Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
244 Sita	T0	129.51	0.82			
	0	129.51	0.82			Brinsfield, 09
253 Mathilde	T	417.7	0.50			
	−3	417.7	0.45	250.		Mottola, 95
	−3	418.	0.5	250.		Pravec, 05
288 Glauke	T	1170.	0.9			
	−1	1200.	0.9			Harris, 99
	0					Pravec, 14
	−2	1170.	0.37	740.		Pilcher, 15
299 Thora	T0	274.	0.39			
	0	274.	0.39			Pilcher, 14
408 Fama	T0	202.1	0.58			
	0	202.1	0.58			Stephens, 08
470 Kilia	T0	290.	0.26			
	0	290.	0.26			Stephens, 09
	0					Stephens, 09
571 Dulcinea	T	126.3	0.50			
	−2	126.3	0.50			Stephens, 11
630 Euphemia	T0	350.	0.45			
	0	350.	0.45			Warner, 11
707 Steïna	T0	414.	1.0			
	0					Pravec, 14
823 Sisigambis	T0	146.	0.7			
	0					Pravec, 14
824 Anastasia	T−	250.	1.20			
	+2	250.	1.20			Stephens, 10
	+2					Pravec, 14
846 Lipperta	T0	1641.	0.30			
	0	1641.	0.30			Buchheim, 11
887 Alinda	T0	73.97	0.35			
	0					Pravec, 14
912 Maritima	T0	1332.	0.18			
	0					Pravec, 14
950 Ahrensa	T0	202.	0.40			
	0					Pravec, 14
989 Schwassmannia	T0	107.85	0.39			
	0	107.85	0.35			Benishek, 14
	0	120.3	0.39			Stephens, 14
1042 Amazone	T0	540.	0.25			
	0					Pravec, 14
1183 Jutta	T0	212.5	0.10			
	0	212.5	0.10			Stephens, 11
1235 Schorria	T0	1265.	1.40			
	−1	1265.	1.40			Warner, 09
	0					Pravec, 14
1244 Deira	T0	210.6	0.50			
	0					Pravec, 14
1278* Kenya	T	188.	0.75			
	−2	188.	0.75	127.		Oey, 12
1447 Utra	T0	257.	0.63			
	0	257.	0.63			Martinez, 11w
1451 Granö	T	138.00	0.65			
	−2	138.	0.65			Stephens, 10
1473 Ounas	T+	139.1	0.6			
	−1	139.1	0.57			Behrend, 13w
	−2	139.1	0.6			Pilcher, 13
	−2					Pravec, 14
1479 Inkeri	T	660.	1.3			
	−2	660.	1.3			Ferrero, 12
1506 Xosa	T0	292.	0.70			
	0	292.	0.70			Warner, 11
1512 Oulu	T?	132.3	0.33			
	−1	132.3	0.33			Galad, 10
	−1					Pravec, 14
1536 Pielinen	T+	66.22	0.85			
	−2	66.22	0.85	52.05		Pravec, 11w
	−2					Pravec, 14w

