

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
1 Ceres													
I	Prograde rotation								-----				Mor77
I	Prograde rotation								-----				Han77
P			270°	+36°	—P—				-----				Joh+83
R			Concentric ring region ⁶						-----				Ost87
S	—S—		332°	+70°	—S—			—S—	-----				Sai+93
Synthesis			332°		+70°				-----				Synthesis
2 Pallas													
EZ			228°	+43°	—E—				0.325440				Sch+76
I	Prograde rotation								-----				Mor77
I	Prograde rotation								-----				Han77
Z			211°	+38°	31°	−38°			-----				Bur+83
AM	44°	+4°	148°	+55°	224°	−4°	328°	−55°	-----	1.14	1.0 ¹		Zap+84
A			200°	+40°	20°	−40°			-----				Bin84
A			220°	+15°	40°	−15°			-----				Bin84
A	49°	+6°	157°	+53°	229°	−6°	337°	−53°	-----	1.14	1.0 ¹		Bur+85
R	Aspect circle ⁷								-----				Ost85
OEAI	—O—		227°	+20°	—E—			—E—	0.325995	1.11	1.03		Lam85
OEA	54°	−6°	—O—		—E—			—E—	0.32555136	1.06	1.05		Mag86
R	Concentric ring region ⁶								-----				Ost87
S	100°	−22°	295°	+16°	—S—			—S—	-----	1.10	1.01		Dr+89a
O	70°	+15°	250°	+15°	70°	−15°	250°	−15°	-----	1.11	1.30		Dr+89b
L			193°	+43°	35°	−12°			0.3255510	1.1	1.05 ³¹		Tor+03
3 Juno													
EA	71°	+49°					—E—		0.3004950				Cha+62
AM	101°	+29°	321°	+57°	141°	−57°	281°	−29°	-----	1.23	1.0 ¹		Zap+84
OEA	110°	+40°	—O—		—E—			—E—	0.30040	1.20	1.02		Mag86
E	104°	+36°	316°	+62°	—E—			—E—	0.3003969				Bir+89
EAM	108°	+34°			—E—			—E—	0.3003970	1.18	1.0 ²		Eri+93
EA	108°	+38°	—		—E—			—E—	0.3003970	1.20	1.26		Dot+95
L	103°	+27°	—		—			—	0.3003971	1.2	1.3 ³¹		Ka+02a
Synthesis	106°	+34°	—		—E—			—E—	0.3003970	1.2	1.3		Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
4 Vesta													
EA	14°	+80°					—E—		0.2227006				Cai56
EA	—E—		—E—			−90°	−90°		0.4453666	1.14	1.0 ¹		Hau58
EA	57°	+74°					—E—		0.2225884				Cha+62
E	126°	+65°				—E—	—E—		0.22258871				Geh67
E	139°	+47°	333°	+39°		—E—	—E—		0.4451021	shape ²¹			Tay73
I	Prograde rotation								-----				Mor77
I	Prograde rotation								-----				Han77
E	103°	+43°	301°	+33°		—E—	—E—		0.2225889				Tay+85
E	120°	+65°	325°	+55°		—E—	—E—		0.22258849	1.01	1.4 ²		Mag86
AM	85°	+58°	310°	+60°					-----	1.0 ¹	1.27	X ¹⁸	Cel+87
SE	—S—		336°	+55°					0.2225887	1.10	1.14	X ²⁰	Dr+88a
S	—S—		311°	+67°		—S—	—S—		-----	1.07	1.14		Dr+89a
EA	160°	+52°	340°	+40°		—E—	—E—		0.2225885				Rey+93
S	-----		343°	+56°		-----	-----		-----	1.06	1.15		McC+94
S	—S—		336°	+63°		—S—	—S—		-----	1.03	1.2		Tho+97
Synthesis	—S—		326°	+53°		—ES—	—ES—		0.2225886	1.1	1.2		Synthesis
5 Astraea													
E							328°	−9°	0.7005047				Tay78
