU865	2011.228	1	0.459	0.015	170.6	1.3					
09058+6807	MLR700	2012.203	1	0.176	0.040	194.3*	8.0					
09062+3314	GII37Ba,Bb	2011.179	1	0.340	0.007	88.6	0.3	0.06	ND			
09062+3314	GII37Ba,Bb	2011.179	1	0.342	0.007	88.7	0.3	0.06	ND			
09062+3314	GII37Ba,Bb	2011.184	1	0.338	0.007	89.6	0.3	0.10	ND			
09062+3314	GII37Ba,Bb	2011.184	1	0.331	0.007	90.1	0.3	0.10	ND			
09062+3314	GII37Ba,Bb	2012.252	1	0.323	0.007	94.4*	0.3	0.03	ND			
09062+3314	COU1560AB	2011.179	1	1.393	0.010	114.3	0.5					
09062+3314	COU1560AB	2011.179	1	1.384	0.007	114.3	0.8					
09062+3314	COU1560AB	2011.184	1	1.378	0.007	115.7	0.3					
09064+6302	HU123	2012.230	1	0.761	0.009	233.2*	0.3					
09064+6302	COU2687	2011.258	2	—	—	—	—		NR			
09073+2211	COU165	2011.135	1	1.565	0.015	172.4	0.4					
09083+4211	A1976	2011.263	1	0.378	0.007	259.5*	0.8					
09088+4416	COU2619	2011.253	1	1.154	0.010	240.3*	0.3					
09094+2203	WRH16AC	2011.135	1	2.167	0.013	8.2	0.4					ND
09094+2203	WRH16AB	2012.238	1	—	—	—	—		NR			

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09095+3250	COU1561	2012.244	1	0.742	0.007	212.0*	0.6					
09095+3250	COU1561	2011.179	1	0.753	0.015	31.3	1.3					
09100+4034	COU2499	2012.252	1	0.612	0.007	218.3*	1.1					
09123+1500	FIN347Aa,Ab	2011.135	1	0.118	0.040	141.8	8.0			Msn2018b	-0.04	0.6
09124+2653	A1977	2011.228	1	0.272	0.007	147.5	3.6					
09126+0915	HEI483	2011.266	1	0.888	0.007	226.8*	0.3					
09128+6943	MLR416	2012.203	1	0.499	0.007	68.9*	0.5					
09129+1040	A2974	2011.230	1	1.785	0.009	59.9	0.3					
09134+3131	COU1562	2012.252	1	2.029	0.013	293.4*	0.3					
09138+4443	HDS1335	2011.263	1	0.249	0.014	89.8	2.0					
09138+4443	HDS1335	2011.263	1	0.316	0.008	10.2	0.7					
09143+0438	HEI349	2011.266	1	1.598	0.008	51.3*	0.6					
09143+5911	MLR701	2012.203	1	1.435	0.007	21.9*	0.3					
09144+1118	HEI484	2011.266	1	0.201	0.013	176.5	1.9					
09146+8253	HU864	2012.230	1	0.717	0.007	32.2*	0.3					
09149+0427	HEI350	2011.230	1	0.722	0.017	44.1	0.3			Tok2016e	-0.03	-2.2
09153+0602	A2754	2011.176	1	1.142	0.009	168.8	1.0					
09154+2248	A2136	2011.179	1	1.863	0.010	113.4	0.3					
09159+2431	COU934Aa,Ab	2012.246	1	0.251	0.017	175.4	0.6					
09159+2431	A1980	2011.228	1	1.593	0.057	51.4	0.8					
09159+2431	A1980	2012.246	1	1.568	0.012	53.1	0.3					
09168+4040	COU19AB	2012.246	2	2.400	0.015	346.7	0.3	0.19				
09168+4040	COU19AB	2012.246	2	2.400	0.015	348.4*	0.4					
09168+4040	COU19BC	2012.246	2	7.908	0.040	38.6	0.3					
09172+4038	A1982	2012.246	1	0.231	0.011	336.7*	6.8					
09172+4038	A1982	2011.253	1	0.263	0.007	339.7*	2.0					
09175+7715	KUI39	2012.203	1	0.545	0.008	91.2*	0.5			Mnt1999a	0.09	8.7
09181+0245	A2556	2011.230	1	0.928	0.015	169.8	0.8	1.31				
09181+0245	A2556	2011.230	1	0.950	0.007	169.6	1.0					
09181+0245	A2556	2012.000	1	0.948	0.012	170.2	2.0					
09183+1847	COU384	2012.246	1	0.185	0.040	55.9*	8.0					
09185+1547	HEI150	2011.228	1	0.672	0.009	80.4	0.8					
09186+2944	A221Ba,Bb	2012.238	1	0.205	0.010	231.1*	4.4			Tok2019e	0.04	15.7
09188+4011	COU2384	2011.253	1	0.871	0.007	133.2*	0.6					
09190+1057	A2975	2011.176	1	1.352	0.015	3.7	0.9					
09190+1057	HDS1344	2012.203	1	—	—	—	—		NR			
09207+0810	A2976BC	2011.266	1	1.031	0.008	137.4*	0.4					
09215+1943	A127	2011.266	1	1.452	0.007	32.9*	0.3					
09218+8834	COU10	2012.230	1	1.752	0.009	77.3	0.3					
09219+3313	POP106	2011.258	2	1.523	0.041	66.6	0.3					
09222+3239	HDS1347	2011.228	1	1.197	0.016	16.8	0.7					
09226+0725	A2977	2011.176	1	1.635	0.029	87.0	0.3					
09227+7020	TDS529	2012.235	1	0.800	0.010	342.9*	0.3					
09233+0921	HEI487	2011.230	1	2.266	0.044	104.6	0.8	0.68				
09237+4441	A1759	2011.253	1	1.659	0.008	139.4	0.3					
09242+1219	HEI488	2011.266	1	1.339	0.007	183.9*	0.3					
09245+1808	A2477	2011.176	1	0.414	0.028	0.5	1.0			FMR2014a	-0.02	0.0
09247+2641	HDS1351	2011.179	1	0.220	0.028	15.2	0.9					
09249+5134	STT200	2011.258	2	1.153	0.015	157.3	0.6					
09251+2616	BU1070	2011.228	1	0.365	0.010	89.7	1.1					
09252+1449	HU869	2011.266	1	0.752	0.007	93.5	0.3					
09252+4606	HDS1353	2011.263	1	0.405	0.007	161.2*	0.4			Cve2016b	0.00	1.1
09260+1854	COU935	2011.135	1	0.872	0.021	60.4	2.3					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
09260+1854	COU935	2011.135	1	0.866	0.040	59.8	1.2					
09260+2839	A222	2012.246	1	0.391	0.007	10.9*	1.6			Hrt2014b	-0.00	2.4
09261+1258	HEI353	2011.135	1	0.614	0.021	141.7	1.3					
09261+5344	A1343	2012.235	1	0.262	0.008	55.9*	0.7					
09267+3855	COU1898	2011.220	1	1.650	0.015	164.2	0.8					
09268+0558	A2755	2011.231	1	2.094	0.014	122.1	0.3					
09276+0858	HEI489	2011.231	1	0.610	0.007	5.3	1.7					
09276+0858	HEI489	2011.231	1	0.593	0.040	3.6	1.6	0.37				
09277+4456	A1762	2011.253	1	0.791	0.013	107.2	0.6					
09277+4456	A1762	2011.258	2	0.778	0.021	105.9	0.6					
09277+4456	A1762	2011.263	1	0.807	0.007	106.3*	0.3					
09278+2250	A129	2011.179	1	1.571	0.022	4.0	1.1					
09279+3128	HO366AB	2012.252	1	0.224	0.040	212.9*	6.0			Zir2010	0.07	-49.0
09282+2811	COU1121	2011.179	1	0.950	0.007	35.2	0.6					
09282+2811	TDS6583	2011.263	1	—	—	—	—			NR		
09285+1212	HU871	2011.231	1	1.376	0.007	138.5	0.3					
09285+1212	HU871	2011.231	1	1.348	0.036	138.0	0.5	0.89				
09290+1917	COU936	2011.179	1	0.944	0.018	46.1	0.8					
09290+1917	TDS536	2011.258	2	—	—	—	—			NR		
09299+5808	MLR549	2012.203	1	0.207	0.007	138.0*	2.5					
09299+5808	MLR549	2012.203	1	2.647	0.013	178.7*	0.3					
09300+4216	A1985	2011.258	2	1.593	0.015	24.1*	0.7					
09305+2026	A130	2012.197	1	0.984	0.018	280.8*	1.1					
09307+4604	A1764	2011.253	1	0.142	0.040	105.7	8.0					
09307+6532	HDS1366	2012.235	1	0.166	0.040	76.7*	8.0					
09317+8512	A1081	2012.230	1	0.329	0.007	268.9*	1.7					
09321+2347	HDS1372	2011.220	1	0.579	0.027	50.0	1.8					
09321+2347	HDS1372	2011.220	1	0.579	0.023	48.7	0.7					
09321+2347	HDS1372	2011.228	1	0.577	0.008	50.8	0.6					
09326+3744	COU1899	2011.220	1	1.350	0.021	155.5	0.4					
09327+1549	HEI152	2011.179	1	0.728	0.034	170.4	1.0					
09327+1549	HEI152	2011.228	1	0.727	0.021	171.2	0.3					
09333+0910	A2756	2011.231	1	1.433	0.044	178.6	1.0	0.34				
09336+6216	HU228	2012.203	1	0.588	0.007	72.5*	0.3					
09338+3231	COU1415	2012.244	1	0.173	0.040	116.0	8.0					
09338+3634	HU1127	2011.220	1	0.380	0.020	31.3	1.4					
09338+7302	HDS1377	2012.235	1	0.156	0.040	181.8	8.0					
09344+4704	COU2500	2012.252	1	0.928	0.007	231.6*	0.3					
09346+4123	HDS1381	2011.253	1	1.034	0.007	146.7*	0.6					
09346+4818	HDS1380	2011.263	1	0.830	0.010	299.4*	0.5					
09347+1627	A2478AB	2011.266	1	1.165	0.007	40.2*	0.4					
09349+0515	A2757	2011.231	1	0.305	0.050	52.9	7.5	1.10		Lin2017b	-0.02	-5.8
09349+0515	A2757	2011.231	1	0.328	0.018	53.8	3.6			Lin2017b	0.01	-4.9
09349+2152	COU282	2011.266	1	1.151	0.007	120.8*	0.3					
09354+4719	COU2501	2011.258	2	1.802	0.015	216.7*	0.3					
09357+1836	COU385	2011.266	1	0.742	0.007	152.1*	0.3					
09357+5004	HU565	2011.258	2	1.960	0.015	4.2*	0.3					
09366+0503	A2758	2011.184	1	0.166	0.040	13.7	8.0					
09375+2838	HDS1385	2012.244	1	1.370	0.027	90.0*	0.6					
09376+1528	A2479	2012.197	1	0.311	0.007	247.2*	0.3			Hei1978a	0.04	2.9
09376+1528	A2479	2012.197	1	0.277	0.009	245.1*	0.5			Hei1978a	0.01	0.8
09378+4800	HDS1386	2011.253	1	0.793	0.007	357.2*	0.6					
09379+4554	A1765	2012.252	1	0.161	0.040	3.0	8.0			Doc2012a	0.03	-1.9

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
09379+7421	HDS1387	2012.203	1	0.165	0.040	169.3	8.0					
09380+7610	HDS1388	2012.230	1	0.629	0.007	131.7*	0.7					
09387+2132	HDS1389	2011.176	1	0.401	0.015	88.8	1.4					
09387+2132	HDS1389	2011.176	1	0.134	0.040	25.2	8.0					
09387+7516	MLR419	2012.203	1	0.387	0.007	334.7*	0.3					
09387+7516	TDS6715	2011.263	1	—	—	—	—		NR			
09390+3017	COU1254	2012.252	1	0.557	0.007	87.9*	0.3					
09391+1425	HDS1391	2011.176	1	0.858	0.011	136.8	0.9					
09411+1756	A2480	2011.184	1	1.163	0.007	157.1	1.7					
09413+0256	HEI752	2011.176	1	1.002	0.007	156.6	0.7					
09415+1753	A2481	2011.220	1	0.324	0.007	164.2	1.5					
09421+3416	COU1566	2012.244	1	0.459	0.007	70.4	0.3					
09421+3915	HU1252	2012.246	1	0.530	0.012	173.8*	1.1					
09422+1332	HDS1397	2011.228	1	0.487	0.009	89.0	0.7					
09423+5328	CHR29	2012.203	1	0.173	0.040	12.5	8.0					
09426+1958	COU283	2011.135	1	0.597	0.018	52.3	4.7					
09427+4826	HDS1399	2011.253	1	0.437	0.015	191.4*	1.2					
09427+4826	HDS1399	2011.253	1	0.444	0.041	198.0*	2.8					
09427+4826	HDS1399	2011.263	1	0.416	0.007	196.3*	0.5					
09427+6016	HU229	2012.230	1	0.977	0.007	181.5*	0.5					
09432+6709	MLR323	2012.203	1	0.367	0.007	24.3*	1.0					
09437+3229	COU1567	2012.244	1	0.959	0.007	260.3*	0.3					
09437+7202	MLR420	2012.203	1	0.173	0.040	116.8	8.0					
09444+4429	HDS1405	2011.263	1	1.211	0.018	82.2	0.5					
09450+5641	MLR675	2012.203	1	0.337	0.009	100.4*	0.3					
09452+4109	COU2085	2011.253	1	0.128	0.040	163.4	12.4					
09452+4109	SKF478AB	2012.246	1	1.844	0.009	135.6	0.3					
09452+4109	SKF478AB	2012.246	1	1.844	0.009	135.0	0.3					
09458+2500	COU776	2011.220	1	1.007	0.015	65.2	1.2	0.09				
09458+2500	COU776	2011.220	1	1.061	0.027	64.5	0.9					
09473+7908	HDS1415	2012.230	1	0.121	0.040	174.3	8.0					
09476+1419	MRL2	2011.184	1	0.442	0.029	101.9	2.4					
09477+1023	HEI490	2011.135	1	0.242	0.016	60.7	1.7					
09477+1023	COU284	2012.197	1	—	—	—	—		NR			
09478+1004	HO253	2011.266	1	1.248	0.007	298.6*	0.3					
09487+5217	MLR676	2012.203	1	0.263	0.007	207.9*	0.4					
09494+1832	HDS1419	2011.228	1	0.154	0.040	25.7	8.1					
09494+1832	TDS6832	2011.263	1	—	—	—	—		NR			
09498+5254	MLR677	2012.230	1	0.162	0.040	132.8	8.0					
09499+3036	COU1256	2011.220	1	1.179	0.034	148.5	1.1	0.08				
09499+3036	COU1256	2011.220	1	1.235	0.022	150.6	0.5					
09499+3036	COU1256	2011.228	1	1.211	0.023	150.6	1.3					
09500+1658	COU937	2011.135	1	1.489	0.015	116.9	0.7					
09506+3331	COU1568	2012.920	1	0.970	0.007	31.3*	0.3					
09512+3629	HO369	2012.246	1	0.311	0.007	105.2*	0.5			Alz2020c	-0.04	-0.2
09512+7654	MLR525	2012.230	1	1.736	0.009	13.1*	0.3					
09517+2617	COU1122	2011.266	1	0.964	0.007	267.4*	0.3					
09517+2617	TDS6864	2011.263	1	—	—	—	—		NR			
09521+2916	A344	2011.220	1	0.628	0.017	69.7	1.5					
09521+2916	A344	2011.220	1	0.633	0.017	68.7	1.3	1.05				
09522+0807	A2762	2011.135	1	0.480	0.021	76.2	2.4			Tok2019c	0.01	0.1
09523+4058	A2139	2011.258	2	1.963	0.015	292.8*	0.5					
09526+6143	HDS1426	2012.230	1	1.742	0.009	42.8*	0.3					
09530+2638	COU1123	2012.197	1	0.449	0.007	75.8*	0.4					

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09531+3920	A2140	2011.258	2	0.986	0.025	64.9*	2.1					
09531+3920	A2140	2011.263	1	0.952	0.007	65.6*	0.3					
09533+3017	COU1257	2011.179	1	0.339	0.008	154.7	0.9					
09533+3017	COU1257	2011.179	1	0.339	0.008	154.7	0.9					
09535+1657	CHR219	2011.176	1	0.181	0.040	78.1	8.0			Hrt2012a	-0.05	0.6
09535+1657	TDS6890	2011.263	1	—	—	—	—		NR			
09542+2612	COU1124	2012.197	1	0.563	0.007	294.5*	0.5					
09544+3041	COU1258	2012.246	1	0.192	0.040	227.9*	8.0			Hor2020	0.04	-1.2 ^Q
09548+6515	HDS1430	2012.230	1	0.346	0.007	191.8*	0.8					
09561+2433	TDS6906	2011.184	1	0.985	0.013	66.0	0.3					
09566+4359	POP151	2011.263	1	0.483	0.012	263.5*	0.5					
09569+1946	COU388	2011.266	2	1.669	0.015	241.3*	1.1					
09577+2540	COU938	2011.228	1	0.139	0.040	59.3	8.0					
09577+2540	COU2086	2012.246	1	—	—	—	—		NR			
09584+4045	HDS1437	2011.253	1	0.232	0.009	237.4*	1.3					
09584+4045	HDS1437	2011.253	1	0.208	0.018	237.0*	2.1					
09587+3853	COU2087	2011.176	1	0.243	0.008	133.5	2.6					
09587+3853	COU2087	2011.228	1	0.304	0.007	129.6	0.6					
09591+5316	A1346	2012.236	1	0.559	0.007	180.5*	0.6			Hrt2009	-0.00	0.2
09598+3128	HDS1442	2011.184	1	0.399	0.007	130.8	0.7					
09598+3306	HDS1441	2011.176	1	0.511	0.010	100.7	1.5					
09599+1610	A2482	2011.220	1	0.755	0.007	38.4	2.6	1.47				
09599+1610	A2482	2011.220	1	0.761	0.013	39.7	0.6					
10000+2433	CHR145	2011.184	1	0.196	0.040	185.3	8.0			Hrt2012a	-0.07	-1.5
10000+2433	CHR145	2011.179	1	0.237	0.024	185.8	1.2			Hrt2012a	-0.03	-1.0
10007+4904	HDS1445	2011.253	1	0.199	0.040	182.1	8.0					
10012+2502	SHN19	2012.241	1	0.348	0.013	274.8*	3.0					
	Bks2005	0.13	30.7									
10017+1725	RUC7	2012.197	1	—	—	—	—		NR			
10018+4328	POP115	2011.258	2	1.999	0.015	90.2*	0.3					
10020+5150	HDS1447	2011.263	1	0.313	0.018	21.6	0.9					
10021+4722	HDS1448	2011.264	1	0.449	0.032	35.5	0.8					
10021+4722	HDS1448	2011.264	1	0.283	0.013	32.5*	3.7					
10021+4722	MLR678	2012.203	1	—	—	—	—		NR			
10026+4622	STT210	2011.258	2	1.300	0.015	257.8*	0.3					
10028+4953	HDS1450	2011.258	2	0.838	0.019	98.4	0.8					
10040+2521	COU589	2012.200	1	0.414	0.007	67.7*	0.4					
10040+3239	HU631	2012.241	1	0.815	0.007	256.4*	0.3					
10056+3105	STF1406	2012.279	1	0.777	0.007	218.9*	0.5					
10057+4103	A2142	2011.258	1	1.049	0.011	295.6*	0.3					
10057+7048	MLR421	2012.230	1	1.927	0.010	191.5*	0.3					
10059+3412	COU1569	2011.253	1	0.165	0.040	75.1	8.0			Doc2006i	0.05	-15.2
10062+0911	HEI492	2011.231	1	1.219	0.014	92.5	0.6					
10062+0911	HEI492	2011.231	1	1.219	0.019	92.9	0.3	0.78				
10062+0911	TDS7020	2011.264	1	—	—	—	—		NR			
10063+7418	MLR422	2012.203	1	0.308	0.007	91.3*	1.3					
10067+1754	HDS1457	2011.179	1	0.412	0.007	65.6	1.9			Tok2019c	-0.01	-1.5

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10067+1754	HDS1457	2011.179	1	0.404	0.007	67.6	1.1			Tok2019c	-0.02	0.5
10067+1754	HDS1457	2011.184	1	0.415	0.014	66.2	1.5			Tok2019c	-0.00	-0.9
10067+1754	HDS1457	2012.197	1	0.439	0.007	64.7*	1.2			Tok2019c	0.02	-0.3
10071+4504	HDS1459	2011.253	1	0.821	0.007	301.1*	0.5					
10076+2207	COU167	2012.241	1	1.776	0.029	118.4	0.8					
10083+0802	A2564	2011.231	1	0.788	0.015	103.9	0.8					
10083+0802	A2564	2011.231	1	0.773	0.010	104.4	0.4	0.62				
10083+3136	KUI48	2011.135	1	0.127	0.040	163.3	8.0			Hrt1996a	0.00	-1.1
10083+3136	KUI48	2012.246	1	0.182	0.040	165.2	8.0			Hrt1996a	0.01	-1.4
10092+2147	COU168	2011.266	1	0.950	0.007	53.2	0.3					
10093+2020	A2145	2011.176	1	0.238	0.055	234.2	8.0			Msn2011e	0.07	-9.6
10093+2020	A2145	2012.200	1	0.226	0.040	230.5*	8.0			Msn2011e	0.05	-11.8
10109+3628	HDS1466	2011.184	1	0.603	0.018	179.8	3.0					
10110+1834	COU287	2011.220	1	1.401	0.027	93.7	0.7					
10110+1834	COU287	2011.220	1	1.387	0.025	92.5	0.6	0.01				
10110+1834	HDS1467	2012.246	1	—	—	—	—		NR			
10110+4040	HDS1467	2011.253	1	0.248	0.052	172.0	8.9					
10110+7508	KUI47	2012.203	1	1.871	0.009	121.2*	0.3			Hei1994a	0.05	-2.5
10116+1321	HU874	2011.228	1	0.173	0.040	284.3	9.1			Doc2020d	0.03	0.4
10116+1321	HU874	2012.197	1	0.247	0.007	285.0	1.3			Doc2020d	-0.04	0.3
10118+0317	HEI756	2011.176	1	0.889	0.013	102.3	1.1					
10118+4222	POP116	2011.258	1	0.571	0.009	72.2	1.0					
10121+2118	A2146	2011.179	1	0.240	0.013	176.8	2.7			Hei2001	0.06	-24.2
10121+2118	A2146	2012.200	1	0.213	0.013	181.7*	1.7			Hei2001	0.03	-23.9
10125+1552	HDS1470	2012.197	1	0.340	0.007	60.5*	1.3					
10125+1552	HDS1470	2011.135	1	0.339	0.010	60.1	2.8					
10125+1942	COU288	2011.176	1	0.615	0.057	3.3	0.7					
10126+4901	HDS1471	2011.258	1	0.242	0.052	73.3	4.1					
10126+4901	HDS1471	2011.264	1	0.206	0.007	65.7	3.0					
10131+2725	STT213	2011.176	1	1.137	0.026	122.7	0.6			Izm2019	0.05	0.6
10132+0653	HEI757	2011.266	1	1.351	0.010	44.0	0.9					
10132+1147	HEI355	2011.179	1	0.342	0.007	24.8	0.4					
10132+1147	HEI355	2011.184	1	0.325	0.015	25.2	1.1					
10139+0246	HEI758	2011.176	1	0.730	0.018	48.2	0.7					
10140+2227	COU169	2011.179	1	0.551	0.010	152.8	1.3					
10140+2227	COU169	2012.200	1	0.524	0.007	152.4*	0.9					
10140+4313	HDS1473	2012.246	1	0.224	0.014	79.5	4.6					
10148+0509	HDS1477	2011.184	1	0.156	0.040	173.2	8.0					
10151+6443	HDS1478	2012.203	1	0.801	0.007	64.3*	0.3					
10162+4844	HU633	2011.253	1	0.190	0.040	164.7	8.0					
10162+6406	MLR143	2012.203	1	0.700	0.007	285.5*	0.3					
10178+2000	A2149	2011.179	1	0.485	0.021	25.2	1.1					
10182+0805	A2765	2011.231	1	0.435	0.075	38.7	16.2	0.38				
10182+0805	A2765	2011.231	1	0.427	0.010	35.2	1.2					
10183+0841	YSC93	2012.241	1	0.268	0.007	94.4*	0.8					
10183+0841	YSC93	2012.197	1	0.290	0.007	93.4	1.0					
10184+3730	HU875	2012.252	1	1.175	0.007	74.1*	0.3					
10184+3730	HU875	2012.252	1	1.169	0.007	73.6	0.4					
10184+4346	POP117	2011.258	1	0.770	0.007	263.5*	0.3					
10187+2155	COU170	2012.200	1	0.856	0.007	111.8*	0.6					
10187+2155	COU289	2012.246	1	—	—	—	—		NR			
10192+1850	COU289	2012.197	1	0.205	0.007	68.1	6.4					
10192+2034	STF1423	2011.135	1	0.717	0.016	324.0	0.7			WSI2004a	0.06	1.2
10192+2034	STF1423	2012.200	1	0.694	0.007	321.9*	0.3			WSI2004a	0.04	1.6

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10210+1809	COU50	2011.179	1	0.151	0.040	178.1	8.0					
10210+1809	COU50	2011.179	1	—	—	—	—		NR			
10213+5023	HDS1489	2011.264	1	0.244	0.007	36.8*	1.9					
10213+5023	HDS1489	2011.258	1	—	—	—	—		NR			
10215+4603	COU2503	2012.252	1	1.485	0.007	172.4*	0.5					
10221+1226	BU1321	2011.228	1	2.024	0.013	131.2	0.5					
10225+0408	HEI760	2011.266	1	0.832	0.007	10.9*	0.4					
10225+5030	HDS1493	2011.264	1	0.213	0.018	38.1	2.5					
10227+1521	STT216	2012.323	2	2.246	0.022	233.0*	0.3	3.05		Sca2009c	0.01	0.3
10227+1521	HDS1494	2011.253	1	—	—	—	—		NR			
10236+2617	A1991	2011.220	1	1.401	0.018	9.2	1.1	0.35				
10236+2617	A1991	2011.220	1	1.422	0.016	8.7	0.5					
10249+0431	HDS1497AB	2011.231	1	0.501	0.018	68.2	4.2	0.99				
10249+0431	HDS1497AB	2011.231	1	0.477	0.019	72.3	0.7					
10238+4935	HDS1495Aa,Ab	2011.253	1	—	—	—	—		NR			
10238+4935	HDS1495Aa,Ab	2012.252	1	0.241	0.130	161.8	8.7					
10238+4935	HDS1495Aa,Ab	2012.252	1	0.110	0.080	182.6	7.7					
10250+2437	STF1429	2012.279	1	0.784	0.007	157.9*	0.4			Zul1981	0.04	-0.7
10259+4628	COU2504	2011.253	1	0.230	0.007	93.7	3.5					
10262+0356	BU1280BC	2011.176	1	0.714	0.018	45.5	0.4					
10262+0356	A1992	2011.258	1	—	—	—	—		NR			
10269+1713	STT217	2012.244	2	0.733	0.015	149.5*	0.3			Sca2015b	0.01	1.3
10269+1931	COU292	2012.197	1	0.176	0.040	58.8	8.0			Doc2013e	-0.01	-5.0
10269+1931	COU292	2012.200	1	0.198	0.040	47.0	8.0			Doc2013e	0.02	-16.8
10271+3143	A2151	2011.264	1	1.187	0.007	75.8	0.3					
10275+0334	STT218	2011.176	1	0.364	0.007	164.2	2.2			USN2002	-0.02	-4.5
10275+4136	COU1900	2011.253	1	2.412	0.012	305.2*	0.3					
10281+4847	KUI50	2011.253	2	4.024	0.020	22.2*	0.3			Dru2014	0.05	0.3
10281+4847	KUI50	2012.252	1	4.024	0.020	21.8	0.3			Dru2014	0.08	-0.2
10281+4847	TDS591	2011.264	1	—	—	—	—		NR			
10286+1146	HEI356	2011.184	1	1.532	0.058	27.3	0.7					
10287+4558	A1993	2011.264	1	0.313	0.023	204.4	3.6			Lin2017b	0.04	2.4
10291+0922	HEI496	2011.266	1	1.801	0.009	163.7	0.3					
10292+1009	STT220	2012.200	1	0.556	0.007	101.2	0.8			USN2002	0.11	-16.2
10292+1009	HDS1507	2012.241	1	—	—	—	—		NR			
10301+2048	STF1439	2012.279	1	1.347	0.007	72.7*	0.3			Izm2019	0.00	-0.4
10301+3502	HDS1509	2012.200	1	0.160	0.040	93.3	8.0					
10302+4532	ES1150	2011.264	1	0.802	0.007	181.1*	0.6					
10312+3707	HU880	2011.184	1	0.880	0.007	143.7	0.3					
10312+3707	HU880	2011.184	1	0.903	0.015	143.8	0.7					
10320+0831	YSC39	2012.241	1	0.746	0.007	37.6*	0.4					
10320+0831	YSC39	2012.241	1	0.813	0.009	37.7*	0.5					
10321+4723	KU35	2011.258	1	1.244	0.007	15.4*	0.8					
10323+2427	HDS1511	2012.246	1	0.131	0.040	18.5	8.0					
10324+4632	A1994	2011.258	1	1.527	0.014	82.8*	0.3					
10331+2052	COU172	2011.266	1	0.255	0.011	33.2	1.3					
10331+2052	COU172	2012.323	1	0.140	0.040	176.3	8.0					
10337+2045	COU173	2012.279	1	0.842	0.007	185.0*	0.6					
10337+2045	COU173	2012.279	1	0.837	0.011	183.1*	0.3					
10341+1222	CHR31	2011.179	1	0.118	0.040	168.0	8.0					
10341+1222	YSC40	2012.197	1	—	—	—	—		NR			
10341+1222	HDS1517	2011.253	1	—	—	—	—		NR			
10355+4155	COU1901	2011.258	1	1.409	0.019	302.0*	0.3					

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10355+4357	COU2091	2012.246	1	0.765	0.007	144.2*	0.5					
10358+0233	A2571BC	2011.176	1	0.329	0.014	173.9	4.6					
10358+4937	COU2623	2011.258	1	1.808	0.036	121.2	0.5					
10358+4937	COU2623	2011.258	1	1.794	0.023	299.2*	0.7					
10371+3759	COU1571	2011.184	1	1.441	0.032	114.6	0.7					
10382+2636	STF1454	2011.266	1	1.367	0.007	354.0*	0.3			Izm2019	0.05	-0.8
10382+2636	STF1454	2012.246	1	1.342	0.007	354.7*	0.3			Izm2019	0.06	-0.7
10382+4558	COU2092	2011.253	1	0.576	0.007	281.2*	0.3					
10385+3114	TDS7389	2011.264	1	0.615	0.017	317.3*	0.5					
10392+4529	COU2094	2011.253	1	0.598	0.007	214.5*	0.3					
10397+0851	STT224	2011.135	1	0.508	0.021	141.0	1.7			Hrt2010a	-0.00	0.9
10401+1914	PER2AB	2011.220	1	0.453	0.013	39.6	2.1					
10401+1914	PER2AB	2011.220	1	0.438	0.012	41.9	3.2					
10406+4700	HDS1525	2011.253	1	0.216	0.033	225.6*	1.8					
10408+2657	COU779	2012.197	1	0.393	0.007	83.5*	1.8					
10417+1044	STT227	2011.272	1	0.908	0.007	3.9*	0.3					
10426+0335	A2768	2011.135	1	0.606	0.025	251.2	2.5			Tok2015c	0.00	2.2
10428+4711	COU2096	2011.253	1	0.328	0.022	273.8*	1.2					
10432+0440	A2769	2011.231	1	0.974	0.064	205.3	14.7	1.46				
10432+0440	A2769	2011.231	1	0.483	0.007	26.5	0.6					
10442+3955	YR26	2011.220	1	0.531	0.027	16.1	3.8					
10442+3955	YR26	2012.200	1	0.528	0.014	198.4*	1.6					
10442+4441	HDS1533	2011.264	1	0.430	0.013	231.4*	2.3					
10446+0402	A2770	2011.231	1	0.879	0.028	19.2	3.1					
10446+0402	A2770	2011.231	1	0.844	0.021	15.9	2.8					
10446+0530	A2771	2011.135	1	0.410	0.049	118.7	3.2			Tok2014a	-0.00	-2.0
10454+0759	HDS1537	2011.184	1	1.085	0.012	97.3	0.4					
10454+3831	HO532AC	2011.176	1	0.690	0.010	235.9	1.6			Tok2019e	0.02	-1.7
10454+3831	HO532AC	2011.179	1	0.690	0.015	238.7	2.7			Tok2019e	0.02	1.1
10454+3831	HO532AC	2012.200	1	0.682	0.007	235.8	2.3			Tok2019e	0.01	-1.5
10454+3831	HO532AC	2012.323	1	0.699	0.007	236.6	2.3	2.67		Tok2019e	0.02	-0.5
10455+4541	COU2097	2011.253	1	1.135	0.010	338.6*	0.5					
10463+2537	HDS1539	2012.200	1	0.414	0.009	58.1*	1.0					
10463+2537	HDS1539	2011.272	1	0.421	0.009	59.9*	0.7					
10472+2605	COU591	2011.135	1	0.452	0.013	4.7	1.3					
10477+2733	COU592	2012.197	1	0.424	0.007	211.6*	0.3					
10480+4107	STT229	2011.258	1	0.676	0.007	260.9*	0.3			Alz2020c	0.00	-0.5
10480+4107	STT229	2012.323	2	0.684	0.007	261.5	0.3	0.64		Alz2020c	0.01	0.9
10496+3948	A2155	2011.184	1	0.915	0.034	16.9	2.1					
10497+2417	BU915	2011.266	1	1.489	0.007	53.3	0.3					
10510+0502	HDS1549	2011.184	1	0.454	0.015	171.4	1.4					
10510+1603	A2372	2012.200	1	0.358	0.007	97.8*	1.3					
10511+1135	CHR32	2011.228	1	0.778	0.012	149.1	1.8					
10515+0756	HDS1550	2011.231	1	0.694	0.013	5.0	1.0					
10520+1606	A2373	2012.200	1	0.208	0.010	35.7*	0.7			USN2007a	0.01	-6.0 ^Q
10539+1706	HDS1559	2011.179	1	0.487	0.007	154.0	2.1					
10543+0737	HDS1560	2011.184	1	0.549	0.010	57.9	1.0					
10543+2607	A1769	2011.220	1	0.706	0.007	83.9	2.7	0.23				
10543+2607	A1769	2011.220	1	0.677	0.035	85.8	1.4					