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
1573 Väisälä	T? −1	252. 252.	0.76 0.76			Pravec, 12w
1575 Winifred	T0 0	125.	1.20			Pravec, 14
1621 Druzhba	T− +2	99.20	0.75			Pravec, 14
1663 van den Bos	T0 0	740.	0.80			Pravec, 14
1689 Floris–Jan	T? −1	145. 144.85	0.4 0.4			Harris, 89
1703 Barry	T? 0	107.1 107.1	0.5 0.5			Galad, 07
1750 Eckert	T −2	375. 375.	0.87 0.87			Warner, 10
1775 Zimmerwald	T −1	122. 122.	0.6 0.60			Stephens, 11
1807* Slovakia	T0 0	308.6	1.1			Pravec, 14
1909 Alekhin	T0 0 0	148.6 148.6	0.45 0.45			Dymock, 09 Pravec, 14
1919 Clemence	T0 0	67.4	0.15			Pravec, 14
1954 Kukarkin	T0 +1	136.40 136.40	0.80 0.80			Alvarez, 13
1989 Tatry	T? 0 −1	131.3 131.3	0.5 0.5			Galad, 09 Pravec, 14
2000 Herschel	T+ −2 −2	130. 130.	1.16 1.16			Warner, 11 Pravec, 14
2035 Stearns	T −2	93. 93.	0.7 0.63			Stephens, 14
2062 Aten	T0 0	40.77	0.26			Pravec, 14
2423 Ibarruri	T− +1 +1	139.79 139.79	0.74 0.74			Pravec, 11w Pravec, 14
2430 Bruce Helin	T0 0	128.	0.6			Pravec, 14
2437 Amnestia	T0 0	85.	0.45			Pravec, 14
2639 Planman	T0 0	89.5	0.40			Pravec, 14
2675 Tolkien	T? 0 −1	1060. 1060.	0.75 0.75			Durkee, 11 Pravec, 14
2696 Magion	AT0 0 0	480. 480.	0.31 0.31			Galad, 09 Pravec, 14
2705 Wu	T −2	150.5 150.5	1.2 1.2			Oey, 10
2731 Cucula	 −1	61.55 61.69	0.40 0.3			Brinsfield, 12
2735 Ellen	T0 0	159.	1.50			Pravec, 14
2772* Dugan	T0 0	235. 235.	1.23 1.14			Pravec, 12w
2862 Vavilov	T0 0	800.	0.4			Pravec, 14
2870* Haupt	T0 0	274. 274.	0.6 0.54			Pravec, 11w
2874 Jim Young	T0 0	131.3	0.75			Pravec, 14
2942 Cordie	T −2	80.0 80.0	1.1 1.1			Pravec, 06w

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
2974* Holden	T0	856.	0.70			
	0	856.	0.70			Stephens, 16
3033 Holbaek	T−	233.3	1.20			
	2	233.3	1.20			Brinsfield, 12
	+2					Pravec, 14
3043 San Diego	T0	105.7	0.60			
	0	105.7	0.60			Warner, 09
3102 Krok	T−	149.4	1.6			
	+2	151.8	1.3			Pravec, 05
3138 Ciney	DT0	113.	0.56			
	0					Pravec, 14
3288 Seleucus	T	75.	1.0			
	−2	75.	1.0			Pravec, 05
	−1	75.	1.0			Harris, 99
3353 Jarvis	T0	202.0	0.50			
	0	202.0	0.50			Warner, 09
3447 Burckhalter	T+	59.8	0.39			
	−2	59.8	0.39	67.5	0.39	Warner, 11
	−2					Pravec, 14
3527 McCord	T0	321.	0.44			
	0	321.	0.44			Pravec, 09w
3635 Kreutz	T0	280.	0.25			
	0	280.	0.25			Warner, 13
3691 Bede	T	226.8	0.5			
	−2	227.	0.5			Pravec, 05
	−2	226.8	0.5			Pravec, 98
3752 Camillo	T−	37.846	1.1			
	+2					Pravec, 05
3833 Calingasta	T	199.	1.2			
	−2	199.	0.7			Pravec, 10w
	0	195.	0.80			Owings, 13
3888 Hoyt	T0	84.2	0.7			
	0					Pravec, 14
3940 Larion	T0	84.	0.31			
	0					Pravec, 14
4002 Shinagawa	T0	175.0	0.95			
	0	175.0	0.95			Stephens, 15
4024 Ronan	T−	356.	1.10			
	2	356.	1.10			Stephens, 10
4142* Dersu–Uzala	T?	140.	0.65			
	−1	140.	0.60			Warner, 09
4179 Toutatis	T	176.	1.46			
	−4	176.	1.2	130.		Pravec, 05
	−2	180.	1.0			Nakamura, 98
	−2	130.	0.5			Hudson, 95
	+2		1.1			Spencer, 95
4232 Aparicio	T0	54.4	0.83			
	0					Pravec, 14
4283 Stöffler	T0	136.	0.65			
	0					Pravec, 14
4450 Pan	T	56.48	0.64			
	−1	60.	0.6			Pravec, 08w
	0	56.48	0.64			Warner, 14
4486 Mithra	RT0	67.5	0.5			
	0	67.5				Brozovic, 10
4524 Barklajdetolli	T0	1069.	1.26			
	0	1069.	1.26			Pray, 10
4544 Xanthus	T0	37.65	0.27			
	0					Pravec, 14
4660 Nereus	T0	15.1	0.8			
	0					Pravec, 14
4678 Ninian	T?	56.72	1.04			
	−1	56.7	0.93			Pravec, 14w
4690 Strasbourg	T	69.2	0.75			
	−2	69.2	0.75	52.05		Warner, 11