AM	131°	+49°	328°	+46°	148°	−46°	310°	−49°	-----	1.29	1.0 ¹		Za+86b
R			Concentric ring region ⁶						-----				Ost87
EA	125°	+46°	318°	+44°		—E—	—E—		0.700026	1.27			Eri+93
EA	114°	+57°				—E—	—E—		0.700026	1.21	1.15		DeA95
AM			312°	+58°	132°	−58°			-----	1.44	1.30		Bla+00
Synthesis	123°	+51°	319°	+49°		—E—	—E—		0.700026	1.24			Synthesis
6 Hebe													
A	145°	+15°					—E—		-----				Geh+62
E			365°	+50°					0.3031020	1.15	1.0 ¹		Geh+77
AM	130°	+33°	344°	+30°	164°	−30°	310°	−33°	-----	1.24	1.0 ¹		Zap+84
OEA	—O—		355°	+50°		—E—	—E—		0.3031025	1.14	1.2		Mag86
R			Concentric ring region ⁶						-----				Ost87
E			363°	+60°		—E—	—E—		0.3031024				Mic88
EA			365°	+27°		—E—	—E—		0.3031023	1.13	1.06		DeA95
EA	—O—		353°	+24°		—E—	—E—		0.3031026	1.14	1.00		Dot+95
EA			check ⁵						-----				Lag+95
AM	128°	+30°					308°	−30°	-----	1.32	1.11		Bla+00
L	-----		339°	+45°		-----	-----		0.3031029	1.1	1.1 ³¹		Tor+03
Synthesis	—O—		355°	+41°		—E—	—E—		0.3031026	1.17	1.1		Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
7 Iris													
EA			184°	+55°	—E—				0.2967853	shape ⁹			Cai56
AM			193°	+15°	13°		−15°		-----				Geh+62
AM	11°	+41°					191°	−41°	-----	1.31	1.35		Tay77
EA	15°	+25°	195°	+15°	—E—		—E—		0.29745197	1.18	1.40		Mag86
AM	18°	+33°	193°	+16°	13°		−16°	198°	−33°	-----	1.19	1.21	Za+86b
R			Concentric ring region ⁶						-----			Ost87	
EA	8°	+35°	187°	+5°	—E—		—E—		0.29745195	1.24	1.36		DeA95
R	15°	+25°							-----				Mit+95
L	20°	+10°	200°	+10°	-----		-----		0.2974517	1.2	1.0 ³¹		Ka+02a
Synthesis	15°	+28°	196°	+10°	—E—		—E—		0.2974519	1.2	1.2		Synthesis
8 Flora													
A	157°	+10°					—E—		-----				Geh+62
A	140°		320°		140°		320°		-----				Zap+83
A	148°	+45°	328°	+45°	148°	−45°	328°	−45°	-----	1.12	1		Hol+87
AM	135°	+43°	327°	+32°	147°	−32°	315°	−43°	-----	1.10	1.28		DiM+89
EA	139°	+14°					319°	−14°	-----	1.05	1.16		DeA95
AM	122°	+37°					302°	−37°	-----	1.097	1.062		Bla+98
L	160°	+16°	-----		-----		-----		0.533292	1.0	1.2 ³¹		Tor+03
Synthesis	140°	+22°	-----		-----		-----		0.533292	1.05	1.2		Synthesis
9 Metis													
AM	156°	+15°					336°	−15°	-----				Geh+62
A			348°	+76°	168°	−76°			-----				Cha+62
AM	191°	+56°					371°	−56°	-----	1.30	1.70		Zap+79
AM	186°	+43°	362°	+26°	182°	−26°	366°	−43°	-----	1.32	1.34		Zap+84
R			Concentric ring region ⁶						-----			Ost87	
EAM	183°	+25°	361°	+9°	—E—		—E—		0.2116324	1.27	1.26		Dr+88b
EAM	180°	+30°	360°	+20°	—E—		—E—		0.2116322	1.27	1.26		Mag90a
EAM	181°	+23°	360°	+7°	—E—		—E—		0.2116323	1.27	1.24		Dru+91
EA	185°	+31°			—E—		—E—		0.2116323	1.31	1.22		DeA95