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10544+3840	COU1746	2011.176	1	0.367	0.018	143.4	1.5			Lin2018a	-0.01	0.1
10544+3840	COU1746	2012.200	1	0.376	0.007	145.3*	0.6			Lin2018a	0.00	0.9
10548+2345	BU597	2012.323	1	2.055	0.010	45.4*	0.3	1.41				
10564+3338	COU1421	2012.279	1	1.962	0.334	96.1*	2.0					
10564+3652	COU1420	2012.200	1	0.150	0.040	24.8	8.0					
10567+3320	POP73	2011.220	1	0.769	0.037	23.4	0.9	0.43				
10567+3444	HU726	2011.228	1	1.150	0.007	103.2	0.3					
10567+3456	POP112	2011.258	2	1.405	0.015	243.6*	0.9					
10585+1711	A2375	2011.135	1	0.524	0.018	172.7	3.3			Doc2009g	0.05	-1.3
10585+1711	A2375	2012.200	1	0.491	0.016	173.9	0.9			Doc2009g	0.01	1.0
10585+1711	TDS7584	2011.266	1	—	—	—	—		NR			
10596+0956	A2774	2011.184	1	1.811	0.024	108.5	0.6					
11003+1926	A2376	2011.135	1	0.128	0.040	183.1	8.0					
11008+2913	COU960	2011.266	1	0.220	0.009	115.6	1.1					
11008+2913	COU960	2011.266	1	0.212	0.009	114.1	1.6					
11008+2913	COU960	2012.200	1	0.199	0.040	300.0*	8.0					
11009+4036	COU1747	2011.253	1	0.828	0.013	315.1*	0.3					
11014+1235	HEI155	2011.179	1	0.746	0.016	67.5	0.8					
11017+3641	COU1422Ba,Bb	2012.200	1	0.630	0.013	41.8*	0.8			Tok2019e	0.00	-2.0
11017+3641	HDS1574	2012.200	1	—	—	—	—		NR			
11018+1903	HDS1575	2011.179	1	0.264	0.017	109.2	1.9					
11018+2952	COU961	2012.323	1	2.349	0.012	327.8*	0.3	1.40				
11027+4446	COU2098	2011.253	1	1.710	0.009	184.6*	0.3					
11029+3541	HO47BC	2011.220	1	0.877	0.013	158.6	0.6	0.28				
11029+3541	HO47BC	2011.220	1	0.912	0.027	156.5	2.3					
11032+2142	COU175	2012.323	1	2.311	0.012	294.8*	0.3	2.19				
11053+1635	A2378	2012.246	1	0.384	0.007	324.1*	1.1					
11055+3927	COU1748	2011.228	1	0.171	0.040	73.2	8.0					
11055+3927	COU1748	2012.279	1	0.176	0.040	90.4	8.0					
11065+2653	A1775	2012.246	1	0.223	0.007	87.9	0.4					
11069+3746	COU1572	2012.200	1	1.884	0.009	183.8*	0.3					
11075+3857	HDS1585	2011.179	1	0.366	0.008	7.6	0.8					
11090+4325	COU2099	2011.253	1	0.275	0.021	102.8	2.2					
11100+2138	COU176	2011.135	1	0.812	0.017	75.8	1.4					
11104+1110	HDS1591	2011.184	1	0.624	0.007	42.5	0.5					
11104+1502	HEI61	2011.231	1	0.266	0.015	86.6	1.1					
11104+1502	HEI61	2011.231	1	—	—	—	—		NR			
11107+3110	HJ2562	2011.179	1	1.015	0.016	228.6	0.6			Izm2019	-0.06	-4.1
11107+3110	HJ2562	2012.200	1	1.004	0.007	228.3*	0.3			Izm2019	-0.07	-3.4
11114+4150	HDS1593	2011.253	1	0.337	0.033	157.3*	0.9					
11120+3500	A2156	2012.279	1	0.207	0.007	168.4*	2.1					
11131+1646	COU295	2011.264	1	0.238	0.013	168.5*	5.0					
11137+2008	STF1517	2011.220	1	0.637	0.008	317.5	1.1			FMR2015b	-0.03	0.4
11143+3553	ES2165	2011.264	1	1.976	0.010	92.7*	0.3					
11144+1531	BU1283	2011.231	1	0.286	0.013	174.3	0.9					
11144+1531	BU1283	2012.279	1	0.383	0.010	169.7*	1.7					
11151+3735	STT232	2012.350	1	0.618	0.007	64.2	0.4					
11155+4729	HU639	2011.253	1	0.254	0.007	89.8*	0.7					
11162+3136	A2157	2012.247	1	1.317	0.010	182.3	0.3	2.49		Pop1996b	0.24	-55.6
11162+3136	A2157	2012.247	1	1.325	0.008	182.2	0.3			Pop1996b	0.25	-55.5
11162+3136	A2157	2012.323	2	1.335	0.007	182.8	0.3	3.76		Pop1996b	0.26	-54.8
11163+0915	HDS1606	2011.231	1	0.618	0.042	87.0	1.7					
11172+0745	HDS1609	2011.184	1	0.951	0.012	16.0	0.6					

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11174+4146	A2158	2011.253	1	0.428	0.007	182.9*	0.8					
11182+1638	A2379BC	2011.264	1	0.416	0.007	103.6	0.4					
11190+1416	STF1527	2012.279	1	0.323	0.016	202.9*	3.5			Tok2012b	0.01	-6.7
11196+4930	HDS1615	2011.253	1	0.145	0.040	25.7	8.0					
11208+2402	TDS7805	2011.272	1	0.847	0.007	319.8*	0.7					
11218+4520	A1847	2011.253	1	1.387	0.007	329.4*	0.3					
11218+4520	A1847	2011.253	1	1.389	0.007	329.5*	0.3					
11221+3705	COU1260	2012.279	1	0.398	0.007	12.5*	0.7					
11221+3705	TDS7831	2011.272	1	—	—	—	—		NR			
11230+0408	A2776AB	2011.231	1	0.161	0.040	40.5	6.7			Hrt2010a	-0.00	-16.2
11235+4828	COU2100	2011.253	1	1.590	0.008	23.5*	0.3					
11241+2929	TDS7840	2011.264	1	1.379	0.012	202.4*	0.5					
11247+3758	COU1261	2012.200	1	0.669	0.007	219.1*	0.3					
11254+0607	HDS1624	2011.184	1	0.520	0.024	11.5	1.8					
11260+1213	YSC41	2012.279	1	1.172	0.007	276.1*	0.3					
11263+1610	HEI157	2012.323	1	3.209	0.016	156.7	0.3	1.75				
11265+0806	A2575	2011.184	1	0.444	0.007	46.5	2.1			USN2002	0.19	-16.4
11271+3546	HDS1626	2011.179	1	0.272	0.046	97.5	1.0					
11271+3546	HDS1626	2012.350	1	0.261	0.020	90.4	3.5					
11271+3546	TDS7870	2012.323	1	—	—	—	—		NR			
11287+3224	COU781	2011.253	1	0.604	0.007	289.0*	0.3					
11290+1555	HDS1629	2011.179	1	0.459	0.011	142.1	1.8					
11290+1555	HDS1629	2011.179	1	0.475	0.008	141.1	1.2					
11290+1555	HDS1629	2011.184	1	0.462	0.007	140.8	0.7					
11292+0606	HEI851	2011.231	1	0.953	0.013	144.3	0.4					
11292+0606	HEI851	2011.231	1	0.940	0.025	142.7	4.1	3.48				
11293+3025	L11	2011.264	1	1.013	0.007	281.7*	0.3			RAO2015	-0.01	-1.6
11293+3025	TDS7887	2011.272	1	—	—	—	—		NR			
11301+2237	A2484	2012.350	1	0.461	0.015	161.6	0.6					
11308+4117	STT234	2011.253	1	0.470	0.007	172.7*	0.3			Doc2009g	-0.00	-1.1
11308+4117	STT234	2012.323	1	0.476	0.007	173.3	0.3	0.41		Doc2009g	0.01	-2.0
11319+4555	COU1750	2011.258	2	2.012	0.027	233.1*	0.4					
11322+3615	HU1134	2011.220	1	0.200	0.008	111.8	10.1			Hrt2000b	0.17	-13.0 ^Q
11322+3615	HU1134	2012.337	1	0.152	0.040	119.6*	8.0			Hrt2000b	0.09	-3.0 ^Q
11323+2527	TDS7912	2011.264	1	1.032	0.019	174.9	0.5					
11332+4927	HU727	2011.258	2	1.224	0.015	205.4*	0.4					
11334+4637	COU1751	2011.253	1	0.166	0.040	140.5	8.0					
11335+0759	HDS1639	2011.184	1	0.221	0.011	170.0	2.4					
11336+3702	HJ502	2012.337	1	1.349	0.007	285.0	0.3	2.03				
11336+4729	COU1573	2011.258	1	0.300	0.019	91.7*	1.1					
11352+3524	HU887	2012.337	1	1.283	0.007	304.4	0.3	1.90				
11352+3524	HDS1644	2012.279	1	—	—	—	—		NR			
11361+1251	STF1554	2012.279	1	0.283	0.007	205.8*	1.9			Zir2011b	-0.01	-9.4
11363+2747	STF1555	2012.279	1	0.723	0.007	149.7*	0.5			Doc2017a	0.01	0.3
11367+2128	STF1558	2011.220	2	0.681	0.037	165.4	1.0					
11367+2128	STF1558	2011.220	1	0.637	0.016	165.8	1.3	0.74				
11374+4728	KU39	2011.253	1	1.212	0.007	132.6*	0.3			Izm2019	0.04	1.4
11389+4733	COU1574	2011.258	2	1.724	0.031	184.3*	0.3					
11390+4109	STT237	2012.323	1	2.044	0.010	244.0*	0.3	1.19		USN2002	0.02	-0.7
11392+2640	HDS1651	2011.184	1	0.879	0.018	38.4	1.5					
11392+2640	TDS7979	2011.264	1	—	—	—	—		NR			
11425+2355	COU390	2011.179	1	0.287	0.049	68.3	5.1			Tok2016e	0.05	1.9
11425+2355	COU390	2011.179	1	0.244	0.051	69.6	1.7			Tok2016e	0.01	3.2
11428+2105	HU888	2012.323	1	1.108	0.007	177.9*	0.3	0.95				

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11431+3715	HU1135	2012.279	1	0.689	0.007	335.2*	0.3					
11431+3715	HJ2581	2012.337	1	—	—	—	—		NR			
11461+3727	ES1738	2012.337	1	1.879	0.009	164.5	0.3	1.27				
11463+3303	A2160	2012.350	1	0.267	0.013	173.2	2.4					
11475+2002	HDS1665	2012.323	1	2.033	0.010	133.0*	0.3	2.96				
11476+1514	TDS646	2011.264	1	0.719	0.016	172.6	0.3					
11478+4949	HU729	2012.362	1	1.506	0.008	347.6	0.3	3.56				
11478+4949	HU729	2012.361	1	1.506	0.008	347.4*	0.3					
11485+1633	HEI158	2011.220	2	1.451	0.053	100.9	1.3					
11485+3507	TDS8038	2011.258	2	1.925	0.015	6.4	0.6					
11487+3937	COU1263	2012.350	1	0.376	0.013	57.2	0.3					
11487+4030	COU1262	2011.253	1	0.684	0.007	247.8*	0.4					
11499+3645	HDS1669	2011.179	1	0.220	0.028	100.1	1.9					
11499+3754	COU1129	2012.323	1	1.088	0.007	124.1*	0.3	1.92				
11503+3741	HDS1670	2012.337	1	1.258	0.007	21.1	0.3	2.29				
11504+3544	COU964	2011.179	1	1.418	0.007	60.0	0.3					
11509+2557	TDS8067	2011.264	1	1.851	0.019	56.4*	0.3					
11510+3653	HU889	2012.323	1	1.953	0.010	294.8*	0.3	1.45				
11511+2245	HDS1671	2012.361	1	0.652	0.007	68.2*	0.4					
11511+2245	TDS8069	2011.264	1	—	—	—	—		NR			
11514+1148	HDS1672	2011.272	1	—	—	—	—		NR			
11517+2344	COU391	2012.337	1	0.323	0.007	300.8	0.3	0.88				
11524+1428	HDS1675	2011.184	1	0.103	0.040	46.4	12.1					
11537+2626	HDS1677	2011.228	1	0.358	0.009	60.1	1.7					
11544+1515	WOR20	2011.264	1	1.212	0.007	290.5*	0.3					
11544+1515	WOR20	2012.323	0	1.205	0.006	290.4	0.3					
11544+1515	WOR20	2012.323	1	1.190	0.007	291.2	0.7					
11551+4629	A1777AB	2011.253	1	0.272	0.014	339.4	1.2			Zas2012b	0.06	3.1
11551+4629	A1777AC	2011.253	1	3.905	0.020	41.8*	0.3	2.46				ND
11551+4629	A1777AC	2011.253	1	3.900	0.020	41.7*	0.3					ND
11552+1643	TDS8112	2012.337	1	1.241	0.007	162.8	0.3	0.24				
11552+1643	TDS8112	2011.264	1	1.232	0.008	163.5*	0.3					
11572+3312	COU939	2012.350	1	0.269	0.015	27.4	1.9					
11572+3312	COU939	2011.253	1	0.232	0.011	33.3*	2.0					
11574+1823	A2486	2012.279	1	1.128	0.007	239.8*	0.8					
11574+1823	TDS8142	2011.264	1	—	—	—	—		NR			
11574+1823	COU296	2012.279	1	—	—	—	—		NR			
11591+0601	HDS1687	2011.231	1	0.426	0.007	121.5	0.3					
11591+0601	HDS1687	2011.231	1	0.497	0.018	123.4	3.2	0.45				
11591+0601	TDS8158	2011.272	2	—	—	—	—		NR			
12006+1820	HDS1688	2012.337	1	0.426	0.007	9.6	0.3	2.11				
12007+2905	TDS8162	2011.272	2	0.497	0.034	12.2	6.3					
12007+2905	TDS8164	2011.272	2	—	—	—	—		NR			
12015+3444	HDS1689	2012.361	1	0.136	0.040	36.9	8.0					
12016+0617	HEI507	2011.231	1	1.447	0.032	40.2	1.1					
12016+0617	HEI507	2011.231	1	1.529	0.035	39.3	1.0	2.42				
12016+0617	COU1752	2012.361	1	—	—	—	—		NR			
12016+0617	TDS8185	2011.264	1	—	—	—	—		NR			
12032+1709	COU177	2012.337	1	1.737	0.009	296.0*	0.3	2.51				
12033+2045	TDS8195	2011.228	1	0.241	0.057	60.8	6.0					
12037+2506	A681	2011.179	1	0.321	0.013	26.5	1.6					
12037+2506	A681	2012.000	1	0.325	0.011	27.2	1.6					
12037+2506	A681	2012.000	1	0.328	0.016	27.5	3.6					

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12037+2506	A681	2012.350	1	0.321	0.007	22.5	0.7					
12037+2506	A681	2012.361	1	0.303	0.010	24.2*	0.9					
12051+4134	HDS1703	2011.253	1	0.419	0.011	326.6*	0.3					
12051+4134	HDS1703	2012.350	1	0.438	0.007	147.3	1.7					
12051+4134	TDS8217	2011.272	2	—	—	—	—		NR			
12059+2628	HDS1707	2011.184	1	0.293	0.051	98.6	3.3					
12059+2628	WSI103	2012.350	1	—	—	—	—		NR			
12064+1812	HDS1708	2011.228	1	0.400	0.018	122.6	2.1					
12064+1812	TDS8229	2011.272	2	—	—	—	—		NR			
12079+0522	HEI767	2011.231	1	0.539	0.021	14.0	1.5	0.83				
12079+0522	HEI767	2011.231	1	0.577	0.015	12.6	0.5					
12080+4242	A1998	2011.253	1	0.342	0.014	349.2*	2.4					
12105+1649	CHR135	2011.179	1	0.139	0.040	125.9	8.0					
12108+3953	STF1606	2012.323	1	0.493	0.007	151.0*	0.4			Msn1999a	-0.02	1.1
12149+1947	COU178	2012.337	1	1.171	0.007	319.8	0.3	2.23				
12167+4424	HDS1729	2012.361	1	0.514	0.010	36.7	0.9					
12182+2718	HDS1733	2012.337	1	0.312	0.007	231.8	0.3	1.44				
12194+1744	A2059	2012.279	1	0.477	0.007	37.4*	0.7			Lin2017a	0.01	1.2
12194+1744	A2059	2012.323	1	0.469	0.007	35.7*	0.5			Lin2017a	0.01	-0.6
12194+1744	A2059	2012.323	1	0.467	0.007	36.5	0.4			Lin2017a	0.01	0.2
12195+4456	COU1753	2012.323	1	0.697	0.017	118.1	0.6					
12223+4826	YSC45	2012.361	1	1.046	0.007	212.9*	0.3					
12232+3257	HDS1744	2012.350	1	0.206	0.007	93.0	0.9					
12232+3257	YSC97	2012.350	1	—	—	—	—		NR			
12232+3257	YSC97	2012.361	1	—	—	—	—		NR			
12244+4305	STT250	2012.361	1	0.291	0.007	351.7*	0.4			PkO2018b	-0.03	0.8
12288+3155	COU965	2012.337	1	0.972	0.007	250.8	0.3	2.83				
12316+3201	COU966	2012.337	1	0.196	0.040	31.8	8.0	0.28		Mnt1999c	0.06	24.3
12340+2650	COU595	2012.279	1	0.953	0.007	182.0*	0.3					
12351+1719	TDS670	2012.361	1	1.159	0.007	242.6*	0.5					
12351+1719	TDS670	2012.362	1	1.179	0.007	244.2	0.3	1.85				
12386+2043	HDS1771	2012.350	1	0.328	0.007	117.5	2.3					
12397+4444	COU1578	2011.387	1	1.463	0.007	64.3*	0.3					
12409+2708	COU596	2012.337	1	—	—	—	—		NR			
12422+2622	A1851	2012.351	1	0.333	0.010	9.5	0.4			Hei1998	-0.00	-2.6
12430+4008	COU1425	2012.361	1	0.850	0.007	347.8*	0.3					
12430+4008	COU1425	2011.387	1	0.849	0.007	347.8*	0.3					
12441+3546	HO256	2011.384	1	0.578	0.007	120.6*	0.5					
12441+3546	HDS1783	2012.351	1	—	—	—	—		NR			
12444+2713	COU597	2012.361	1	0.249	0.009	104.0	0.7					
12461+1715	A2061	2012.351	1	1.146	0.007	14.0	0.3					
12461+1715	HDS1792	2012.361	1	—	—	—	—		NR			
12478+4539	COU2104	2012.361	1	1.439	0.007	305.6*	0.3					
12478+4539	COU1426	2012.337	1	—	—	—	—		NR			
12507+2032	HU640	2012.351	1	0.432	0.010	234.5	0.8			Hrt2014b	0.02	-0.4
12507+2032	HU640	2011.384	1	0.431	0.010	231.4	0.5			Hrt2014b	0.02	-0.1
12510+3129	HDS1804	2012.397	1	0.756	0.010	258.6*	0.4					
12519+2647	HDS1805	2012.337	1	0.421	0.007	190.8	0.3	2.39				
12519+2647	HDS1805	2012.337	1	0.399	0.007	184.1	0.3	2.85				
12523+4822	YSC100	2012.361	1	0.178	0.040	148.6	8.0					
12523+4822	YSC100	2012.361	1	0.339	0.039	149.4	1.2					
12526+5103	COU2189	2012.361	1	0.887	0.007	101.0*	0.3					
12533+2115	STF1687	2011.392	1	1.149	0.007	194.3*	0.3			Dru2014	0.01	-0.2
12533+4246	COU1579	2011.387	1	0.223	0.007	134.2*	1.6			Doc2013a	0.00	3.2

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12533+4246	COU1579	2012.361	1	0.219	0.012	134.7	1.1			Doc2013a	-0.01	0.7
12539+2438	YSC47	2012.351	1	0.133	0.040	337.6	8.0					
12539+2438	YSC47	2012.361	1	0.111	0.040	324.6	8.0					
12550+4236	COU1580	2011.392	1	0.437	0.009	107.1	0.4					
12550+4236	COU1580	2011.392	1	0.418	0.010	107.0	1.0					
12550+4236	COU1580	2012.361	1	0.458	0.007	106.1	0.7					
12559+2907	TDS682	2012.397	1	1.249	0.007	265.5*	0.3					
12575+2457	COU397	2012.337	1	0.707	0.007	59.9	0.3	1.62				
12587+2626	COU479	2012.351	1	0.889	0.007	156.3*	0.8					
12591+4709	HDS1821	2012.397	1	0.942	0.007	150.8*	0.5					
12595+2814	WSI1	2011.395	1	0.700	0.009	42.0	1.1					
12595+2814	WSI1	2011.395	1	—	—	—	—		NR			
12595+2814	HU1142	2012.397	1	—	—	—	—		NR			
12595+2814	COU297	2012.337	1	—	—	—	—		NR			
13013+1748	COU297	2012.361	1	0.203	0.007	14.4	1.7					
13013+1748	TDS8673	2011.387	1	—	—	—	—		NR			
13049+2438	COU298	2012.337	1	0.271	0.007	8.8	0.3	1.70				
13055+3708	HDS1830	2012.361	1	0.473	0.007	164.8	0.5					
13062+2902	BU1083AB	2011.395	1	—	—	—	—		NR			
13062+2902	BU1083AB	2012.337	1	0.398	0.007	66.2*	0.3					
13062+2902	BU1083BC	2012.337	1	6.337	0.032	223.1*	0.3	5.86				
13063+2044	HU739	2012.351	1	1.486	0.007	201.7*	0.3			Hrt2014b	0.01	0.2
13064+2109	COU11	2012.339	1	1.749	0.009	316.7	0.3	2.73				
13067+2853	HDS1834	2011.389	1	0.728	0.007	152.1	0.4					
13068+2657	L12	2011.389	1	—	—	—	—		NR			
13068+2657	L12	2012.339	1	0.235	0.007	269.9	0.3	1.49				
13068+2657	L12	2012.351	1	—	—	—	—		NR			
13068+4022	A2062	2011.384	1	0.659	0.007	122.2	0.4					
13081+2657	STT260	2012.337	1	0.286	0.007	32.3	0.3	0.12		Zir2008	-0.02	-39.9
13081+2657	STT260	2012.337	1	0.227	0.007	27.8	0.3	0.02		Zir2008	-0.08	-44.4
13091+2127	HU572	2012.351	1	0.469	0.007	339.7	0.3			FMR2012b	-0.03	0.4
13091+2127	COU2105	2012.359	1	—	—	—	—		NR			
13091+2127	ISO13	2011.387	1	—	—	—	—		NR			
13112+3050	STF1729AB,C	2012.397	2	8.521	0.043	275.1	0.3	1.75				
13112+3050	A1359	2011.384	1	0.269	0.060	128.6	1.0					
13112+3050	A1359	2012.397	1	0.335	0.070	131.8	0.3	1.53				
13115+4407	COU1910	2011.387	1	0.744	0.007	34.4*	0.8					
13115+4407	COU1910	2012.359	1	0.742	0.007	34.1*	0.3					
13118+2931	HDS1846	2012.361	1	0.366	0.007	13.2	0.9					
13118+2931	HDS1846	2011.389	1	0.351	0.007	193.1*	0.4					
13120+4703	COU2106	2012.361	1	0.230	0.007	92.2	0.9					
13120+4703	COU2106	2012.361	1	5.567	0.028	53.5	0.3					
13121+2415	HDS1848	2012.351	1	0.162	0.040	139.8	8.0					
13121+2415	HDS1848	2012.351	1	—	—	—	—		NR			
13128+4030	A1606	2011.384	1	1.311	0.007	196.2*	0.3					
13130+4703	COU2107	2011.389	1	1.103	0.007	359.5*	0.6					
13131+2838	COU400	2011.389	1	0.621	0.007	108.8	0.3					
13131+2838	COU400	2012.339	1	0.634	0.007	285.3	0.3	1.87				
13131+2838	HO55	2012.337	1	—	—	—	—		NR			
13141+3156	A1854	2012.339	1	0.190	0.040	331.5	8.0	2.02				
13149+4055	COU1911	2011.389	1	0.514	0.007	87.5	0.7					
13149+4055	CHR180	2011.384	1	—	—	—	—		NR			
13155+4051	CHR180	2011.384	1	0.627	0.007	56.7*	0.3			Cve2015b	0.00	-0.2

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13182+4744	VBS20	2012.397	1	1.573	0.008	94.9	0.3	2.07				
13183+4736	VBS21	2012.361	1	0.883	0.007	141.5	0.7					
13188+4806	TDS700	2011.395	1	1.295	0.012	276.2*	0.6					
13198+3517	HEI520	2011.395	1	1.188	0.007	65.7*	0.3					
13198+4747	HU644	2012.359	1	1.232	0.007	89.3*	0.3			WSI2015	0.01	-0.4
13198+4747	A2166AB	2011.384	1	—	—	—	—		NR			
13198+4747	A2166AB	2011.384	1	—	—	—	—		NR			
13203+1746	A2166AC	2011.384	1	2.170	0.011	225.8*	0.3		ND			
13203+1746	COU56	2011.384	1	—	—	—	—		NR			
13216+1717	COU56	2012.351	1	0.367	0.011	6.8	1.3					
13216+1717	COU56	2012.337	1	0.213	0.028	23.8	2.8					
13221+3952	HDS1876	2012.351	1	0.258	0.029	89.6	1.5					
13221+3952	HDS1876	2011.387	1	0.173	0.040	104.0	8.0					
13222+2710	A565	2012.359	1	0.777	0.009	16.3*	0.3					
13225+1543	HEI371	2012.337	1	1.658	0.008	179.4	0.3					
13225+4242	COU1581	2012.359	1	0.316	0.007	159.4*	0.7					
13230+4058	COU1582	2011.389	1	0.631	0.007	80.4	0.4					
13232+4029	POP119	2011.384	1	0.759	0.007	7.8*	0.5					
13232+4822	COU1912	2011.395	1	0.409	0.013	156.8*	0.8					
13232+4822	HU1259	2011.384	1	—	—	—	—		NR			
13232+4822	HU1259	2012.337	1	—	—	—	—		NR			
13251+4411	ES1548	2011.392	1	1.401	0.007	3.9*	0.4					
13252+3901	COU1427	2011.389	1	1.477	0.007	130.9	0.3					
13258+4430	A1609	2012.359	1	0.430	0.007	42.2*	0.4			Hei1991	0.00	-0.5
13258+4430	A1609AB,C	2012.359	1	2.457	0.014	219.0*	0.3					
13266+3235	COU787	2012.397	1	0.315	0.007	145.1	0.3	1.91				
13266+4611	COU1913	2011.389	1	0.395	0.007	159.2*	0.6					
13276+2116	TOK46AB	2012.361	1	2.881	0.014	127.8	0.3					
13276+2116	TOK46AB	2012.362	1	2.897	0.014	127.9	0.3	3.83				
13276+2116	TOK46AB	2012.397	1	2.896	0.014	126.9	0.3	4.22				
13276+2116	TOK46Aa,Ab	2012.361	1	0.168	0.040	178.5	8.0					
13276+2116	TDS8836	2011.387	1	—	—	—	—		NR			
13276+2116	YSC48	2012.361	1	—	—	—	—		NR			
13284+3643	COU1428	2012.337	1	0.348	0.007	70.8	0.3	2.78				
13284+3643	COU1428	2012.337	1	0.352	0.022	67.9	0.6					
13284+3643	COU1428	2012.339	1	0.368	0.007	68.7	0.3	2.71				
13290+2913	COU598	2011.389	1	1.702	0.009	356.7*	0.3					
13290+4751	YSC103	2012.397	1	0.190	0.040	0.0	8.0	1.17				
13290+4751	HDS1888	2011.395	1	—	—	—	—		NR			
13293+4847	COU1914	2011.392	1	0.492	0.007	184.5*	0.3					
13305+3430	A1857	2011.387	1	0.475	0.010	343.4*	0.6					
13305+3430	BEU17	2012.359	1	—	—	—	—		NR			
13320+3108	WOR24	2011.389	1	0.295	0.007	70.0	0.9			Doc2000b	-0.01	1.3
13320+3108	WOR24	2012.337	1	0.322	0.007	62.9	0.3			Doc2000b	-0.01	2.2
13329+3454	STT269	2012.339	1	0.267	0.007	225.4	0.3	0.68		Hei1997	-0.04	1.8
13329+3454	COU1754	2011.387	1	—	—	—	—		NR			
13329+3454	COU1754	2012.359	1	—	—	—	—		NR			
13333+4526	A1610	2012.397	1	0.919	0.007	267.7	0.3	1.19				
13336+2944	A1095	2012.361	1	0.340	0.007	283.9	0.5			Ole2002a	-0.01	-0.1
13344+3559	HDS1906	2011.384	1	0.183	0.040	22.0*	8.0					
13348+4242	HDS1908	2011.387	1	0.462	0.015	29.6*	1.1					
13357+3935	COU1583	2011.384	1	1.049	0.007	60.7*	0.4					
13360+2123	HU741	2012.339	1	0.239	0.007	181.5	0.3	1.25				
13360+2123	HU741	2011.389	1	0.255	0.007	0.9*	0.5					

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13377+5043	STF1770	2011.392	1	1.700	0.008	122.2*	0.3					
13377+5043	STF1770	2011.392	1	1.694	0.008	122.1	0.3					
13379+4808	ES608	2012.361	1	1.692	0.011	331.3*	0.3			USN2002	-0.00	2.0
13387+3823	COU1429	2011.384	1	0.679	0.007	65.1*	0.3					
13387+3823	COU1584	2012.359	1	—	—	—	—		NR			
13389+2127	HU645	2011.389	1	0.785	0.007	24.5	0.5					
13398+3625	COU1264	2011.384	1	0.377	0.007	257.7*	0.9					
13398+3625	COU1264	2012.397	1	0.430	0.007	268.2	0.3	3.05				
13400+1235	HDS1917	2011.387	1	0.173	0.040	93.9	8.0					
13411+3719	TDS718	2011.395	1	1.711	0.009	42.6	0.3					
13419+1407	HDS1925	2011.387	1	0.260	0.049	208.6*	2.9					
13419+4725	HDS1924	2011.392	1	0.751	0.015	310.2*	0.8					
13419+4725	COU1431	2012.397	1	—	—	—	—		NR			
13433+4023	COU1431	2011.384	1	1.137	0.007	343.3*	0.3					
13446+3224	COU788	2011.384	1	1.689	0.008	298.4*	0.3					
13446+3224	TDS8951	2011.395	1	—	—	—	—		NR			
13446+4819	TDS8951	2011.395	1	1.346	0.008	139.5*	0.7					
13453+4559	COU1915	2011.389	1	1.610	0.008	75.8*	0.3					
13457+2231	YSC49	2012.339	1	0.149	0.040	134.1	8.0	0.00				
13457+2231	YSC49	2012.359	1	0.171	0.040	134.4	8.0					
13477+2128	HDS1939	2011.389	1	1.284	0.024	149.7	0.3					
13477+2128	HDS1939	2011.389	1	1.271	0.010	149.9*	0.5					
13477+2128	COU401	2011.384	1	—	—	—	—		NR			
13488+2753	HDS1942	2011.395	1	1.744	0.014	42.7	0.3					
13493+3140	COU601	2012.339	1	1.327	0.007	301.0	0.3	2.76				
13509+3555	COU1132	2012.339	1	0.796	0.007	147.1	0.3	3.06				
13509+4531	HDS1949	2011.395	1	0.134	0.040	45.0	8.0					
13512+2948	A685	2012.397	1	0.790	0.007	19.2	0.3	2.44				
13514+2620	SKF260AB	2012.339	1	3.213	0.016	1.3	0.3	4.20				
13514+2620	YSC50Aa,Ab	2012.339	1	0.221	0.007	218.9	0.3	1.27				
13518+3649	COU1133	2012.351	1	0.270	0.014	156.4	1.7					
13524+3851	TDS9012	2011.395	1	0.632	0.007	101.0	0.5					
13535+3618	COU1134	2011.384	1	1.559	0.008	250.6*	0.3					
13554+5002	COU2689	2012.359	1	0.649	0.007	327.4*	0.5					
13583+3922	COU1432	2012.361	1	1.670	0.008	192.0*	0.3					
13584+1120	HDS1959	2011.387	1	0.235	0.007	180.1	0.5					
13584+1120	TDS9051	2011.395	1	—	—	—	—		NR			
13591+3549	COU1265	2011.384	1	1.715	0.009	93.9*	0.3					
13593+3042	COU602	2012.339	1	0.435	0.007	124.8	0.6					
13593+3042	COU602	2012.339	1	0.388	0.007	304.7	0.3	1.79				
13593+3042	TDS9064	2011.395	1	—	—	—	—		NR			
14012+2522	A569	2012.359	1	0.597	0.007	147.4*	0.3					
14014+1710	COU2193	2012.359	1	2.198	0.011	315.8	0.3	3.14				
14017+3759	COU1433	2012.339	1	0.494	0.007	296.7	0.3	2.30				
14034+2409	COU302	2012.359	1	0.861	0.007	175.3	0.3	3.20				
14029+2434	COU301	2011.384	1	0.906	0.015	126.1*	0.6					
14029+2434	COU301	2011.384	1	0.906	0.007	124.4	0.3	3.69				
14029+2434	COU301	2011.384	1	0.915	0.007	127.2*	0.5					
14029+2434	COU301	2012.339	1	0.897	0.007	126.4	0.3	3.38				
14029+2434	COU301	2012.339	1	0.901	0.007	125.2	0.3	3.38				
14048+3243	COU603	2011.389	1	0.697	0.007	53.4*	0.3					
14059+3848	HU1263	2011.387	1	0.275	0.010	195.9*	1.3					
14059+4059	COU1585	2011.389	1	0.899	0.007	214.6*	0.3					