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
4902 Thessandrus	T −2	738. 738.	0.60 0.60			French, 13
5171 Augustesen	T? −1	480. 480.	0.8 0.8			Galad, 07
5202 Charleseliot	T? −1	183. 183.	0.58 0.58			Pravec, 12w
5230 Asahina	T− 0 +2	89.3 89.3	0.67 0.67			Warner, 10 Pravec, 14
5247 Krylov	T+ −3 −2	81.5 81.5	1.5 1.5	62.85		Pravec, 06w Pravec, 14
5378 Ellyett	T+ −2 −2	47.32 47.32	0.48 0.48			Warner, 12 Pravec, 14
5390 Huichiming	T0 0	111.	0.75			Pravec, 14
5511 Cloanthus	T0 0	336.	0.49			Pravec, 14
5561 Iguchi	T0 0	112.4	0.43			Pravec, 14
5577 Priestley	T −2	160. 160.	0.85 0.85	30.7		Stephens, 14
5630 Billschaefer	T0 0	69.	0.9			Pravec, 14
5641 McCleese	T0 0	418.	1.3			Pravec, 14
5645 1990 *SP*	T −2	30.39 30.39	0.7 0.7			Pravec, 05
5691 Fredwatson	T0 0	106.0	1.2			Pravec, 14
5751 Zao	T0 0	76.	0.2			Pravec, 14
5752 1992 *CJ*	T0 0	86.	0.80			Pravec, 14
5774 Ratliff	T0 0	61.	0.6			Pravec, 14
5786 Talos	NT0 0	38.52	0.23			Pravec, 14
5851 Inagawa	T? −1	367.5	0.90			Pravec, 14
5967 Edithlevy	T −2	66. 66.	0.7 0.7			Warner, 10
6063 Jason	T −2	51.7 51.7	0.11 0.11	238.	0.12	Warner, 14
6141 Durda	T0 0	460. 460.	0.50 0.50			Warner, 10
6183* Viscome	T? −1 −1	453. 437. 453.	0.9 0.68 0.9			Pravec, 15w Stephens, 16
6192 1990 KB_1	T+ −2 −2	78.85 78.74	0.95 0.95			Brinsfield, 12 Pravec, 14
6250 Saekohayashi	T0 0	82.6	0.78			Pravec, 14
6271 Farmer	T? −1 −1 −1	250. 250.	0.22 0.13 0.22			Warner, 11w Warner, 11w Pravec, 14
6425 1994 WZ_3	T0 0	103.9 103.9	0.92 0.92			Durkee, 11
6435 Daveross	T− +2 +2	51.25 51.25	0.67 0.67			Warner, 11 Pravec, 14
6461 Adam	T −2	74. 74.	0.76 0.76	74.	47.	Warner, 12
6485 Wendeesther	T0 0	74.82	1.00			Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
6487 Tonyspear	T− +2	74.91	1.24			Pravec, 14
6498 Ko	T0 0	500.	0.6			Pravec, 14
6911 Nancygreen	T0 0	59.1	0.52			Pravec, 14
7352 1994 *CO*	T −2	648. 648.	0.30 0.30			Stephens, 14
7421 Kusaka	T −2	96.5 96.5	0.7 0.7			Galad, 10
7480 Norwan	T0 0	35.90	0.5			Pravec, 14
7743 1986 *JA*	T? −1	146.8 146.8	0.93 0.93			Pravec, 08w
7781 Townsend	T− +2 +2	81.1 81.1	0.58 0.58			Warner, 11 Pravec, 14
7824 Lynch	T0 0	75.30	0.37			Pravec, 14
8709 Kadlu	T− +1	50.6	0.40			Pravec, 14
8736 Shigehisa	T0 0	80.5	1.2			Pravec, 14
8885 Sette	T0 0	212.	0.5			Pravec, 14
9000 Hal	T0 0	908.	0.9			Pravec, 14
9165* Raup	T0 −1 0	1320. 560. 1320.	1.34 1.05 1.34			Warner, 14 Warner, 16
9233 Itagijun	T0 0	110.95	0.6			Pravec, 14
9400* 1994 TW_1	T? −1	82.8 82.8	0.80 0.80			Warner, 16
9556 Gaywray	T0 0	920.	0.5			Pravec, 14