L	181°	+23°	359°	+9°	-----		-----		0.2116325	1.2	1.4 ³¹		Tor+03
Synthesis	182°	+26°	360°	+11°	—E—		—E—		0.2116324	1.3	1.3		Synthesis
10 Hygiea													
I					Retrograde rotation				-----				Mor77
EA	—E—		—E—		112°	−41°	299°	−39°	1.152462	1.36	1.04		Mic+91
EA	—E—		—E—		100°	−34°	285°	−34°	1.150969	1.28	0.65		Eri+93
EAM	—E—		—E—		117°	−37°	304°	−35°	1.150977	1.30	1.18		Mic93
AM	118°	+44°					298°	−44°	-----	1.343	1.144		Bla+98
AM	122°	+42°					302°	−42°	-----	1.343	1.444		Bla+98
L	-----		-----		115°	−30°	300°	−30°	1.150967	1.3	1.1 ³¹		Ka+02a
Synthesis	—E—		—E—		111°	−36°	298°	−37°	1.15097	1.29			Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
11 Parthenope													
AM	64°	+38°	253°	+51°	73°	−51°	244°	−38°	-----	1.225	1.208		Bla+98
12 Victoria													
A			242°	+17°	62°	−17°			0.36060				Tem+69
R			Concentric ring region ⁶						-----				Ost87
EA	9°	+55°	176°	+40°	—E—		—E—		0.3608665	1.25	1.00		Dot+95
L	-----		137°	+55°	-----		-----		0.360829	1.3	1.3 ³¹		Tor+03
Synthesis	-----		150°	+50°	—E—		—E—		0.36085	1.3			Synthesis
13 Egeria													
AM	103°	+13°					283°	−13°	-----	1.43	1.26		Bla+00
14 Irene													
AM			270°	+34°	90°	−34°			-----	1.148	1.080		Bla+98
15 Eunomia													
EA	—E—		—E—		−90°		−90°		0.253448				Gro+54
EA	—E—		—E—				337°	−82°	0.25344810	1.51	?		Cai56
EA	—E—		—E—		−90°		−90°		0.253448				HG+58
EA	—E—		—E—		70°	−74°			0.25344810				Cai60
EA	—E—		—E—		−90°		−90°		0.25336				Sca+75
A	164°	+52°	-----		-----		344°	−52°	-----	1.6	1.0 ¹		Pii+85
A	170°	+57°	-----		-----		350°	−57°	-----	1.6	1.4 ¹		Pii+85
E	Prograde rotation				—E—		—E—		0.25336				Lup+85
EA	—E—		—E—		106°	−73°	351°	−61°	0.25344806	1.50	1.0		Mag86
E	—E—		—E—		131°	−71°	360°	−50°	0.25344810				Mic88
EAM	—E—		—E—		82°	−78°	352°	−61°	0.25344805	1.40	1.06		Dr+88b
EA	—E—		—E—		108°	−74°	350°	−59°	0.25344808	1.44	1.0		Mag90a
EAM	—E—		—E—		106°	−73°	-----		0.25344806	1.44	1.02		Dru+91
EA	—E—		—E—		96°	−63°			0.25344806	1.47	1.00		DeA92
E	—E—		—E—		Retrograde rotation				-----				Kru+92
EAM	—E—		—E—		102°	−76°	354°	−57°	0.25344814	1.36	1.20		Mic93
EA	—E—		—E—		106°	−73°			0.25344806	1.47	1.00		DeA95
L	-----		-----		-----		355°	−65°	0.25344800	1.4	1.2 ³¹		Ka+02a
Synthesis	—E—		—E—		106°	−74°	353°	−60°	0.25344808	1.42	1.1		Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
16 Psyche													
EZ	————		225°	+5°	—E—		—E—		0.17483120				Zho+82
Z			222°	+4°	42°	−4°			0.174831	1.3	1.3		Lup+83
AM	40°	+23°	217°	+31°	37°	−31°	220°	−23°	-----	1.32	1.26		Zap+84
E	41°	+33°	223°	+37°					0.1748143				Ted+85