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14066+2443	COU303	2012.359	1	1.930	0.010	288.9	0.3	3.51				
14073+2505	A2384	2011.387	1	1.046	0.007	111.8*	0.3					
14081+4503	COU1755	2011.392	1	1.162	0.007	163.4*	0.3					
14081+4503	COU1755	2011.392	1	1.158	0.007	163.6*	0.3					
14081+4503	STT276	2012.339	1	—	—	—	—		NR			
14084+2910	A1363	2011.387	1	2.577	0.013	229.4*	0.3					
14087+3341	HU742	2012.339	1	0.209	0.007	341.7	0.3	0.97		FMR2012h	-0.08	-2.3
14087+3341	HU742	2011.395	1	0.237	0.010	349.4*	1.5			FMR2012h	-0.03	2.4
14105+4823	COU2108	2012.359	1	0.542	0.007	324.6	0.3	2.12				
14105+4823	COU2108	2012.397	1	0.563	0.007	321.8	0.3	1.99				
14109+1513	HDS1989	2011.387	1	0.229	0.011	353.3*	1.4					
14109+1513	HDS1989	2011.387	1	0.459	0.020	353.2*	1.8					
14111+3628	HU1264	2011.387	1	0.356	0.007	12.4	0.6					
14111+3628	HU1264	2011.387	1	1.356	0.007	359.9*	0.3					
14113+3013	COU605	2012.359	1	0.249	0.007	340.2*	0.7					
14122+2722	J1125	2011.395	1	0.691	0.007	95.7*	0.5					
14122+2722	STT278	2011.392	1	—	—	—	—		NR			
14122+4411	STT278	2012.359	1	0.361	0.007	277.0*	0.5			Hrt2009	-0.02	-1.1
14127+2233	HDS1993	2011.387	1	0.164	0.040	148.9	8.0					
14127+2233	HDS1993	2011.395	1	0.176	0.040	145.6	8.0					
14127+2349	YSC53	2012.359	1	1.123	0.007	129.5*	0.3					
14129+5043	YSC105	2012.361	1	0.595	0.010	31.5	0.5					
14129+5043	YSC105	2012.361	1	0.585	0.007	28.4	0.4					
14129+5043	YSC105	2012.361	1	0.593	0.007	209.4	0.3	3.76				
14138+1720	HDS1998AB	2012.359	1	0.891	0.007	358.9*	0.3					
14138+1720	YSC54	2012.359	1	0.201	0.007	172.6	0.4					
14138+3059	COU606	2011.387	1	0.145	0.040	220.5	8.0			Doc2008a	0.02	9.6
14138+3059	COU606	2012.339	1	0.082	0.007	181.8	0.3	1.93		Doc2008a	-0.04	-5.0
14140+3720	COU1434	2012.361	1	0.541	0.014	105.9	1.0					
14164+3708	HDS2005	2011.389	1	0.161	0.040	171.2	8.0					
14164+3708	HDS2005	2011.384	1	3.565	0.018	174.8*	0.3					
14165+3334	HU1266	2011.392	1	0.218	0.007	144.4	2.1			Doc2012e	-0.03	-1.3
14165+3334	HU1266	2011.392	1	0.215	0.007	146.9	1.4			Doc2012e	-0.04	1.2
14165+3334	HU1266	2012.397	1	0.177	0.040	146.5	8.0	1.27		Doc2012e	-0.07	-2.0
14167+4055	COU1756	2011.390	1	1.021	0.007	42.4*	0.3					
14185+4755	BU1273	2011.395	1	1.305	0.007	176.8*	0.3					
14192+3755	COU1435	2011.390	1	1.688	0.030	42.1	0.9					
14203+4830	STF1834	2011.395	1	1.618	0.008	103.2*	0.3			Izm2019	0.01	0.3
14203+4830	DAN1	2012.361	1	—	—	—	—		NR			
14205+2634	DAN1	2012.361	1	0.147	0.040	131.2	8.0					
14208+4617	COU2194	2012.362	1	0.233	0.007	56.7	1.3					
14208+4617	COU2194	2011.395	1	0.173	0.040	52.5	8.0					
14213+3050	COU482	2012.397	1	0.655	0.007	121.0	0.3	1.02				
14224+3557	TDS9175	2011.395	1	0.232	0.007	6.5	2.6					
14233+2111	COU61	2011.392	1	1.914	0.010	100.2	0.3					
14234+4736	A149	2012.397	1	0.780	0.007	123.7	0.3	1.18				
14249+3730	HDS2029	2011.384	1	0.176	0.040	284.1*	8.0					
14260+4213	COU1757	2011.387	1	0.114	0.040	54.7	8.0			Hrt2014b	-0.01	5.3
14260+4213	COU1757	2012.359	1	0.134	0.040	73.5	8.0			Hrt2014b	0.01	12.6
14260+4213	COU1757	2012.362	1	0.087	0.040	71.0	8.0			Hrt2014b	-0.04	10.1
14262+2154	HDS2032	2011.392	1	0.148	0.040	170.1	8.0					
14277+2842	TDS750	2011.384	1	1.049	0.007	299.9*	0.4					
14280+3546	COU1266	2011.387	1	1.221	0.007	56.7*	0.3					
14280+3546	COU1266	2012.362	1	1.215	0.007	237.3*	0.3					

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14286+1818	COU2508	2012.339	1	0.440	0.007	253.5	0.3	2.25				
14289+4226	COU1758	2011.390	1	0.582	0.007	147.9*	0.4					
14293+1318	HDS2042	2011.387	1	0.271	0.024	123.5*	1.2					
14293+1318	HDS2042	2011.387	1	0.222	0.008	132.9	1.1					
14295+3612	HU1268	2011.395	1	0.281	0.010	341.1*	1.3			Hrt2008	-0.01	2.1
14295+3612	HU1268	2012.359	1	0.298	0.007	341.2*	1.4			Hrt2008	0.00	3.2
14295+3759	COU1436	2011.384	1	0.946	0.007	42.8*	0.3					
14298+1550	HEI532BC	2012.339	2	1.742	0.015	69.1	0.3	3.14				
14301+4737	COU2387	2011.390	1	0.339	0.007	343.3*	0.4					
14303+4709	COU1917	2012.362	1	0.413	0.007	38.5	0.5					
14305+2055	COU97	2012.359	1	0.296	0.010	251.1*	2.0					
14311+2801	COU404	2011.384	1	1.316	0.007	176.9*	0.3					
14312+3426	TDS9227	2011.395	1	1.841	0.009	172.8*	0.3					
14317+3554	COU1267	2011.390	1	0.734	0.007	62.5	0.3					
14323+2641	A570	2011.392	1	0.191	0.040	9.8	8.0			Hei1991	0.02	3.0
14323+2641	A570	2012.474	1	0.193	0.040	172.6*	8.0			Hei1991	0.03	2.5 ^Q
14325+4911	HU57BC	2012.362	1	1.102	0.007	134.7*	0.3	0.57				
14337+4300	COU1586	2011.392	1	1.782	0.009	142.7*	0.3					
14340+4113	COU1437	2012.359	1	0.181	0.040	175.2	8.0					
14340+4500	COU1587	2011.392	1	0.756	0.007	25.5*	0.4					
14345+3801	HDS2057	2011.387	1	0.792	0.010	294.2*	0.5					
14353+4302	YSC55	2012.359	1	0.530	0.021	128.2	0.6					
14367+2014	COU98	2012.397	1	0.318	0.007	168.2	0.3	2.60				
14376+3137	HDS2062	2012.362	1	0.139	0.040	149.6	8.0					
14376+3137	HDS2062	2011.395	1	0.128	0.040	147.0	8.0					
14393+2648	A571	2011.384	1	1.816	0.009	108.6*	0.3					
14403+3331	COU789	2011.390	1	0.992	0.009	217.7*	0.5					
14407+3117	STF1867	2011.461	1	0.700	0.008	355.7*	0.3			Zir2013a	0.02	0.9
14426+3842	COU1268	2011.384	1	0.193	0.040	131.6	8.0					
14426+3842	COU1268	2012.362	1	0.199	0.040	143.9	8.0					
14455+4223	STT285	2011.392	1	0.506	0.007	88.0*	0.4			Sca2015b	0.01	0.9
14459+2344	COU100	2011.390	1	—	—	—	—		NR			
14459+2344	COU100	2012.359	1	—	—	—	—		NR			
14460+4723	HDS2079	2011.390	1	0.631	0.007	313.8*	0.7					
14463+3146	HDS2080	2011.387	1	0.125	0.040	129.3	8.0					
14463+3146	HO263	2011.395	1	—	—	—	—		NR			
14491+4058	HDS2088	2011.387	1	1.320	0.007	89.3*	0.3					
14492+4814	HU647	2011.392	1	0.165	0.083	81.4	8.0					
14492+4814	HU647	2011.392	1	0.201	0.019	79.5	2.7					
14493+4950	HDS2091	2011.392	1	1.061	0.007	345.1*	0.3					
14506+4326	HDS2094	2011.392	1	0.208	0.009	22.4*	1.0					
14515+4456	STT287	2011.395	1	0.691	0.007	0.4*	0.3			Hei1997	-0.07	1.8
14521+2017	HO389	2011.458	1	1.512	0.008	86.6*	0.3					
14521+4629	HDS2097	2011.392	1	0.469	0.007	45.1*	2.7					
14521+4629	HDS2097	2011.392	1	0.491	0.106	33.0	8.2					
14523+4413	COU1588	2011.395	1	1.044	0.007	203.3*	0.3					
14534+1542	STT288	2011.461	1	1.075	0.007	160.8*	0.3			Hei1998	0.02	0.2
14546+2252	COU408	2011.392	1	1.874	0.009	354.5*	0.3					
14558+3939	A1627	2012.359	1	0.216	0.007	191.5	1.1			Baz1993a	-0.00	1.0
14558+3939	A1627	2011.384	1	0.159	0.040	190.9	8.0			Baz1993a	-0.06	2.3
14560+3807	TDS9348	2011.395	1	1.679	0.008	258.8*	0.3					
14565+1706	YSC7	2012.359	1	0.318	0.015	166.5	2.4					

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14569+2034	HU648	2011.387	1	1.453	0.007	135.8*	0.3					
14569+3429	HDS2110	2011.384	1	1.399	0.008	22.5*	0.3					
14575+3124	HDS2112	2011.392	1	0.814	0.007	156.8	0.4					
14588+3551	COU1136	2012.359	1	0.143	0.041	148.4	8.0			Gur2020	0.10	-11.3
14593+4649	COU1760	2011.395	1	0.196	0.040	251.6*	8.0			Hrt2014b	-0.03	2.5
14593+4649	COU1760	2011.395	1	0.249	0.007	252.8	1.1			Hrt2014b	0.03	3.8
14595+1753	COU188	2012.474	1	0.282	0.034	51.0	6.5					
14595+3957	COU1269	2011.384	1	0.154	0.040	110.1	8.0					
14595+3957	COU1269	2011.395	1	0.202	0.008	103.1	2.5					
14595+3957	COU1269	2012.359	1	—	—	—	—		NR			
14597+3410	A1365	2011.461	1	2.001	0.010	58.6*	0.3					
15005+3741	COU1270	2011.384	1	0.449	0.007	227.8*	0.4					
15009+4526	HDS2118	2011.390	1	1.869	0.009	169.6*	0.3					
15010+4543	HDS2119	2011.390	1	0.401	0.013	122.6*	3.1					
15029+1655	COU63	2011.387	1	1.953	0.010	46.8*	0.3					
15034+3319	COU791	2011.390	1	1.241	0.007	17.4*	0.3					
15038+2006	HU744	2011.392	1	0.966	0.011	353.4*	0.6					
15038+4739	STF1909	2011.458	1	1.471	0.007	61.4*	0.3			Izm2019	0.01	0.1
15042+3641	HDS2124	2011.390	1	0.256	0.010	70.2	2.7					
15049+3428	STF1908	2011.461	1	1.338	0.007	332.5*	0.3					
15077+4632	COU1761	2011.392	1	1.156	0.007	265.9*	0.3					
15078+3956	COU1271	2011.384	1	0.393	0.007	191.2*	0.5			Cou1999b	0.01	-22.3
15078+3956	COU1271	2012.359	1	0.383	0.009	190.2	0.5			Cou1999b	0.00	-26.0
15088+4014	COU1272	2012.359	1	0.286	0.013	54.7	0.8					
15088+4014	COU1272A,BC	2012.359	1	1.275	0.028	177.0	0.9					
15088+4014	A690	2011.384	1	—	—	—	—		NR			
15092+3508	COU972	2011.395	1	1.438	0.007	323.8*	0.3					
15105+4800	HDS2131	2011.461	1	3.508	0.024	59.8	0.4					
15105+4800	HDS2131	2011.461	1	0.240	0.023	152.9	3.3					
15106+2021	HU144	2012.359	1	0.143	0.040	140.6*	8.0					
15109+1749	COU64	2011.458	1	1.094	0.007	22.6	0.3					
15121+1859	COU189	2011.469	1	0.466	0.011	140.5*	0.3					
15127+4835	POP1220	2011.461	1	0.731	0.016	307.3*	0.3					
15135+3244	ES2476	2012.474	1	1.307	0.014	25.4	3.2					
15135+3244	ES2476	2012.474	2	1.325	0.040	27.2	1.3					
15136+3453	HO60	2011.384	1	0.204	0.015	76.3*	1.6			Doc2017f	0.01	9.1
15143+1959	COU102	2012.487	1	1.142	0.008	93.9*	0.3					
15143+1959	COU102	2012.359	1	1.181	0.007	95.1*	0.3					
15149+3818	STF1926	2011.392	1	0.365	0.044	226.7*	1.0					
15168+4100	ES1551	2011.461	1	1.313	0.007	332.4*	0.9					
15175+3241	COU793	2011.392	1	1.452	0.008	60.8*	0.3					
15175+4804	COU1762	2011.390	1	1.122	0.007	70.9	0.5					
15181+3245	COU794	2011.384	1	0.194	0.040	135.4	8.0					
15181+3507	HO61	2012.474	2	2.449	0.015	255.8*	0.7					
15183+2650	STF1932	2011.469	1	1.621	0.008	263.9*	0.3			Izm2019	0.01	9.1
15186+2356	COU307	2011.458	1	0.317	0.007	3.8	0.7			Lin2017c	-0.04	2.0
15186+2356	COU307	2012.359	1	0.332	0.007	1.2	1.4			Lin2017c	-0.02	0.3
15188+3627	HDS2152	2011.384	1	1.143	0.007	223.9*	0.3					
15195+2515	COU308	2011.392	1	1.413	0.007	355.3*	0.3					
15200+4603	ES75AB,C	2011.392	1	4.241	0.021	32.5*	0.3					
15200+4603	ES75AB,C	2011.392	2	4.242	0.021	32.4*	0.3					
15200+4603	A1631	2011.392	1	0.767	0.007	253.8*	0.3					
15206+1523	HU1160	2011.461	1	0.249	0.015	144.8	2.0			Hrt2009	-0.04	13.2
15206+4656	HDS2155	2011.469	1	1.010	0.007	194.6*	0.3					

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15208+3459	HO62	2011.469	1	1.452	0.007	103.1*	0.3					
15209+4540	HDS2157	2011.461	1	0.695	0.011	279.4*	0.3					
15211+1640	A2229	2011.469	1	1.559	0.008	44.7	0.3					
15223+4203	COU1440	2011.461	1	0.917	0.010	175.2	1.2					
15224+3210	COU795	2011.469	1	0.694	0.007	324.3*	0.8					
15232+3017	STF1937	2012.487	1	0.661	0.007	189.5*	0.5			Mut2010b	0.00	2.2
15232+3017	STF1937	2011.461	1	0.638	0.007	180.6*	0.4			Mut2010b	0.00	1.2
15233+3619	A1367	2011.384	1	0.670	0.007	333.3*	0.3					
15233+4022	COU1441	2012.359	1	0.208	0.010	23.9	0.9					
15245+3723	STF1938Ba,Bb	2012.474	2	2.289	0.015	5.4*	0.3			Izm2019	0.01	0.6
15247+2318	COU105	2012.474	2	2.069	0.056	89.0	0.7					
15255+1546	HEI381	2011.469	1	0.277	0.015	181.2	1.8					
15271+2355	A82	2011.461	1	0.827	0.007	172.6*	0.6					
15294+4041	COU1273	2011.384	1	1.137	0.007	141.3	0.3					
15307+2805	COU796	2011.384	1	0.370	0.007	115.7	0.6					
15307+2805	A1634	2011.461	1	—	—	—	—		NR			
15319+1623	A2075	2011.461	1	0.471	0.007	95.2*	0.7					
15329+3122	COU610	2011.461	1	0.839	0.012	199.6*	0.3					
15331+3113	COU611	2011.392	1	0.670	0.007	96.4*	0.3					
15340+3320	COU797	2011.384	1	1.767	0.009	202.2*	0.3					
15344+3201	HU746	2012.474	2	1.984	0.021	36.9	0.3					
15347+2655	COU798	2012.487	1	0.179	0.040	203.8*	8.0			Doc2010h	-0.01	-10.2
15360+3948	STT298	2012.495	1	1.152	0.007	181.8*	0.3			Sod1999	-0.01	0.6
15362+4915	HDS2194	2011.469	1	0.115	0.040	148.5	8.0					
15363+4300	COU1444	2011.469	1	0.961	0.007	310.3*	0.5					
15371+2646	HDS2199AB	2012.635	1	0.396	0.007	170.7	0.5					
15371+2646	HDS2199AC	2011.469	1	2.093	0.012	62.9	0.3		ND			
15376+2110	HU578	2011.469	1	1.209	0.007	136.3*	0.3					
15376+3427	COU975	2011.384	1	0.948	0.007	161.1	0.3					
15376+3427	COU975	2011.469	1	0.951	0.007	340.7*	0.3					
15382+3615	STF1964CD	2012.487	1	1.574	0.008	20.6*	0.3			Dru1995	0.06	1.2
15382+3615	STF1964CD	2012.495	1	1.569	0.008	20.4*	0.4			Dru1995	0.05	1.0
15389+3401	COU976	2011.384	1	1.228	0.007	128.2*	0.4					
15390+2545	COU612	2012.487	1	0.266	0.011	348.4*	0.9			Doc2011h	-0.02	-1.9 ^Q
15396+7959	STF1989	2011.518	1	0.666	0.007	22.7*	0.3			Hrt2008	0.04	-0.4
15402+4041	COU1274	2011.384	1	0.949	0.007	95.5*	0.6					
15402+4041	COU613	2012.487	1	—	—	—	—		NR			
15422+7256	MLR192	2011.518	1	1.031	0.007	65.9*	0.6					
15422+7256	A1635	2011.469	1	—	—	—	—		NR			
15451+2936	COU614	2011.469	1	0.293	0.007	214.1*	0.4					
15473+7327	MLR193	2011.518	1	0.567	0.007	181.3	0.5					
15473+7327	MLR193	2011.518	1	0.567	0.007	181.3	0.5					
15474+1851	COU192	2011.469	1	1.897	0.009	187.1*	0.3					
15478+3301	HDS2225	2011.384	1	0.159	0.040	128.5	8.0					
15479+4159	A1638	2011.458	1	0.261	0.007	229.4*	0.7					
15489+2314	HDS2227	2011.469	1	0.627	0.007	287.3*	0.7					
15500+6012	HDS2229	2011.518	1	0.224	0.016	184.6*	0.9					
15501+3046	HDS2230	2011.384	1	1.779	0.009	313.0*	0.3					
15503+3449	A1858	2011.458	1	0.349	0.007	282.8*	0.5					
15509+1911	A2078	2011.524	1	1.091	0.007	164.7*	0.6					
15521+0528	A1128	2011.524	1	1.545	0.008	350.1*	0.4					
15521+1052	BAG7	2011.524	1	0.176	0.040	353.0	8.0			Doc2019c	0.10	-0.6
15530-0218	RST5035	2011.524	1	0.480	0.007	115.1*	1.5					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
15530+6007	HU913AB	2011.518	1	0.406	0.007	310.3*	0.3					
15542+1659	A2080	2011.521	1	0.346	0.015	101.5*	0.4			Hrt2008	-0.03	-3.1
15543+0528	A1130	2011.524	1	1.967	0.010	329.2*	0.3					
15568+1229	STF1988	2011.526	1	1.849	0.010	250.5*	0.9					
15583+4019	COU1448	2011.384	1	1.096	0.009	257.0*	0.3					
15583+4019	COU1448	2011.458	1	1.106	0.007	76.4*	0.7					
15583+4019	JEF2	2011.458	1	—	—	—	—			NR		
15583+4019	JEF2	2012.487	1	—	—	—	—			NR		
15595+2555	JEF2	2011.458	1	0.134	0.040	134.8	8.0					
15596+4440	COU1764	2012.496	1	1.312	0.007	207.7*	0.3					
16001+3625	COU1138	2011.458	1	0.187	0.040	170.1	8.0					
16001+3625	COU1138	2012.496	1	0.243	0.007	181.6	1.1					
16003+1140	A1639AB	2011.526	1	0.264	0.007	93.0*	1.3			Zir2012b	0.03	4.9
16003+5856	STF2006	2011.515	1	1.483	0.007	178.2*	0.3					
16004+5431	HU154	2012.528	1	1.537	0.008	117.1	0.3					
16004+5431	HU154	2012.528	1	1.555	0.013	117.4	0.4					
16004+7331	MLR195	2011.515	1	1.237	0.007	299.4*	0.3					
16007+0051	RST5403	2011.521	1	0.861	0.007	55.5*	0.5					
16009+1918	A2081	2012.487	1	2.392	0.012	324.4*	0.3					
16011+6531	HU1170	2012.523	1	0.995	0.007	148.9*	0.3					
16012+0136	HEI792	2011.521	1	1.856	0.009	78.7	0.3					
16013-0658	BU623	2011.521	1	0.765	0.007	223.9*	0.3					
16022+6004	MLR45	2011.515	1	0.398	0.007	73.3*	0.3					
16026+2637	HDS2262	2011.469	1	0.325	0.014	266.5*	0.8					
16032+2851	STF2004	2012.479	1	1.835	0.009	278.2*	0.3					
16038+5906	MLR535	2011.518	1	1.599	0.010	130.6*	0.3					
16040+2515	TRN1	2012.479	1	0.207	0.011	4.8	1.2					
16043+3230	HDS2267	2012.496	1	0.438	0.007	329.6*	0.6					
16044+3625	HDS2268	2011.469	1	0.347	0.007	190.5*	1.9					
16048+2028	COU194	2011.458	1	1.902	0.010	339.9*	0.3					
16048+2028	COU194	2012.496	1	1.877	0.009	160.1*	0.3					
16048+7016	HDS2269	2012.528	1	0.218	0.108	73.1	9.0					
16048+7016	HDS2269	2012.528	1	0.286	0.007	249.9*	1.4					
16053+5810	KUI71	2011.515	1	0.638	0.007	11.2*	0.5					
16053+5810	KUI71	2012.523	1	0.610	0.007	11.5	0.7	0.05				
16053+5810	KUI71	2012.523	1	0.614	0.039	13.0	2.3					
16053+5810	KUI71	2012.523	1	0.621	0.007	11.8*	0.3					
16057+0255	A2178	2011.521	1	1.246	0.007	327.7*	0.3					
16062+1809	COU2389	2011.469	1	1.101	0.007	56.2*	0.3					
16062+1809	YSC110	2012.523	1	—	—	—	—			NR		
16065+7547	HU916	2011.518	1	0.300	0.012	169.6*	0.8					
16079+1425	A1798	2011.510	1	0.199	0.040	350.8*	8.0			USN2002	0.04	8.7
16080+4523	BU355	2012.496	1	0.146	0.040	280.1*	8.0					
16092-0549	RST4559	2011.526	1	0.931	0.007	295.7*	0.3					
16094+1305	HEI385	2011.510	1	1.931	0.010	189.7*	0.3					
16096+2658	HDS2282	2012.517	1	0.405	0.007	55.1*	0.6					
16097-0633	RST3932	2011.526	1	0.238	0.010	154.7*	1.2					
16097+4900	COU1919	2012.517	1	0.737	0.007	134.0*	0.3					
16107+4019	COU1277	2011.458	1	0.691	0.008	171.2*	0.6					
16109+6554	MLR179	2011.515	1	0.284	0.007	333.4*	2.4					
16118-0041	RST5046	2011.526	1	1.044	0.008	358.2*	0.3					
16118+3424	STT306	2012.479	1	0.222	0.007	5.4*	1.1					
16121+3303	HU1171	2012.517	1	1.129	0.007	305.1*	0.6					
16126+5146	YSC112	2012.496	1	0.761	0.007	154.1	0.5					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
16126+5146	YSC112	2012.496	1	0.756	0.007	334.8	0.3	3.30				
16132+7339	MLR196	2011.515	1	0.730	0.007	235.9*	0.3					
16132+7339	MLR196	2012.531	1	0.722	0.007	55.7	1.2					
16132+7339	MLR196	2012.531	1	0.724	0.007	56.5*	0.9					
16135+3202	HDS2293	2011.469	1	0.402	0.015	116.2*	2.5					
16135+3202	HDS2293	2011.469	1	—	—	—	—		NR			
16135+7147	A1136	2011.518	1	0.751	0.010	8.9*	0.3					
16135+7147	YSC58	2012.479	1	—	—	—	—		NR			
16152-0709	RST3938	2011.521	1	1.227	0.010	28.2	0.4					
16152+3443	HDS2298	2011.458	1	0.355	0.024	190.6*	1.7					
16160+6228	MLR53	2012.523	1	1.863	0.009	148.5	1.2					
16160+6228	MLR53	2012.523	1	1.840	0.010	147.4*	0.3					
16162+6126	MLR49	2012.528	1	0.354	0.007	90.0*	0.3					
16164+4327	COU1450	2011.469	1	1.331	0.007	61.9*	0.3					
16166+4001	COU1278	2012.496	1	1.252	0.007	155.7*	0.3					
16168+0051	A2182	2011.526	1	1.461	0.007	90.0*	0.3					
16172+3341	COU980	2011.469	1	0.543	0.007	341.4*	1.2					
16178+0417	HEI891	2011.521	1	1.252	0.007	294.6*	0.3					
16178+3148	HDS2303	2012.517	1	1.573	0.008	37.9	0.3					
16178+3148	HDS2303	2012.517	1	0.308	0.007	122.7	0.3	3.64				
16192+2553	COU412	2012.487	1	0.954	0.007	82.7*	0.3					
16199+2238	LAW4Aa,Ab	2012.487	1	0.277	0.007	28.3	0.7					
16199+2238	LAW4	2012.479	1	—	—	—	—		NR			
16199+3600	COU981	2011.469	1	1.077	0.009	131.6*	0.3					
16211+0250	HEI794AB	2011.521	2	0.855	0.018	58.0*	0.3					
16211+0250	HEI794AC	2011.521	2	3.749	0.037	33.8*	0.3		ND			
16212+2259	HU481	2012.517	1	0.362	0.007	257.8*	0.4			Hrt2010a	0.03	-2.5
16212+2259	HU481	2012.517	1	0.357	0.007	259.3	0.3	2.45		Hrt2010a	0.02	-0.9
16213+7434	HDS2310AB	2011.515	1	0.410	0.014	102.8	1.7					
16213+7434	HDS2310AB	2012.523	1	—	—	—	—		NR			
16213+7434	HDS2310AC	2011.515	1	2.698	0.013	26.7	0.3		ND			
16213+7434	HDS2310AC	2012.523	1	2.706	0.014	25.4*	0.3		ND			
16213+7434	HDS2310AC	2012.523	1	2.733	0.014	26.3	0.5		ND			
16216+3631	COU982	2012.517	1	0.280	0.007	237.1*	0.3			Hrt2009	-0.02	-2.2
16220+3908	COU1279	2012.496	1	1.672	0.008	27.9*	0.3					
16229+3803	COU1281	2012.517	1	0.215	0.007	202.8*	2.1			Doc2012h	0.06	-4.2
16233+3251	COU619	2012.479	1	0.481	0.007	8.5*	0.4					
16233+3251	HDS2316	2011.521	1	—	—	—	—		NR			
16235+3321	BU951AB,C	2012.520	1	1.049	0.007	30.4	0.3					
16235+3321	BU951AB,C	2012.520	1	1.044	0.007	30.4*	0.4					
16235+3321	VBS26AB	2012.520	1	0.183	0.040	358.2*	8.0			USN2002	0.06	0.4
16238+6142	STF2054	2012.528	1	0.971	0.007	351.0*	0.3					
16238+6142	YSC59	2012.496	1	—	—	—	—		NR			
16252+4652	YSC60	2012.496	1	0.625	0.009	136.2	0.9					
16252+4652	YSC60	2012.496	1	0.201	0.010	2.2	0.6					
16252+4652	YSC60	2012.496	1	—	—	—	—		NR			
16253-0952	BU950	2011.521	1	1.042	0.007	343.7*	0.3					
16257+4921	COU1920	2012.496	1	0.751	0.011	61.4*	0.5					
16265+5037	COU2112	2012.520	1	0.565	0.007	75.7*	0.6					
16270+3708	COU1139	2012.517	1	1.613	0.008	296.4*	0.3					
16272+3521	COU984	2011.469	1	0.632	0.007	354.5*	0.5					
16282+7614	MLR350	2011.518	1	0.906	0.007	228.5*	0.4					
16287+3714	COU1140	2011.469	1	0.803	0.007	351.8*	0.3					
16301+3353	HU1173	2012.517	1	0.207	0.009	60.8	2.3			Hei1997	-0.05	-3.4

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16304+4044	HDS2331	2011.469	1	0.564	0.021	96.4	0.6					
16304+4044	HDS2331	2011.469	1	0.553	0.010	276.7*	0.5					
16308-0218	RST5059	2011.521	1	1.339	0.007	172.1*	0.3					
16309+6318	TDS9943	2012.531	1	0.660	0.007	195.3*	0.4					
16309+6318	TDS9943	2012.531	1	0.677	0.018	13.5	1.2					
16309+6318	HDS2332	2012.547	1	—	—	—	—		NR			
16311+5756	A1138	2011.515	1	0.547	0.007	174.5	0.3					
16312+5725	WOR32	2012.523	1	1.002	0.007	1.0*	0.3					
16313+5557	MLR636	2011.515	1	0.577	0.007	270.1*	0.3					
16315+7237	HDS2334	2012.528	1	1.057	0.007	174.2	0.6					
16315+7237	HDS2334	2012.528	1	1.081	0.011	175.1*	0.3					
16315+7237	HDS2334	2011.518	1	1.020	0.007	175.3*	0.4					
16319+5259	A1862	2012.528	1	0.336	0.038	67.6	4.4					
16319+5259	A1862	2012.528	1	0.401	0.007	63.0*	1.0					
16322+6940	MLR180	2011.515	1	0.551	0.007	246.9*	0.4					
16326+2314	BU817	2012.547	1	0.942	0.007	328.1*	0.3					
16326+4007	STT313	2012.520	1	0.940	0.007	130.9*	0.5					
16330+0233	A2234	2011.521	1	0.941	0.009	121.9*	0.9					
16330+0233	A2234	2011.521	1	0.982	0.007	121.8	0.3	3.47				
16332-0956	RST3952	2011.526	1	2.069	0.010	92.9*	0.3					
16335+3030	BU818	2011.521	1	1.576	0.008	238.8*	0.6					
16335+3030	BU818	2011.521	1	1.476	0.007	238.8	0.3	3.13				
16337+4520	COU1590	2012.520	1	1.209	0.007	29.4*	0.3					
16339+7159	HDS2342	2011.518	1	0.324	0.007	264.9*	0.4					
16339+7159	WS1105	2012.517	1	—	—	—	—		NR			
16357+6716	MLR181	2011.518	1	1.379	0.007	105.0	0.3					
16360+6237	MLR54	2011.518	1	1.522	0.008	57.6*	0.3					
16366+5502	TDS824	2012.528	1	1.559	0.013	296.5*	0.3					
16366+6948	BAZ7	2011.515	1	0.490	0.022	87.2	8.5					
16366+6948	BAZ7	2012.523	1	0.462	0.029	90.3	9.8					
16367+4230	COU1451	2011.469	1	1.113	0.007	2.0*	0.4					
16369+4547	COU1591	2012.520	1	0.553	0.007	19.2*	0.3					
16371+1732	COU311	2012.479	1	0.334	0.007	101.9*	1.4			Cou1999b	-0.04	-10.7
16371+1732	COU311	2011.469	1	0.360	0.024	108.3	1.5			Cou1999b	-0.02	-3.6
16376+4510	A1643	2012.547	1	0.780	0.007	151.5*	0.3					
16380+4831	COU1768	2012.496	1	0.613	0.007	300.5*	0.6					
16380+6910	HDS2353	2011.518	1	0.311	0.008	202.1*	0.5					
16381+3935	HDS2355	2012.547	1	0.590	0.007	326.5*	0.7					
16384+3514	COU985	2012.520	1	0.323	0.010	255.0*	0.6			Doc2019h	-0.00	-0.7
16386-0204	RST5062	2011.521	1	0.445	0.007	266.9*	1.1					
16386-0204	RST5062	2011.521	1	0.400	0.007	264.5	0.3	0.99				
16386+3820	STF2080	2012.496	1	0.782	0.007	240.5*	0.3					
16392+6819	YSC113	2012.528	1	0.866	0.015	333.3	0.5					
16396+2344	COU414	2012.496	1	1.753	0.009	197.1*	0.3					
16397-0337	A26	2011.521	1	1.314	0.007	340.9	0.3	2.57				
16397-0337	A26	2011.521	1	1.331	0.007	340.9*	0.4					
16407+7323	MLR197	2012.235	1	1.927	0.010	247.2*	0.3					
16407+7323	MLR197	2011.515	1	0.454	0.008	74.0*	0.8					
16412-0100	HDS2367	2011.524	1	0.799	0.007	68.1*	0.3					