9584 Louchheim	T0 0	410. 410.	0.3 0.3			Pravec, 09w
9739 Powell	T? −1	109. 109.	0.40 0.40			Stephens, 15
9969 Braille	T0 0	226.4	1.			Pravec, 14
10302 1989 *ML*	T0 0	19.	1.0			Pravec, 14
10531 1991 GB_1	T0 0	55.1	0.21			Pravec, 14
10772 1990 *YM*	NT? −1 −1	68.7 68.7	1.3 1.3		1.3	Pravec, 06w Pravec, 14
11304 Cowra	T0 0 0	95.7 95.7 94.5	1.0 0.40 1.0			Warner, 09 Warner, 12
11351 Leucus	T0 0	515. 515.	0.53 0.53			French, 13
11398 1998 YP_{11}	T− +2	38.60 38.60	0.34 0.25			Pravec, 05
11500 Tomaiyowit	NT0 0	73.0	0.5			Pravec, 14
11579* Tsujitsuka	T? −1	56.6 56.6	0.8 0.8	24.		Pravec, 15w
11780 1942 *TB*	T0 0	295.	0.70			Pravec, 14
11789 Kempowski	AT0 0	48.6	0.45			Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
12265 1990 *FG*	T– +2 +2	56.6 56.6	0.65 0.65			Warner, 11 Pravec, 14
13331 1998 SU_{52}	T? −1	375.	0.80			Pravec, 14
13553* Masaakikoyama	NT −2	38. 38.	1.1 1.1			Pravec, 05w
13643 Takushi	T0 0	83.838 83.838	1.00 1.00			Clark, 13
13651 1997 *BR*	T −1 −2	33.644 33.644 33.64	1.2 1.2 1.2			Pravec, 98 Pravec, 05
14040 Andrejka	T0 0	310.	0.95			Pravec, 14
14395 Tommorgan	T −2	35.5 35.5	0.61 0.61	40.4		Warner, 13
14764 Kilauea	T+ −2 −2 0	19.84 19.84 19.59	1.2 0.81 0.50	22.86		Warner, 12 Pravec, 14 Stephens, 15
14815 Rutberg	T0 0	150.	1.0			Pravec, 14
15533* 2000 AP_{138}	T0 0	114.	0.38			Pravec, 14
16064 Davidharvey	T −2	178.5 178.5	0.7 0.7			Pravec, 05
16256 2000 JM_2	T0 0	63.5 63.5	0.98 0.98			Warner, 12
16421 Roadrunner	T0 0 0	174. 173. 174.	1.25 1.25 1.00			Warner, 12 Warner, 14
16558 1991 VQ_2	T0 0	170.	1.0			Pravec, 14
16589 Hastrup	T −2	128. 128.	0.62 0.62			Warner, 12
16641 Esteban	 0	79.62 79.51	1.42 1.42			Pravec, 14w
16896 1998 DS_9	T? −1	708. 708.	0.43 0.43			Stephens, 14
17584* 1994 XF_1	T −2	4.6398 4.6398	0.56 0.56	5.7306		Pravec, 15w
17681 Tweedledum	T0 0	75.2	0.90			Pravec, 14
18096 2000 LM_{16}	T0 0	86.	0.18			Pravec, 14
18582 1997 XK_9	T0 0	114.	0.94			Pravec, 14
18906 2000 OJ_{19}	T0 0	77.90	0.80			Pravec, 14
19537 1999 JL_8	AT0 0	50.1	0.10			Pravec, 14
19763 Klimesh	T? −1	101. 101.	0.67 0.67			Pravec, 11w
19764 2000 NF_5	NT0 0	59.3	0.80			Pravec, 14
20231 1997 *YK*	T? 0 0	178. 178.	0.70 0.4 0.70			Warner, 09 Warner, 14
20562 1999 RV_{120}	T0 0	135.4 135.4	0.43 0.43			Pravec, 14w
20571 Tiamorrison	T0W 0	450.	0.60			Pravec, 14
20996* 1986 *PB*	T0 0	43.6	4.			Pravec, 14
21609 Williamcaleb	T0 0	112.	0.5			Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
22166 2000 WX_{154}	T0 0	800. 800.	0.46 0.46			Pravec, 11w
22357 1992 YJ	T0 0	103. 103.	0.54 0.54			Warner, 11
