

## INTERNATIONAL ASTRONOMICAL UNION

## COMMISSION G1 (BINARY AND MULTIPLE STAR SYSTEMS)

## DOUBLE STARS INFORMATION CIRCULAR No. 213 (JUNE 2024)

## NEW ORBITS

WDS HIP	Name ADS	P(yr) $\sigma_P$	T(yr) $\sigma_T$	e $\sigma_e$	a(") $\sigma_a$	i(°) $\sigma_i$	$\Omega$ (°) $\sigma_\Omega$	$\omega$ (°) $\sigma_\omega$	2024 2025	Author(s) Last obs.	
00085+3456 689	HDS 17	12.988 0.075	2006.366 0.100	0.5306 0.0030	0.0907 0.0025	149.8 0.5	65.3 1.5	183.7 2.0	78.9 69.5	0.129 0.137	D et al. 2023.6007
00479–2921 3733	I 261 –	200 ...	1899.72 ...	0.547 ...	0.373 ...	89.5 ...	234.4 ...	105.2 ...	233.5 233.5	0.284 0.288	TOK 2021.566
02020+7054 9480	BU 513AB 1598	60.43 0.30	1964.52 0.20	0.349 0.003	0.624 0.002	18.9 2.0	56.7 0.5	10.3 2.0	54.6 67.1	0.409 0.406	D et al. 2023.5870
02418–5300 –	TOK 690Aa,Ab –	2.811 $\pm 0.060$	2018.233 $\pm 0.125$	0.780 fixed	0.0493 $\pm 0.0135$	78.3 $\pm 6.1$	109.2 $\pm 6.4$	111.4 $\pm 10.0$	300.0 71.5	0.020 0.027	TOK 2023.664
03417–5126 17255	HIP 17255 –	2.791 $\pm 0.094$	2021.688 $\pm 0.040$	0.170 $\pm 0.032$	0.0709 $\pm 0.0035$	49.1 $\pm 4.2$	65.7 $\pm 2.8$	124.8 $\pm 9.6$	98.2 267.4	0.057 0.063	TOK 2023.913
04064+4325 19159	A 1710 2980	111.13 2.95	1946.816 0.092	0.681 0.010	0.400 0.024	124.3 1.2	118.9 1.6	329.6 2.0	305.0 304.4	0.591 0.585	S et al. 2023.930
04093–2025 –	RST2333AB –	83.9 $\pm 3.4$	1986.60 $\pm 0.56$	0.853 $\pm 0.041$	0.2239 $\pm 0.0126$	50.0 fixed	34.6 $\pm 10.4$	327.9 $\pm 13.8$	190.3 190.8	0.370 0.372	TOK 2022.195
04123+0939 –	STT 74 3053	111.49 $\pm 1.28$	1996.789 $\pm 0.293$	0.9076 $\pm 0.0051$	0.3344 $\pm 0.0037$	109.0 $\pm 0.8$	111.9 $\pm 0.9$	16.8 $\pm 2.6$	290.4 290.2	0.522 0.530	TOK 2020.837
04259+1852 20686	BU 1185 3210	27.518 0.027	2031.160 1.76	0.0354 0.0059	0.253 0.032	97.34 0.28	23.20 0.27	335.4 22.8	191.8 183.1	0.138 0.088	S et al. 2024.053
04386–0921 21265	TOK 387 –	4.239 $\pm 0.035$	2019.351 $\pm 0.043$	0.4499 $\pm 0.0277$	0.0509 $\pm 0.0014$	106.2 $\pm 1.7$	40.6 $\pm 1.1$	292.9 $\pm 2.7$	36.4 325.6	0.037 0.019	TOK 2024.156
05025–2115 23452	DON 91AB –	43.54 $\pm 0.16$	1996.04 $\pm 0.22$	0.811 $\pm 0.008$	1.413 $\pm 0.034$	70.2 $\pm 0.6$	240.9 $\pm 0.6$	277.7 $\pm 0.4$	13.5 16.3	1.060 1.078	TOK 2024.238
05251–3803 –	I 1493 –	250 ...	2054.59 ...	0.50 ...	0.197 ...	47.9 ...	134.1 ...	111.6 ...	140.5 141.7	0.164 0.160	TOK 2024.156