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16413+1816	COU2512	2012.479	1	0.372	0.007	181.8*	0.5					
16413+3006	A349	2012.517	1	0.672	0.007	133.4*	0.3			Hrt2014b	0.01	-0.6
16420+5711	HDS2371	2011.518	1	0.861	0.007	71.8*	0.5					
16420+7353	MLR198	2012.523	1	0.196	0.040	230.8*	8.0			Hrt2014b	-0.04	-7.3 ^Q
16420+7353	MLR198	2011.515	1	0.210	0.010	53.8*	1.6			Hrt2014b	-0.02	-7.4
16421-0847	RST3956	2011.524	1	2.220	0.207	201.7*	10.7					
16422+3753	HDS2372	2012.547	1	0.196	0.040	241.8*	8.0					
16422+4112	STF2091	2012.547	1	0.379	0.007	328.2*	0.7			Zir2014a	0.00	0.2
16428+7122	HDS2373	2011.518	1	0.166	0.040	180.6	8.0					
16429+4814	COU1769	2012.496	1	0.553	0.007	181.6*	0.3					
16429+4814	TDT45	2012.528	1	—	—	—	—		NR			
16433-0953	RST3958	2011.524	1	0.900	0.022	145.3*	0.7					
16434+3539	COU986	2012.479	1	1.272	0.014	221.3*	0.4					
16434+6120	TDS831	2012.528	1	1.084	0.018	215.8*	1.0					
16435-0807	WRH26	2011.526	1	0.331	0.013	168.3	1.7					
16437+5544	MLR570	2012.523	1	1.264	0.007	350.0*	0.3					
16439+4329	D15	2011.469	1	0.413	0.007	2.5*	0.9			Alz2007	0.03	-0.8
16442+2331	STF2094	2012.553	1	1.159	0.013	72.5	0.4					
16442+2331	STF2094	2012.553	1	1.142	0.007	72.9	0.8	0.84				
16446+7145	MLR182Aa,Ab	2011.515	1	0.310	0.012	92.1	0.7			Hei1997	0.00	32.7
16446+7145	MLR182Aa,Ab	2012.528	1	0.311	0.009	92.7*	0.6			Hei1997	0.01	35.5
16446+7145	MLR182Aa,Ab	2012.528	1	0.303	0.007	94.0	2.2			Hei1997	0.00	36.8
16447+3148	COU804	2011.469	1	0.212	0.007	30.2	2.2					
16449+0039	RST5416	2011.524	1	0.769	0.018	101.9*	1.2					
16449+0039	COU490	2012.479	1	—	—	—	—		NR			
16450+3842	COU1284	2012.517	1	0.162	0.040	166.8*	8.0			Cou1999b	0.05	29.3 ^Q
16453+2435	HDS2376	2012.520	1	0.641	0.009	257.6*	0.4					
16458-0828	HDS2378	2011.526	1	0.318	0.007	148.1*	0.8					
16471+7435	TDS835	2012.528	1	1.191	0.007	115.8*	0.7					
16471+7435	MLR61	2011.518	1	—	—	—	—		NR			
16476+4255	GII3	2011.179	1	1.303	0.028	182.3	1.3					
16483+0244	BU43	2011.524	1	1.411	0.008	54.6*	0.3					
16486+2516	COU491	2012.479	1	0.769	0.007	42.0*	0.4					
16488+6752	MLR183	2011.518	1	0.728	0.013	27.8	0.4					
16492+4559	A1866BC	2011.559	1	0.336	0.007	258.1*	0.3	0.16		DRs2012	0.05	-3.7
16492+4559	A1866BC	2012.520	1	0.342	0.007	264.9	0.3	0.10		DRs2012	0.05	-1.4
16492+4559	A1866BC	2012.520	1	0.335	0.007	264.3	0.3	0.23		DRs2012	0.05	-2.0
16492+4559	A1866BC	2012.520	1	0.306	0.007	259.9	0.3	0.36		DRs2012	0.02	-6.4
16492+4559	BU627A,BC	2011.559	1	2.133	0.011	40.7*	0.3					
16492+4559	BU627A,BC	2012.520	1	2.092	0.010	41.2*	0.3					
16492+4559	BU627A,BC	2012.520	1	2.106	0.011	41.4	0.3	3.95				
16497+5816	MLR430	2011.515	1	0.148	0.040	99.4	8.0			Lin2019b	-0.02	-15.8
16509+4259	A575	2011.455	1	0.715	0.007	149.8*	0.6					
16509+4445	COU1592	2011.455	1	0.565	0.007	47.8	0.7					
16510-0836	RST3960	2011.521	1	1.211	0.018	108.3	0.8					
16511+0924	STF2106	2011.510	1	0.752	0.007	173.7*	0.3			Sca2001g	-0.02	1.7
16518+2840	STF2107	2012.496	1	1.433	0.007	102.2*	0.3			Izm2019	0.00	-0.6
16519+6755	HEI386	2011.518	1	0.101	0.055	171.5	8.2					
16519+6755	MLR185	2011.515	1	—	—	—	—		NR			
16519+6755	MLR185	2012.523	1	—	—	—	—		NR			
16522+1535	HU1278	2011.524	1	1.328	0.010	0.2*	0.3					
16524+3521	COU987	2012.487	1	1.528	0.008	27.4*	0.3					
16533+4122	COU1286	2011.455	1	0.866	0.007	136.7*	0.3					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
16539+2547	COU492	2012.547	1	0.536	0.012	92.0*	0.3					
16540+2906	A350	2012.517	1	0.593	0.007	148.0*	0.4					
16544+5802	MLR431	2012.523	1	2.220	0.011	9.9*	0.3					
16550+3223	COU988	2011.455	1	1.640	0.010	265.6*	0.3					
16557+1544	HEI70	2011.510	1	1.303	0.013	137.6	0.3					
16557+1544	RUC9	2012.487	1	—	—	—	—		NR			
16564+3755	COU1287	2012.479	1	0.719	0.007	162.6*	0.3					
16564+6502	STF2118	2011.518	1	1.031	0.007	66.6	0.3			Izm2019	0.00	0.4
16564+6502	STF2118	2012.531	1	1.023	0.007	66.5*	0.3			Izm2019	0.01	0.4
16564+6502	STF2118	2012.531	1	1.014	0.017	66.9	0.3			Izm2019	-0.00	0.8
16565+4108	COU1288	2011.455	1	1.503	0.008	182.8*	0.3					
16566+5711	A1143	2011.518	1	0.317	0.008	46.1	0.9			Hrt2000c	-0.01	-2.0 ^Q
16566+5711	A1143	2012.531	1	0.327	0.007	45.4*	0.5			Hrt2000c	0.00	-0.8 ^Q
16566+5711	A1143	2012.531	1	0.345	0.017	47.0	0.6			Hrt2000c	0.02	0.8 ^Q
16566+5711	A1143CD	2011.518	1	0.713	0.007	139.8*	0.3					
16566+5711	A1143CD	2012.531	1	0.693	0.008	137.7	1.4					
16566+5711	A1143CD	2012.531	1	0.696	0.007	139.6*	0.4					
16567+1539	HDS2395	2011.526	1	0.148	0.040	153.1	8.0					
16569+1540	HEI71AB	2011.510	1	1.267	0.008	76.2*	0.3					
16573+4950	COU1771	2012.517	1	1.815	0.009	243.8*	0.3					
16574+1444	A1142	2011.510	1	2.045	0.010	129.2*	0.3					
16576+6027	HDS2398	2011.518	1	0.466	0.010	59.5*	0.3					
16579-0644	RST3964	2011.521	1	2.399	0.015	184.0*	0.3					
16583+3107	COU989	2012.487	1	0.266	0.007	194.6*	0.7					
16584+3943	COU1289	2011.469	1	—	—	—	—		NR			
16584+3943	COU1289	2012.479	1	0.131	0.040	63.1	8.0			Doc2013e	0.02	-3.3
16584+6935	WRH25AB	2011.518	1	1.244	0.008	343.5*	0.6					
16584+6935	WRH25AB	2012.523	1	1.294	0.008	342.9*	0.3					
16584+6935	WRH25Aa,Ab	2012.523	1	0.174	0.040	174.2	8.0					
17003+0106	A2235	2011.521	1	0.801	0.007	267.0*	0.3					
17005+0635	CHR59	2011.526	1	—	—	—	—		NR			
17005+7514	HDS2408	2011.518	1	0.601	0.007	110.8*	0.4					
17006+2002	COU199AB	2011.556	1	0.244	0.018	13.5	4.4					
17006+2002	COU199AC	2011.556	1	1.300	0.007	331.4*	0.4		ND			
17006+2026	COU200	2012.487	1	1.465	0.010	132.8*	0.3					
17006+2026	COU200	2011.455	1	1.464	0.009	312.7*	0.3					
17013+6937	HEI245	2012.528	1	1.353	0.013	116.2	1.4					
17013+6937	HEI245	2012.528	1	1.362	0.015	296.1*	0.5					
17014-0047	RST5073	2011.521	1	0.675	0.009	21.1*	0.9					
17019+3943	BAG26	2012.575	1	0.287	0.021	31.8	2.2					
17036+6948	A1146	2011.515	1	0.325	0.012	104.2*	0.8			USN2007b	0.03	-2.5
17039+1941	BU822	2011.524	1	1.528	0.008	223.9*	0.3					
17039+3212	DAE6	2012.575	1	1.365	0.010	149.0	0.9	0.65				
17039+3212	DAE6	2012.575	1	1.341	0.036	147.4	0.7					
17039+3212	DAE6	2012.575	1	1.343	0.007	147.1	0.6					
17039+3212	DAE6	2012.586	1	1.339	0.027	146.7	0.5	2.23				
17039+3212	DAE6	2012.586	1	1.341	0.007	147.8*	0.3					
17039+3212	DAE6	2012.586	1	1.353	0.008	148.1	0.3					
17039+5314	MLR603	2012.528	1	0.368	0.013	166.8	1.2					
17043+4445	COU1593	2012.517	1	0.490	0.007	199.1*	0.3					
17043+4445	COU1593	2011.469	1	0.490	0.007	198.0*	0.5					
17044+3314	HO555	2011.556	1	1.462	0.012	186.3*	0.7					
17046-0339	RST4565	2011.521	1	0.779	0.009	165.3*	0.3					
17047+1936	PRY2AB	2011.573	1	1.849	0.009	47.7	0.3					

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17047+1936	HDS2417	2011.526	1	—	—	—	—		NR			
17053+5927	MLR353	2011.518	1	0.718	0.007	353.5*	0.3					
17055+1033	BU357	2011.524	1	1.457	0.008	307.2*	0.3					
17060+4616	TDT212	2012.547	1	1.209	0.007	131.0*	0.3					
17063+2631	A228	2012.569	1	0.534	0.007	6.9*	0.8					
17063+2631	A228	2012.569	1	0.537	0.015	7.2	0.5	0.55				
17063+2631	A228	2012.569	1	0.511	0.010	4.7	2.2					
17064+3114	TDT214	2012.548	1	0.734	0.007	354.9*	0.7					
17067-0749	RST3965	2011.521	1	1.683	0.008	296.8*	0.3					
17067+2225	COU110	2011.556	1	1.430	0.007	90.6*	0.3					
17073+4604	COU1773	2011.469	1	0.914	0.007	23.7*	0.3					
17073+5920	MLR354	2011.518	1	1.675	0.008	288.8*	0.3					
17074+6229	HU918	2011.515	1	0.233	0.012	37.6	1.8					
17075+3810	COU1291	2011.469	1	0.238	0.007	126.3*	1.2		Doc2011a		-0.04	1.9 ^Q
17075+3810	COU1291	2011.469	1	0.272	0.008	125.3	1.7		Doc2011a		-0.01	0.9 ^Q
17075+3810	COU1291	2012.479	1	0.274	0.007	127.6*	1.8		Doc2011a		-0.01	2.0 ^Q
17075+5126	COU1921	2012.496	1	0.528	0.007	284.8*	0.4					
17076+4108	COU1292	2011.455	1	0.523	0.007	347.8*	0.7					
17080-0957	RST3966	2011.521	1	0.442	0.010	108.7*	0.9					
17080+3556	HU1176	2011.559	1	0.173	0.040	99.8*	8.0		Mut2010b		0.04	2.1
17080+3556	HU1176	2012.517	1	0.153	0.040	99.8	8.0		Mut2010b		0.04	14.3
17080+3556	CHR60Aa,Ab	2012.520	1	—	—	—	—		NR			
17084-0518	RST4566	2011.526	1	0.256	0.008	188.9*	0.6					
17084-0518	TDT227	2012.548	1	—	—	—	—		NR			
17087+1945	J1130	2011.573	1	1.288	0.007	278.9*	0.4					
17088+4856	COU1774	2011.559	1	0.583	0.013	97.6*	0.9					
17094+2423	A229	2012.520	1	1.213	0.007	356.9*	0.3					
17094+2423	A229	2012.520	1	1.210	0.007	356.8*	0.3					
17100+6812	MLR200	2011.518	1	1.153	0.007	90.2*	0.3					
17102-0046	BU124	2011.524	1	0.948	0.017	261.3*	0.3					
17103+5403	HDS2424	2012.523	1	0.518	0.008	157.6	0.3					
17105+4645	A1645	2012.520	1	0.246	0.007	219.0*	0.4					
17105+4645	A1645	2012.520	1	0.233	0.007	36.8*	0.6					
17107+1651	HEI167	2011.510	1	0.386	0.007	93.2*	0.7					
17107+2104	TDT251	2012.548	1	0.606	0.012	117.9	0.9					
17109+4044	COU1293	2012.517	1	0.203	0.011	9.4	0.4					
17110+1622	HEI168	2011.510	1	0.760	0.007	65.4	0.4					
17115-0956	HDS2428	2011.526	1	0.322	0.007	348.5*	2.2					
17115+4914	COU1775	2012.548	1	0.165	0.040	6.0	8.0					
17116+3916	HU1178	2012.487	1	0.340	0.007	10.2*	0.3		Zir2012		-0.01	1.0
17116+3916	HU1178CD	2012.487	1	1.381	0.007	76.6*	0.3					
17121+2515	COU313	2012.569	1	0.793	0.007	153.9	0.5					
17121+2515	COU313	2012.569	1	0.784	0.015	152.9	1.3					
17121+4540	KUI79	2012.487	1	1.103	0.007	224.3*	0.3		Hrt1996a		0.02	-0.5
17121+4540	KUI79	2011.455	1	1.137	0.007	232.0*	0.3		Hrt1996a		0.00	-0.5
17125+2802	COU493	2012.496	1	0.295	0.010	55.5*	1.5					
17129-0216	RST4568	2011.521	1	1.599	0.015	318.7*	0.5					
17134+4944	COU1776	2011.559	1	0.418	0.007	96.7*	0.3					
17134+4944	COU1776	2012.517	1	0.462	0.007	276.7*	0.3					
17136+0405	HEI895	2011.510	1	0.835	0.007	17.3	1.1					
17136+1716	A2087	2012.496	1	0.435	0.007	131.2*	0.3		Mnt2001a		-0.01	-2.1
17141+5608	STT327	2012.531	1	0.461	0.007	154.6*	0.5		Msn2011c		0.01	1.4 ^Q
17141+5608	STT327	2012.531	1	0.461	0.007	153.8	0.6		Msn2011c		0.01	1.4 ^Q
17142+0622	A1147AB	2011.526	1	0.186	0.040	181.0	8.0					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
17142+0622	A1147AB,C	2011.526	1	5.328	0.027	139.1	0.3					
17142+2731	COU495	2011.455	1	0.782	0.007	280.4*	0.4					
17142+2731	COU495	2011.469	1	0.822	0.007	351.6*	0.4					
17145+4331	HDS2437	2011.469	1	0.364	0.007	31.9	1.2					
17151+6639	MLR186	2011.515	1	0.224	0.022	25.8	4.3					
17151+6639	MLR186	2012.523	1	—	—	—	—		NR			
17152+3214	COU805	2012.518	1	0.858	0.007	235.3*	0.5					
17155+1052	HDS2440	2011.526	1	0.131	0.059	192.9	9.1			Cve2014	0.03	2.9
17157-0949	A2592	2011.521	1	0.169	0.040	136.9	6.0			Tok2015c	-0.01	-0.6
17158+4016	COU1294	2011.469	1	0.978	0.007	83.3	0.3					
17161+2316	COU315	2011.455	1	0.148	0.040	135.6	8.0			Doc2020b	0.07	14.7
17161+2316	COU315	2012.518	1	0.121	0.040	128.2	8.0			Doc2020b	0.05	17.8
17163+3458	COU1141	2011.469	1	0.497	0.007	138.1	1.0					
17163+3458	COU1141	2012.479	1	0.508	0.009	138.8*	0.5					
17164+4643	HDS2442	2011.559	1	0.616	0.007	54.6*	0.7					
17164+4643	HDS2442	2012.589	1	0.607	0.007	52.4*	0.7					
17164+4643	BU1200	2011.526	1	—	—	—	—		NR			
17166+2635	WHC15	2012.520	1	0.250	0.012	63.3*	0.7					
17166+7136	HDS2443	2011.518	1	0.573	0.007	141.4*	0.7					
17171+4034	COU1295	2011.469	1	0.252	0.009	55.5	0.5					
17173+2113	HU668	2012.583	1	1.331	0.007	37.6	0.4					
17174+1113	HU172	2011.526	1	1.131	0.007	344.9*	0.3					
17179+4918	STF2153	2012.569	1	1.465	0.011	64.8	0.7			Izm2019	-0.01	-0.8
17179+4918	STF2153	2012.569	1	1.468	0.007	66.2	0.7	1.62		Izm2019	-0.00	0.6
17179+4918	A231	2012.575	1	—	—	—	—		NR			
17182+1559	HEI246	2011.573	1	1.120	0.007	42.4*	0.3					
17182+4952	HU669	2012.569	1	0.897	0.009	80.7	1.4					
17182+4952	HU669	2012.569	1	0.888	0.010	82.7	1.0	0.36				
17184+3240	BU628	2012.548	1	0.548	0.007	263.8*	0.3			FMR2012a	0.00	-1.4
17193+4917	HU670	2012.548	1	0.192	0.040	18.8*	8.0					
17194+2802	COU625	2012.496	1	0.129	0.052	99.4	8.0					
17199+1807	COU2625	2011.573	1	2.344	0.016	8.7*	0.3					
17201+6206	HU920	2011.518	1	0.457	0.007	312.6*	0.9					
17210-0014	RST5079	2011.526	1	1.294	0.007	62.1	0.3					
17215+2845	KUI80	2012.520	1	0.634	0.010	173.2*	1.1					
17215+2845	KUI80	2011.469	1	0.639	0.013	171.5*	0.3					
17220+5351	BU1249	2012.523	1	0.543	0.015	85.5	2.1					
17220+5351	BU1249	2012.523	1	0.577	0.007	80.8	1.3					
17220+5351	BU1249	2012.523	1	0.586	0.007	262.4*	0.3					
17220+5351	BU1249	2012.523	1	0.586	0.007	79.5	2.5					
17221+2310	COU415	2011.456	1	0.204	0.010	241.7*	4.6			Msn2011c	-0.05	-4.1
17221+2310	COU415	2012.496	1	0.218	0.007	246.2*	1.5			Msn2011c	-0.04	4.2
17226+3037	TDT325	2012.575	1	0.184	0.040	125.9*	8.0					
17227+2808	TDT326	2012.548	1	0.812	0.007	69.4*	0.6					
17227+2808	HDS2453	2011.526	1	—	—	—	—		NR			
17229+4723	COU1777	2012.569	1	0.444	0.021	42.4	1.5					
17229+4723	COU1777	2012.569	1	0.425	0.027	44.1	1.5	0.08				
17231+2545	HO415	2012.583	1	0.890	0.007	344.1*	0.3					
17234+4209	STF2163	2011.573	1	1.427	0.009	76.9*	0.3					
17235+1654	A2183	2011.573	1	1.182	0.007	135.9*	0.3					
17239+3627	STF2162	2011.556	1	1.345	0.007	284.8*	0.3					
17240-0921	RST3972Aa,Ab	2011.526	1	0.224	0.007	250.3*	1.5			Sod1999	0.00	-0.7
17240+3835	HU1179	2012.575	1	0.266	0.010	276.0	0.7			Hrt2000b	0.00	5.3
17246+3913	WSI2Aa,Ab	2011.469	1	0.409	0.027	80.3	1.6					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
17246+3913	WSI2Aa,Ab	2012.569	1	0.283	0.049	68.2	10.2	1.61				
17246+3913	WSI2Aa,Ab	2012.569	1	0.368	0.048	76.6	3.9					
17247+3802	HSL1Aa,Ac	2011.556	1	0.168	0.040	43.8	8.0					
17247+3802	COU1142	2011.556	1	1.939	0.010	41.5	0.3					
17248+3044	BU1250	2012.520	1	1.981	0.010	117.2*	0.3			Izm2019	0.07	-0.9
17250+4306	COU1454	2011.573	1	0.972	0.007	327.8*	0.3					
17251+3444	HU922Aa,Ab	2012.479	1	0.252	0.007	39.9*	1.7			FMR2016b	0.00	0.8
17255+0030	RST5432	2011.510	1	0.236	0.007	187.1	0.9			Hrt2009	0.02	-6.8
17256+4145	COU1296	2012.487	1	0.496	0.007	344.8*	0.8					
17263+6746	BU1201	2011.515	1	0.252	0.007	341.3*	0.4					
17266+7331	MLR201	2011.515	1	0.424	0.009	258.9*	1.2					
17268+2625	COU1455	2012.569	1	0.354	0.013	181.7	1.2	0.77				
17268+2625	COU1455	2012.569	1	0.239	0.035	178.3	1.2					
17271+2402	TDT360	2012.000	2	0.677	0.060	178.6	1.3					
17271+2402	TDT360	2012.589	1	0.702	0.057	178.0*	0.4					
17271+2402	TDT360	2012.589	1	0.655	0.041	182.0	1.7					
17272+2250	TDT363	2012.548	1	1.544	0.008	190.1*	0.3					
17276+2624	COU498	2012.583	1	0.455	0.007	41.2*	0.3					
17279+5610	A1152	2012.523	1	0.154	0.040	203.5*	8.0					
17279+5610	A1152	2011.515	1	0.193	0.040	41.0	8.0					
17279+7112	A1154	2011.518	1	0.908	0.007	67.4*	0.3					
17285+7430	A1155	2011.518	1	0.569	0.017	286.7*	0.8					
17290+3845	COU1297	2012.479	1	0.279	0.007	97.5*	0.5					
17292+1543	HEI169	2011.510	1	0.650	0.011	40.4	0.3					
17296+6953	MLR188	2012.523	1	1.848	0.017	197.5*	0.3					
17296+6953	MLR188	2012.523	1	1.850	0.009	17.8	0.4	0.05				
17296+6953	MLR188	2012.523	1	1.869	0.028	18.0	0.6					
17297-0801	RST3977	2011.526	1	0.263	0.018	145.2	1.9					
17297-0801	HDS2471	2011.469	1	—	—	—	—		NR			
17301+3025	TDT383	2012.575	1	1.071	0.024	62.0	1.8	2.26				
17301+3025	TDT383	2012.575	1	1.113	0.032	62.0	1.0					
17301+3025	TDT383	2012.575	1	1.066	0.007	240.0*	0.3					
17308+0349	A2247	2011.510	1	0.242	0.007	174.7	2.4					
17309+1512	HDS2473	2011.521	1	0.547	0.019	142.4*	0.9					
17312+4903	COU1778	2011.559	1	0.370	0.007	191.5*	0.3					
17313+1901	COU499	2011.469	1	—	—	—	—		NR			
17313+1901	COU499	2012.479	1	0.133	0.040	348.9	8.0			Tok2017c	0.04	1.1
17318-0055	RST5088	2011.521	1	1.161	0.008	57.9	0.4					
17321+2310	TDT400	2012.570	1	0.455	0.007	139.8	0.3					
17321+2310	TDT400	2012.570	1	0.459	0.016	140.7	0.9	0.37				
17321+2310	A352	2011.556	1	—	—	—	—		NR			
17321+2310	A352	2012.479	1	—	—	—	—		NR			
17326+3445	HU1181	2012.518	1	0.150	0.040	316.7	8.0			Sod1999	0.05	-2.2
17327+0251	HDS2475	2011.521	1	0.243	0.014	31.2	2.1					
17328+6659	HDS2476	2011.518	1	0.422	0.010	213.1*	0.5					
17328+6659	HDS2477	2011.521	1	—	—	—	—		NR			
17330+2316	COU113	2012.518	1	1.241	0.007	71.0*	0.3					
17335+5734	MLR571	2012.523	1	—	—	—	—		NR			
17343+4657	A2090	2012.520	1	0.890	0.014	112.5*	0.3					
17343+4657	A2090	2012.520	1	0.877	0.007	112.7*	0.3					
17343+4657	COU2113	2012.518	1	—	—	—	—		NR			
17344+7801	MLR205	2011.518	1	1.142	0.007	92.2	0.3					
17345+3935	COU1298	2012.570	1	0.268	0.069	75.8	2.6					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
17345+3935	COU1298	2012.570	1	0.322	0.063	67.3	8.4	0.67				
17348+1812	TDT422	2012.575	1	0.473	0.035	138.2	0.6	0.23				
17348+1812	TDT422	2012.575	1	0.406	0.041	137.8	3.3	0.45				
17348+1812	TDT422	2012.575	1	0.500	0.007	141.1	1.5					
17348+1812	TDT422	2012.575	1	0.486	0.009	139.9*	0.5					
17349+4803	HDS2482	2011.573	1	0.204	0.037	3.4	2.7					
17349+4803	HDS2482	2011.573	1	0.205	0.027	5.2*	1.5					
17349+4803	HDS2482	2012.518	1	0.187	0.040	0.0	8.0					
17351-0036	HDS2484	2011.521	1	3.342	0.049	307.8*	0.8					
17351-0036	HDS2484	2011.521	1	0.792	0.010	200.9*	0.4					
17354+3443	COU995	2012.518	1	0.401	0.007	332.2*	0.3					
17359+3205	COU807	2012.583	1	0.646	0.007	141.1*	0.5					
17364+2503	COU500	2011.456	1	0.582	0.007	339.8*	0.3					
17365+4142	ES636	2012.553	1	1.968	0.010	127.5	0.3					
17365+4543	COU1595	2012.583	1	0.489	0.007	265.3*	0.4					
17366+4827	COU1922	2011.456	1	0.212	0.018	101.8*	2.3			Doc2008f	-0.10	4.8
17366+4827	COU1922	2012.520	1	0.250	0.007	94.3	0.3	2.06		Doc2008f	-0.08	1.9
17366+4827	COU1922	2012.520	1	0.306	0.027	91.2*	0.5			Doc2008f	-0.02	-1.2
17372+2754	KUI83	2011.469	1	0.213	0.010	265.9*	1.7			Msn2012a	-0.02	1.2
17372+2754	KUI83	2012.479	1	0.228	0.007	240.3*	1.7			Msn2012a	-0.01	-3.5
17374+1233	BU1121	2011.521	1	0.467	0.020	196.4*	0.5					
17377+3017	HDS2490	2011.573	1	0.222	0.007	164.1*	0.3					
17380+2842	TDS875	2012.575	1	0.863	0.007	178.7	0.7					
17380+2842	TDS875	2012.575	1	0.869	0.011	179.3	0.3	1.58				
17380+2842	TDS875	2012.575	1	0.858	0.007	179.3	0.3					
17381+3655	HO69	2012.605	1	1.948	0.010	139.6*	0.3					
17386+2219	COU316	2012.479	1	2.296	0.011	276.2*	0.3					
17386+5546	STF2199	2012.531	1	2.050	0.010	55.6*	0.3			Izm2019	0.03	0.2
17386+5546	STF2199	2012.531	1	2.054	0.010	56.5	0.3			Izm2019	0.04	1.1
17388+5406	HDS2493	2012.523	1	0.524	0.007	255.3*	0.7					
17393+2617	COU628	2011.456	1	1.131	0.007	129.2*	0.3					
17393+7020	A1372	2011.518	1	1.134	0.007	82.5*	0.3					
17393+7020	COU1780	2012.520	1	—	—	—	—		NR			
17403+5047	COU2114	2012.583	1	0.366	0.007	185.8*	0.9					
17407+3117	HDS2501	2011.456	1	0.786	0.007	77.8	0.5					
17417+0109	A2249	2011.510	1	1.407	0.007	123.2	0.3					
17418+2130	COU114	2012.518	1	0.096	0.040	261.1	8.0			Cou1999b	-0.01	-8.4
17418+2130	COU114	2011.456	1	—	—	—	—		NR			
17418+7140	MLR202	2011.515	1	0.276	0.013	112.3*	1.8					
17420+1038	HDS2504	2011.576	1	0.323	0.015	53.1	2.2					
17420+1557	BU1251	2011.469	1	1.428	0.007	106.3*	0.3			Baz1991a	0.06	2.3
17421+2103	A1371	2012.479	1	0.137	0.040	136.4*	8.0					
17423+3030	TDT469	2012.589	1	0.535	0.007	96.1*	0.3					
17425+7456	MLR207	2011.515	1	0.196	0.040	134.9	8.0					
17425+7456	MLR207	2011.515	1	0.182	0.040	131.8	8.0					
17430+1215	HU1283	2011.510	1	0.452	0.007	6.1*	0.3					
17430+1215	DUQ1	2011.556	1	—	—	—	—		NR			
17435+3453	COU997	2012.548	1	0.165	0.040	35.1*	8.0					
17436+2237	HU1285	2011.456	1	0.542	0.007	212.4*	0.3			USN2002	0.02	-1.1
17440+2517	TDT482	2012.589	1	0.589	0.007	18.6*	0.8					
17449+6628	HU924	2012.531	1	0.338	0.021	36.9	1.3					
17449+6628	HU924	2012.531	1	0.315	0.007	33.4*	1.2					
17452+2107	COU630	2011.456	1	0.190	0.066	127.8	8.0					

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17453+0244	HEI798	2011.576	1	1.948	0.010	103.3*	0.3					
17453+1750	TDT488	2012.589	1	0.693	0.008	192.9*	1.0					
17455+3554	HDS2509	2012.548	1	0.559	0.018	78.4*	1.4					
17456+3032	HO70	2012.520	1	0.305	0.007	268.5*	0.9					
17456+3032	TDT493	2011.573	1	—	—	—	—		NR			
17462+3853	COU1300	2011.469	1	0.753	0.007	125.7*	0.3					
17462+5357	HDS2511	2012.523	1	0.469	0.010	96.5	0.8					
17462+5357	HDS2511	2012.523	1	0.427	0.013	96.8	0.9					
17464+3553	TDT497	2012.575	1	0.748	0.013	82.5	0.3					
17464+3553	TDT497	2012.575	1	0.708	0.013	80.0	1.3	0.39				
17464+3553	TDT497	2012.575	1	0.723	0.007	260.9*	0.3					
17465+2743	AC7BC	2011.456	1	1.070	0.007	253.1*	0.3			Pru2014	0.03	-0.2
17465+2743	AC7BC	2012.479	1	0.980	0.007	259.6*	0.3			Pru2014	0.03	-0.3
17468+0534	A1161	2011.576	1	0.785	0.007	282.9*	0.3					
17470+2915	TDS881	2012.583	1	1.028	0.014	240.8*	0.3					
17470+2915	TDS881	2012.583	1	0.171	0.040	137.8	8.0					
17471+1742	STF2215	2011.573	1	0.498	0.007	251.6*	0.3			Cve2006e	0.03	1.2
17471+3235	COU634	2012.479	1	0.251	0.007	83.0*	1.3					
17471+4737	CHR64	2011.573	1	0.421	0.021	152.8*	1.7			Lin2012c	0.01	0.6
17474+7549	MLR210	2011.518	1	0.646	0.007	82.3	0.3					
17481+0135	A2185	2011.510	1	0.668	0.013	182.2*	0.3					
17481+0135	TDT515	2012.583	1	—	—	—	—		NR			
17487+3536	HU1182	2011.573	1	0.456	0.007	124.6*	0.3			USN2002	-0.00	-0.8 ^Q
17487+3536	HU1182	2012.570	1	0.468	0.021	121.8	0.6	0.21		USN2002	0.02	-2.5 ^Q
17487+3536	HU1182	2012.570	1	0.462	0.016	122.0	2.4			USN2002	0.01	-2.3 ^Q
17489-0152	BU824	2011.526	1	0.235	0.010	21.0	2.3					
17490+2511	COU501	2011.556	1	1.917	0.010	318.8*	0.3					
17490+3704	COU1145	2012.479	1	0.173	0.040	124.9*	8.0			Hrt1996a	0.01	-1.5
17494+4028	COU1456	2011.559	1	1.377	0.013	93.5*	0.9					
17500+0031	A2186	2011.510	1	0.262	0.010	263.3*	2.2			Zir2013d	0.03	8.5
17502+2704	TDT526	2012.586	1	0.834	0.007	327.2*	0.3					
17503-0335	RST4577	2011.526	1	0.270	0.011	122.2*	0.5					
17505+3651	COU1146	2012.520	1	0.280	0.007	149.1	0.3	4.43				
17505+4907	COU1924	2012.518	1	0.588	0.007	67.3*	0.3					
17507+3638	TDS889	2012.583	1	1.349	0.007	14.9	0.3					
17507+3638	TDS889	2012.548	1	1.355	0.007	14.2*	0.3					
17510+3010	COU636	2011.556	1	1.500	0.009	270.0*	0.6					
17512+3821	HU1183	2012.570	1	0.472	0.013	11.4	1.8	0.94				
17512+3821	HU1183	2012.570	1	0.484	0.010	10.3	2.3					
17516+4555	A1883	2011.573	1	0.559	0.007	41.3*	0.4					
17516+4555	A699	2012.605	1	—	—	—	—		NR			
17526+2536	A234	2012.570	1	0.125	0.042	159.5	9.8					
17528+3408	TDT553	2012.605	1	0.695	0.007	241.1*	0.3					
17528+4038	TDT552	2012.586	1	1.291	0.010	224.3*	0.4					
17532+3243	COU998Aa,Ab	2011.556	1	0.261	0.010	29.7	2.0		ND			
17532+3243	COU998Aa,Ab	2011.576	1	0.178	0.040	25.5	8.0	0.30	ND			
17532+3243	COU998Aa,Ab	2012.479	1	0.187	0.040	22.4	8.0	0.47	ND			
17532+3243	COU998Aa,Ab	2012.518	1	0.244	0.007	18.3	1.1		ND			
17532+3243	COU998AB	2011.573	1	1.601	0.010	122.0*	0.3					
17532+3243	COU998AB	2011.576	1	1.630	0.008	122.5*	0.3					
17532+3243	COU998AB	2012.479	1	1.621	0.012	120.5*	0.5					
17532+3243	COU998AB	2012.518	1	1.645	0.008	120.6*	0.4					
17532+3243	A235	2011.573	1	—	—	—	—		NR			