24077 1999 TD_{233}	T −2	30.86 30.86	1.61 1.61	33.13		Warner, 14
24242 1999 XY_{100}	T+ −2 −2	49.94 49.94	0.6 0.6			Pravec, 08w Pravec, 14
24702 1991 OR	T0 0	59.5	0.19			Pravec, 14
25076 1998 QM_{98}	T −2	58.3 58.3	0.35 0.35			Warner, 15
25143 Itokawa	T− +4	12.132	1.05			Pravec, 05
27810 Daveturner	T0 0	546. 546.	0.43 0.43			Warner, 11
28017 1997 YV_{13}	T? −1 −1	47. 47.	0.15 0.15		0.15	Pravec, 05w Pravec, 14
29147 1988 GG	T −2	99. 99.	0.80 0.80			Warner, 10
29292 Conniewalker	T+ −2 −2 −2	30.6 30.5 30.6	0.63 0.63 0.62	22.55		Pravec, 11w Brinsfield, 12 Pravec, 14
29780 1999 CJ_{50}	T0 0	63.50	0.58			Pravec, 14
31076 1996 XH_1	AT0 0	350.	0.17			Pravec, 14
31173 1997 XF_1	T0 0	122.8 122.8	0.67 0.67			Warner, 14
31182 1997 YZ_3	T0 0	380.	0.62			Pravec, 14
31832 2000 AP_{59}	T −2	64. 64.	0.8 0.8			Stephens, 15
32928 Xiejialin	T0 0	38.9	0.56			Pravec, 14
33319* Kunqu	T? −1	105. 105.	0.9 0.9			Warner, 16w
33341 1998 WA_5	T− +1	204. 204.	0.57 0.57			Warner, 10
33356 1999 AM_3	T− +2	37.59 37.59	0.92 0.92			Warner, 12
33736 1999 NY_{36}	T? −1	211. 211.	0.4 0.4			Stephens, 12
33816 2000 AL_{42}	AT0 0	193.	0.12			Pravec, 14
36298 2000 JF_{10}	T? −1	82. 82.	0.75 0.75			Warner, 10
36316 2000 LC_{12}	T −2	56.5 56.5	1.22 1.22	46.4		Warner, 12
37634 1993 UZ	T0 0	82.0 82.0	0.70 0.70			Warner, 10
37635 1993 UJ_1	T0 0	600.	0.8			Pravec, 14
38063 1999 FH	T? −1	990. 990.	0.55 0.55			Stephens, 15
38071 1999 GU_3	T? −1 −1	216. 216. 215.	1.5 1.4 1.5			Pravec, 00 Pravec, 02w
39240 2000 YZ_{69}	T0W 0	105.	1.6			Pravec, 14
39420 Elizabethgaskell	T0W 0	105.	1.6			Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
39618 1994 LT	T −2	140. 140.	0.85 0.85			Warner, 12
39796* 1997 TD	T? −1	223.5 223.5	0.92 0.92			Warner, 15
41424 2000 CK_{40}	T0 0	48.0	0.35			Pravec, 14
41503 2000 QG_{148}	T0 0	42.81 42.81	1.00 1.00			Warner, 14
41660 2000 SV_{362}	T0 0	77.2 77.2	0.65 0.65			Stephens, 14
43606 2001 XQ_2	T? −1	87. 87.	1.3 1.3			Warner, 10
44534* 1998 YZ_9	ADT0W 0	45.0	0.75			Pravec, 14
48707 1996 KR_1	T0 0	230.	0.75			Pravec, 14
51371 2000 XF_{15}	AT0 0	54.	0.09			Pravec, 14
51386 2001 CN_{35}	T0 0	48.0	0.36			Pravec, 14
52387 1993 OM_7	T0 0	26.	0.4			Pravec, 14
53008 1998 VY_5	 0	47. 47.	0.3 0.3			Pravec, 13w
53319 1999 JM_8	T −2	136. 136.	0.7 0.7			Pravec, 05
53789 2000 ED_{104}	NT0 0	43.	1.1			Pravec, 14
54071 2000 GQ_{146}	NT0 0	51.	0.2			Pravec, 14
54789 2001 MZ_7	T+ −3 −3	37.57 37.57	1.4 1.4	 52.79		Pravec, 05 Pravec, 14
55532 2001 WG_2	T −2	46.08 46.08	0.55	 32.4		Stephens, 14