**NEW ORBITS (continuation)**

<b>WDS HIP</b>	<b>Name ADS</b>	<b>P(yr)</b> $\sigma_P$	<b>T(yr)</b> $\sigma_T$	<b>e</b> $\sigma_e$	<b>a(")</b> $\sigma_a$	<b>i(°)</b> $\sigma_i$	<b><math>\Omega</math>(°)</b> $\sigma_\Omega$	<b><math>\omega</math>(°)</b> $\sigma_\omega$	<b>2024 2025</b>	<b>Author(s) Last obs.</b>
05589+1248 28302	STT124 4562	450 150	1904.41 3.57	0.827 0.049	0.437 0.055	85.1 2.8	120.9 1.6	358.8 11.8	299.4 0.646 299.4 0.649	ALZ ...
06136–1527 29557	HDS 852Aa,Ab –	120 ...	2025.93 ...	0.867 ...	0.153 ...	122.7 ...	100.7 ...	66.8 ...	116.7 0.038 98.8 0.027	TOK 2024.156
06197–0749 30073	CHR 22 –	37.77 $\pm 0.84$	2014.56 $\pm 0.35$	0.800 fixed	0.0682 $\pm 0.0040$	61.5 $\pm 2.5$	182.0 $\pm 4.9$	87.5 $\pm 2.9$	52.5 0.058 56.2 0.059	TOK 2024.069
06243–2801 –	I 753AB –	600 ...	1986.81 ...	0.533 ...	0.513 ...	139.0 ...	41.9 ...	101.9 ...	227.0 0.313 225.9 0.317	TOK 2019.952
06455+2922 32378	A 122 5408	102.971 2.07	1976.841 0.389	0.6512 0.0135	0.335 0.018	114.2 1.0	41.7 1.7	228.8 1.9	19.7 0.423 19.0 0.419	S et al. 2024.034
06460–6624 32414	TOK 826CD –	11.70 $\pm 1.85$	2023.000 $\pm 0.048$	0.621 $\pm 0.044$	0.0970 $\pm 0.0051$	149.1 $\pm 8.9$	36.1 $\pm 11.6$	319.5 $\pm 14.5$	337.8 0.061 302.5 0.089	TOK 2023.910
06471+1001 32509	A 2828 5443	128 ...	1993.2 ...	0.364 ...	0.169 ...	0.0 ...	9.9 ...	0.0 ...	136.1 0.187 138.2 0.190	TOK 2020.927
07026+1558 33941	A 2462AB 5720	44.38 $\pm 0.45$	2012.742 $\pm 0.034$	0.6546 $\pm 0.0039$	0.2012 $\pm 0.0015$	132.7 $\pm 1.1$	72.7 $\pm 1.1$	49.0 $\pm 1.6$	238.1 0.263 235.7 0.270	TOK 2022.197
07029–1313 33973	HDS 980 –	58.04 ...	2034.00 ...	0.685 ...	0.312 ...	20.0 ...	147.1 ...	246.1 ...	253.6 0.331 257.6 0.312	TOK 2023.007
07269+2015 36156	CHR 26 –	8.562 $\pm 0.021$	2000.553 $\pm 0.090$	0.411 $\pm 0.021$	0.0493 $\pm 0.0015$	49.3 $\pm 2.6$	160.5 $\pm 3.2$	70.0 $\pm 3.2$	105.4 0.042 140.2 0.041	TOK 2023.007
07498–0317 –	GKM Ba,Bb –	0.6192 $\pm 0.0071$	2023.5257 $\pm 0.0304$	0.000 $\pm 0.000$	0.0316 $\pm 0.0022$	40.0 $\pm 0.0$	88.1 $\pm 16.8$	0.0 $\pm 0.0$	5.6 0.024 232.7 0.028	TOK 2024.238
08086–4321 –	DON 227 –	280 ...	1906.50 ...	0.40 ...	0.525 ...	108.3 ...	56.5 ...	316.5 ...	262.5 0.435 262.0 0.441	TOK 2020.112
08181–2700 –	I 795 –	300 ...	1991.40 ...	0.747 ...	0.280 ...	58.7 ...	47.1 ...	331.5 ...	162.4 0.139 164.1 0.143	TOK 2021.160
08250–4246 41250	CHR 226Ba,Bb –	61.2 $\pm 5.5$	2018.158 $\pm 0.264$	0.485 $\pm 0.029$	0.0636 $\pm 0.0036$	115.2 $\pm 2.1$	83.2 $\pm 1.9$	262.1 $\pm 6.3$	88.2 0.046 84.4 0.051	TOK 2024.238
08403+1921 42542	CHR 130 –	20.96 $\pm 0.26$	2011.48 $\pm 0.65$	0.980 $\pm 0.027$	0.0762 $\pm 0.0245$	89.0 $\pm 4.3$	160.4 $\pm 2.8$	149.2 $\pm 32.8$	159.8 0.129 159.9 0.126	TOK 2024.154