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17533+2459	A235	2011.556	1	0.179	0.040	21.0	8.0			Hrt2014b	0.06	-8.1
17533+3605	STF2243	2012.520	1	1.126	0.007	39.0*	0.3					
17541+2949	AC9	2011.556	1	1.109	0.007	240.7*	0.3					
17541+4702	HDS2525	2012.520	1	0.361	0.008	184.3*	1.0					
17541+4702	HDS2525	2012.520	1	0.290	0.022	6.0	2.3					
17543+0328	A2188	2011.510	1	0.179	0.040	171.6	8.0					
17543+5357	A1885	2012.531	1	0.407	0.007	80.5*	0.7					
17548+3610	COU1303	2011.556	1	1.326	0.021	75.7*	0.7					
17555+4108	COU1601	2012.589	1	0.533	0.007	62.2*	0.3					
17556+2508	COU503	2012.583	1	0.338	0.026	114.0*	1.2					
17562+3926	BU417	2011.556	1	1.010	0.007	314.4*	0.3			Izm2019	0.05	-0.9
17565+3139	TDT585	2012.583	1	0.557	0.007	177.2	0.3					
17571+0004	STF2244	2011.526	1	0.638	0.007	99.3*	0.3			Msn2017e	-0.01	0.3
17571+0004	MCA50	2011.576	1	—	—	—	—		NR			
17575+3942	COU1457	2012.520	1	1.925	0.010	7.3*	0.3					
17575+3942	COU1457	2012.548	1	1.915	0.010	7.2*	0.3					
17575+3942	COU1457	2012.575	1	1.909	0.010	6.5	0.5					
17575+3942	COU1457	2012.575	1	1.903	0.016	7.1	0.3	1.37				
17578+0253	HDS2532	2011.527	1	0.207	0.012	5.9	1.7					
17584+0428	KUI84	2011.510	1	0.214	0.007	6.6*	1.4			Tok2016e	0.01	-3.9
17584+3524	COU1000	2012.518	1	0.906	0.007	155.0*	0.5					
17584+3524	RST4579	2011.527	1	—	—	—	—		NR			
17587+3538	COU1002	2011.556	1	0.833	0.007	165.1*	0.5					
17589+2620	COU808	2011.556	1	0.939	0.012	154.6*	0.6					
17591+3228	HU1185	2011.573	1	0.384	0.010	141.0*	0.4			Doc2012i	0.01	0.3
17592+3926	COU1458	2012.518	1	0.353	0.013	77.4*	2.6					
17593+4902	YSC64	2012.518	1	0.528	0.009	39.4	0.7					
17593+4902	YSC64	2012.518	1	1.024	0.007	40.6	0.3	0.65				
17596+4314	COU1784	2011.573	1	2.155	0.012	97.4*	0.4					
17597+2110	TDT618	2012.632	1	1.759	0.009	108.2*	0.3					
17599+5304	HO563	2012.531	1	0.727	0.019	10.1	1.7					
17599+5304	HO563	2012.531	1	0.704	0.007	191.5*	0.3					
18000+2449	COU115	2012.575	1	0.246	0.021	116.8	1.1					
18000+2449	COU115	2012.575	1	0.215	0.013	118.3	3.9					
18000+6027	HDS2537	2011.515	1	0.339	0.010	267.1*	0.7					
18001+2215	TDT622	2012.583	1	1.029	0.014	279.6*	0.4					
18003+2154	A1374	2011.556	1	0.443	0.007	220.5*	0.5			Mdz2017	0.02	-1.9
18003+2154	A1374	2012.627	1	0.456	0.008	217.0*	0.4			Mdz2017	0.03	-3.3
18007+1736	COU810	2012.630	1	0.156	0.040	108.6	8.0					
18007+1736	COU810	2011.510	1	0.201	0.010	114.0	1.5					
18020+1245	HDS2538	2011.576	1	0.435	0.009	213.6*	1.7					
18025+4414	BU1127Aa,B	2012.520	1	0.725	0.007	48.5*	0.3			Cve2016c	-0.00	-1.6
18028+3115	TDT651	2012.589	1	0.555	0.007	46.8*	0.5					
18031+2702	TDT653	2012.575	1	0.731	0.007	208.3*	0.3					
18031+2702	TDT653	2012.575	1	0.711	0.026	28.5	0.7	0.49				
18032+2603	HO565	2012.630	1	0.169	0.040	102.8	8.0					
18032+2603	HO565	2012.627	1	0.198	0.040	101.3*	8.0					
18033+3921	STF2275	2012.635	1	0.286	0.007	120.3*	0.5			Pop2000a	0.00	-2.1 ^Q
18035+4032	COU1785	2012.520	1	0.145	0.040	19.4	8.0			Doc2008a	0.01	-7.1
18043+4206	COU1786Aa,Ab	2012.518	1	0.125	0.040	169.0	8.0			Hrt2009	-0.04	2.2
18047+4650	COU2115	2012.518	1	0.339	0.011	34.4*	1.0					
18048+2630	TDT666	2012.589	1	0.774	0.007	33.6*	1.0					
18048+5344	HDS2546	2012.531	1	0.570	0.007	55.4	0.4					
18048+5344	HDS2546	2012.531	1	0.613	0.007	235.2*	0.4					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
18053+2357	COU116	2012.605	1	0.749	0.007	69.2	0.3					
18054+4306	COU1787	2012.548	1	0.380	0.007	325.3*	0.5					
18054+4306	COU1787	2011.573	1	0.372	0.007	324.5*	0.9					
18058+2127	STT341	2012.583	1	0.435	0.007	92.2*	0.3			Hei1982b	-0.00	-0.6
18058+3512	TDT678	2012.589	1	0.654	0.007	234.2*	0.5					
18060+3002	TDT679	2012.635	1	0.758	0.007	348.9*	0.4					
18063+3824	HU1186	2012.520	1	0.196	0.040	124.4*	8.0			Cve2006c	-0.04	4.8
18064+4437	COU1926	2012.630	1	0.292	0.015	126.8*	1.9					
18065+4022	STF2282AB	2012.630	1	2.580	0.013	82.7*	0.3					
18065+4022	STF2282BC	2012.630	1	0.208	0.010	36.3*	1.5					
18068+2326	COU417	2011.556	1	1.453	0.007	90.8*	0.3					
18070+2824	HDS2553	2012.635	1	0.123	0.040	142.5	8.0					
18070+3034	SCA170	2011.557	1	1.176	0.007	316.5*	0.3					
18070+3034	SCA170	2012.520	1	1.192	0.007	320.4	0.3	3.09				
18070+3034	SCA170	2012.520	1	1.189	0.007	320.1	0.3	3.16				
18070+3034	SCA170	2012.520	1	1.193	0.007	139.1	0.3					
18072+2822	TDT691	2012.583	1	0.889	0.007	202.1*	0.3					
18072+7131	A1168	2011.516	1	0.630	0.008	353.2*	0.6					
18075+1940	STT524	2012.627	1	0.470	0.007	207.1*	0.9			Hrt2000c	0.01	-0.7
18077+0946	BU826	2011.521	1	1.038	0.007	136.8	0.9					
18078+2606	CHR67	2011.576	1	0.360	0.008	147.1	1.9					
18078+2606	YSC65	2012.479	1	—	—	—	—		NR			
18083+2941	YSC65	2012.479	1	0.143	0.040	161.1	8.0					
18083+2941	YSC65	2012.518	1	0.120	0.040	125.8	8.6					
18083+2941	YSC65	2012.630	1	—	—	—	—		NR			
18086+1245	HDS2556	2011.510	1	0.514	0.007	124.5*	0.6					
18086+1700	HDS2555	2011.510	1	0.386	0.007	113.2*	0.8					
18089+2435	HDS2558	2012.583	1	0.146	0.040	139.5	8.0					
18090+2335	HU315	2012.548	1	0.123	0.046	133.1	8.0					
18090+2335	HU315	2012.548	1	0.123	0.046	133.1	8.0					
18092-0817	RST3998	2011.521	1	0.311	0.007	166.2*	0.5					
18092+2323	TDT711	2012.586	1	0.990	0.007	293.6*	0.3					
18092+3129	COU812	2012.479	1	0.639	0.007	262.9*	0.3			Cou1999b	-0.04	-19.9
18092+3129	COU812	2011.576	1	0.656	0.007	263.8*	0.3			Cou1999b	-0.02	-18.1
18096+0400	STF2281	2011.527	1	0.655	0.007	287.2*	0.3			Sod1999	-0.01	1.4
18101+1629	STF2289	2011.521	1	1.224	0.007	219.0*	0.4			Hop1964b	-0.02	2.7
18101+1629	MLR5	2012.531	1	—	—	—	—		NR			
18101+6007	MLR5	2011.516	1	0.265	0.017	32.4	2.0					
18101+6007	MLR5	2012.531	1	0.447	0.010	156.1	2.9					
18103+0235	BU638BC	2011.521	1	1.810	0.009	7.7*	0.3					
18103+0235	BU638BC	2011.510	1	1.810	0.018	187.8*	0.3					
18106+0738	HDS2562	2011.527	1	0.961	0.021	63.7	1.6					
18109+3321	COU1005	2012.575	1	1.796	0.009	24.4	0.5					
18109+3321	COU1005	2012.575	1	0.182	0.040	143.7	8.0					
18113+6022	MLR501	2012.531	1	0.241	0.011	103.7	3.2					
18113+6022	MLR501	2011.516	1	0.229	0.007	79.5	1.3					
18114+2519	A238	2012.632	1	0.623	0.007	71.8*	0.4					
18114+2519	COU2118	2011.573	1	—	—	—	—		NR			
18114+2519	COU2118	2012.589	1	—	—	—	—		NR			
18122+0814	HDS2568	2011.527	1	0.610	0.007	260.9*	0.6					
18130+3318	COU1006	2012.479	1	0.455	0.007	326.6*	0.3			Cou1999b	0.25	99.7
18130+3318	LWR14	2012.630	2	—	—	—	—		NR			
18132+5749	HDS2571	2011.518	1	0.257	0.008	300.0*	1.4					
18133+0906	HDS2573	2011.527	1	0.821	0.007	163.3*	0.3					

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18133+2118	TDT743	2012.627	1	0.969	0.007	64.2*	0.8					
18136+0946	HDS2574	2011.527	1	0.641	0.033	137.4	1.4					
18136+0946	HDS2574	2011.527	1	0.673	0.014	136.5*	0.4					
18141+2235	TDT755	2012.605	1	1.756	0.009	77.1*	0.3					
18144+1953	HDS2576	2011.573	1	0.973	0.007	67.1*	0.3					
18144+1953	HDS2576	2012.548	1	0.957	0.007	66.3*	0.5					
18144+1953	HDS2576	2011.573	1	0.947	0.007	65.5*	0.3					
18144+4042	TDS910	2012.632	1	1.979	0.010	264.4*	0.3					
18145+3249	HU927	2012.520	1	0.354	0.007	101.7*	0.5					
18145+3313	COU1007	2012.570	1	0.290	0.025	37.5	0.8					
18145+3313	COU1007	2012.570	1	0.279	0.035	38.6	6.5	0.81				
18146+0011	STF2294	2011.527	1	1.352	0.013	93.5*	0.3			Sca2015b	0.04	0.1
18146+2335	HU318	2012.632	1	0.682	0.007	155.4*	0.5					
18147+5635	BU1274BC	2011.516	2	1.080	0.015	145.5*	0.7					
18147+5635	BU1274BD	2011.516	2	5.184	0.026	187.2*	0.3					
18153+6012	MLR6	2012.531	1	0.139	0.040	57.7	8.0					
18153+6012	MLR6	2012.531	1	0.226	0.007	52.2	0.3					
18154+5720	HDS2577	2011.516	1	0.235	0.013	292.4*	1.1			RAO2015	-0.02	-0.5
18163+2333	TDT768	2012.605	1	0.139	0.040	126.2	8.0					
18163+3625	HU1291	2011.573	1	—	—	—	—		NR			
18165+2249	HU319	2012.570	1	0.247	0.086	120.0	9.2	0.87				
18171+3453	COU12	2011.576	1	2.050	0.019	30.2*	0.3					
18171+3453	COU12	2012.479	1	2.038	0.010	31.4*	0.5					
18171+3453	COU12	2012.548	1	2.015	0.010	31.2*	0.3					
18171+3453	COU12	2012.570	1	2.072	0.010	30.7	0.4	0.32				
18171+3453	COU12	2012.570	1	2.007	0.025	29.9	0.3					
18177+3932	TDT778	2012.575	1	0.908	0.010	177.5*	0.8					
18178+4351	A578AB	2012.520	1	1.845	0.009	167.3*	0.3					
18178+4351	A578AB	2012.520	1	1.807	0.010	167.4*	0.3					
18178+4351	A578AB	2012.586	1	1.796	0.009	168.2*	0.3					
18178+4351	A578Aa,Ab	2012.520	1	0.323	0.007	244.3*	0.3					
18178+4351	A578Aa,Ab	2012.520	1	0.298	0.007	243.0*	0.5					
18178+4351	A578Aa,Ab	2012.586	1	0.277	0.009	244.2*	1.2					
18181+6051	FOX81AB	2011.516	1	0.887	0.007	132.3*	0.7					
18182+4509	HDS2588	2012.589	1	0.181	0.040	27.7	8.0					
18186+2513	TDT789	2012.583	1	1.025	0.007	82.3*	0.3					
18187-1837	BU639	2011.751	1	1.772	0.010	243.8*	0.3					
18198+1705	TDT799	2012.605	1	0.496	0.007	35.2*	0.3					
18201-0759	STF2303	2012.548	1	0.761	0.007	293.3*	0.3					
18203+2104	HDS2592	2011.559	1	0.449	0.042	183.6*	1.6					
18204+2423	TDT805	2012.575	1	0.979	0.011	57.8	1.1	0.22				
18204+2423	TDT805	2012.575	1	0.978	0.007	56.8*	0.3					
18204+2423	TDT805	2012.575	1	0.999	0.030	55.7	1.4					
18205+2055	COU202	2012.575	1	0.156	0.040	113.4	8.0					
18207+3547	COU1148	2012.586	1	1.873	0.014	71.5*	0.7					
18213+2409	COU505	2011.557	1	1.041	0.011	138.0*	0.3					
18214+1810	HDS2594	2012.605	1	0.259	0.007	319.2*	0.4					
18215+1318	HDS2595	2011.527	1	1.551	0.008	23.6*	0.3					
18215+1318	HDS2596	2011.527	1	—	—	—	—		NR			
18217+2356	COU418	2012.518	1	0.192	0.040	277.3*	8.0					
18217+2356	COU418	2011.557	1	0.216	0.014	265.3*	2.8					
18222+3417	TDT818	2012.635	1	0.282	0.007	202.4*	0.9					
18224+4545	A700	2012.635	1	0.625	0.007	127.9*	0.5			Hei1998	0.49	-19.8
18225+7659	HU930	2012.531	1	1.024	0.007	309.5*	0.3					

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18225+7659	HU930	2012.531	1	1.034	0.032	131.4	2.6					
18238+5318	YSC66	2012.531	1	0.886	0.007	42.7*	0.3					
18238+5318	YSC66	2012.531	1	0.872	0.013	43.4	0.4					
18238+5318	YSC66	2012.531	1	—	—	—	—		NR			
18241+4054	COU1603	2012.632	1	0.280	0.009	82.6*	0.9					
18242+2818	A244	2011.557	1	0.548	0.011	272.3*	1.5					
18242+2818	TDT845	2012.605	1	—	—	—	—		NR			
18250-0135	AC11	2011.521	1	0.914	0.007	355.6*	0.3			Tok2017c	0.01	0.6
18250+2724	STF2315	2011.557	1	0.638	0.007	120.0*	0.4			WSI2004b	0.02	1.5
18250+2724	STF2315	2012.520	1	0.636	0.007	118.8*	0.3			WSI2004b	0.02	0.7
18253+2605	HDS2605	2012.632	1	1.203	0.007	83.3*	0.3					
18253+4846	HU66	2011.559	1	0.211	0.007	213.8	2.3	0.50		USN2002	0.05	0.9
18253+4846	HU66	2011.573	1	0.191	0.040	216.9*	8.0	0.46		USN2002	0.03	4.0
18253+4846	STT351AC	2011.559	1	0.786	0.028	26.0*	0.3					
18253+4846	STT351AC	2011.573	1	0.766	0.027	25.9*	0.5					
18257+2639	COU815	2011.557	2	1.596	0.024	146.6*	0.8					
18264+0255	HEI560	2011.521	1	1.705	0.009	208.7*	0.3					
18266+0633	HDS2607	2011.521	1	0.173	0.040	17.6	8.0					
18271+2754	TDS921	2012.586	1	0.911	0.007	135.0*	0.5					
18276+4926	COU2278	2011.559	1	1.409	0.007	15.8*	0.3					
18285+2010	COU203	2012.518	1	0.177	0.040	154.4	8.0					
18285+2010	COU203	2012.518	1	0.465	0.007	56.4*	0.3					
18295+3259	TDS925	2012.586	1	1.756	0.009	89.3*	0.3					
18295+3259	TDS925	2012.589	1	1.791	0.009	88.6*	0.3					
18295+3259	TDS925	2012.627	1	1.773	0.018	88.2*	0.3					
18296+2603	HDS2619	2012.518	1	0.620	0.007	109.8	0.3	4.53				
18297+3929	TDT910	2012.635	1	0.807	0.007	194.8*	0.3					
18301+4325	J763	2011.573	1	1.838	0.010	309.8*	0.3					
18301+4325	A583	2011.510	1	—	—	—	—		NR			
18306+4429	COU1928	2012.518	1	0.559	0.007	272.8*	0.3					
18309+3417	COU1150	2012.548	1	0.176	0.040	100.8	8.0					
18311+2216	COU15	2011.573	1	1.948	0.010	118.4*	0.3					
18316+2030	COU119	2011.573	1	0.675	0.008	227.5*	0.3					
18316+2030	COU119	2012.518	1	0.686	0.007	227.8*	0.3					
18316+2030	COU119	2012.548	1	0.688	0.007	227.0*	1.0					
18316+2030	COU119	2012.605	1	0.675	0.007	227.5*	0.3					
18317+7120	A1170	2011.516	1	0.877	0.007	188.3*	0.3					
18319+3538	COU1151	2012.556	1	1.289	0.015	96.5*	0.5					
18323+1625	HDS2630	2011.510	1	0.158	0.040	165.0	8.0					
18334+2301	J463	2012.635	1	1.900	0.009	223.6*	0.3					
18335+3510	HO86	2012.518	1	0.286	0.010	198.6*	0.5					
18335+3934	COU1606	2012.627	1	1.895	0.009	130.2*	0.3					
18335+3934	COU1606	2012.627	1	1.886	0.009	130.1*	0.3					
18335+6929	MLR95	2011.516	1	0.224	0.021	43.7	3.3					
18337+6019	FOX83	2011.516	1	0.686	0.007	27.9*	0.8					
18338+1744	WAK21	2012.556	1	1.393	0.085	94.8	6.2	0.63				
18338+1744	WAK21	2012.556	1	1.549	0.018	97.3	0.6					
18338+1744	WAK21CD	2012.583	1	0.474	0.007	261.5	0.3	0.68				
18338+1744	WAK21CD	2012.605	1	0.494	0.007	262.6	0.3	0.67				
18338+1744	STF2339AB,CD	2012.583	1	1.556	0.008	276.3*	0.3					
18338+1744	STF2339AB,CD	2012.605	1	1.564	0.008	276.8	0.3					
18339+7016	MLR97	2011.516	1	0.232	0.012	110.5	5.0					
18347+3548	HDS2635	2011.559	1	0.255	0.015	95.1	2.6					
18354-0621	RST4591	2011.527	1	0.266	0.007	11.6	0.3					

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18355+2336	STT359	2011.559	1	0.741	0.007	6.8*	0.4			Sca2009a	0.00	2.0
18359+1659	STT358	2012.556	1	1.619	0.022	150.2	0.5			Izm2019	-0.03	0.6
18359+2542	TDT952	2012.630	1	1.109	0.007	69.0*	0.3					
18360+3452	GII48	2012.630	1	0.345	0.007	315.3*	0.3		ND			
18360+3452	GII48	2012.632	1	0.359	0.010	316.1*	0.6		ND			
18361+2003	TDS931	2012.586	1	1.252	0.007	48.6*	0.5					
18361+2003	HDS2639	2012.583	1	—	—	—	—		NR			
18361+2344	HDS2639	2011.557	2	0.468	0.043	273.2*	1.1					
18361+2344	HDS2639	2011.573	1	0.651	0.010	292.4*	0.7					
18363+2143	COU206	2011.559	1	—	—	—	—		NR			
18363+2143	COU206	2012.518	1	—	—	—	—		NR			
18366+3505	COU1307	2011.559	1	1.134	0.013	326.6*	0.3					
18377+3346	TDT963	2012.586	1	1.190	0.007	149.7*	0.3					
18377+3346	A88	2011.527	1	—	—	—	—		NR			
18384+0850	HU198	2011.510	1	0.522	0.007	129.5*	0.5			Nov2007d	0.06	0.1
18385+3503	COU1308	2012.518	1	0.369	0.007	219.4	0.3	1.90				
18385+3503	COU1308	2012.518	1	0.320	0.007	30.8	1.1					
18386+1632	HO87	2012.635	1	0.440	0.007	87.4*	0.5			Msn2019	0.02	-1.0
18389+2324	TDT972	2012.635	1	0.848	0.007	43.8*	0.4					
18390+5559	A1380AB	2011.516	1	0.998	0.007	200.3*	0.3					
18399+3806	HU1190	2011.573	1	1.638	0.008	168.3*	0.3					
18399+3806	HDS2644	2011.559	1	—	—	—	—		NR			
18403+3425	HDS2645	2011.559	1	1.908	0.010	20.4*	0.3					
18403+3425	HDS2645	2012.586	1	1.917	0.010	19.1	0.3	4.74				
18403+3425	HDS2645	2012.586	1	1.881	0.009	19.6*	0.3					
18403+3425	HDS2645	2012.627	1	1.889	0.010	18.8	0.3					
18403+3425	HDS2645	2012.627	1	1.889	0.009	19.0*	0.3					
18407+4336	TDT990	2012.575	1	0.340	0.007	138.6	1.2					
18407+4336	TDT990	2012.575	1	0.296	0.027	134.8	2.5					
18410+2450	A2988	2012.556	1	0.135	0.040	220.4	8.0			FMR2010f	0.01	-8.6
18413+3018	STF2367	2011.576	1	0.415	0.008	74.6*	0.3			Pbx2000b	0.01	0.5
18413+3018	RST4593	2011.527	1	—	—	—	—		NR			
18421+3445	B2546Aa,Ab	2012.556	1	0.151	0.040	8.7	8.0			USN2002	0.04	-4.1 ^Q
18427+0742	HEI870	2011.521	1	1.542	0.056	345.3*	5.9					
18431+2447	TDS937	2012.632	1	1.675	0.025	44.0*	0.8					
18432+3822	HDS2651	2011.573	1	0.476	0.007	46.1*	0.7					
18433+1847	COU816	2012.583	1	0.230	0.007	121.9*	1.1					
18440+0321	A2388	2011.510	1	0.277	0.007	127.9*	0.9			FMR2014c	0.02	-1.7
18443+2720	TDS941	2012.630	1	0.835	0.007	91.5*	0.3					
18449+0253	HEI562	2011.510	1	0.345	0.008	246.9*	0.4					
18450+4051	COU1792	2011.557	2	1.075	0.015	347.2*	0.5					
18451+0639	HDS2658	2011.527	1	0.110	0.063	200.7	10.6					
18451+0639	HDS2658	2011.527	1	0.125	0.051	190.3	12.9					
18455+0530	FIN332	2011.521	1	2.562	0.013	120.2*	0.3					
18459+1450	HEI397	2011.576	1	1.087	0.007	141.1*	0.3					
18459+3657	COU1309	2012.575	1	0.484	0.027	179.5	3.6					
18459+3657	COU1309	2012.575	1	0.471	0.019	180.3	0.7	0.05				
18461+1655	HEI259	2012.682	1	1.921	0.010	247.2*	0.3					
18462+4408	HDS2662	2012.548	1	0.770	0.007	256.6*	0.3					
18465+3414	COU1153	2012.586	1	0.364	0.010	115.6*	0.3					
18465+3414	COU1153	2012.605	1	0.367	0.007	115.1*	0.5					
18466+3821	HU1191	2011.573	1	0.138	0.040	121.4	8.0			Doc2009g	0.04	7.0
18476+3248	COU1154	2012.605	1	0.566	0.008	54.3*	0.7					
18476+3248	KOI68	2012.627	1	—	—	—	—		NR			

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18476+3248	KOI68	2012.635	1	—	—	—	—		NR			
18486+3132	TDT1063	2012.605	1	0.262	0.007	109.8	1.2					
18486+3132	TDT1063	2012.575	1	0.325	0.007	112.1	1.7					
18489+1615	STF2400BC	2011.527	1	0.975	0.007	201.8*	0.7					
18489+1615	STF2400BC	2011.510	1	0.989	0.007	22.8*	0.3					
18490-0828	HDS2666	2011.521	1	0.220	0.009	261.6*	0.9					
18490+3432	YSC11	2012.556	1	0.266	0.079	74.1	7.8					
18495+1811	HDS2668	2011.527	1	0.393	0.007	60.3*	0.3					
18497+6930	MLR96	2011.516	1	1.649	0.008	86.4	0.3					
18500+1519	YSC12AB	2012.556	1	0.443	0.024	55.2	2.5			Tok2018b	-0.04	-0.1
18500+1519	YSC12AB	2012.632	1	—	—	—	—		NR			
18500+1519	YSC12AB	2012.635	1	0.438	0.015	53.2	2.4			Tok2018b	-0.04	-1.9
18509+2058	COU317	2012.682	1	1.521	0.008	94.6*	0.3					
18511-0540	RST4603	2011.521	1	0.747	0.007	100.4*	0.4					
18511-0540	RST4603	2011.521	2	0.739	0.015	98.6*	0.8					
18517+4323	BU421	2012.641	1	1.171	0.007	296.4*	0.3					
18521+2431	COU510	2012.589	1	0.180	0.040	165.6*	8.0					
18525+2632	HDS2677	2012.589	1	0.985	0.007	76.0	0.3					
18526+4508	KOI42	2012.589	1	1.671	0.008	34.9*	0.3					
18528+3125	A257CD	2011.559	1	0.682	0.030	82.8*	1.4					
18528+3125	A257CD	2012.589	1	0.734	0.007	81.6*	0.3					
18529+4121	KOI284	2012.586	1	0.831	0.007	95.5*	0.4					
18529+4121	KOI284	2012.589	1	0.858	0.007	96.2*	0.4					
18529+4121	KOI284	2012.627	1	0.840	0.007	94.8*	0.3					
18529+5814	MLR359	2011.516	1	1.838	0.009	294.2*	0.3					
18534+2553	A2989	2012.556	1	0.297	0.023	197.0	3.1			USN2002	0.03	-2.0
18550+3053	A258	2012.693	1	0.323	0.007	237.7*	1.0			Hrt2013c	-0.05	-3.0
18551+4051	HEI73	2012.630	1	0.706	0.007	320.8*	0.6					
18552+3941	TDT1126	2012.687	1	0.340	0.007	189.6*	0.4					
18554+2324	COU511	2012.556	1	0.665	0.208	185.0	21.0					
18554+3556	A1385	2012.575	1	0.477	0.007	112.9	0.5					
18554+3556	A1385	2012.575	1	0.499	0.180	119.9	12.9	1.29				
18563-0048	A1171AB	2011.527	1	0.873	0.007	81.0*	0.3					
18564+2944	COU1014	2012.630	1	0.240	0.007	43.5*	0.9					
18571+3451	HDS2685	2012.641	1	0.506	0.007	199.3*	0.6					
18572+3845	COU1611	2012.687	1	0.666	0.007	108.0*	0.5					
18574+2129	HU329	2012.693	1	0.107	0.040	157.9	8.0					
18582+4858	KOI258AB	2012.586	1	1.032	0.110	72.9	0.3					
18582+4858	KOI258AB	2012.586	1	1.002	0.110	72.9*	0.3					
18582+4858	KOI258AB	2012.589	1	1.010	0.110	73.5*	0.4					
18582+4858	KOI258AB	2012.641	2	1.021	0.110	73.3	0.3	3.37				
18582+4858	KOI258AB	2012.641	2	1.071	0.110	73.8	0.3					
18582+4858	KOI258AB	2012.641	1	0.976	0.110	72.1	0.3	1.33				
18582+4858	KOI258Aa,Ab	2012.586	1	0.460	0.027	78.9	0.3	1.08				
18582+4858	KOI258Aa,Ab	2012.589	1	0.436	0.027	79.0*	0.3	0.84				
18582+7519	WOR26	2011.516	1	0.231	0.007	161.5	0.8					
18587+2744	COU817	2011.557	2	1.066	0.016	194.4*	2.0					
18589+2500	TDT1162	2012.605	1	0.986	0.007	176.7*	0.3					
18589+2500	TDT1162	2012.687	1	1.004	0.007	177.6*	0.5					
18597+2949	COU1019	2012.630	1	0.302	0.007	348.8*	0.6					
19005+2716	TDT1178	2012.627	1	0.849	0.007	334.8*	0.3					
19006+3300	COU1156	2011.559	1	0.780	0.007	290.4*	0.4					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
19006+3951	COU1933	2012.632	1	0.541	0.007	199.2*	0.4					
19006+3952	HDS2696	2012.630	1	0.362	0.007	136.6	0.3					
19016+3253	HU1295	2012.583	1	0.252	0.007	219.2*	1.2					
19018+3448	COU1612	2012.682	1	0.854	0.007	321.5*	0.3					
19027-0043	STF2434BC	2011.527	1	0.691	0.010	273.3*	0.5					
19027+4307	YSC13	2012.583	1	0.097	0.040	167.0	8.0			Doc2013j	0.01	-7.8
19028+2208	TDS961	2012.684	1	0.888	0.007	211.6*	0.3					
19029+2742	WAK3AC	2012.682	1	1.145	0.028	356.9	0.3	1.90				
19029+2742	WAK3AC	2012.682	1	1.126	0.025	357.2	0.3					
19029+2742	WAK3AC	2012.682	1	1.120	0.027	357.3	0.3	1.51				
19036+3705	HDS2702	2011.559	1	0.272	0.007	92.9	1.0					
19038+4000	TDT1203	2012.687	1	1.177	0.007	203.9*	0.3					
19038+4040	COU2196	2012.709	1	0.497	0.007	332.8*	0.3					
19039+2642	A2992	2011.573	1	0.170	0.040	54.0	8.0			Doc2009g	-0.03	-1.4
19039+2642	A2992	2012.632	1	0.193	0.040	235.3*	8.0			Doc2009g	-0.00	1.3 ^Q
19045-0426	A2689	2011.521	1	0.744	0.007	69.2*	0.3					
19045-0426	A2689	2011.521	1	0.739	0.007	70.0*	0.3					
19053+1504	HEI267	2011.510	1	0.881	0.007	43.8*	0.4					
19055+3352	HU940	2011.576	1	0.487	0.007	194.5*	0.5			Doc2009g	-0.01	2.4
19056+2724	HDS2709	2011.559	1	0.336	0.007	38.1*	1.0					
19057+2717	HO95	2012.684	1	0.199	0.040	147.3*	8.0					
19060+3354	TDS965	2012.693	1	1.370	0.007	166.1*	0.4					
19069+4137	COU2197	2011.559	1	0.271	0.007	149.3*	0.8			Doc2016g	0.09	14.1 ^Q
19069+4137	COU2197	2012.627	1	0.296	0.014	146.8*	2.9			Doc2016g	0.12	20.3 ^Q
19070+1104	HEI568	2011.510	1	0.267	0.014	263.5*	1.5			Zir2010	-0.04	-2.2
19070+1104	STA3	2011.576	1	—	—	—	—		NR			
19074+3230	KUI90Ca,Cb	2011.559	1	0.370	0.023	87.9*	1.5			Sgr2000	0.03	8.2
19074+3230	KUI90Ca,Cb	2011.573	1	0.345	0.007	80.5*	0.4			Sgr2000	0.03	8.2
19074+3230	KUI90Ca,Cb	2012.583	1	0.337	0.007	90.7*	0.8			Sgr2000	0.03	8.2
19074+3230	HDS2711	2011.521	1	—	—	—	—		NR			
19081+2142	CHR83	2012.632	1	0.128	0.040	161.6	8.0					
19081+2142	CHR83	2011.576	1	—	—	—	—		NR			
19081+3031	HO99	2012.630	1	0.369	0.007	163.6*	0.7					
19083+0948	HEI807	2011.510	1	1.503	0.008	206.7*	0.3					
19089+3404	COU1462Aa,Ab	2011.559	1	0.280	0.010	205.1*	1.2			Doc2003e	0.06	-2.7
19089+3404	COU1462Aa,Ab	2012.627	1	0.244	0.007	208.6*	0.8			Doc2003e	0.01	-1.8
19089+3404	HDS2716	2011.576	1	—	—	—	—		NR			
19095+2303	TDS971	2012.605	1	1.148	0.007	48.2*	0.3					
19098-0017	A863	2011.521	1	0.335	0.026	156.9*	0.7					
19100+3821	A263	2011.557	2	1.634	0.015	216.1*	0.4					
19100+3821	A263	2011.557	2	1.649	0.024	217.2*	0.3					
19103+2820	COU723	2012.605	1	0.202	0.007	10.6	0.6					
19103+3044	COU1020	2011.557	2	0.973	0.021	99.0*	0.9					
19104+2030	A150	2012.556	1	0.423	0.018	121.1	3.0					
19104+2320	COU120	2011.573	1	0.233	0.007	51.4*	1.4					
19104+2320	COU120	2012.635	1	0.250	0.009	52.2*	0.4					
19108+3726	COU1799	2012.698	1	1.430	0.007	12.9	0.3					
19108+4123	TDT1277	2012.635	1	1.080	0.007	186.3*	0.4					
19108+4720	KOI98	2012.586	1	0.247	0.007	142.1*	0.9					
19108+4720	KOI98	2012.589	1	0.261	0.007	145.8	0.3	6.91				
19110-0726	A95	2011.521	1	0.281	0.007	26.5*	1.1			Doc2017f	0.03	-5.7
19120+3925	YSC114	2012.586	1	0.617	0.007	313.5	0.3	3.86				