AM	39°	+35°	220°	+40°	40°	−40°	219°	−35°	-----	1.33	1.33		Ted+85
EA	—E—		—E—		36°	−21°	217°	−14°	0.17483113	1.19	1.16		Mag86
R			Concentric ring region ⁶						-----				Ost87
EAM	—E—		—E—		————		215°	−17°	0.17483117	1.27	1.35		Dr+88b
EAM	—E—		—E—		35°	−19°	216°	−12°	0.17483106	1.16	1.34		Mag90a
AMF	37°	+0°	217°	+8°	37°	−8°	217°	−0°	-----				Lum+90
AM	33°	+25°	211°	+29°	31°	−29°	213°	−25°	-----	1.39	1.38		Dot+92
EA	—E—		—E—		35°	−27°	215°	−22°	0.17483104	1.35 ²	1.36		DeA93
L	————		————		35°	−9°	216°	−2°	0.17483113	1.2	1.2 ³¹		Ka+02a
Synthesis	—E—		—E—		35°	−18°	216°	−13°	0.1748311	1.3	1.3		Synthesis
17 Thetis													
AM	69°	+43°	268°	+55°	88°	−55°	249°	−43°	-----	1.25	1.35 ¹		Za+86b
EA	Prograde rotation				—E—		—E—		-----				Lag+95
EAM	—E—		—E—		————		253°	−33°	0.5112699	1.40	1.40		Mic+95
L	58°	+12°	240°	+25°	————		————		0.5110845	1.3	1.0 ³¹		Tor+03
18 Melpomene													
EA	—E—		—E—		0°	−0°	341°	−36°	0.482218				Hof+90
L	————		————		199°	−24°	8°	−37°	0.482142	1.2	1.2 ³¹		Tor+03
Synthesis	————		————		190°	−20°	355°	−37°	0.482142	1.2	1.2		Synthesis
19 Fortuna													
I	Prograde rotation								-----				Mor77
I	Prograde rotation								-----				Han77
E	Prograde rotation				—E—		—E—		0.310125				Lup+85
R	Concentric ring region ⁶								-----				Ost87
EAM	65°	+48°	————		—E—		—E—		0.3101343	1.24	0.94		Dr+88b
E	70°	+50°	250°	+50°	—E—		—E—		0.3101342	1.21	1.1		Mag90a
EAM	68°	+52°	————		—E—		—E—		0.3101343	1.23	0.93		Dru+91
EA	98°	+51°	266°	+48°	—E—		—E—		0.3101340	1.27	1.00		DeA95
AM	65°	+49°	244°	+48°	64°	−48°	245°	−49°	-----	1.445	1.096		Bla+98
L	98°	+58°	277°	+60°	————		————		0.3101342	1.2	1.05 ³¹		Tor+03
Synthesis	80°	+52°	260°	+52°	—E—		—E—		0.3101342	1.2	1.0		Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
20 Massalia													
A	10°	+78°					190°	-78°	-----				Cha+62
AM	30°	+49°	207°	+51°	27°	-51°	210°	-49°	-----	1.27	1.0 ¹		Bar+85
A	30°	+54°	205°	+79°	25°	-79°	210°	-54°	-----	1.25	2.4 ²		McC+85
E	—E—		—E—						0.337419				Lup+85
EA	20°	+80°	200°	+80°	—E—		—E—		0.3373993	1.16			Mag86
E	Prograde rotation				—E—		—E—		-----				Kru+92
EA	31°	+69°	208°	+69°	—E—		—E—		0.3373994	1.27	1.00		Dot+95
E	27°	+38°	207°	+38°	—E—		—E—		0.3373987				Sza+99
L	10°	+45°	189°	+45°	—		—		0.33740475	1.1	1.1 ³¹		Ka+02a
Synthesis	23°	+59°	203°	+60°	—E—		—E—		0.337399	1.15	1.1		Synthesis
21 Lutetia													
E	Prograde rotation				—E—		—E—		0.340277				Lu+87a
AM	42°	+40°	223°	+48°	43°	-48°	222°	-40°	-----	1.25	1.09		Lu+87c
EAM	55°	+44°	241°	+40°	—E—		—E—		0.3400260	1.30	1.7 ²		Mic92