**NEW ORBITS (continuation)**

<b>WDS HIP</b>	<b>Name ADS</b>	<b>P(yr)</b> $\sigma_P$	<b>T(yr)</b> $\sigma_T$	<b>e</b> $\sigma_e$	<b>a(")</b> $\sigma_a$	<b>i(°)</b> $\sigma_i$	<b><math>\Omega</math>(°)</b> $\sigma_\Omega$	<b><math>\omega</math>(°)</b> $\sigma_\omega$	<b>2024 2025</b>	<b>Author(s) Last obs.</b>
08547+1637 43751	TOK 196Aa,Ab –	24.6 $\pm 3.0$	2009.84 $\pm 1.15$	0.177 $\pm 0.048$	0.209 $\pm 0.023$	128.1 $\pm 3.8$	115.7 $\pm 3.0$	252.4 $\pm 27.4$	22.7 0.150 5.7 0.153	TOK 2024.154
09020–2345 –	I 357 –	152.4 $\pm 6.9$	2022.00 $\pm 0.10$	0.8846 $\pm 0.0044$	0.4511 $\pm 0.0095$	81.9 $\pm 0.8$	178.2 $\pm 0.8$	179.1 $\pm 2.3$	115.6 0.017 156.1 0.050	TOK 2024.238
09207–2913 45834	I 198 –	600 ...	1910.77 ...	0.314 ...	0.468 ...	74.5 ...	178.1 ...	6.2 ...	322.5 0.197 323.3 0.201	TOK 2016.960
09308+1815 46662	TOK 887 –	9.56 $\pm 0.34$	2015.09 $\pm 0.23$	0.589 $\pm 0.049$	0.1189 $\pm 0.0039$	61.9 $\pm 2.4$	46.8 $\pm 1.6$	336.9 $\pm 2.9$	280.3 0.041 63.2 0.051	TOK 2024.154
09387–3937 47238	I 202 –	169.6 $\pm 6.8$	2004.89 $\pm 0.39$	0.420 $\pm 0.017$	0.9182 $\pm 0.0258$	113.1 $\pm 0.5$	0.9 $\pm 0.4$	21.4 $\pm 1.5$	232.1 0.354 227.3 0.382	TOK 2024.154
09468–3920 47983	I 1519AB –	102 ...	2005.185 ...	0.630 ...	0.228 ...	85.1 ...	355.8 ...	235.2 ...	356.9 0.251 357.1 0.256	TOK 2024.238
09494+1832 48189	HDS1419 –	36.66 $\pm 0.95$	2021.466 $\pm 0.038$	0.964 $\pm 0.011$	0.1025 $\pm 0.0095$	20.0 fixed	144.4 $\pm 95.2$	247.0 $\pm 92.4$	191.1 0.081 194.3 0.099	TOK 2024.154
10169+2229 –	A 2148 7707	211 ...	1992.254 ...	0.750 ...	0.337 ...	93.2 ...	170.2 ...	172.6 ...	173.4 0.262 173.3 0.271	TOK 2023.105
10205+0626 50637	STF1426AB 7730	1000 ...	2116.0 ...	0.267 ...	1.131 ...	59.6 ...	135.0 ...	235.2 ...	314.8 0.912 315.1 0.911	TOK 2024.236
10212+2642 50699	HDS1488 –	205 ...	1963.34 ...	0.0 ...	0.35 ...	108.7 ...	344.1 ...	0.0 ...	211.3 0.146 208.2 0.153	TOK 2023.105
10268–6254 51138	HDS1501Ba,Bb –	13.8 $\pm 2.2$	2024.24 $\pm 0.46$	0.2854 $\pm 0.0176$	0.2160 $\pm 0.0223$	74.5 $\pm 1.1$	144.7 $\pm 1.1$	256.4 $\pm 20.9$	353.9 0.077 111.7 0.073	TOK 2024.020
10476–1538 52792	TOK 714Aa,Ab –	6.005 $\pm 0.052$	2015.13 $\pm 0.14$	0.514 $\pm 0.024$	0.0506 $\pm 0.0022$	112.5 $\pm 2.6$	101.9 $\pm 1.8$	301.3 $\pm 4.6$	317.4 0.044 298.8 0.059	TOK 2024.020
11000–3507 53776	TOK 788BC –	11.2 ...	2016.701 ...	0.275 ...	0.147 ...	136.9 ...	97.8 ...	149.5 ...	95.6 0.176 77.8 0.152	TOK 2024.020
11043–3643 54106	HDS1579 –	100 ...	2011.41 ...	0.455 ...	0.266 ...	133.1 ...	242.8 ...	90.6 ...	57.2 0.223 54.2 0.230	TOK 2024.020
11064–3545 –	DAW 132AB –	170.2 $\pm 14.0$	1981.18 $\pm 1.42$	0.933 $\pm 0.031$	1.293 $\pm 0.019$	120.0 $\pm 9.4$	116.9 $\pm 3.8$	166.6 $\pm 6.3$	129.0 1.958 128.8 1.981	TOK 2024.238