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19120+3925	YSC114	2012.589	1	0.556	0.007	317.6*	0.3					
19121+0237	BU1204	2011.510	1	0.221	0.011	2.8	0.4					
19121+0237	BU1204	2011.527	1	0.204	0.021	0.2	0.7					
19121+0237	BU1204	2011.527	1	0.205	0.010	2.6	0.5					
19121+0254	AST1	2011.510	1	0.252	0.013	187.5	2.8			AST2016	0.05	8.7
19127+1324	HEI399	2011.576	1	1.791	0.009	306.2*	0.3					
19127+2435	HDS2720	2012.687	1	—	—	—	—		NR			
19127+2435	A264AB	2012.605	1	3.570	0.018	291.0	2.3	4.08		Izm2019	0.17	2.1
19127+2435	A264AB	2012.687	1	3.443	0.017	286.4	3.3	3.73		Izm2019	0.05	-2.5
19127+2545	TDT1295	2012.709	1	0.811	0.007	137.5*	0.3					
19131+2154	A153	2012.605	1	0.694	0.007	265.1*	0.3					
19131+2154	A153	2011.557	2	0.635	0.016	266.3*	1.3					
19132+3420	COU1616	2012.627	1	0.286	0.013	129.8	3.9					
19133-0817	RST4622	2011.521	1	0.235	0.008	181.8	1.3					
19134+2926	COU1157	2011.573	1	0.208	0.009	96.5*	0.9					
19136+2012	HU335	2012.682	1	0.488	0.007	245.1*	0.7					
19140+4005	COU2199	2011.573	1	0.942	0.007	351.5*	0.4					
19141+6707	HDS2722	2011.516	1	0.169	0.040	24.5	8.0					
19147+3258	COU1463	2012.635	1	0.622	0.007	207.3*	0.5					
19150+3539	COU1617	2012.641	1	0.925	0.007	150.2*	0.3					
19159+2727	STT371	2012.714	1	0.886	0.007	160.9*	0.3					
19162+2817	STF2491	2011.726	1	1.362	0.007	229.2*	0.7					
19162+4505	COU2521	2011.576	1	0.564	0.007	277.1*	0.9					
19163+4018	COU2280	2012.682	1	0.282	0.007	89.4*	0.5					
19172-0323	A100	2011.527	1	0.734	0.009	317.7*	0.3					
19174+0115	A2267	2011.527	1	0.426	0.007	173.3	0.3					
19177+3654	TDT1357	2012.684	1	0.545	0.007	280.8*	0.3					
19177+3654	TDT1358	2012.641	1	—	—	—	—		NR			
19178+5950	HDS2729	2011.516	1	0.143	0.040	133.4	8.0					
19180+2012	COU321	2011.573	1	0.171	0.040	173.6	8.0			Doc2003e	0.06	9.4
19180+2012	COU321	2011.573	1	—	—	—	—		NR			
19180+2012	COU321	2012.605	1	0.188	0.040	144.7*	8.0			Doc2003e	0.06	-17.4
19180+2012	HDS2731	2011.521	1	—	—	—	—		NR			
19181-0525	HDS2731	2011.521	2	7.294	0.036	306.9*	0.3					
19188+1736	HU337	2011.527	1	0.199	0.040	83.1*	8.0					
19189+7648	HDS2732	2011.516	1	0.725	0.015	85.0*	0.6					
19192+1229	HEI570	2011.510	1	1.364	0.007	222.8*	0.3					
19192+2844	VBS28	2012.632	1	2.032	0.010	94.6*	0.3					
19192+2844	VBS28	2012.684	1	2.028	0.010	93.7*	0.3					
19194+1943	COU421	2012.627	1	0.130	0.040	152.4	8.0					
19196+4035	COU2398	2011.559	1	0.169	0.040	95.9*	8.0					
19201+2849	COU1022	2012.687	1	0.151	0.040	142.1	8.0					
19201+2849	COU1022	2012.728	1	0.180	0.040	143.8*	8.0					
19203+2831	TDS982	2012.635	1	0.768	0.007	298.4*	0.3					
19204+2631	COU1023	2012.728	1	0.262	0.007	144.9*	1.3					
19204+2631	KOI300	2012.632	1	—	—	—	—		NR			
19204+2631	KOI300	2012.627	1	—	—	—	—		NR			
19205+3831	KOI300	2012.586	1	0.153	0.040	113.4	8.0					

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19205+3831	A1395	2011.516	1	—	—	—	—		NR			
19218+7708	HDS2740	2011.516	1	0.274	0.007	21.1	2.4					
19220+2230	BU141	2011.745	1	0.911	0.007	81.8*	0.6					
19220+7037	HDS2741	2011.516	1	0.211	0.007	15.1*	5.2					
19226+2912	TDT1407	2012.641	1	0.937	0.011	166.6*	0.3					
19227+2336	TDT1409	2012.632	1	0.892	0.007	188.7*	0.3					
19237+2822	COU1024	2012.641	1	0.430	0.010	237.9*	0.7					
19238+3832	COU2201	2011.573	1	0.213	0.007	139.9*	1.6					
19240+2433	HDS2750	2011.559	1	0.355	0.007	58.3	2.4					
19240+2437	TDS988AB	2012.605	1	0.167	0.007	141.0	1.9					
19240+2437	TDS988AB	2012.605	1	0.207	0.007	149.4	0.3	0.36				
19240+2437	TDS988AC	2012.605	1	3.279	0.016	55.6	0.3		ND			
19240+2437	TDS988AC	2012.627	1	3.305	0.017	56.6*	0.3		ND			
19243+3156	COU1160	2012.728	1	0.546	0.007	195.2*	0.8					
19244+1656	HDS2753	2011.576	1	0.446	0.015	319.1*	0.9					
19247+1005	HDS2756	2011.745	1	0.187	0.040	6.6	8.0					
19252+3928	COU2202	2011.576	1	1.373	0.014	248.9*	0.8					
19264+2241	GII50	2012.641	1	0.396	0.010	184.8*	0.3		ND			
19264+2241	GII50	2012.682	1	0.385	0.012	187.8	2.0		ND			
19254+2619	COU819	2011.576	1	2.076	0.023	184.5*	0.3					
19269+1204	A1181	2011.745	1	0.700	0.007	200.1*	0.5					
19269+1204	HDS2764	2011.745	1	—	—	—	—		NR			
19269+2245	CON37AB	2012.605	2	1.556	0.036	325.3*	3.3	2.1				
19269+2245	CON37AB	2012.687	2	1.484	0.026	321.9	3.1	2.05				
19269+2245	CON37AB	2012.693	2	1.480	0.037	325.4*	2.3	1.8				
19269+2245	CON37AB	2012.693	2	1.592	0.035	324.9	3.3	1.75				
19269+2245	CON37AB	2012.717	2	1.536	0.028	326.0	3.2					
19269+2245	CON37AB	2012.717	1	1.600	0.038	324.9*	0.3					
19269+2245	CON37A,CD	2012.693	2	10.39	0.08	159.8	3.0	3.2				
19269+2245	CON37CD	2012.641	1	—	—	—	—		NR			
19269+2245	CON37CD	2012.693	1	0.590	0.007	147.3	0.3	1.12				
19272+1626	HDS2765	2011.745	1	0.260	0.008	181.8*	0.5					
19274+2510	COU1026	2011.576	1	1.979	0.010	13.0*	0.3					
19287+1442	HEI271	2011.745	1	1.382	0.007	222.6*	0.3					
19288+2305	A160	2011.742	1	0.179	0.040	102.1	8.0					
19290+1515	A1651	2011.740	1	0.209	0.007	254.7*	3.1					
19300+2918	COU1318	2011.742	1	0.398	0.007	200.3*	1.4	0.40				
19302+5639	A712	2011.516	1	0.107	0.040	72.2	8.0		USN2006b		0.01	-1.6
19303+4204	COU2401	2012.714	1	0.976	0.018	191.4*	0.4					
19306+2817	COU1161	2011.559	1	0.232	0.007	179.1	8.2					
19306+2817	COU1161	2011.573	1	0.109	0.063	138.1	7.2					
19310+0429	A366	2011.521	1	0.506	0.007	305.5*	0.3					
19310+4210	COU2403	2011.573	1	0.345	0.007	32.2*	0.8					
19310+4210	A161	2011.559	1	—	—	—	—		NR			
19316+1747	STF2536	2011.742	1	1.796	0.009	117.6*	0.3		Izm2019		-0.02	-1.2
19317+3040	TDT1520	2012.635	1	1.183	0.007	66.6*	0.3					
19325+4358	A585	2012.630	1	1.847	0.009	291.4*	0.3					
19326+3649	COU2204	2011.740	1	0.250	0.007	229.5*	1.1					
19330+0546	A367	2011.756	1	0.999	0.007	306.2*	0.3		Izm2019		0.05	1.3
19331+3254	HU948AB	2011.740	1	0.218	0.011	157.2*	1.2					
19333+2629	COU1028	2011.742	1	0.280	0.007	64.4*	0.6	0.60				
19333+3329	HO108	2011.742	1	0.210	0.015	193.3*	1.9					
19334-0602	RST4632	2011.756	1	0.716	0.007	53.1*	0.3					
19334+3551	COU1941	2012.630	1	0.516	0.009	221.2*	0.3					
19334+4111	COU2404AB	2012.630	1	1.400	0.007	155.6*	0.3					
19334+4111	COU2404AB	2012.630	2	1.426	0.018	155.9	0.7					
19334+4111	COU2404AB	2012.630	2	1.420	0.015	156.1	0.5					
19334+4111	COU2404AB	2012.630	2	1.389	0.015	155.9	0.3					
19334+4111	COU2404AC	2012.630	2	8.398	0.042	355.9*	0.3					

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19342+0747	HDS2777	2011.521	1	0.166	0.040	241.6*	8.0					
19346+1808	STT375	2011.748	1	0.621	0.013	188.2*	0.6			Zir2015a	0.02	1.9
19347+2854	COU1031AB	2011.510	1	1.827	0.016	60.2	0.3					
19347+2854	COU1031AB	2011.559	1	1.829	0.020	60.3	0.6					
19347+2854	COU1031AB	2012.635	1	1.790	0.039	59.7*	0.8					
19347+2854	GII33Aa,Ab	2011.510	1	0.297	0.011	205.9*	3.9					
19347+2854	GII33Aa,Ab	2012.635	1	0.262	0.046	199.3*	4.3					
19348+3751	COU2205	2011.759	1	0.306	0.007	265.3*	0.3					
19350+2328	A162	2012.635	1	0.153	0.040	294.0	8.0			Mdz2017	0.00	9.5
19350+2947	A368	2012.635	1	0.506	0.007	154.2*	0.6					
19355+1126	BU53	2011.745	1	1.660	0.012	245.9*	0.3					
19356+4002	A1400	2011.726	1	0.328	0.013	121.7*	0.4			USN2002	0.08	-18.7
19358+2316	A163	2011.573	1	0.244	0.007	190.7*	1.3			Sca2019d	0.02	-7.2 ^Q
19358+2316	HEI272	2011.510	1	—	—	—	—		NR			
19371+4013	WSI5	2011.726	1	0.165	0.040	17.5	8.0					
19376+2911	COU1320	2011.740	1	1.681	0.008	30.0*	0.3					
19379+0130	HEI176	2011.510	1	0.227	0.007	327.5*	0.3					
19379+0916	J801	2011.751	1	1.590	0.008	77.3*	0.3					
19379+1836	HDS2785	2011.521	1	0.182	0.040	182.0	8.0					
19379+2248	A164	2011.745	1	0.193	0.040	242.8*	8.0					
19379+4312	HDS2784	2011.759	1	0.356	0.013	169.2	3.1					
19380+1614	A1656	2011.510	1	0.224	0.026	176.0*	3.3					
19380+1614	TDT1596	2011.751	1	—	—	—	—		NR			
19382+0725	TDT1596	2011.751	1	2.508	0.013	122.0	0.3					
19384+1424	TDT1598	2011.751	1	0.476	0.007	148.8*	0.3					
19388+2307	HDS2788	2011.576	1	0.325	0.012	235.8*	4.8					
19389+3514	HU953	2011.740	1	0.278	0.007	40.4*	1.2			Lin2017c	-0.03	-0.2
19390+1842	COU213	2011.745	1	1.134	0.007	183.1*	0.3					
19394+2215	STF2556	2011.740	1	0.368	0.007	348.8*	0.8			Ari1999	0.00	-0.1
19394+2215	STF2556	2011.740	1	0.371	0.007	348.6	0.3			Ari1999	0.01	-0.3
19394+2215	STF2556	2012.755	1	0.348	0.015	347.5*	0.8			Ari1999	-0.02	-0.0
19397+3359	HO111	2012.755	1	1.290	0.007	17.5*	0.3					
19397+3359	HO111	2012.755	1	1.296	0.007	17.8	0.3	3.19				
19400-0306	RST5141	2011.756	1	0.263	0.007	114.4	3.9					
19404+3118	COU1164	2011.759	1	0.362	0.007	331.4*	0.4					
19404+3121	COU1163	2012.755	1	0.143	0.040	165.7*	8.0					
19404+3121	COU1163	2011.576	1	0.170	0.040	169.2*	8.0					
19409+1523	HEI74	2011.748	1	0.836	0.007	111.5*	0.5					
19409+1523	TDT1631	2011.753	1	—	—	—	—		NR			
19411+1349	KUI93	2011.510	1	0.141	0.040	319.5	8.0			Tok2021	-0.03	5.0
19413+3043	BU145	2011.723	1	0.851	0.009	271.3*	0.3					
19414+0813	HEI814	2011.745	1	1.473	0.007	83.7*	0.3					
19415+2319	A2789	2011.723	1	0.755	0.007	278.6*	0.3					
19420+4015	KUI94	2011.573	1	0.463	0.007	160.5*	0.3			Sod1999	0.02	0.2
19424+1515	HDS2795	2011.745	1	0.190	0.040	194.5*	8.0					
19426+1150	STT380	2011.576	1	0.403	0.007	72.8*	1.4					
19426+1150	HU343	2011.745	1	—	—	—	—		NR			
19429+2803	A273	2011.723	1	1.742	0.009	153.6*	0.3					
19429+2803	HDS2797	2012.635	1	—	—	—	—		NR			
19432+0117	RST5463	2011.751	1	2.397	0.012	106.5*	0.5					
19432+1736	COU323	2011.751	1	1.127	0.007	301.4*	0.3					
19439-0034	RST5142	2011.756	1	1.457	0.007	76.8*	0.3					
19445+4350	COU2633	2011.759	1	0.531	0.009	158.0	0.4					

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19448+1057	HDS2802	2011.745	1	1.063	0.007	13.1	0.3					
19449+1047	STF2570AB,C	2011.510	1	4.252	0.021	276.8*	0.3					
19449+1047	AGC10	2011.510	1	0.212	0.007	140.7	2.4					
19449+1047	HDS2803	2011.753	1	—	—	—	—		NR			
19452+1823	TDT1708	2011.748	1	0.979	0.011	197.4*	0.4					
19458+2710	KUI95	2011.527	1	2.083	0.010	58.2*	0.3			Izm2019	0.00	0.9
19458+2710	KUI95	2012.570	1	2.100	0.015	57.9	0.3			Izm2019	-0.04	0.2
19458+2710	KUI95	2012.570	1	2.042	0.010	59.0*	0.3			Izm2019	-0.01	1.3
19458+2710	KUI95	2012.570	1	2.076	0.196	58.8	17.2	0.22		Izm2019	-0.07	1.1
19458+2710	KUI95	2012.583	1	2.116	0.013	58.8	0.5			Izm2019	-0.03	1.1
19458+2710	KUI95	2012.583	1	2.144	0.012	59.4	0.3			Izm2019	0.00	1.7
19458+2710	KUI95	2012.583	1	2.123	0.011	58.7	0.5			Izm2019	-0.02	1.0
19458+2710	KUI95	2012.583	1	2.143	0.040	57.8	1.5	0.67		Izm2019	0.00	0.1
19458+2710	KUI95	2012.583	1	2.138	0.059	60.0	3.7	0.85		Izm2019	-0.00	2.3
19458+2710	KUI95	2012.583	1	2.128	0.011	58.4	0.6	0.47		Izm2019	-0.01	0.7
19458+2710	KUI95	2012.583	1	2.133	0.024	58.3	0.6	0.74		Izm2019	-0.01	0.6
19459+3953	A1404	2012.684	1	0.181	0.040	108.0*	8.0					
19460+3717	COU2284	2011.740	1	0.590	0.007	329.7*	0.7					
19463+1648	HEI177	2011.510	1	0.382	0.010	31.3*	1.5					
19464+0418	BU1301BC	2011.510	1	0.724	0.008	339.2*	0.7					
19465+1924	J1335	2011.753	1	1.338	0.007	182.7*	0.3					
19466-0123	RST5143	2011.753	1	0.178	0.040	153.5	8.0					
19466+4346	HDS2810	2011.573	1	0.359	0.018	51.6*	2.9					
19466+4346	HDS2810	2011.573	1	0.337	0.007	36.9	1.4					
19470+1911	HDS2812	2011.753	1	0.180	0.040	358.5*	8.0					
19470+1911	TDT1740	2012.630	2	—	—	—	—		NR			
19471-0809	A108	2011.756	1	0.267	0.007	109.1*	0.9			Doc2017l	-0.04	4.5
19471-0809	A2993	2011.753	1	—	—	—	—		NR			
19477+1905	TDT1760	2011.748	1	1.789	0.015	78.4*	0.3					
19480+1541	HEI75	2011.742	1	0.610	0.007	31.5*	0.6	1.30				
19480+3513	BU1473	2011.576	1	1.037	0.007	194.4*	0.7					
19484+4113	COU2527	2011.759	1	0.558	0.009	109.0*	0.3					
19484+4117	COU2526	2011.573	1	0.176	0.089	235.4*	17.8					
19486+3450	HU682	2011.740	1	0.374	0.007	119.1*	0.8					
19487+1504	A1658	2012.684	1	0.205	0.010	92.3*	1.8			Doc2009g	-0.02	5.6
19487+1504	A1658	2012.684	1	0.208	0.015	88.6	1.1			Doc2009g	-0.02	1.9
19487+3519	STT387	2011.560	1	0.522	0.007	119.0*	0.6			WSI2006b	-0.00	-0.8
19490+1909	AGC11	2011.726	1	0.200	0.009	175.5*	2.0			Mut2010b	-0.03	5.1
19490+4423	A718BC	2012.627	1	0.198	0.040	26.7	8.0					
19491+1645	HDS2819	2011.740	1	0.185	0.040	194.9*	8.0					
19500+3243	ES2371	2012.755	1	2.793	0.152	179.2*	0.3					
19501+2348	COU121	2012.714	1	0.367	0.007	261.4*	2.2					
19504+2409	COU1034	2011.742	1	0.241	0.007	209.8*	1.2	0.30				
19506+3715	COU2285	2012.641	1	1.492	0.009	66.8*	0.4					
19506+3715	HDS2827	2011.527	1	—	—	—	—		NR			
19513+0938	HDS2829	2011.745	1	0.344	0.007	113.6	0.6					
19513+0938	COU2531	2011.726	1	—	—	—	—		NR			
19520+1548	TDT1810	2011.748	1	1.356	0.010	165.2	0.3					
19523+3417	TDT1815	2012.630	1	0.154	0.040	134.3	8.0					
19524+3537	HU685	2011.759	1	1.607	0.008	63.1*	0.3					
19530+3825	COU2532	2011.759	1	0.362	0.009	155.1*	0.4					
19534+2020	HDS2833	2011.527	1	0.178	0.040	135.6	8.0					
19537-0127	RST5145	2011.756	1	0.613	0.018	190.3*	0.3					

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19537+2712	TDT1831	2012.712	1	1.726	0.009	70.0*	0.3					
19537+2712	COU1626	2011.573	1	—	—	—	—		NR			
19540+2616	COU1321	2011.742	1	0.314	0.008	138.0*	1.2	0.60				
19550+4152	HO581	2012.712	1	0.106	0.040	254.6	8.0			Sod1999	-0.05	28.6
19551+3611	COU1946	2011.742	1	0.969	0.007	172.5*	0.4					
19553-0644	STF2597	2011.756	1	0.620	0.007	101.3*	0.8			Hrt1996a	-0.01	0.4
19554+2341	COU1036	2011.740	1	0.278	0.007	197.1*	0.6					
19554+2341	COU1036	2012.755	1	0.278	0.007	194.2*	0.6					
19559+2500	COU1037	2012.687	1	0.178	0.040	153.9*	8.0			Doc2010h	0.01	1.1
19561+1151	J153	2011.748	1	1.835	0.009	3.7*	0.3					
19562+0456	HEI575	2011.510	1	1.373	0.013	237.8*	0.3					
19564+2015	TDS1025	2012.709	1	1.182	0.007	170.7*	0.3					
19577-0349	A2690	2011.753	1	1.430	0.007	213.5*	0.3					
19579+3353	COU1805	2011.759	1	0.312	0.007	62.8*	0.6					
19579+3353	COU1805	2012.709	1	0.300	0.007	63.5*	0.5					
19580+0456	A606	2011.745	1	0.576	0.010	159.9*	0.4			Sca2016c	0.04	0.6
19580+3840	A1409	2011.740	1	0.445	0.009	0.8*	0.4					
19582-0621	HDS2843	2011.753	1	0.316	0.017	174.2*	1.3					
19585+3317	STF2606	2011.573	1	0.719	0.007	145.6*	0.9			Zir2015a	0.02	-0.2
19591+3809	COU2411	2011.726	1	0.382	0.007	45.6*	0.3					
19591+3809	HO276	2011.753	1	—	—	—	—		NR			
20001+0338	A2393	2011.753	1	0.198	0.040	9.8	8.0					
20002+1454	HDS2847	2011.573	1	0.173	0.040	101.2	8.0					
20002+1454	HDS2849	2011.745	1	—	—	—	—		NR			
20003+1757	HU352AB	2011.753	1	0.180	0.040	197.8*	8.0					
20007+3635	HDS2851	2011.576	1	0.367	0.007	171.2	1.1					
20008-0749	RST4647	2011.756	1	0.463	0.007	80.8*	0.3					
20009-0230	RST5150	2011.756	1	0.525	0.007	121.3*	0.4					
20009-0230	TDT1917	2011.748	1	—	—	—	—		NR			
20015+2439	TDS1032	2012.728	1	0.810	0.007	95.1*	0.3					
20016+3435	COU1947	2011.573	1	0.249	0.016	90.6*	0.7					
20020+0257	HEI818	2011.748	1	2.060	0.010	24.1*	0.3					
20023+2009	COU215	2012.728	1	0.304	0.007	271.4*	1.9					
20024+2105	HDS2855	2012.755	1	0.140	0.040	145.7	8.0					
20024+2105	HDS2860	2011.745	1	—	—	—	—		NR			
20033+2209	OL110	2012.635	2	8.297	0.041	331.2*	0.3					
20034+3815	A1412	2012.764	1	0.753	0.007	226.0*	0.3					
20039+2034	COU216	2011.723	1	0.422	0.007	216.6*	0.3					
20041+3957	COU2534	2011.759	1	0.191	0.040	196.5*	8.0					
20050+3707	COU2212	2012.684	1	0.514	0.007	17.2	0.3					
20052+4044	A381	2012.682	1	0.779	0.007	277.3*	0.3					
20052+4044	COU1807	2011.726	1	—	—	—	—		NR			
20063+1954	WAK19	2012.682	1	2.018	0.014	165.4	0.6					
20063+3148	COU1322	2011.573	1	0.230	0.015	102.8	1.6					
20063+3148	COU1322	2011.573	1	0.208	0.017	104.8	2.6					
20067+1256	BU428	2011.745	1	0.810	0.007	354.7*	0.3					
20068+0157	A2278AB	2011.510	1	0.921	0.007	35.0*	0.3					
20069+3438	COU2124	2011.573	1	0.359	0.007	34.1*	0.8					
20072+1141	HEI579	2011.751	2	2.118	0.016	326.6*	0.3					
20072+1141	COU2125	2011.576	1	—	—	—	—		NR			
20075+3535	COU2126	2012.755	1	0.680	0.007	337.4*	0.3					
20075+3535	TDT2005	2011.748	1	—	—	—	—		NR			
20075+3535	HEI76	2011.510	1	—	—	—	—		NR			

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20080+4204	A383	2012.712	1	0.345	0.007	187.8*	0.3			Hrt2013c	-0.00	-3.0 ^Q
20081+3554	TDS1043	2012.764	1	0.921	0.007	234.6*	0.6					
20082+2715	COU1167	2011.726	1	2.026	0.010	238.6*	0.3					
20083+3519	COU2127	2011.759	1	0.248	0.007	222.6*	1.6					
20083+3519	COU2127	2012.685	1	0.298	0.007	35.2*	1.9					
20096+4009	COU2414	2011.759	1	0.275	0.007	158.5*	1.0					
20101+2712	TDT2040	2011.740	1	1.809	0.013	254.7*	0.4					
20101+2712	TDT2040	2012.630	1	1.810	0.013	255.1*	0.3					
20102+2131	TDT2042	2011.723	1	0.567	0.008	358.5*	0.6					
20105+2503	COU122	2011.827	1	0.635	0.007	353.2*	0.4					
20105+2920	HDS2874Ca,Cb	2012.630	1	0.379	0.008	71.0	5.0					
20108+2029	HDS2875	2011.740	1	0.306	0.010	230.9*	4.3					
20108+2029	HDS2876	2011.740	1	—	—	—	—		NR			
20110+2928	TDT2056	2012.725	1	1.463	0.008	357.6*	0.3					
20113+3338	COU1630	2012.709	1	0.115	0.040	65.8	8.0					
20118+3936	COU2415	2012.755	1	0.324	0.007	155.2*	1.0					
20119+2625	HDS2879	2012.712	1	0.293	0.007	162.1*	0.8					
20120+3333	COU1631	2011.742	1	0.382	0.007	327.1*	0.3	0.50				
20120+3429	A282AB	2011.742	1	0.255	0.011	206.7*	2.2					
20120+3436	HO120	2011.723	1	1.216	0.007	110.6*	0.3					
20121+0306	HEI581	2011.510	1	0.841	0.009	340.2*	0.5					
20129+2913	A1203	2012.687	1	0.396	0.009	176.7	1.7					
20129+2913	A1203	2012.687	1	0.383	0.007	355.7*	0.8					
20135+3526	COU2214AB	2011.573	1	1.127	0.008	211.3*	0.3					
20135+3526	COU2214AB	2011.759	1	1.151	0.007	209.6*	0.3					
20135+3526	COU2214AB	2012.685	1	1.137	0.007	208.7*	0.3					
20135+3526	COU2214AB	2012.709	1	1.144	0.007	210.8*	0.3					
20135+3526	COU2214AB	2012.709	1	1.092	0.007	210.4	0.3	0.13				
20135+3526	COU2214AC	2011.573	1	3.420	0.018	263.6*	0.3		ND			
20135+3526	COU2214AC	2011.576	1	3.404	0.017	263.3*	0.3		ND			
20137+1302	A1668	2011.748	1	1.457	0.010	340.7*	0.3					
20139+4539	POP138	2012.755	1	0.545	0.007	220.9*	0.3					
20140+3031	COU1475	2011.742	1	0.216	0.011	75.8*	2.1					
20141-0450	HDS2883	2011.753	2	0.866	0.034	137.8	1.2					
20141-0450	HDS2883	2011.753	2	0.952	0.055	138.4	1.4					
20144+3501	COU2216	2012.725	1	0.554	0.007	206.2*	0.5					
20148+2159	HDS2886	2011.745	1	1.012	0.007	63.6*	0.3					
20149+2840	HO122	2012.764	1	1.406	0.010	72.2*	0.3					
20151+3742	COU2416	2012.682	1	0.293	0.011	126.1*	0.9			Doc2013g	0.02	-0.0
20151+3742	COU2416	2011.723	1	0.297	0.007	124.5*	0.9			Doc2013g	0.03	1.3
20155+4030	A390	2012.000	2	0.822	0.038	146.4	0.5					
20155+4030	A390	2012.687	1	0.852	0.047	146.2	0.6					
20155+4030	A390	2012.687	1	0.867	0.025	145.3	1.2					
20155+4030	A390	2012.687	1	0.834	0.037	325.7*	0.3					
20157+4339	A2095	2012.687	1	0.241	0.007	332.7*	0.4			Lin2012c	-0.03	-1.6 ^Q
20157+4339	A2095A,BC	2012.687	1	3.048	0.015	313.9*	0.3					
20163+2033	HDS2888	2011.745	1	0.646	0.010	283.0*	0.9					
20164+2309	COU218	2012.709	1	0.339	0.021	218.6*	0.6					
20165+2747	HDS2889	2011.576	1	0.186	0.040	122.1	8.0					
20168+3435	TDT2137	2012.725	1	0.613	0.007	110.1*	0.8					
20170+3725	HDS2891	2011.726	1	0.914	0.007	53.3*	0.3					
20170+3725	A1423AB	2011.726	1	4.517	0.023	128.8*	0.3					

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
20176+2622	BU984	2011.573	1	0.201	0.040	153.9	8.0			Pop2000a	-0.07	29.1
20176+2622	BU984	2012.764	1	0.161	0.040	159.7*	8.0			Pop2000a	-0.11	30.6 ^Q
20177+4030	HDS2897	2011.759	1	0.205	0.015	276.3	0.9					
20177+4030	HDS2897	2011.759	1	0.205	0.015	276.3*	0.9					
20177+4030	HDS2897	2012.687	1	0.266	0.007	273.0*	1.9					
20181+2730	HDS2898	2011.740	1	0.199	0.040	168.2	8.0					
20182+1820	HU357	2011.748	1	1.768	0.009	195.2*	0.3					
20182+2912	A1205AB	2012.687	1	1.188	0.007	97.0*	0.4			WSI2006b	0.00	-0.2
20187+2001	HDS2901	2011.745	1	0.292	0.030	46.1	4.2					
20188+3102	HDS2902	2011.726	1	1.676	0.013	295.6*	0.3					
20189+3325	COU1948	2012.712	1	0.168	0.040	342.4*	8.0					
20189+3817	A1425	2011.573	1	0.182	0.040	266.2*	8.0					
20191+3648	COU2286	2011.742	1	0.523	0.007	121.6*	0.8	0.40				
20195+1533	HDS2905	2011.510	1	0.321	0.007	116.1	2.9					
20199+3725	COU2287	2012.764	1	0.194	0.040	314.5*	8.0					
20200+1848	HU359	2011.740	1	0.194	0.040	179.2	8.0					
20201+3700	TDT2183AB	2012.755	2	1.624	0.016	192.3	0.3					
20201+3700	TDT2183AC	2012.755	2	2.922	0.029	258.8	0.3	1.79	ND			
20202+1128	HDS2906	2011.510	1	0.577	0.016	316.9*	0.7					
20203+3924	A1427	2012.712	1	0.190	0.040	132.4	8.0			Doc2016h	-0.04	1.3
20205+1634	HU360AB	2011.748	1	—	—	—	—			NR		
20205+1634	HU360AC	2011.748	2	7.327	0.037	347.8*	0.3			ND		
20205+1634	HU360AC	2011.751	2	7.324	0.037	348.2*	0.3			ND		
20207+1601	YSC70	2012.682	1	0.525	0.010	155.8	0.4					
20207+3512	COU2218	2012.693	1	0.210	0.007	88.2*	0.5					
20209+3928	HO127	2012.627	1	1.914	0.010	94.0*	0.3					
20215+0034	A2280	2011.751	1	0.319	0.034	31.3*	3.4					
20216+1930	COU327AB	2011.510	1	0.176	0.040	235.8*	8.0			Doc2008a	0.02	-6.9
20216+1930	COU327AB,C	2011.510	1	4.088	0.020	132.2	0.3					
20219+1336	HU1197	2011.753	1	1.186	0.007	305.2*	0.3					
20219+3017	TDT2209	2012.627	1	1.731	0.009	50.9*	0.3					
20227+2837	COU1169	2011.759	1	0.243	0.007	58.6*	0.3					
20227+2837	COU1169	2011.759	1	0.239	0.007	59.2*	1.0					
20227+2837	COU1169	2012.709	1	0.224	0.015	59.8*	0.6					
20230+2020	HDS2911	2011.745	1	0.384	0.010	332.5*	1.6					
20231+2052	A288	2011.573	1	0.181	0.040	110.3*	8.0			Doc1994d	-0.02	-4.1 ^Q
20231+2052	A288	2012.728	1	0.196	0.040	115.6	8.0			Doc1994d	-0.00	-0.8 ^Q
20231+3342	COU1949	2012.712	1	0.197	0.040	83.0*	8.0					
20236-0055	RST5155	2011.751	1	1.126	0.007	11.9*	0.3					
20236+3854	GII51	2012.725	1	3.246	0.016	355.8*	0.3			ND		
20236+3854	GII51	2012.728	1	3.192	0.016	356.6*	0.3			ND		
20237-0104	HDS2913	2011.751	1	0.588	0.012	4.1	0.3					
20244+1213	A1209AB	2011.576	1	1.875	0.009	324.1*	0.3					
20244+1213	WOR33Aa,Ab	2011.576	1	0.576	0.007	133.0*	0.3					
20244+1301	HU1198	2011.745	1	0.571	0.007	31.2*	0.4					
20244+2802	HDS2918	2011.573	1	0.202	0.040	218.0*	8.0					
20244+2802	HDS2918	2012.693	1	—	—	—	—			NR		
20244+2802	HDS2918	2012.728	1	0.154	0.040	227.5	8.0					
20249+1309	J841	2011.751	1	0.176	0.040	179.6	8.0					
20249+3404	A290	2011.827	1	0.484	0.007	313.1*	0.3					
20254+4014	MLR1	2012.685	1	0.394	0.016	213.6*	0.9					
20254+4014	MLR1	2011.759	1	0.395	0.008	213.0*	0.7					