56367 2000 EF	AT0 0	98.	0.8			Pravec, 14
57868* Pupin	T0 0	108.10 108.10	0.93 0.93			Benishek, 16
59493 1999 JG_5	T0 0	57.4	0.90			Pravec, 14
64107 2001 TK_8	T? −1	68.5 68.5	1.31 1.31			Warner, 15
65407 2002 RP_{120}	T0 0	200.	0.6			Pravec, 14
65637 Tsniimash	T −1	220. 220.	0.90 0.90			Stephens, 14
65717 1993 BX_3	T0 0	20.463	0.91			Pravec, 14
66092 1998 SD	T0 0	448. 448.	0.42 0.42			Warner, 13
66419 1999 NR_{13}	 +2	56.71 56.71	0.80 0.80			Alvarez, 13
68547 2001 XW_{29}	T+ −2 −2	36.7 36.7	0.60 0.60			Warner, 10 Pravec, 14
69350 1993 YP	AT? −1 −1	31.79 32.34	0.95 0.95			Warner, 12 Pravec, 14
74081 1998 OU_1	T0 0	46.1	0.23			Pravec, 14
76800 2000 OQ_{35}	T0 0	392.	1.4			Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
79316* Huangshan	T? −1	493. 493.	0.62 0.62			Stephens, 15
85953 1999 FK_{21}	T? 0	28.1 28.1	0.60 0.60			Skiff, 11w
86039 1999 NC_{43}	AT? −1	34.49 34.29	1.1 1.00			Warner, 14
86666* 2000 FL_{10}	T? −1	206. 206.	0.85 0.85			Warner, 16
89136* 2001 US_{16}	T −3	14.39 14.39	0.90 0.90	37.4		Pravec, 04w
89355 2001 VS_{78}	T− +2	40.553 40.553	0.52 0.52			Pravec, 05
95711 2003 AK	NT0 0	100.	0.7			Pravec, 14
96590 1998 XB	NT0 0	520.	1.0			Pravec, 14
99475 2002 CR_{118}	T0 0	81.	0.74			Pravec, 14
99812 2002 LW_{31}	T0 0	150.	0.8			Pravec, 14
99942 Apophis	T −3	30.56 30.56	1.14 1.14	27.38		Pravec, 14
101430 1998 VE_{32}	T0 0	40.66	0.22			Pravec, 14
101549 1998 YY_{29}	T0 0	56.7 56.7	0.51 0.51			Warner, 09
105844 2000 SH_{160}	T0 0	38.26	1.45			Pravec, 14
106620 2000 WL_{124}	T− +2 +2	104.5 104.5	0.58 0.58			Warner, 12 Pravec, 14
120578 1995 QV_{12}	T? 0	72.4 72.4	0.51 0.51			Warner, 14
123937 2001 EX_{16}	T0 0	39.82	0.07			Pravec, 14
125742 2001 XT_{117}	T? −1	60.8 60.8	1.40 1.15			Warner, 13
134422 1998 QM_3	T −1	25.4 25.4	0.65 0.65	34.2	0.60	Warner, 15
134549 1999 RN_{154}	T? −1	124. 124.	0.55 0.55			Warner, 14
135486 2001 XP_2	T0 0	69.	1.2			Pravec, 14
141018 2001 WC_{47}	T0 0	16.51 16.51	0.18 0.18			Warner, 12
143651 2003 QO_{104}	T? −1 −1	114.4 114.4 114.	1.60 1.60 1.25			Warner, 09 Koehn, 14
143678* 2003 SA_{224}	NAT0 0	35.	0.24			Pravec, 14
144411* 2004 EW_9	T− +2	49.94 49.94	1.9 0.9			Pravec, 04w
152664 1998 FW_4	T0 0	17.38 17.38	0.34 0.34			Warner, 14
152679* 1998 KU_2	T −2	125. 125.	1.35 1.35			Warner, 16
154807* 2004 PP_{97}	T? −1	161. 161.	0.96 0.96			Warner, 16
162004 1991 VE	T+ −2	13.4802 13.4802	1.11 1.08	17.316		Pravec, 12w
162058 1997 AE_{12}	NT0 0	1880.	0.6			Pravec, 14
162416 2000 EH_{26}	RT0 0	24.				Pravec, 14