**NEW ORBITS (continuation)**

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11250–3200 54288	CHR 242Aa,Ab –	15.672 $\pm 0.068$	2010.714 $\pm 0.071$	0.4796 $\pm 0.0079$	0.1556 $\pm 0.0020$	111.6 $\pm 0.6$	124.2 $\pm 0.5$	226.5 $\pm 1.6$	342.4 0.078 318.6 0.095	TOK 2024.321
11418+0508 57058	TOK 896 –	3.650 $\pm 0.005$	2017.939 $\pm 0.011$	0.312 $\pm 0.006$	0.0841 $\pm 0.0006$	36.0 $\pm 0.0$	93.8 $\pm 1.5$	284.8 $\pm 1.4$	238.0 0.094 328.0 0.054	TOK+RV 2024.239
11420–1701 57078	TOK 384Aa,Ab –	26.77 $\pm 0.87$	2016.122 $\pm 0.019$	0.6404 $\pm 0.0088$	0.1915 $\pm 0.0026$	25.9 $\pm 1.9$	177.9 $\pm 3.6$	245.9 $\pm 3.8$	217.7 0.263 222.4 0.273	TOK 2024.020
12455–3727 62254	HDS1788Aa,Ab –	33.34 ...	2018.856 ...	0.960 ...	0.118 ...	40.0 ...	175.0 ...	60.0 ...	35.5 0.134 37.1 0.146	TOK 2023.488
12479–5127 62445	TOK 720 –	12.01 $\pm 0.94$	2023.81 $\pm 0.41$	0.2064 $\pm 0.0292$	0.0556 $\pm 0.0032$	145.5 $\pm 5.7$	96.3 $\pm 9.5$	131.2 $\pm 26.7$	311.2 0.041 273.2 0.047	TOK 2024.321
12572+0818 63221	FIN 380 –	72.2 $\pm 4.5$	2026.73 $\pm 0.24$	0.596 $\pm 0.037$	0.225 $\pm 0.011$	86.7 $\pm 0.3$	162.8 $\pm 0.3$	121.2 $\pm 4.2$	169.3 0.051 183.9 0.016	TOK 2024.157
13038–2035 63738	BU 341 8757	58.53 $\pm 0.19$	2023.731 $\pm 0.018$	0.9882 $\pm 0.0021$	0.815 $\pm 0.091$	91.8 $\pm 0.3$	135.5 $\pm 0.5$	239.3 $\pm 3.8$	134.6 0.103 134.0 0.247	TOK 2024.157
13194–3957 64999	RST1712 –	192.5 $\pm 25.5$	2023.80 $\pm 2.13$	0.4321 $\pm 0.0297$	0.597 $\pm 0.053$	148.6 $\pm 4.3$	113.7 $\pm 12.0$	227.2 $\pm 4.7$	250.0 0.313 244.7 0.309	TOK 2024.157
13306–4238 65906	HDS1891 –	12.23 $\pm 0.06$	2014.490 $\pm 0.030$	0.185 $\pm 0.004$	0.1794 $\pm 0.0012$	163.1 $\pm 1.7$	73.6 $\pm 4.7$	236.1 $\pm 4.5$	297.4 0.176 266.2 0.162	TOK 2024.157
13453+0903 67115	BU 115AB 9013	800 ...	2164.5 ...	0.50 ...	1.792 ...	55.2 ...	103.3 ...	264.8 ...	260.2 1.586 260.5 1.584	TOK 2024.157
13550–4235 –	I 401AB –	600 ...	1962.1 ...	0.372 ...	0.550 ...	129.7 ...	84.1 ...	118.7 ...	255.6 0.424 255.0 0.426	TOK 2022.444
13598–0333 68380	HDS1962 –	9.79 $\pm 0.05$	2008.33 $\pm 0.05$	0.398 $\pm 0.011$	0.0791 $\pm 0.0010$	56.5 $\pm 0.8$	37.0 $\pm 1.2$	233.1 $\pm 1.7$	94.3 0.066 127.7 0.054	TOK 2024.157
14031–6030 –	JSP 612 –	321 ...	1982.18 ...	0.585 ...	0.239 ...	54.6 ...	124.2 ...	321.7 ...	195.2 0.129 197.0 0.130	TOK 2024.312
14056–3916 68831	I 1575 –	64.9 ...	2018.62 ...	0.776 ...	0.135 ...	160.0 ...	119.5 ...	290.8 ...	62.3 0.099 56.7 0.110	TOK 2024.312
14152–6739 69643	DON 652 –	120.6 $\pm 6.1$	2023.204 $\pm 0.103$	0.9374 $\pm 0.0034$	0.6971 $\pm 0.0274$	80.2 $\pm 0.8$	82.7 $\pm 1.0$	30.8 $\pm 3.2$	252.7 0.076 258.7 0.180	TOK 2024.154