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20254+4129	COU2642	2012.693	1	0.746	0.007	321.4*	0.4					
20260+3512	COU2129	2012.685	1	0.205	0.007	157.2*	2.1					
20260+3549	HDS2922	2012.693	1	0.621	0.012	142.6*	0.3					
20262+3547	COU2130	2012.709	1	0.127	0.040	49.0	8.0					
20266-0343	RST4666	2011.753	1	0.499	0.007	199.1*	0.5					
20266-0343	TDT2274	2011.748	1	—	—	—	—		NR			
20273+3357	COU1955	2012.712	1	0.390	0.012	348.3*	1.4					
20276+4202	HDS2928	2012.764	1	0.173	0.040	14.6*	8.0					
20278+3447	COU2131	2012.728	1	1.058	0.007	280.3*	0.3					
20286+3118	COU1325	2012.712	1	0.232	0.013	42.3	0.5					
20290+0710	A610	2011.745	1	0.475	0.007	79.7*	0.6			Cot2002	0.04	-0.0
20290+3535	COU1959	2011.726	1	0.358	0.007	324.7*	0.3					
20302+2651	WOR9	2012.627	1	0.509	0.007	244.7*	0.3			Zir2003	0.02	5.2
20307+3521	HU760	2012.764	1	0.258	0.007	67.2*	1.4					
20307+3521	HU760	2012.764	2	8.720	0.044	148.6*	0.3					
20311+1548	A1675	2011.808	1	0.210	0.017	324.5	1.0			Baz1987d	0.02	7.6
20311+3333	COU1962	2011.573	1	0.215	0.007	289.2*	1.2			Tok2021	-0.02	4.4 ^Q
20311+3333	COU1962	2012.627	1	0.216	0.007	112.4	1.4			Tok2021	-0.03	4.8
20311+3333	COU1962	2012.627	1	0.210	0.007	107.7*	0.6			Tok2021	-0.03	0.1
20320+2548	STF2695	2011.740	1	0.375	0.007	254.3*	0.3			Alz2005a	-0.04	-0.6
20321+1511	A1677	2011.751	1	1.283	0.007	183.7*	0.3					
20328+4418	COU2645	2012.627	1	0.248	0.007	295.2*	0.8					
20328+4418	COU2645	2011.759	1	0.248	0.007	121.1	0.3					
20329+1357	L35CD	2011.576	1	0.472	0.007	156.4*	0.3			Hrt014b	0.01	1.3
20329+1357	BU670AB	2011.576	1	0.821	0.007	7.5*	0.3					
20329+1357	BU670AB	2012.816	1	0.824	0.007	7.3*	0.3					
20329+3056	COU1326	2011.742	1	0.430	0.008	262.4*	0.9	0.10				
20331+2324	A2792	2012.685	1	0.261	0.007	127.8*	0.6					
20333+4119	HER4	2012.627	1	3.131	0.016	160.2	0.3					
20333+4119	HDS2936	2011.751	1	—	—	—	—		NR			
20334+4109	WS167	2012.627	1	0.744	0.007	145.8*	0.5					
20335+2250	HDS2938	2011.573	1	1.553	0.010	119.2	0.3					
20335+2250	TDT2378	2011.748	1	—	—	—	—		NR			
20341+4804	YSC116	2012.728	1	0.147	0.040	99.7	8.0					
20341+4804	YSC116	2012.687	1	0.142	0.040	98.2	8.0					
20351-0436	RST4671	2011.751	1	0.720	0.008	46.5*	0.3					
20352+0019	RST5157	2011.756	1	1.734	0.009	293.4*	0.3					
20354+1121	YR16	2012.816	1	0.604	0.007	264.6*	0.3					
20355+3241	COU1632	2011.576	1	0.648	0.007	251.5*	0.8					
20357+3908	COU2289	2011.576	1	0.702	0.007	333.7*	0.3					
20359+3617	GII52Aa,Ab	2012.726	1	0.354	0.007	216.2*	0.8			ND		
20375+1050	HEI586	2012.816	1	0.561	0.008	219.9*	0.5					
20375+1436	BU151	2011.510	1	0.230	0.010	37.4*	1.6			Mut2010e	-0.03	-5.0
20376+1835	COU224	2011.748	1	0.429	0.010	323.1*	0.7					
20380+1011	HDS2945	2011.748	1	0.356	0.007	77.8*	1.8					
20381+2050	COU328	2011.576	1	1.029	0.007	155.9*	0.3					
20385+2945	COU1172	2011.726	1	0.325	0.007	278.5*	0.4					
20390+3702	COU2219	2011.576	1	0.911	0.007	42.8	0.3					
20393+1529	HEI77	2011.740	1	1.382	0.011	40.9*	0.5					
20393+2714	TDT2454	2011.723	1	0.934	0.007	45.4*	0.3					
20393+2714	TDT2455	2011.759	1	—	—	—	—		NR			

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20394+4318	COU2539	2012.726	1	0.353	0.007	64.0*	1.1					
20396+0458	KUI99	2011.745	1	0.739	0.028	311.4*	2.3			Tok2017a	-0.04	3.7
20396+0458	KUI99	2011.754	1	0.751	0.027	311.5*	2.3			Tok2017a	-0.03	3.8
20396+0458	KUI99	2012.816	1	0.705	0.027	308.0*	2.4			Tok2017a	-0.04	-0.3
20397+3658	A1432	2011.576	1	0.430	0.007	115.7*	0.5					
20406+2948	HO137	2011.740	1	0.735	0.007	355.8*	0.3					
20406+2948	HO137	2011.830	1	0.754	0.007	355.7*	0.3					
20410+1206	HEI587	2011.754	1	1.218	0.007	35.8*	0.3					
20411+3516	COU1963AB	2011.742	1	0.242	0.007	183.4*	0.4	0.20				
20411+3516	COU1963AB,C	2011.742	1	1.751	0.018	43.9*	0.3					
20412+2023	COU423	2011.723	1	0.430	0.007	160.4*	1.6					
20412+3001	COU1173	2011.723	1	1.159	0.007	48.3	0.3					
20416+3000	COU1174	2011.573	1	0.341	0.007	30.8*	0.8					
20416+3000	COU1174	2012.764	1	0.333	0.007	28.7*	0.3					
20416+3950	COU2290	2012.687	1	0.548	0.007	39.4*	0.9					
20416+3950	J2575	2011.754	1	—	—	—	—		NR			
20419-0458	RST4676	2011.756	1	0.342	0.007	188.0*	0.9					
20423+1921	SHN39	2012.764	1	0.458	0.007	54.3	1.9					
20424+3455	COU1965	2011.726	1	0.358	0.007	274.6*	0.9					
20432+3350	HDS2949	2011.759	1	0.929	0.007	164.5*	0.4					
20432+3350	HDS2949	2011.759	1	0.925	0.007	164.4	0.3					
20432+3350	HDS2949	2012.687	1	0.951	0.007	165.5*	0.5					
20439-0557	RST4679	2011.756	1	0.337	0.011	356.0*	1.2					
20440+3839	COU2292	2012.687	1	0.303	0.007	238.1*	0.4					
20440+3839	COU2292	2011.759	1	0.296	0.007	235.9*	0.9					
20444+4103	COU2423	2011.726	1	0.283	0.007	183.2*	0.5					
20450+1244	BU64	2011.745	1	0.661	0.007	173.1*	0.3			USN2007a	0.01	-1.1 ^Q
20455-0716	A3000	2011.756	1	0.672	0.007	63.7*	0.3					
20456+1714	COU425	2011.827	1	0.655	0.013	146.3	1.1					
20459+0607	TDT2523	2012.816	1	1.650	0.008	80.2*	0.3					
20464+3511	COU1810	2011.830	1	0.207	0.007	178.4	1.7					
20464+3511	COU1810	2011.740	1	0.233	0.012	181.8	1.0					
20466+1915	COU426	2011.573	1	0.247	0.007	159.2*	2.2					
20477+3258	COU1634	2011.830	1	0.184	0.040	133.1*	8.0					
20480+2704	COU826	2012.687	1	1.278	0.007	122.7*	0.3					
20481-0302	A174	2011.751	1	0.637	0.012	356.9*	0.3					
20482-0648	RST4681	2011.751	1	0.312	0.007	62.7	1.2					
20485+0143	RST5471	2011.756	1	0.657	0.007	17.8*	0.3					
20489-0214	HO142	2012.816	1	1.004	0.007	9.6*	0.4					
20490+2540	HDS2966	2011.827	1	0.555	0.007	222.2*	1.0					
20492-0302	RST4682	2011.756	1	0.930	0.007	1.7*	0.3					
20492+0502	HDS2967	2011.754	1	0.399	0.010	189.9*	2.4					
20492+4525	COU2646	2012.764	1	0.383	0.007	265.1*	0.4					
20494+1124	J194	2012.816	1	0.600	0.007	320.5*	0.3			Sod1999	0.02	2.5
20495+4035	COU2426	2011.576	1	1.237	0.007	328.5*	0.3					
20496+5047	HDS2968	2011.759	1	0.331	0.007	69.4	0.8					
20499-0131	RST4684	2011.754	1	0.271	0.007	2.6	0.3					
20499-0131	HDS2972	2011.745	1	—	—	—	—		NR			
20514-0538	STF2729	2011.756	1	0.832	0.007	27.4*	0.3			Mdz2017	0.00	0.7
20514-0538	STF2729	2012.816	1	0.815	0.007	28.4*	0.3			Mdz2017	-0.00	1.0
20514-0538	A750	2011.573	1	—	—	—	—		NR			
20528+3132	TDT2599	2012.777	2	1.714	0.015	144.5*	0.4					
20528+3646	COU2221	2012.682	1	0.318	0.007	202.6*	1.7					
20528+3646	TDT2603	2011.748	1	—	—	—	—		NR			

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20535+0300	HEI819	2011.745	1	0.210	0.007	135.0*	2.0					
20535+2630	COU1177	2011.726	1	0.244	0.007	13.9*	1.0					
20539-0323	RST4686	2011.754	1	0.441	0.015	103.6*	1.2					
20549+3709	COU2295	2011.576	1	0.436	0.007	182.6*	0.3					
20549+3803	TDT2626	2012.682	1	4.993	0.025	52.1	0.3					
20549+3803	TDT2626	2012.682	1	6.421	0.032	120.7	0.3	2.29				
20550+2805	BU367	2012.685	1	0.245	0.010	153.5*	1.1			Sca2003e	0.08	-25.5
20550+2805	BU367	2012.685	1	0.220	0.007	153.4	2.6			Sca2003e	0.05	-25.6
20554+0836	J1318	2011.745	1	0.873	0.007	138.9*	0.3					
20556+3809	COU2222	2012.682	1	0.357	0.007	110.9*	1.1					
20556+3809	COU2222	2011.759	1	0.393	0.007	288.0*	0.8					
20558+2131	COU727	2011.726	1	1.104	0.009	353.4*	0.3					
20560+3546	COU2134	2011.740	1	0.539	0.007	261.1*	0.3					
20564+4308	COU2544	2012.764	1	0.317	0.008	161.2*	0.3					
20565+2118	A2797	2012.764	1	0.135	0.040	237.2*	8.0					
20565+2118	A2797	2012.726	1	0.159	0.040	232.0	8.0					
20566+3858	A1436	2012.726	1	0.514	0.008	50.0*	0.6					
20568+3348	COU1812	2011.576	1	1.110	0.010	104.4*	0.3					
20569+1059	HDS2985	2011.745	1	0.630	0.007	292.5*	0.9					
20577+3848	ES2056	2012.777	2	2.658	0.019	74.8*	0.3					
20581+4043	COU2430AB	2012.685	1	0.413	0.007	252.9*	1.4					
20581+4043	COU2430A,BC	2012.685	1	3.047	0.015	175.5	0.3					
20581+4043	COU2430A,BC	2012.685	1	3.004	0.015	176.2	0.3	4.96				
20582+1038	A1215	2012.816	1	0.431	0.007	209.3*	0.3					
20584+0118	RST5474	2012.816	1	1.993	0.010	193.5*	0.3					
20584+3344	COU1635	2011.827	1	1.587	0.008	51.6	0.5					
20584+3344	RST4687	2011.751	1	—	—	—	—		NR			
20590+3218	COU1636	2011.742	1	0.815	0.007	189.7*	0.8	0.30				
20590+3218	COU1636	2011.827	1	0.831	0.007	189.1*	0.3	0.40				
20591+0418	STF2737	2011.754	1	0.465	0.007	285.6*	0.6			Tok2017c	-0.01	1.9
20592+3314	COU1637	2011.726	1	0.241	0.008	3.7*	1.1					
20599+4016	HDS2989Da,Db	2012.764	1	0.205	0.015	144.6	8.3			Tok2019e	0.02	-1.6
21000-0436	RST4688	2011.754	1	0.293	0.008	291.5*	1.4					
21000+3740	COU2297	2011.742	1	0.268	0.007	233.8*	0.3	0.40				
21000+3740	COU2297	2011.830	1	0.282	0.007	235.8*	0.3					
21000+3740	COU2297	2012.764	1	0.311	0.010	238.1*	1.5					
21000+4004	KUI103	2011.573	1	0.582	0.007	27.3*	0.3			Doc2016b	-0.02	0.5
21000+4004	KUI103	2011.726	1	0.598	0.007	28.7*	0.3			Doc2016b	-0.01	0.3
21000+4004	KUI103	2012.627	1	0.646	0.010	35.1*	0.3			Doc2016b	-0.02	-1.7
21000+4004	KUI103	2012.628	1	0.633	0.012	39.8*	0.3			Doc2016b	-0.04	3.0
21001+0731	KUI102	2012.816	1	0.135	0.040	287.4	8.0			Hrt2014b	-0.01	-0.6
21004+3022	COU1179	2012.854	1	0.895	0.007	358.9*	0.3					
21004+3022	COU1179	2012.854	1	0.877	0.014	359.3*	0.3					
21004+3411	BU1329	2012.854	1	0.305	0.007	217.3*	0.3					
21004+3411	BU1329	2012.854	1	0.321	0.007	218.7*	0.3					
21008+2057	A176	2012.854	1	0.249	0.007	175.2*	0.6					
21008+2057	COU523	2011.745	1	—	—	—	—		NR			
21019+2340	COU128	2012.726	1	0.200	0.007	146.2*	1.4					
21021+1423	A1687	2011.745	1	0.790	0.007	189.0*	0.3					
21023+2037	HDS2998	2011.830	1	0.203	0.013	130.4	2.7					
21026+2141	BU69	2011.808	1	0.323	0.007	359.7*	0.6			Zir2014a	-0.07	-0.4
21031+0132	STF2744	2011.748	1	1.241	0.007	112.2*	0.3			Izm2019	-0.02	-0.0

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
21032-0610	RST4689	2011.754	1	0.844	0.007	83.5*	0.4					
21032-0610	YSC14	2012.755	1	—	—	—	—		NR			
21040+4225	COU2433	2012.755	1	0.347	0.007	50.8	0.7					
21040+4225	COU2433	2012.755	1	0.347	0.007	230.8*	0.7					
21040+4225	SE3	2011.745	1	—	—	—	—		NR			
21047+0332	SE3BC	2011.748	1	0.602	0.007	129.6	0.3	0.13				
21047+0332	STF2749A,BC	2011.748	1	3.065	0.015	181.4*	0.3					
21050-0403	RST4690	2011.756	1	0.885	0.007	7.3*	0.3					
21050-0403	HDS3004	2011.754	1	—	—	—	—		NR			
21051+0757	HDS3004	2012.816	1	0.180	0.007	64.0	1.8			Tok2015c	-0.02	1.0
21052+1936	HDS3005	2012.764	1	0.340	0.007	3.0	0.5					
21052+1936	HDS3007	2011.751	1	—	—	—	—		NR			
21053+2807	HDS3006	2012.685	1	0.693	0.008	11.2*	0.3					
21053+2807	HDS3006	2012.685	1	0.689	0.021	11.4	1.0					
21054-0744	RST4691	2011.756	1	0.499	0.007	72.0	0.5					
21054-0744	RST4691	2011.756	1	0.225	0.010	166.0	0.8					
21054+2824	MLB666	2012.848	1	1.351	0.021	175.9	1.0					
21054+2824	MLB666	2012.848	1	1.351	0.021	175.9	1.0					
21055+2434	COU129	2012.854	1	0.701	0.007	75.7*	0.8					
21056+1443	HEI78	2011.748	1	1.844	0.009	54.0	0.3					
21057+2508	COU130	2011.726	1	1.323	0.007	150.4*	0.3					
21058+1939	J2702	2012.764	1	5.412	0.027	178.5*	0.3	2.34				
21058+1939	J2702	2012.764	1	1.964	0.010	104.9	0.3	4.56				
21059+0152	YSC71	2012.816	1	0.745	0.007	265.2	0.3	3.11				
21059+0152	YSC71	2012.816	1	—	—	—	—		NR			
21059+2118	A178	2012.848	1	1.046	0.007	64.2*	0.3					
21059+2118	A178	2012.848	1	1.046	0.007	64.2*	0.3					
21065+2655	COU527	2012.755	1	0.309	0.007	131.1*	0.9					
21065+2655	COU527	2012.755	1	5.894	0.029	49.6*	0.3	2.98				
21068+2306	HU364	2011.759	1	0.241	0.008	111.0*	1.3					
21072+2833	COU528	2011.740	1	1.204	0.007	69.8*	0.4					
21072+2833	COU528	2011.827	1	1.207	0.013	70.1*	0.3					
21074-0810	HDS3010	2011.754	1	0.852	0.007	30.0*	0.3					
21074+3444	COU1814	2011.740	1	0.331	0.014	201.0*	1.6					
21077+3255	COU1330	2012.854	1	0.393	0.007	218.7*	0.5					
21080+0509	STT527	2011.751	1	0.345	0.007	115.0*	0.3			Pop1995a	-0.03	5.9
21083+2913	COU1331	2011.742	1	0.311	0.007	31.5*	0.4	0.60				
21091+2922	COU1332	2011.759	1	0.210	0.011	199.4*	0.9					
21091+2922	COU1332	2012.685	1	0.253	0.007	22.6	3.3					
21091+2922	COU1332	2012.685	1	0.229	0.015	200.5*	1.1					
21092+3620	COU1815	2011.726	1	0.359	0.007	99.5*	0.8					
21092+3638	COU1966	2012.756	1	1.332	0.007	311.2*	0.3					
21096-0940	RST4075	2011.754	1	1.624	0.014	43.6	0.3					
21096-0940	OL132	2011.917	1	—	—	—	—		NR			
21106+1650	HU367	2012.854	1	0.302	0.007	342.1*	1.0					
21106+1650	HEI186	2012.816	1	—	—	—	—		NR			
21109+1801	COU69	2012.848	1	1.505	0.334	150.8	8.2					
21109+1801	COU69	2012.848	1	1.505	0.334	150.8	8.2					
21109+2925	BAG29	2011.827	1	0.215	0.016	106.3	1.9			Bag2010	-0.04	-7.6
21109+2925	BAG29	2012.726	1	0.325	0.010	123.1*	0.3			Bag2010	0.06	-0.8
21110+0102	A2287	2011.754	1	0.215	0.009	11.8	3.0					
21110+3320	VKI41	2012.685	1	1.192	0.007	309.4*	0.4					
21115+2144	COU227	2011.827	1	0.512	0.007	115.8*	0.8			FMR2012b	-0.01	1.3

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21115+2144	COU227	2012.854	1	0.511	0.007	116.3*	0.5			FMR2012b	-0.01	-0.0
21119+2524	COU643	2011.726	1	0.173	0.040	130.0*	8.0					
21122-0203	A179	2011.756	1	0.283	0.010	180.3*	0.7					
21125+2821	HO152	2011.726	1	0.181	0.040	140.7	8.0			Doc2016g	-0.01	1.6
21125+2821	HO152	2012.756	1	0.192	0.040	139.5*	8.0			Doc2016g	0.01	-1.9
21133+4655	A884	2011.759	1	0.435	0.007	114.4	0.6					
21135+1559	HU767	2011.748	1	0.086	0.040	165.3	8.0			Hrt1996a	0.05	89.8
21135+1559	HU767	2011.827	1	0.114	0.040	170.6	8.0			Hrt1996a	0.08	95.0
21138+3711	COU1816AB	2012.726	1	1.844	0.009	247.7*	0.3					
21138+3711	COU1816AB	2012.726	2	1.849	0.015	247.8*	0.3					
21138+3711	COU1816AC	2012.726	2	10.038	0.050	336.1*	0.3		ND			
21145+1000	STT535AB	2011.748	1	0.300	0.007	24.3*	1.4			Mut2008	-0.04	-3.4 ^Q
21151+4227	COU2228	2011.759	1	0.502	0.007	28.5*	0.5	1.00				
21159+2858	HDS3025	2012.854	1	0.221	0.010	45.9	2.8					
21161+3747	COU1819	2012.756	1	0.696	0.010	328.8*	0.4					
21166-0037	HDS3029	2011.756	1	0.640	0.007	118.0	0.7					
21166-0037	COU1972	2011.759	1	—	—	—	—		NR			
21169+4009	COU1972	2012.756	1	0.157	0.040	145.2	8.0					
21170+4704	COU2437	2012.726	1	0.430	0.007	235.3*	0.6					
21171+3546	BU162	2012.777	1	1.228	0.007	252.7*	0.3					
21179+1831	HU368	2012.777	1	0.249	0.007	131.8	1.7					
21180+3049	COU1183	2012.777	1	0.253	0.013	195.9*	1.0					
21183+4140	COU2302	2012.777	1	1.276	0.007	60.9*	0.3					
21183+4140	HDS3033	2012.854	1	—	—	—	—		NR			
21187+3348	HU770	2012.848	1	0.894	0.014	133.4	0.8					
21187+3348	HU770	2012.848	1	0.894	0.014	133.4	0.8					
21187+3348	HDS3038	2011.748	1	—	—	—	—		NR			
21209+0307	BU838	2011.748	1	1.628	0.008	154.6*	0.3			Zir2015a	-0.02	1.4
21209+0307	BU838	2011.756	1	1.639	0.008	154.9*	0.3			Zir2015a	-0.01	1.8
21209+2720	COU729	2012.854	1	0.213	0.008	138.1*	0.3					
21212+4003	COU2230	2011.726	1	0.440	0.007	84.0*	0.4					
21214+0253	STT435	2011.748	1	0.684	0.007	57.9	0.3			PkO2018b	0.00	-0.8
21224+2927	COU1041	2011.740	1	1.246	0.008	90.5	0.3					
21240+2445	COU231	2011.830	1	0.461	0.007	125.2*	0.6					
21243+0343	A2288	2011.748	1	0.364	0.013	227.4*	1.0			Tok2015c	-0.01	-3.1
21248+4106	COU2305	2011.726	1	0.350	0.007	102.1*	0.3					
21252+1828	COU430	2011.751	1	0.582	0.007	233.8*	0.3					
21252+2600	TDT2952	2012.854	1	0.970	0.007	119.2*	0.6					
21253+2928	COU940	2012.685	1	0.357	0.007	269.0*	1.1					
21254+1121	A887	2011.748	1	0.183	0.040	180.2*	8.0					
21256+4138	A618	2012.726	1	0.556	0.009	276.5*	0.3					
21257+4043	COU2306	2012.867	1	0.579	0.007	20.4*	0.6					
21257+4043	COU2306	2011.759	1	0.584	0.007	21.1*	0.5					
21260+2422	COU534	2011.726	1	0.337	0.008	110.7*	0.5					
21261-0010	RST5164	2011.756	1	0.856	0.007	307.4*	0.8					
21264+3909	A1442	2012.777	1	1.258	0.007	272.9*	0.3					
21268+3731	COU1821	2011.830	1	0.641	0.007	95.5*	0.3					
21281+4110	COU2231	2012.868	1	0.179	0.040	28.7*	8.0					
21287+0743	HU276	2011.751	1	0.892	0.007	28.0*	0.4					
21287+1810	HU490AB	2011.740	1	0.346	0.007	312.6*	0.3					
21287+1810	HU490AB	2012.756	1	0.343	0.007	309.2*	0.9					
21296+4626	HDS3059	2012.685	1	0.669	0.007	142.0	0.6					
21297+1719	COU535	2012.870	1	0.671	0.007	31.4*	0.3					

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21297+4732	A767	2011.759	1	1.269	0.007	171.0*	0.3					
21297+4732	COU941	2011.830	1	—	—	—	—		NR			
21297+4732	COU941	2012.854	1	—	—	—	—		NR			
21303+4740	COU2440	2012.685	1	0.477	0.007	180.2*	0.3					
21303+4740	COU2440	2011.759	1	0.507	0.007	178.9*	0.6					
21304+3504	HLD45	2012.868	1	1.300	0.007	197.9*	0.3					
21307+0005	A888	2012.816	1	0.553	0.007	217.3*	0.4					
21307+2258	COU134	2011.830	1	1.432	0.054	3.6*	1.4					
21308+3446	COU1479	2012.756	1	0.717	0.007	143.0*	0.8					
21308+3446	COU1479	2011.740	1	0.757	0.007	147.5*	1.1					
21321+4828	COU2442	2012.726	1	0.334	0.019	121.8	2.4					
21322+0013	ALC4	2011.751	1	1.482	0.007	132.0	0.3					
21324+2434	MCT12	2012.854	2	1.455	0.015	243.1*	0.3					
21328-0053	HDS3064	2011.751	1	0.294	0.007	177.7	0.4					
21328-0053	HDS3064	2011.751	1	0.294	0.007	177.7	0.4					
21328+0159	A2290	2011.756	1	0.499	0.007	260.4*	0.4					
21328+3904	A1443	2012.868	1	0.250	0.007	242.9*	1.6					
21340+3844	COU1976	2012.868	1	0.407	0.007	29.2*	0.4					
21349+0308	A2291	2012.816	1	1.009	0.007	93.1*	0.3					
21352+2124	BU74	2012.857	1	0.982	0.007	336.4*	0.3					
21352+2124	BU74	2012.857	1	0.987	0.007	337.0*	0.3					
21355+2427	HU371	2011.740	1	0.210	0.007	319.1*	2.3			WSI2006b	-0.06	-0.9
21365+4304	COU2233	2011.759	1	0.153	0.040	118.0	8.0					
21368+3217	COU1184	2011.740	1	0.224	0.007	160.3	0.7					
21368+3217	ARU22	2012.816	1	—	—	—	—		NR			
21376+0035	ARU4	2011.751	1	0.642	0.007	120.6	0.6					
21379+2743	HDS3080	2011.748	1	3.317	0.017	18.9*	0.3					
21379+2743	HDS3080	2012.685	1	3.286	0.016	18.6*	0.3					
21379+2743	HDS3080	2012.685	1	3.235	0.016	19.3	0.3					
21383+2336	HU372	2012.854	1	0.292	0.007	71.1*	0.3			USN2002	0.06	-6.2 ^Q
21391+1252	ROE128	2012.889	1	1.353	0.008	262.5*	0.3					
21391+3356	WSI120	2012.764	1	1.410	0.007	54.8*	0.3					
21393+2043	STT445	2012.870	1	1.017	0.007	120.2*	0.3					
21393+4625	COU2312	2011.759	1	0.320	0.007	161.7*	0.3					
21395+3551	COU1335	2011.830	1	0.548	0.009	288.4*	0.5					
21396+0431	HEI822	2011.756	1	1.206	0.007	0.1*	0.3					
21399+1914	COU330	2011.830	1	0.507	0.007	13.3	0.3					
21399+1914	COU330	2011.830	1	0.560	0.014	13.5	0.5					
21399+2737	HDS3083	2011.860	1	—	—	—	—		NR			
21399+1914	HDS3083	2012.726	1	—	—	—	—		NR			
21399+1914	HDS3083	2012.764	1	—	—	—	—		NR			
21399+2737	HDS3083AC	2011.830	1	3.356	0.017	2.5*	0.3					
21399+3931	A1445	2012.868	1	1.428	0.007	281.5	0.3	4.19				
21399+3931	A1445	2012.868	1	1.466	0.009	102.3	0.4					
21401-0403	RST4697	2012.816	1	1.902	0.010	164.0*	0.3					
21423+0555	HU280	2011.754	1	0.178	0.040	178.1*	8.0			USN2006a	0.01	-7.1 ^Q
21423+0555	HU280	2012.870	1	0.152	0.040	184.7*	8.0			USN2006a	-0.01	-3.1 ^Q
21424+4105	KUI108	2012.868	1	0.204	0.010	29.9	1.3			Hrt2000c	0.00	5.3
21424+4105	KUI108	2011.759	1	0.165	0.040	28.4	8.0			Hrt2000c	-0.03	-3.1
21426+0233	HDS3092	2011.751	1	0.210	0.007	127.6	1.8			Tok2021	0.03	11.3
21426+1900	HO165	2012.854	1	0.757	0.007	61.2*	0.3					
21428+1429	HEI288	2011.748	1	1.672	0.008	241.4*	0.4					
21429-0225	A180	2011.756	1	0.582	0.007	235.5*	0.6					

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21431+4122	COU1978	2012.868	1	0.223	0.007	81.7*	0.6					
21434+2353	HU374	2012.854	1	0.172	0.040	121.1*	8.0			USN2002	-0.06	70.3
21435+2721	A299	2011.759	1	1.133	0.007	64.1*	0.3					
21445+0607	HDS3096	2012.870	1	1.325	0.007	79.1*	0.4					
21445+0607	A1223	2011.754	1	—	—	—	—		NR			
21445+0607	A1223	2012.816	1	—	—	—	—		NR			
21460+1053	BU1305	2012.889	1	1.277	0.007	52.1*	0.3					
21461+3534	COU1337	2011.740	1	0.345	0.024	110.4*	4.6					
21465+2210	HDS3101	2012.854	1	0.156	0.040	12.5*	8.0					
21466+1929	COU431	2012.889	1	0.466	0.007	185.0*	0.4					
21469+0051	STF2825	2011.754	1	0.370	0.007	155.8*	0.6			Zir2014a	-0.09	2.0
21473+3451	COU1482	2012.868	1	0.807	0.007	55.7*	0.3					
21477-0143	BAR15	2011.754	1	0.269	0.008	152.4*	1.2					
21481+2100	HU378	2012.889	1	0.150	0.040	118.2	8.0					
21489+0523	HU281	2011.756	1	1.458	0.007	146.6*	0.3					
21495+2334	BU1306CD	2012.889	1	1.993	0.010	348.1*	0.3					
21496+3319	HDS3106	2011.740	1	0.140	0.040	139.5	8.0					
21498+3455	COU1484	2012.868	1	0.405	0.007	349.2*	0.3					
21501+1717	COU14	2012.854	1	0.291	0.007	50.2*	0.6			Mut2010b	-0.03	-0.9
21504+3927	HO170	2011.726	1	0.283	0.007	75.8	0.5					
21510+2911	A889	2011.726	1	0.156	0.040	126.1	8.0			Hei1984b	0.05	5.9
21511+1022	COU2549	2012.816	1	0.119	0.044	85.7	8.0					
21511+4209	COU1822	2012.868	1	0.165	0.040	19.0*	8.0					
21518-0333	RST4699	2011.754	1	0.714	0.007	259.1*	0.3					
21521+0549	J916	2012.870	1	1.749	0.009	5.0*	0.3					
21539+2821	WS18	2011.740	1	0.111	0.040	142.2	8.0			HIP1997d	0.02	2.5
21543+1943	COU432BC	2012.854	1	0.173	0.040	180.2*	8.0			Tok2017c	0.01	2.6 ^Q
21544+1621	HEI82	2012.854	1	1.556	0.008	73.1*	0.4					
21546-0300	HDS3116	2011.754	1	0.231	0.011	143.7*	3.5					
21548+4548	STF2846AB	2012.764	1	3.595	0.018	85.3	0.3					
21548+4548	COU2137	2012.764	1	0.207	0.007	39.8	0.9					
21553+1842	HO173	2012.870	1	0.981	0.007	72.8*	0.3					
21553+1842	HO173	2012.870	1	0.988	0.007	72.4	0.3	1.60				
21553+2850	COU836	2011.759	1	1.224	0.007	161.2*	0.3					
21555+1053	BU75	2012.870	1	1.024	0.007	24.0*	0.3			Hei1996a	0.01	0.2
21556+3849	A1449	2011.726	1	0.271	0.007	50.0*	0.9			Hrt2014b	-0.02	-4.0 ^Q
21557+0715	STT452	2011.756	1	0.710	0.007	178.4*	0.3					
21559+1536	BAT1	2012.870	1	1.106	0.007	152.8*	0.3					
21561+2846	COU837	2012.868	1	1.186	0.007	150.1	0.3					
21561+2846	A621	2012.870	1	—	—	—	—		NR			
21566+3053	HDS3119	2011.740	1	0.553	0.008	32.7*	0.4					
21571-0711	RST4700	2011.754	1	0.493	0.008	244.2*	0.9					
21573+3241	A1226	2011.740	1	0.205	0.015	180.9*	1.1			Cou1987c	0.01	-3.9 ^Q
21576-0858	RST4094	2011.754	1	0.268	0.011	166.1	2.2					
21577-0038	A891	2011.756	1	0.611	0.007	256.4*	0.3					
21581-0329	STF2847	2012.816	1	0.715	0.007	306.6*	0.3					
21588+2427	COU839	2012.854	1	0.316	0.007	95.9*	0.7					
21590+1212	HEI410	2012.889	1	0.194	0.040	154.3*	8.0					
21593+2641	COU1043	2011.726	1	0.362	0.007	18.2*	0.6					
21593+4606	COU2138	2012.764	1	0.129	0.040	145.3	8.0			Doc2012c	-0.01	8.9
21594+1719	COU433	2012.889	1	0.588	0.007	120.3*	0.8					
22012-0507	RST4703	2011.756	1	0.308	0.023	92.9*	1.5					
22020+1058	HDS3126	2011.756	1	0.522	0.007	86.0	0.7					
22020+1058	HDS3128	2012.726	1	—	—	—	—		NR			