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
162900 2001 HG_{31}	T	60.61	0.56			
	−1	59.58	0.56			Warner, 09
	−3	60.61	0.50	39.0		Pravec, 08w
162998 2001 SK_{162}	NT0	68.	0.40			
	0					Pravec, 14
163081 2002 AG_{29}	T0	19.70	0.25			
	0					Pravec, 14
163696* 2003 EB_{50}	T0	62.4	0.83			
	−1	27.2	0.73	31.4		Warner, 14
	0	62.4	0.83			Warner, 16w
163732 2003 KP_2	NT?	151.1	1.7			
	−1	151.1	1.7			Pravec, 03w
163899* 2003 SD_{220}	T?	285.	2.2			
	−1	285.	2.2			Warner, 16
164400 2005 GN_{59}	T−	38.69	1.30			
	0	38.69	1.30			Skiff, 12
	+1					Pravec, 14
168381 1997 LY_4	T	46.07	1.0			
	−2	46.07	1.0			Pravec, 00
179806 2002 TD_{66}	T0	9.455	1.16			
	0					Pravec, 14
181882 1999 RF_{14}	T?	2.5	0.20			
	0	2.5	0.20			Skiff, 11w
183581* 2003 SY_{84}	T?	260.	0.87			
	−1	260.	0.87			Warner, 15
188077 2001 XW_{47}	T0	525.	0.3			
	0					Pravec, 14
206378* 2003 RB	T?	37.5	0.43			
	0					Pravec, 14
	0	37.5	0.43			Warner, 16
217807 2000 XK_{44}	T	51.9	1.2			
	−1	66.75	0.5	25.7		Hicks, 10
	−3	51.9	1.2	66.8		Warner, 10
218144* 2002 RL_{66}	T0B?	587.	0.32			
	0	590.	0.32			Warner, 10
	0	587.	0.25			Warner, 10
234145 2000 EW_{70}	RT0	33.				
	0					Pravec, 14
242191* 2003 NZ_6	T0	13.531	1.5			
	0					Pravec, 14
253106* 2002 UR_3	T?	180.	0.36			
	−1	180.	0.36			Warner, 16
267337 2001 VK_5	T?	39.05	0.92			
	−1	39.05	0.92			Warner, 14
267729 2003 FC_5	NT0	129.5	0.5			
	0					Pravec, 14
302831 2003 FH	T0	13.94	0.99			
	0					Pravec, 14
306790 2001 KB_1	T?	71.	0.85			
	−1	71.	0.85			Warner, 15
308635 2005 YU_{55}	AT0	19.31	0.20			
	−1					Muller, 13
	0					Pravec, 14
329770 2004 JA	NT0	52.1	0.4			
	0					Pravec, 14
345853 2007 PU_{11}	T0	56.8	0.98			
	0					Pravec, 14
363084 2000 RD_{53}	NT0	14.96	0.09			
	0					Pravec, 14
368664 2005 JA_{22}	T?	31.7	0.92			
	−1	31.7	0.92			Warner, 14
369984* 1998 QR_{52}	NT−	234.	0.88			
	+1					Pravec, 14
374158 2004 UL	T	38.	1.2			
	−2	38.	1.2			Warner, 15
374851 2006 VV_2	B	2.425	0.57			
	−1	1.704	0.2	94.	0.3	Vereshchagina, 09