**NEW ORBITS (continuation)**

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14160–0704 69700	HU 138 9186	143.1 $\pm 2.7$	1938.45 $\pm 0.68$	0.567 $\pm 0.015$	0.4450 $\pm 0.0063$	43.0 $\pm 1.9$	73.7 $\pm 3.1$	306.0 $\pm 2.8$	220.4 0.603 221.2 0.603	TOK 2024.157
14242+1616 70399	MCA 39 –	11.88 $\pm 0.18$	2020.36 $\pm 1.01$	0.631 $\pm 0.072$	0.0334 $\pm 0.0031$	95.6 $\pm 3.2$	151.5 $\pm 2.4$	164.3 $\pm 29.1$	155.9 0.038 154.5 0.047	TOK 2024.239
14305+2505 70935	LSC 55 –	84 ...	2023.4 ...	0.50 ...	0.192 ...	38.7 ...	158.6 ...	258.0 ...	64.7 0.075 83.1 0.078	TOK 2024.239
14323+2641 71094	A 570 9301	29.879 0.0170	2013.674 0.0621	0.1674 0.0019	0.202 0.0056	151.94 0.92	15.1 1.9	48.0 2.1	189.4 0.224 181.0 0.227	S et al. 2024.314
14376–1632 71515	HIP 71515 –	2.493 $\pm 0.060$	2022.539 $\pm 0.058$	0.000 fixed	0.0349 $\pm 0.0012$	56.2 $\pm 5.0$	24.4 $\pm 6.0$	0.0 fixed	222.9 0.032 21.9 0.035	TOK 2024.157
14428–7256 –	B 2771 –	107.0 ...	2022.37 ...	0.717 ...	0.510 ...	38.9 ...	56.0 ...	177.3 ...	270.3 0.149 290.8 0.157	TOK 2024.312
14453–3609 72140	I 528AB –	15.93 $\pm 0.17$	2023.56 $\pm 0.09$	0.593 $\pm 0.028$	0.0459 $\pm 0.0023$	25.6 $\pm 7.7$	236.5 $\pm 18.5$	66.6 $\pm 17.3$	350.2 0.019 45.0 0.033	TOK 2024.312
14565–3438 73108	I 227AB –	41.61 $\pm 0.44$	1998.22 $\pm 1.16$	0.9160 $\pm 0.0225$	0.2327 $\pm 0.0085$	147.0 $\pm 13.6$	99.5 $\pm 42.6$	185.0 $\pm 51.9$	91.2 0.427 90.3 0.420	TOK 2021.565
15042–1530 73724	RST3906 –	59.54 $\pm 2.32$	2019.573 $\pm 0.219$	0.6557 $\pm 0.0096$	0.1651 $\pm 0.0036$	89.9 $\pm 0.7$	155.1 $\pm 0.7$	357.0 $\pm 3.3$	334.3 0.017 334.7 0.039	TOK 2024.312
15130–3045 74469	HDS2137 –	200 ...	2029.29 ...	0.70 ...	0.277 ...	23.1 ...	95.8 ...	350.5 ...	24.6 0.100 34.4 0.094	TOK 2024.312
15328+1945 76118	HU 577 9692	108.125 1.5	1944.304 0.297	0.3944 0.0081	0.300 0.043	62.40 0.83	35.85 0.83	126.6 1.5	32.1 0.348 33.2 0.343	S et al. 2024.314
15332–2429 76143	SEE 238Ba,Bb –	61.70 $\pm 0.41$	1999.823 $\pm 0.302$	0.676 $\pm 0.010$	0.2282 $\pm 0.0069$	24.0 $\pm 5.5$	204.7 $\pm 7.2$	132.5 $\pm 7.8$	149.2 0.347 150.8 0.351	TOK 2023.488
15420+0027 76892	A 2176 9747	51.47 $\pm 1.00$	1986.983 $\pm 0.223$	0.6286 $\pm 0.0191$	0.1421 $\pm 0.0035$	20.6 $\pm 5.6$	100.3 $\pm 13.6$	275.9 $\pm 11.9$	223.6 0.189 226.6 0.184	TOK 2021.319
15428–6147 76958	HDS2218AB –	46.7 $\pm 3.6$	2024.679 $\pm 0.194$	0.574 $\pm 0.028$	0.0986 $\pm 0.0050$	153.7 $\pm 5.8$	11.0 $\pm 26.8$	253.2 $\pm 19.2$	144.1 0.041 107.4 0.038	TOK 2024.321
15481–2513 77399	HDS2226 –	30.66 $\pm 0.86$	2010.96 $\pm 0.25$	0.700 $\pm 0.057$	0.1151 $\pm 0.0086$	143.4 $\pm 6.8$	0.7 $\pm 15.2$	134.8 $\pm 17.0$	46.4 0.170 43.4 0.174	TOK 2024.311