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
22028-0045	RST5166	2011.756	1	0.591	0.007	12.3*	0.4					
22029+1547	HDS3129	2011.827	1	0.154	0.040	158.4	8.0			Tok2015c	0.06	-1.2
22029+1547	HDS3129	2012.870	1	—	—	—	—		NR			
22029+3436	COU445	2011.740	1	0.863	0.041	33.8	1.7					
22029+3436	COU445	2011.742	1	0.883	0.007	211.9*	0.8	0.20				
22032+2358	J289	2012.756	1	1.953	0.010	136.5*	0.3					
22032+2729	COU434	2011.742	1	0.931	0.024	92.2	0.7					
22037+0515	HU491	2012.816	1	0.982	0.007	260.6*	0.3					
22038-0248	HO469	2011.756	1	0.477	0.007	52.1*	1.1					
22038+0100	RST5482	2012.816	1	0.475	0.008	32.6*	1.6					
22040+3841	COU1341	2012.726	1	1.599	0.008	91.2	0.3					
22040+3841	COU1341	2011.827	1	1.542	0.008	90.4	0.3					
22042+4821	COU2323	2011.759	1	1.612	0.008	22.1*	0.3					
22042+4821	COU2323	2012.726	1	1.622	0.008	22.2*	0.3					
22044+1339	STF2854	2011.751	1	1.638	0.008	83.3*	0.3					
22045+1551	BU696	2012.870	1	0.156	0.040	356.8*	8.0			FMR2013d	-0.04	4.3
22051+3923	YSC121	2012.756	1	1.125	0.007	102.4*	0.3	4.58				
22051+3923	YSC121	2012.756	1	1.072	0.007	101.3	0.4					
22053+4308	COU1826	2011.759	1	0.945	0.007	177.7*	0.3					
22053+4308	COU1826	2012.726	1	0.951	0.007	177.4*	0.3					
22053+4308	YSC73	2012.816	1	—	—	—	—		NR			
22055+0545	YSC73	2012.870	1	0.348	0.037	165.7	1.4					
22055+0545	YSC73	2012.889	1	0.354	0.015	170.6	1.9					
22059+4522	A183	2011.759	1	0.732	0.007	245.0*	0.3					
22075+2538	A308	2012.868	1	0.196	0.040	133.4*	8.0			Hrt2009	0.02	-0.1 ^Q
22077+2622	COU537	2011.759	1	0.238	0.007	140.3*	0.5	0.10		Doc2012g	0.00	-1.0 ^Q
22077+2622	COU537	2012.854	1	0.242	0.007	143.5	0.8			Doc2012g	0.00	-1.2 ^Q
22091+2259	HDS3148	2012.854	1	0.584	0.007	134.1*	1.0					
22095+0542	HWE61	2012.889	1	1.235	0.007	128.6*	0.3					
22099+4254	COU1828	2012.868	1	0.867	0.007	274.8*	0.3					
22100+2308	COU136	2012.854	1	0.457	0.007	20.7	0.6			Doc2016h	-0.01	-1.2
22100+2308	COU136	2011.726	1	0.473	0.007	22.8	0.5			Doc2016h	-0.00	0.1
22106+3544	COU1188	2011.827	1	0.424	0.020	40.7*	0.3	0.80				
22106+3706	HDS3149	2011.830	1	0.180	0.040	138.7	8.0					
22107+0755	WOR10	2011.754	1	0.785	0.007	12.5*	0.8			Zir2014a	0.00	0.6
22107+0755	WOR10	2011.756	1	0.801	0.007	11.5*	0.3			Zir2014a	0.02	-0.4
22107+0755	WOR10	2012.816	1	0.835	0.007	10.9*	0.3			Zir2014a	0.03	0.5
22109+2717	COU538	2011.830	1	0.238	0.010	134.5*	1.2					
22115+1806	CHR119	2011.756	1	0.188	0.040	147.3	8.0					
22116+3727	COU1486	2011.827	1	0.570	0.007	34.0*	0.4	0.10				
22116+3727	COU1486	2011.742	1	0.571	0.007	31.6	1.1					
22126+3013	HO179	2012.857	1	0.918	0.007	280.7*	0.3					
22134+3914	HDS3154	2011.742	1	0.546	0.007	321.9*	0.5					
22149+4142	A410	2011.726	1	0.819	0.007	350.9*	0.3					
22158-0226	A2600	2011.756	1	1.759	0.009	16.5*	0.3					
22163+4821	TDT3434	2012.889	1	0.885	0.007	263.2*	0.3					
22175+1649	HEI192	2012.870	1	0.127	0.040	166.7	8.0					
22183-0022	HDS3160	2011.754	1	1.312	0.014	119.9*	0.3					
22183-0022	HDS3160	2012.816	1	1.300	0.018	120.3*	1.3					
22195+0501	TDT3464	2012.889	1	0.760	0.008	212.8*	0.3					
22195+2531	COU436	2011.830	1	0.372	0.007	259.9*	1.3	0.20				
22196+2107	HU383	2012.870	1	0.359	0.007	28.9*	0.6					
22196+2107	HU383	2012.870	1	0.333	0.007	29.3	0.3	0.63				
22202+2931	BU1216	2012.854	1	0.916	0.007	276.6*	0.3			Lin2012a	0.04	-1.3

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ (°)	σ_θ (°)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ (°)
22210+3119	BU1217	2012.854	1	0.218	0.007	214.9*	1.2					
22223+2131	HU384	2012.854	1	0.150	0.040	109.2	8.0					
22223+2131	HU384	2011.742	1	0.225	0.017	136.4	3.1					
22223+2151	TDT3493	2012.889	1	1.156	0.007	289.7*	0.3					
22225-0727	A2694	2011.754	1	0.266	0.007	154.6*	0.4					
22234+1733	HO182	2012.870	1	1.455	0.007	310.0*	0.3					
22234+3228	WOR11	2011.726	1	1.401	0.007	60.6*	0.4			Cve2011c	-0.02	1.0 ^Q
22234+3228	WOR11	2011.830	1	1.388	0.008	241.5*	0.5			Cve2011c	-0.03	1.6
22237+1107	A630	2011.756	1	1.388	0.007	124.5*	0.3					
22237+2051	COU139CD	2011.827	1	0.300	0.008	91.2*	1.1					
22248+2233	HO183	2012.854	1	2.381	0.012	221.7*	0.3			Zir2003	0.06	0.4
22248+2841	HDS3176	2011.742	1	0.320	0.015	329.5*	0.7	0.40				
22255+4227	A2498	2011.726	1	0.614	0.007	345.5*	0.3					
22262+4228	COU1832	2011.726	1	1.016	0.007	156.9*	0.3					
22265+1925	HU596	2012.889	1	1.156	0.007	17.7	0.3					
22273+3822	COU1643	2011.726	1	0.389	0.007	341.8*	0.3					
22276+0040	HDS3181	2011.754	1	1.249	0.007	238.1*	0.4					
22277-0253	RST4707	2011.756	1	0.248	0.007	156.3	1.0					
22277+0431	BU291	2012.816	1	0.263	0.008	232.0*	0.8					
22281+1215	BU701	2012.870	1	0.968	0.007	181.5*	0.3			Cve2005	0.00	0.9
22281+2942	BU1218	2011.759	1	1.517	0.008	52.8*	0.3	1.20				
22285+3343	COU942	2011.830	1	0.235	0.007	137.6*	0.8	0.30				
22290-0956	HDS3183	2011.754	1	0.473	0.008	59.7*	1.1					
22290+1420	HU1317	2012.870	1	0.443	0.007	126.8*	0.4					
22295-0012	BU76	2012.816	1	1.600	0.008	8.4*	0.3					
22297+1848	TDT3549	2012.889	1	1.016	0.007	229.6*	0.3					
22302+2228	HU388	2012.854	1	0.524	0.007	59.8*	0.3			Doc2008c	-0.01	-0.5
22302+2259	COU140	2012.870	1	0.694	0.007	103.5*	0.4					
22303+0047	RST5485	2011.756	1	1.090	0.007	91.6	0.3					
22303+0047	RST5485	2012.816	1	1.100	0.007	91.9*	0.3					
22303+1810	COU331	2011.584	1	0.444	0.007	180.2*	0.6					
22307+1758	COU234	2012.854	1	0.163	0.040	186.4	8.0			Doc2012c	-0.04	3.8
22307+1758	COU234	2011.726	1	0.176	0.040	177.3	8.0			Doc2012c	-0.01	-8.3
22308+0630	HDS3191	2011.584	1	1.289	0.007	147.7*	0.3					
22314+3617	COU1192	2011.830	1	0.793	0.010	182.5*	1.0					
22322+1311	BU1308BC	2012.889	2	1.076	0.015	339.3	0.3	1.04				
22322+1311	BU1308A,BC	2012.889	2	7.585	0.038	270.4*	0.3					
22328+1024	YSC122Aa,Ab	2012.870	1	0.118	0.040	176.8	8.0					
22328+1024	YSC122	2012.870	1	1.263	0.020	118.5	0.3					
22333+1203	HEI411	2012.816	1	1.511	0.008	302.1*	0.3					
22336+2217	J617	2012.854	1	0.706	0.007	93.2*	0.3					
22344+2623	COU540	2012.854	1	0.322	0.007	322.0*	0.5			Mnt2004a	-0.01	3.3
22344+2623	COU540	2011.726	1	0.308	0.013	320.9*	1.0			Mnt2004a	-0.03	3.3
22352+1437	HU982	2012.941	1	0.573	0.007	216.6*	0.3					
22354+4341	COU2143	2012.868	1	0.337	0.007	108.0*	0.4					
22360+4515	COU2242	2012.868	1	0.814	0.007	275.1*	0.3					
22360+4515	GII55	2012.868	2	2.523	0.025	311.6*	0.6		ND			
22369+1130	ROE130	2012.816	1	0.966	0.007	102.1*	0.3					
22372+2645	COU737	2011.584	1	0.173	0.040	13.1	8.0					
22375+1607	HEI86	2012.870	1	0.265	0.007	100.8*	0.6					
22384+2943	HO480	2012.854	1	0.131	0.040	317.8	8.0			FMR2014b	0.02	-11.8
22386+2215	COU235	2012.870	1	0.415	0.018	74.4*	0.6					
22389+1931	KUI113	2011.584	1	1.993	0.010	58.4	0.3					
22396+2822	A413	2012.941	1	1.111	0.007	15.2*	0.3					

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22398+3641	COU1044	2011.582	1	0.531	0.011	117.7*	0.6					
22398+3641	WSI9	2012.870	1	—	—	—	—		NR			
22406+0632	HU494	2012.919	1	0.469	0.009	156.8*	0.6			Hrt2010a	-0.01	4.1 ^Q
22407+1634	J618	2012.941	1	1.836	0.010	229.6*	0.4					
22408-0333	KUI114	2011.754	1	0.116	0.007	137.2	2.0			Doc2016d	0.02	14.5
22408-0333	KUI114	2012.816	1	0.174	0.040	134.3*	8.0			Doc2016d	-0.00	9.9
22414+0443	BU480	2012.816	1	1.069	0.007	60.3*	0.3					
22419+2126	STF2934	2012.840	1	1.373	0.007	57.0*	0.3			Zir2013c	0.05	1.9
22420+1513	HU781	2012.889	1	0.128	0.040	157.7	8.0					
22420+1513	HDS3222	2011.754	1	—	—	—	—		NR			
22421+2013	HDS3221	2011.742	1	0.598	0.007	88.2*	0.3					
22424-0048	A1233	2012.816	1	0.233	0.007	197.4*	0.3					
22425+0254	HDS3223	2011.754	1	0.675	0.013	85.0	0.9					
22426+2943	BU710	2012.941	1	0.490	0.010	63.8*	0.4					
22428+2348	HU395A,BC	2012.944	2	7.811	0.039	236.2*	0.3					
22429-0442	A310	2011.754	1	0.726	0.010	285.7*	0.8					
22430+0637	HU394	2012.816	1	0.208	0.007	133.9	0.6					
22438+0353	WSI92	2012.816	1	0.975	0.007	300.0*	0.3	3.72				
22438+0353	WSI92	2012.816	1	1.007	0.007	118.5	0.5					
22438+2935	HDS3225	2011.742	1	0.926	0.008	1.5*	0.3					
22447+1014	BAR17	2012.870	1	2.052	0.010	325.1*	0.3					
22455+3359	HU782	2011.879	1	1.972	0.010	321.5*	0.4	1.40				
22456+4524	HDS3231	2012.868	1	0.942	0.007	344.1	0.3	2.00				
22456+4524	HDS3231	2012.868	1	0.934	0.007	343.6*	0.3					
22457+2924	HO481	2012.840	1	0.461	0.007	285.3*	0.4					
22459+3358	HJ969	2011.879	2	5.978	0.030	26.1*	0.3					
22465+1944	COU333	2012.919	1	0.675	0.007	195.2*	0.3					
22474+1749	WSI93	2012.854	1	0.159	0.040	138.2	8.0			Tok2017c	-0.08	-1.2
22474+1749	WSI93	2012.870	1	0.137	0.040	141.6	8.0			Tok2017c	-0.10	2.0
22479+1259	HU985	2011.584	1	0.721	0.007	135.7*	0.8			USN2002	0.05	-3.3
22485-0435	HDS3237	2011.754	1	0.249	0.020	172.7	1.0					
22485-0435	HDS3237	2011.754	1	0.382	0.014	355.7*	0.5					
22485+3106	BU1146	2011.582	1	0.264	0.007	75.5*	0.4			Doc2017i	0.03	0.3
22502+1810	HDS3243	2012.870	1	0.627	0.007	76.7	0.4					
22502+1810	HDS3243	2012.870	1	0.604	0.007	73.5	0.3	3.19				
22513+2120	COU238	2012.854	1	0.773	0.007	160.6*	0.5					
22527+4347	COU2244	2011.582	1	0.247	0.010	288.2*	0.7					
22530+1407	J1347	2012.870	1	1.281	0.007	352.0*	0.3					
22530+1407	COU2665	2011.759	1	—	—	—	—		NR			
22531+5001	COU2665	2012.868	1	0.330	0.007	88.7*	0.4					
22532+4157	COU1990	2011.582	1	0.579	0.007	43.8*	0.4					
22533+0740	HEI603	2011.584	1	0.235	0.021	163.5	1.9					
22534-0906	HDS3251	2011.754	1	1.597	0.016	34.1*	0.3					
22536+3756	RUC15	2011.827	1	1.631	0.008	79.2	0.3					
22537+2558	HDS3254	2011.742	1	0.267	0.007	137.1	1.9					
22545+1517	HEI193	2012.870	1	0.953	0.007	211.1*	0.3					
22546+1054	HDS3257	2012.816	1	0.131	0.040	67.3	8.0			Tok2015c	-0.03	-3.8
22548+4908	COU2666	2011.759	1	1.038	0.010	139.7*	0.4	0.20				
22553+4354	COU2245	2012.868	1	0.503	0.011	213.4*	0.7					
22553+4354	COU2245	2012.868	1	0.476	0.007	215.2	0.3	1.55				

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22563+4247	A416	2011.726	1	0.375	0.007	334.2*	0.3					
22564+4443	COU2144	2012.868	1	0.985	0.007	156.2*	0.4					
22570+2441	COU542Aa,Ab	2011.584	1	0.251	0.007	73.7	2.7			Doc2016b	0.06	5.0
22570+2441	COU542Aa,Ab	2011.584	1	0.194	0.040	73.9	8.0			Doc2016b	0.00	5.0
22570+2441	COU542Aa,Ab	2012.854	1	0.128	0.043	85.4*	8.0			Doc2016b	-0.04	3.8
22571+3650	COU1644	2012.840	1	0.477	0.010	72.7*	0.5					
22572+1403	J669	2012.870	1	1.416	0.008	38.1*	0.3					
22574+1958	COU334	2012.854	1	1.148	0.010	256.4	0.3					
22574+1958	COU334	2012.854	1	1.122	0.007	255.7*	0.3	3.27				
22574+1958	COU334	2012.919	1	1.132	0.007	256.1*	0.3					
22574+1958	COU334	2012.919	1	1.139	0.007	258.0	0.3	3.11				
22579+1337	HU989	2011.748	1	0.277	0.010	69.2*	1.5			Hei1998	0.01	2.2
22586+0921	STT536	2011.745	1	0.264	0.007	166.4*	0.9			Sod1999	-0.03	-0.8
22587+2611	COU543	2012.854	1	0.227	0.007	75.8*	1.7					
22587+2611	COU543	2011.582	1	0.240	0.007	75.4*	1.0					
22588+3808	HDS3272	2011.830	1	0.190	0.040	154.0	8.0					
22592+1144	STT483	2011.745	1	0.462	0.007	4.6*	0.3			Alz2007	0.01	-4.9
22595+4355	COU2146	2012.868	1	3.645	0.018	325.0	0.3	5.79				
22595+4355	COU2146	2012.868	1	3.642	0.018	145.1	0.3					
22598-0226	HDS3274	2011.754	1	0.711	0.015	226.0*	1.1					
23006-0704	RST4712	2012.816	1	1.108	0.007	187.3*	0.3					
23009+3522	HU991	2012.840	1	0.889	0.007	300.5*	0.3			Sca2017d	0.01	-0.0
23013+4430	COU1991	2011.759	1	0.494	0.007	285.9*	0.3					
23015+3103	ES2362	2012.941	1	1.980	0.010	4.0	0.3					
23015+3516	COU842	2011.584	1	0.686	0.007	53.2*	0.3					
23015+3516	COU842	2011.860	1	0.694	0.007	232.5*	0.9					
23019+3642	COU843	2012.840	1	1.044	0.007	132.2*	0.3					
23020+4800	A194	2012.868	1	0.130	0.045	287.3*	8.0			Doc2017e	0.02	7.0
23022+1832	HDS3279	2012.854	1	1.660	0.008	163.5*	0.3	4.36				
23022+1832	HDS3279	2012.854	1	1.661	0.008	163.8	0.3					
23024+1837	HU398	2011.584	1	0.482	0.007	289.1*	0.3			Hrt2014b	0.02	1.2
23024+1837	HU398	2012.870	1	0.472	0.007	289.6*	0.3			Hrt2014b	0.00	0.6
23033+1129	GII71Aa,Ab	2012.889	1	0.139	0.040	30.7	8.0		ND			
23033+1129	ROE132	2012.870	1	1.148	0.022	71.2*	2.3					
23033+1129	ROE132	2012.870	2	1.146	0.021	70.5	2.3	2.28				
23033+1129	ROE132	2012.873	1	1.149	0.027	70.5	2.3					
23033+1129	ROE132	2012.879	1	1.153	0.022	71.3*	2.6					
23039+2512	COU142	2012.941	1	0.521	0.007	188.3*	0.3					
23039+3510	ES2134	2012.840	1	1.528	0.008	120.5*	0.3					
23043+1054	SKF246	2011.879	1	1.948	0.024	117.9*	0.3					
23052-0742	A417	2011.751	1	0.217	0.007	60.9	0.7			Hrt1996a	0.01	-0.5
23052-0742	A417	2011.754	1	0.180	0.064	57.9	8.2			Hrt1996a	-0.03	-3.5
23060+4219	WOR13	2011.582	1	0.733	0.007	142.4*	0.3					
23067+3302	COU741	2011.879	1	0.897	0.007	192.0*	0.3					
23067+3302	MAR1	2011.879	1	—	—	—	—		NR			
23082+0502	A1899	2012.919	1	1.548	0.008	64.9*	0.3					
23083-0228	RST5559	2012.816	1	0.828	0.007	153.3*	0.3					
23088+0047	HEI884	2012.816	1	2.018	0.010	232.8*	0.3					
23088+1058	A1238AB	2011.584	1	0.255	0.007	115.3*	0.8			Pru2014	-0.04	4.6

WDS	Name	Epoch	Bin.	ρ (")	σ_ρ (")	θ ($^\circ$)	σ_θ ($^\circ$)	Δm	Notes	Orbit	$\Delta\rho(\text{O-C})$ (")	$\Delta\theta(\text{O-C})$ ($^\circ$)
23088+1058	A1238AB	2012.873	1	0.236	0.011	105.5	0.3			Pru2014	-0.05	-1.1
23088+1058	A1238AB	2012.873	1	0.263	0.007	106.0*	0.3			Pru2014	-0.02	-0.7
23088+1058	A1238CD	2011.748	1	1.322	0.011	301.2	0.3					
23088+1058	A1238CD	2012.889	1	1.259	0.007	300.6*	0.3					
23091+4153	COU1492	2011.582	1	0.896	0.007	257.1*	0.6					
23095+0841	YSC16	2012.873	1	0.170	0.040	157.6	8.0					
23102+3540	COU1198	2011.584	1	0.517	0.007	258.1*	0.5					
23106+0746	HDS3300	2012.889	1	0.988	0.007	332.1*	0.3					
23107+0947	HDS3302	2011.582	1	0.324	0.007	337.1*	1.9					
23107+2631	BU852BC	2012.941	1	1.277	0.013	320.6*	0.3					
23107+2631	HDS3301	2012.941	1	0.770	0.007	159.8	0.5					
23107+2631	HDS3301	2012.941	1	0.771	0.007	158.6	0.3	2.94				
23110+3817	COU1199AB	2011.584	1	1.877	0.009	114.3	0.4					
23110+3817	COU1199BC	2011.584	1	0.853	0.007	65.4	0.3	1.63	ND			
23110+3817	A2298	2011.745	1	—	—	—	—		NR			
23135-0854	A418	2011.754	1	0.759	0.007	36.7*	0.5					
23137-0618	RST4718	2012.816	1	0.753	0.007	178.9*	0.6					
23137+0212	A2299	2011.745	1	1.246	0.007	75.1*	0.3					
23138+4348	COU1992	2012.868	1	0.394	0.007	144.1*	0.3					
23141-0238	BU714	2011.751	1	0.247	0.027	105.9*	2.0					
23141+1010	HDS3308	2012.889	1	0.128	0.040	166.2	8.0					
23144+0739	A1900	2012.873	1	1.155	0.007	239.9*	0.3					
23146+2555	COU335	2011.830	1	0.235	0.007	165.3	0.8					
23159-0905	BU1220BC	2011.754	1	0.597	0.007	284.2*	0.3			Zir2007	0.02	-0.1 ^Q
23159+1430	J581	2012.873	1	1.255	0.007	16.2*	0.3					
23167+1937	HDS3316	2012.870	0	0.256	0.013	214.3	1.8			Bag2006	-0.03	1.8
23167+1937	HDS3316	2012.873	1	0.308	0.007	212.0*	0.3			Bag2006	0.02	-0.5
23167+3441	HDS3315	2011.582	1	0.280	0.007	206.7*	0.7			Cve2014	0.04	0.9
23175+1652	HLD171A,BC	2011.582	1	2.081	0.010	21.8*	0.3					
23175+1652	HLD171A,BC	2011.830	1	2.185	0.011	27.8*	0.3					
23175+1652	HU497AB	2012.854	1	2.210	0.011	26.0*	0.3					
23175+1652	HU497BC	2011.582	1	0.210	0.017	71.9	2.3			Lin2010c	-0.02	0.5
23175+1652	HU497BC	2011.830	1	0.244	0.017	64.4	2.3	0.17		Lin2010c	0.02	-6.6
23175+1652	HU497BC	2012.854	1	0.233	0.040	72.6*	8.0	0.00		Lin2010c	0.00	-3.0
23176-0131	BU79	2011.751	1	1.632	0.008	11.7*	0.3			WSI2004b	0.03	1.3
23176+1818	HU400	2011.827	1	0.401	0.018	72.9*	1.0			Sca2002d	0.03	-7.9
23176+1818	HU400	2012.854	1	0.284	0.008	73.4*	0.3			Sca2002d	-0.09	-5.8
23178-0534	A419	2012.816	1	0.914	0.007	237.4*	0.3					
23181-0323	RST4719	2012.816	1	2.097	0.010	221.1*	0.3					
23189+0524	BU80	2012.873	1	0.669	0.007	241.0*	0.3			Hei1996c	0.04	3.2
23191+4855	HDS3321	2011.759	1	0.601	0.007	95.8	0.4					
23191+4855	HDS3321	2012.868	1	0.587	0.012	96.1	0.7					
23191+4855	HDS3321	2012.868	1	0.531	0.007	95.5	0.3	2.26				
23195+4225	COU1645	2012.868	1	0.753	0.007	74.2*	0.4					
23198+4243	COU1646	2011.759	1	0.179	0.040	88.8	8.0					
23199+0807	HEI606	2012.889	1	2.159	0.011	255.1*	0.3					
23199+2844	GII36AB,C	2011.582	1	2.496	0.201	138.4	4.6					
23199+2844	GII36AB,C	2012.854	1	2.558	0.013	139.1*	0.3	6.01				
23199+2844	COU439	2011.582	1	0.165	0.040	165.2*	8.0			Doc2017e	0.03	3.0 ^Q
23200+2612	COU336	2011.827	1	1.554	0.008	359.7*	0.3					
23204-0115	RST4720	2012.816	1	1.150	0.007	127.9*	0.3					
23207+4739	COU2668	2011.759	1	0.683	0.010	15.5*	0.8					
23209+1643	HEI88	2012.854	1	0.199	0.040	180.0*	8.0			Cve2011a	-0.03	-0.9
23209+1643	HEI88	2011.745	1	0.212	0.010	176.6	1.0			Cve2011a	-0.01	0.2

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23213+3835	HDS3325	2011.582	1	0.142	0.040	311.0*	8.0					
23214+1622	HEI89	2012.873	1	1.164	0.007	67.4*	0.3					
23216+3901	COU1495	2011.759	1	0.875	0.007	256.0*	0.3					
23216+3901	COU1495	2011.828	1	0.848	0.007	73.9	0.3	0.10				
23216+3901	COU1495	2011.830	1	0.864	0.007	254.4*	0.3					
23219+3149	BU718	2011.860	1	0.448	0.008	179.1*	1.4					
23225+0530	HU294	2012.889	1	1.868	0.009	140.6*	0.3					
23227+2944	TDT4006	2012.941	1	1.112	0.007	122.8*	0.3					
23237+4425	COU1994	2011.759	1	0.983	0.007	43.7*	0.5					
23244+1429	BU719	2011.584	1	1.344	0.007	158.8*	0.3					
23249+3521	COU1347	2011.830	1	0.539	0.007	106.0*	0.8					
23260+2742	HO489	2011.879	1	0.520	0.007	220.3*	0.5					
23266+2342	COU338	2012.919	1	0.134	0.040	11.0	8.0					
23271+1307	HDS3339	2012.816	1	0.430	0.011	233.1*	1.1					
23271+1307	HDS3339	2011.751	1	0.458	0.007	229.5*	1.6					
23272+3026	POP21	2012.941	1	0.787	0.007	210.8*	0.3					
23281-0228	RST4724	2012.816	1	0.121	0.040	74.8	8.0					
23288+1512	HU998	2012.854	1	0.370	0.007	177.6*	0.7					
23300+1542	HEI90	2012.854	1	0.292	0.007	107.3*	0.3					
23300+1542	HEI90	2011.582	1	0.241	0.010	111.6*	1.6					
23302-0314	RST4725	2011.751	1	0.828	0.007	324.2*	0.3					
23302+1359	HU999	2012.889	1	1.579	0.008	142.3*	0.3					
23304+3050	BU1266	2011.584	1	0.161	0.040	192.6	8.0			Msn1998c	0.04	-7.8
23309+0929	STT497	2012.919	1	1.407	0.007	216.6*	0.3					
23309+3920	COU1348	2011.830	1	0.235	0.040	11.8*	2.6					
23310+0744	YSC76	2012.816	1	0.506	0.013	162.1	0.7					
23318+2148	COU243	2012.840	1	0.903	0.010	343.9*	0.5					
23322+0705	HU298	2011.582	1	0.173	0.040	93.1*	8.0			Hrt2000c	0.01	12.7
23322+0705	HU298	2012.816	1	0.168	0.040	280.8*	8.0			Hrt2000c	0.01	6.0 ^Q
23322+1458	HDS3353	2011.879	1	0.200	0.010	97.6*	9.9					
23322+1458	HDS3353	2011.751	1	0.211	0.007	88.3*	8.0					
23322+1942	COU340	2012.854	1	0.282	0.007	56.0*	0.6					
23324+1724	STF3023	2012.941	1	1.737	0.009	279.8*	0.3					
23327+3854	COU1349	2011.584	1	1.647	0.011	27.5*	0.3					
23330+4307	COU2147	2012.868	1	1.745	0.009	341.0*	0.3					
23334+4251	HDS3356	2012.868	1	—	—	—	—			NR		
23336+0100	RST5490	2011.751	1	1.015	0.007	178.6*	0.3					
23338+1159	CHE504	2011.879	1	0.195	0.040	165.7	8.0					
23339+2342	COU144	2011.582	1	0.323	0.008	48.4*	0.3					
23339+4938	COU2670	2012.868	1	0.525	0.007	109.0*	0.3					
23342+0759	TDT4102AC	2012.889	1	1.158	0.007	46.8	0.3	4.41	ND			
23342+0759	TDT4102AC	2012.889	1	1.158	0.007	46.2	0.3		ND			
23347+1914	COU341	2012.840	1	0.791	0.007	120.0*	0.4					
23361+2027	TDT4118	2012.919	1	0.604	0.007	1.4*	0.3					
23368+2346	HU498	2012.854	1	0.685	0.007	297.1*	0.3					
23374+0737	FOX102	2012.873	1	0.176	0.040	68.0*	8.0			Tok2015c	-0.00	-4.4
23374+0737	FOX102	2011.584	1	0.179	0.040	68.9	8.0			Tok2015c	0.00	3.5
23379+2510	COU441	2012.941	1	0.694	0.007	11.8*	0.4					
23380+1253	A1241	2011.584	1	0.641	0.007	11.0*	0.7					
23382+3250	HU792	2011.879	1	0.197	0.040	131.5*	8.0					

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23386+1959	COU342	2012.854	1	0.885	0.007	30.9*	0.3					
23400+4943	HDS3362	2012.868	1	0.753	0.007	33.1*	0.4					
23400+4943	HDS3362	2012.868	1	0.778	0.007	33.5	0.3	3.13				
23401+1258	HU1325	2011.879	1	0.859	0.007	30.5*	0.6			Sca2003a	0.01	3.3
23402+0346	HEI608	2011.584	1	0.376	0.012	171.0	1.1					
23405+2959	HDS3363	2011.828	1	0.898	0.010	235.1*	0.6					
23409+0759	BU724	2012.873	1	0.610	0.007	99.4*	0.3					
23409+2022	HO303	2012.873	1	1.109	0.007	185.9*	0.4			Doc2011d	0.12	0.3
23413+3234	BU858AB	2012.941	1	0.860	0.007	221.9*	0.3					
23413+4547	COU1998	2012.868	1	0.514	0.007	251.8*	0.6					
23420+2018	STT503	2012.920	1	1.035	0.007	133.4*	0.3					
23431+1150	A1242	2012.873	1	1.024	0.007	338.8*	0.3			Izm2019	0.03	1.1
23435+1652	HEI196	2011.584	1	0.853	0.007	167.5*	0.3					
23440+2922	AGC14	2012.840	1	0.844	0.007	279.8*	0.3			Pop1997f	-0.04	-0.1
23445+0830	HDS3374	2011.584	1	0.660	0.013	39.4*	0.5					
23445+0830	HDS3374	2012.870	0	0.655	0.007	41.1	0.3					
23445+0830	HDS3374	2012.873	1	0.642	0.007	33.9	0.3	2.78				
23445+0830	HDS3374	2012.873	1	0.660	0.007	40.8*	0.3					
23445+0830	RAS15	2012.854	1	—	—	—	—		NR			
23450+3020	RAS15	2011.879	2	0.841	0.084	132.1	3.1					
23450+3020	RAS15	2011.879	1	—	—	—	—		NR			
23452+0814	WSI95	2012.873	1	1.177	0.007	196.8*	0.3					
23452+0814	WSI95	2012.873	1	1.189	0.007	15.3	0.3	3.83				
23455+0629	HU300	2012.920	1	1.272	0.007	109.4*	0.3					
23465+1705	EGB8	2011.879	1	1.075	0.007	85.2*	0.3	1.10				
23468+1227	TDT4187	2012.920	1	0.490	0.007	176.0*	0.9					
23470+1726	TDT4190	2012.980	1	0.551	0.007	33.2	1.0					
23475+1729	TDT4195	2012.941	1	0.744	0.007	135.5	0.4					
23485+3608	COU944	2011.828	1	0.196	0.040	102.6*	8.0					
23489+1109	HEI414	2011.751	1	1.368	0.007	76.6*	0.3					
23491+1915	COU343	2012.854	1	0.151	0.040	113.7*	8.0					
23491+1915	COU343	2011.828	1	0.195	0.040	132.6*	8.0	0.10				
23497+4159	COU1350	2012.868	1	0.361	0.007	195.0*	0.8					
23498+2741	A424	2012.840	1	0.182	0.040	165.2*	8.0			Sca2002b	0.02	-0.3
23502+1940	COU344	2011.828	1	0.215	0.008	148.1*	2.0	0.10		Msn2001a	0.08	10.8 ^Q
23502+1940	COU344	2012.873	1	0.218	0.007	147.5*	1.2			Msn2001a	0.08	14.2 ^Q
23505-0205	RST4733	2011.751	1	0.856	0.007	52.0*	0.6					
23509+4730	A794	2011.759	1	0.810	0.007	9.7*	0.6					
23512+4433	YSC77	2012.868	1	0.874	0.010	99.2	0.3					
23512+4433	YSC77	2012.868	1	0.883	0.007	101.4	0.3	4.41				
23518-0637	A2700	2011.751	1	0.232	0.007	170.6*	0.5			Doc2009g	0.05	3.0
23520+1252	A1247	2011.751	1	0.413	0.010	257.0*	2.5			USN2002	0.10	12.2
23520+1252	A1247	2012.870	0	0.331	0.007	257.4	2.3			USN2002	0.01	13.2
23520+1252	A1247	2012.873	1	0.396	0.014	256.5*	2.3			USN2002	0.08	14.3
23526+1057	YSC17	2011.879	1	0.587	0.007	172.6	1.1					
23526+1057	YSC17	2012.873	1	0.579	0.007	173.6	0.3					
23528+3841	A1496	2011.759	1	0.377	0.016	156.0*	1.5					
23528+3841	A1496	2011.830	1	0.454	0.007	153.8	0.3	1.95				
23528+3841	A1496	2011.830	1	0.413	0.010	153.5*	0.4					
23529+0533	TDT4249	2012.920	1	0.824	0.013	178.2*	0.4					
23545+2533	OCC9031	2011.828	1	0.209	0.007	10.2	3.2					
23551+2023	YSC140	2012.854	1	0.160	0.040	108.3	8.0					
23561+2520	A426	2012.854	1	0.355	0.007	288.5*	0.5			Hrt2001b	-0.04	-3.8

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23568+0444	A2100	2011.582	1	0.401	0.007	262.6*	1.5			Msn2012a	0.03	0.7
23568+0444	A2100	2012.980	1	0.393	0.007	259.5*	0.3			Msn2012a	0.02	-0.6
23570+4637	HDS3397	2012.868	1	0.150	0.040	127.2	8.0					
23573+7252	A900	2012.988	1	0.393	0.007	136.0*	0.6					
23581+4340	COU1649	2011.582	1	0.402	0.009	252.1*	0.8					
23588+0933	HDS3406	2012.920	1	0.141	0.040	19.4	8.0					
23592+7448	BU1154	2012.988	1	1.247	0.007	332.4*	0.4					
23597+2305	TDT4311	2012.840	1	1.128	0.007	147.1*	0.3					
23598+0640	BAG31	2012.873	1	4.530	0.023	16.4	0.3					

Notes: In column 7, the superscript * indicates that the position angle θ could be determined without the 180° ambiguity. In column 13, the superscript Q indicates that our θ measurement quadrant was not compatible with the quadrant used for computing the orbit.