NON-PRINCIPAL AXIS ROTATION (TUMBLING) ASTEROIDS

Asteroid	PAR	Per_1	Amp_1	Per_2	Amp_2	Reference
380929 2006 HU_{30}	T?	49.0	0.17			
	−1	49.0	0.17	450.		Warner, 14
398188 2010 LE_{15}	T	21.99	1.12			
	−2	21.99	1.12			Warner, 15
411201 2010 LJ_{14}	T0	113.	0.85			
	0	113.	0.85			Warner, 14
413260 2003 TL_4	NT0	27.2	1.0			
	0					Pravec, 14
415949 2001 XY_{10}	T0	43.5	0.35			
	0	43.5	0.35			Warner, 15
416186* 2002 TD_{60}	T+	2.8513	2.0			
	−3	2.8513	1.4	6.781		Pravec, 05
	−3	2.8516	1.5	6.784		Pravec, 05
	−3	2.8512	2.0	6.784		Pravec, 05
	−4					Pravec, 14
	−3	2.8504	1.15	6.783		Warner, 15
422638 1994 CB	T−	8.676	0.90			
	+1					Pravec, 14
429584* 2011 EU_{29}	T0	43.5	0.65			
	0	43.5	0.65			Warner, 15
443103* 2013 WT_{67}	T?	135.	1.1			
	−1	135.	1.1			Warner, 15
446791* 1998 SJ_{70}	T0	19.15	0.90			
	0					Pravec, 14
446804* 1999 VN_6	NAT0	24.1	0.7			
	0					Pravec, 14
455192* 2000 QN_{130}	NT0	30.33	0.3			
	0					Pravec, 14
456051* 2006 AW	T0	53.19	0.95			
	0	53.19	0.95			Warner, 16

F o o t n o t e. This Table includes data for the asteroids for which non-principal axis rotational motion (tumbling) has been reported (symbols T or T? in the column "Note" of the Table "Lightcurve parameters"). In some cases the Table containes data for asteroids not marked by symbol T or T? in the main table.

For each object the Table contains a summary line (the first one) and associated detail line(s). In the summary line the adopted value of primary period (Per_1) in hours and amplitude of brightness variation (Amp_1) are given.

In detail entries in the column PAR the non-principal axis rotation probability rating is given (see below description). Then alternative values of primary period and amplitude of brightness variation as well as values of secondary period (Per_2) and corresponding amplitude (Amp_2), if available, are cited. In the last column of detail entries short references to the principal author (name and year of corresponding publication) are printed. Posting on a web site are given as the current year + "w" (e. g., Warner, 11w).

An asterisk (*) between the asteroid number and name denotes a new or significantly changed entry.

PAR rating

The PAR rating is that used by Pravec et al, Icarus 173, 108–131.

Those asteroids where we believe the claims of NPA rotation are not justified are not included in the NPA rotation table, nor are they given as an entry in the "Note" column of the "Lightcurve parameters" Table. Following is a brief description of the PAR rating codes (see the Pravec et al. paper for a more detailed explanation):

–4 Physical model of the NPA rotation constructed.

–3 NPA rotation reliably detected with the two periods resolved. There may be some ambiguities in one or both periods.

–2 NPA rotation detected based on deviations from a single period but the second period is not resolved.

–1 NPA rotation possible, i. e., deviations from a single period are seen, but not conclusively.

0 Insufficient data to determine if rotation is PA or NPA.

+1 PA rotation is consistent with the data but coverage is insufficient.

+2 PA rotation likely, or deviations from PA are small with some overlapping data fitting a PA rotation period.

+3 PA rotation quite likely.

+4 PA spin vector obtained.

Entries with positive ratings are rare. Such ratings are used when the asteroid was thought to be tumbling but further examination showed it was likely in PA rotation, or when the damping time to PA rotation is sufficiently long that the given asteroid would more likely be in NPA than PA rotation.

Summary line usually contains letter T in PAR column with flag that currently has five possible qualifiers:

Blank The asteroid has a PAR < -1, i. e., it is definitely tumbling. Example: T

? Possible tumbler. There is some evidence that the asteroid might be a tumbler. It may carry a PAR = 0 to −1. Example: T?

0 The tumbling damping time scale (see Pravec 2005, Icarus) is long enough that tumbling might be expected, but observations are not sufficient to substantiate either tumbling or not tumbling, PAR = 0. Example: $T0$

– The tumbling damping time scale is long enough that tumbling might be expected, but observations indicate that the object is NOT tumbling, i. e., PAR >= 1. Example: $T-$

\+ The tumbling damping time scale is short enough that tumbling would not seem likely, however observations indicate that it may be tumbling or actually is tumbling. PAR =< 0. Example: $T+$

The W flag denotes that result based on wide field data. The W flag is included so that those doing statistical studies can include or exclude the results from these surveys. Such surveys can introduce significant biases by "cherry picking" the best results from a large pool and so skew overall rotational statistics. See the paper by Warner, B. D. and Harris, A. W. (2011) "Using sparse photometric data sets for asteroid lightcurve studies." Icarus, 216, 610–624.