**NEW ORBITS (continuation)**

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15493+0503 77489	A 1126 9797	1000 ...	2005.86 ...	0.90 ...	0.290 ...	38.2 ...	16.3 ...	8.4 ...	145.5 0.074 147.3 0.078	TOK 2024.239
16055–3214 78830	B 1314 –	400 ...	1951.535 ...	0.266 ...	0.589 ...	98.9 ...	135.6 ...	205.9 ...	149.7 0.305 149.3 0.313	TOK 2022.307
16087–2523 79097	JNN 221Aa,Ab –	30.0 ...	2020.489 ...	0.55 ...	0.085 ...	71.5 ...	94.3 ...	302.3 ...	114.5 0.049 125.0 0.045	TOK 2024.236
16090–0939 79122	WSI 85 –	9.509 $\pm 0.143$	2020.89 $\pm 0.30$	0.970 fixed	0.0984 $\pm 0.0273$	83.8 $\pm 5.2$	139.4 $\pm 3.4$	319.3 $\pm 19.3$	313.3 0.128 313.8 0.143	TOK 2024.239
16103–2209 79244	TOK 860 –	7.72 $\pm 0.60$	2023.10 $\pm 0.15$	0.314 $\pm 0.078$	0.0479 $\pm 0.0013$	95.9 $\pm 1.5$	121.2 $\pm 1.5$	111.9 $\pm 10.6$	300.6 0.040 292.9 0.030	TOK 2024.157
16245–3734 80390	B 868AB –	1.700 $\pm 0.014$	2022.711 $\pm 0.083$	0.957 $\pm 0.098$	0.0194 $\pm 0.0114$	20.0 $\pm 0.0$	164.8 $\pm 696.2$	299.7 $\pm 674.2$	294.3 0.030 281.6 0.034	TOK 2024.239
16325–1739 80998	HDS2338 –	100 ...	2022.32 ...	0.512 ...	0.153 ...	65.4 ...	144.3 ...	299.6 ...	125.7 0.063 132.4 0.072	TOK 2024.239
16567+1539 82915	HDS2395 –	12.82 $\pm 0.42$	2020.58 $\pm 0.17$	0.795 $\pm 0.030$	0.0805 $\pm 0.0041$	158.4 $\pm 19.8$	131.6 $\pm 22.5$	337.7 $\pm 23.2$	349.5 0.119 343.0 0.132	TOK 2024.321
17005+0635 82323	CHR 59 –	13.116 $\pm 0.056$	2014.45 $\pm 0.16$	0.726 $\pm 0.032$	0.1063 $\pm 0.0025$	25.2 $\pm 10.8$	65.7 $\pm 26.1$	187.7 $\pm 29.1$	92.2 0.152 102.0 0.127	TOK 2024.321
17093–2954 83931	B 330 –	57.75 $\pm 1.45$	1998.26 $\pm 0.74$	0.3533 $\pm 0.0271$	0.1780 $\pm 0.0085$	45.6 $\pm 3.7$	65.2 $\pm 3.8$	126.5 $\pm 5.8$	10.6 0.184 14.4 0.188	TOK 2024.321
17176+1025 84595	HDS2445 –	44.37 $\pm 1.71$	2010.60 $\pm 1.13$	0.1266 $\pm 0.0228$	0.2791 $\pm 0.0096$	96.8 $\pm 0.3$	84.6 $\pm 0.4$	153.7 $\pm 10.3$	136.1 0.044 112.6 0.073	TOK 2024.321
17305–1006 85675	RST3978 –	93.9 $\pm 2.1$	2008.60 $\pm 0.44$	0.244 $\pm 0.019$	0.5737 $\pm 0.0055$	78.3 $\pm 0.3$	97.0 $\pm 0.2$	91.0 $\pm 2.8$	276.5 0.531 277.3 0.541	TOK 2024.311
17450–1646 86875	VOU 42 –	260 ...	2015.52 ...	0.0 ...	0.245 ...	141.5 ...	316.1 ...	0.0 ...	306.9 0.243 305.8 0.243	TOK 2019.534
18005–7019 88173	FIN 302 –	365 ...	2025.41 ...	0.50 ...	0.263 ...	10.0 ...	49.6 ...	0.0 ...	44.9 0.132 48.2 0.131	TOK 2023.488
18160–3703 89513	B 1355 –	51.70 ...	2012.49 ...	0.75 ...	0.191 ...	92.4 ...	112.0 ...	303.2 ...	309.1 0.036 305.1 0.049	TOK 2024.239

**NEW ORBITS (continuation)**

<b>WDS HIP</b>	<b>Name ADS</b>	<b>P(yr)</b> $\sigma_P$	<b>T(yr)</b> $\sigma_T$	<b>e</b> $\sigma_e$	<b>a(")</b> $\sigma_a$	<b>i(°)</b> $\sigma_i$	<b><math>\Omega</math>(°)</b> $\sigma_\Omega$	<b><math>\omega</math>(°)</b> $\sigma_\omega$	<b>2024 2025</b>	<b>Author(s) Last obs.</b>
18384+6708 91395	STF2384AB 11568	128.60 0.50	2001.89 0.50	0.649 0.020	0.629 0.015	87.7 0.5	128.5 0.5	353.5 3.0	305.8 0.447 306.0 0.474	D et al. 2023.5951
18437+3141 91868	A 253 11623	102.84 1.50	1943.48 1.50	0.768 0.009	0.492 0.005	61.4 1.5	119.4 1.0	190.6 2.0	138.3 0.572 139.1 0.553	D et al. 2023.6000
18466+3821 92122	HU 1191 11680	14.639 0.100	1996.697 0.100	0.473 0.003	0.196 0.002	143.7 1.0	73.2 0.5	296.7 0.5	242.8 0.170 208.3 0.113	D et al. 2023.6000
18516–6054 92547	RST5126 –	55.3 $\pm 1.2$	2011.90 $\pm 0.09$	0.489 $\pm 0.010$	0.1229 $\pm 0.0014$	8.9 $\pm 6.1$	147.9 $\pm 45.6$	238.0 $\pm 46.3$	158.0 0.139 162.2 0.145	TOK 2024.310
19121+0254 94349	AST 1 –	2.4765 $\pm 0.0004$	2020.6306 $\pm 0.0050$	0.4541 $\pm 0.0035$	0.1482 $\pm 0.0008$	131.6 $\pm 0.6$	178.8 $\pm 0.8$	27.0 $\pm 1.2$	355.5 0.203 292.3 0.119	TOK 2024.321
19164+1433 94720	CHR 85Aa,Ab –	6.9383 $\pm 0.0232$	2022.495 $\pm 0.083$	0.5773 $\pm 0.0207$	0.0392 $\pm 0.0011$	147.4 $\pm 6.0$	37.5 $\pm 8.9$	148.5 $\pm 10.8$	106.2 0.040 81.2 0.053	TOK 2024.321
19216+5223 95156	BU 1129 12366	192.87 5.50	2040.00 0.80	0.302 0.015	0.366 0.003	96.4 0.5	161.7 0.5	242.0 2.5	340.9 0.281 340.5 0.275	D et al. 2023.6032
19487+1504 97469	A 1658 12961	88.86 1.20	1990.76 3.50	0.070 0.015	0.222 0.006	180.0 5.0	70.9 10.0	244.1 10.0	46.8 0.233 43.1 0.234	D et al. 2023.6001
20103–2030 99385	BEU 21 –	57.1 ...	2046.152 ...	0.40 ...	0.950 ...	93.8 ...	75.5 ...	250.9 ...	340.8 0.086 302.9 0.115	TOK 2024.321
20557–6609 103302	HDS2981AB –	19.65 $\pm 1.04$	2024.16 $\pm 0.34$	0.2334 $\pm 0.0122$	0.1054 $\pm 0.0011$	142.2 $\pm 3.0$	180.1 $\pm 3.0$	358.6 $\pm 10.9$	185.0 0.081 160.9 0.080	TOK 2024.322
21125–4148 104704	I 1436 –	350 ...	1978.973 ...	0.40 ...	0.650 ...	57.8 ...	110.1 ...	73.2 ...	281.7 0.536 282.4 0.544	TOK 2022.447
21135+0713 104767	BU 270AB 14759	114.3 $\pm 3.3$	1933.3 $\pm 3.0$	0.636 $\pm 0.042$	0.3765 $\pm 0.0094$	105.1 $\pm 1.3$	169.6 $\pm 1.6$	351.5 $\pm 8.3$	341.4 0.402 340.8 0.387	TOK 2021.732
21214–6655 –	SYU 13Ba,Bb –	1.5124 $\pm 0.0110$	2022.327 $\pm 0.089$	0.543 fixed	0.0438 $\pm 0.0030$	154.1 $\pm 22.1$	251.2 $\pm 12.2$	137.0 fixed	16.1 0.032 254.0 0.053	TOK+Gaia 2021.751
21296+1739 106106	GJ 829 –	0.146 fixed	2021.2412 $\pm 0.0017$	0.374 $\pm 0.000$	0.0339 $\pm 0.0012$	133.3 $\pm 3.0$	222.2 $\pm 3.6$	300.0 fixed	339.8 0.017 38.4 0.034	TOK+RV 2022.682
21439+2751 107288	HO 166 15267	78.91 1.20	2014.029 0.080	0.275 0.007	0.280 0.002	145.5 0.5	91.4 1.0	162.7 1.0	220.2 0.212 213.9 0.213	D et al. 2023.6059

**NEW ORBITS (continuation)**

<b>WDS HIP</b>	<b>Name ADS</b>	<b>P(yr)</b> $\sigma_P$	<b>T(yr)</b> $\sigma_T$	<b>e</b> $\sigma_e$	<b>a(")</b> $\sigma_a$	<b>i(°)</b> $\sigma_i$	<b><math>\Omega</math>(°)</b> $\sigma_\Omega$	<b><math>\omega</math>(°)</b> $\sigma_\omega$	<b>2024 2025</b>	<b>Author(s) Last obs.</b>
22329+4923 111303	HU 1320 16046	64.15 0.95	1956.38 0.20	0.605 0.004	0.208 0.001	18.4 0.5	18.8 3.0	119.1 3.5	214.3 0.116 226.5 0.130	D et al. 2023.6003
22557+1547 113220	HU 987 16373	454.3 18.0	1916.8 0.7	0.495 0.010	1.091 0.015	121.0 0.5	65.5 0.5	207.1 1.5	74.0 1.250 73.7 1.258	D et al. 2023.6004
22570+2441 113323	COU 542Aa,Ab	30.73 0.50	1987.533 0.200	0.375 0.003	0.181 0.002	21.2 0.5	5.2 0.5	189.6 0.5	307.4 0.171 317.9 0.186	D et al. 2023.6059
23209+1643 115279	HEI 88	34.14 0.20	2036.657 0.200	0.652 0.007	0.172 0.001	30.7 0.5	100.2 0.5	284.6 0.5	221.9 0.241 225.4 0.237	D et al. 2023.6005
23474-7118 117326	FIN 375Aa,Ab -	105.4 $\pm 18.3$	2044.0 $\pm 5.3$	0.151 $\pm 0.144$	0.1693 $\pm 0.0092$	48.8 $\pm 3.8$	158.6 $\pm 9.5$	209.2 $\pm 36.4$	294.1 0.128 297.9 0.130	TOK 2023.896

ALZ = A. Alzner

D et al. = J. A. Docobo, P. P. Campo, J. Gómez, A. Costas, and L. Piccotti

S et al. = M. Scardia, J.-L. Prieur, J. Ling, L. Pansecchi, R. Argyle, E. Aristidi, L. Piccotti, L. Maccarini, L. Abe, P. Bendjoya, J.-P. Rivet, and D. Vernet

TOK = A. Tokovinin

TOK+RV = A. Tokovinin, uses radial velocities

TOK+Gaia = A. Tokovinin, fit DR3 astrometric orbit



PAPERS PUBLISHED IN 2023 (continuation)

1. ARISTIDI, E. et al.: *Speckle observations of the binary asteroid (22) Kalliope with C2PU/PISCO*. MNRAS, **524**, (4) 5225A (2023).
2. PRIEUR, J.-L. et al.: *Measurements of visual double stars with PISCO2 at the Nice 76-cm refractor in 2013–2014 (new data) and in 2015*. AN, **344**, (10) 30112P (2023).

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The deadline for contributions to Information Circular No. 214 is:

October 15th 2024

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ISSN: 1024-7769