A	48°	+31°	233°	+38°	53°	-38°	228°	-31°	-----	1.29	1.25		Dot+92
EAM	33°	+9°	214°	+15°	—E—		—E—		0.340244	1.25	2.7		Mic93
EA	41°	+42°			—E—		—E—		0.3400252	1.41	1.08		DeA95
EA	50°	+10°	230°	+10°	—E—		—E—		0.340151	1.22	1.4		Lag+95
EAM	—		240°	+37°	—E—		—E—		0.3404874	1.26	1.15		Mic96a
E	41°	+51°	221°	+51°	—E—		—E—		0.3402446				Sza+99
L	39°	+3°	220°	+3°	—		—		0.3402272	1.2	1.2 ³¹		Tor+03
Synthesis	42°	+20°	225°	+20°	—E—		—E—		0.34025	1.25	1.2		Synthesis
22 Kalliope													
AM			215°	+45°	35°	-45°			-----	1.34	1.23		Sca+78
AM	13°	+17°	214°	+42°	34°	-42°	193°	-17°	-----	1.34	1.18		Zap+84
EAM			199°	+14°	19°	-11°			0.1728092	1.4	1.18		Mag86
A			203°	+29°	23°	-29°			-----	1.33	1.24		Sur+86
M			201°	+22°	21°	-22°			-----	1.32	1.13		Sur+86
EAM	—E—		—E—		—		194°	-8°	0.17284164	1.32	1.27		Dr+88b
EAM					20°	-23°	195°	+2°	0.1728416	1.6	1.2		Mag90a
EA	—E—		—E—		18°	-23°			0.17284168	1.32	1.18		Mi+90a
AMF	18°	+0°	204°	+23°	24°	-23°	198°	-0°	-----				Lum+90
EAM	—E—		—E—		—		193°	-7°	0.17284164	1.31	1.27		Dru+91
EA	—E—						190°	-1°	0.1728415	1.33	1.27		DeA92
A	10°	+12°	203°	+45°	23°	-45°	190°	-12°	-----	1.32	1.18		Dot+92
EA	—E—		—E—				190°	-1°	0.17284154	1.33	1.27		DeA95
L	—		—		20°	-21°	197°	+6°	0.17284167	1.2	1.2 ³¹		Ka+02a
Synthesis	—E—		—E—		21°	-22°	193°	0°	0.1728416	1.3	1.2		Synthesis

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	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
23 Thalia													
A D	Solution curve								-----	1.15 ²			Tan+91
EAM	198° +72°		354° +47°		—E—		—E—		0.5133960	1.18	1.45		Mic93
EA	—E—		—E—		15° -55°		180° -35°		0.513202	1.28			Lag+95
L	—		—		359° -55°		—		0.5130	1.1	1.3 ³¹		Tor+03
Synthesis	—E—		—E—		7° -55°		—		0.5131	1.2	1.3		Synthesis
24 Themis													
AM			274° +52°		94° -52°				-----	1.191	1.148		Bla+98
26 Proserpina													
AM	47°	0°	227°	+4°	47°	-4°	227°	0°	-----	1.16	1.40		Bla+00
28 Bellona													
AM	93° +18°		285° +37°		105° -37°		273° -18°		-----	1.31	1.18		Zap+84
EAM	73° +17°		265° +43°		—E—		—E—		-----	1.24	1.20		Mic93
Synthesis	83° +18°		275° +40°		—E—		—E—		-----	1.2	1.2		Synthesis
29 Amphitrite													
A	165° +45°		345° +45°		165° -45°		345° -45°		-----	1.14	1.0 ¹		Ted+81
A	160° +53°		320° +45°		140° -45°		340° -53°		-----	1.13	1.00		McC+84
AM	142° +50°		308° +40°		128° -40°		322° -50°		-----	1.13	1.0 ¹		Zap+84
EAM	—E—		—E—		135° -15°		320° -25°		0.22458835	1.06	1.06		Mag86
EAM	—E—		—E—		136° -33°		—		0.2245882	1.13	1.14		Dr+88b
S	—S—		—S—		134° -36°		—S—		-----	1.22	1.06		Dr+89a
EAM	—E—		—E—		133° -17°		318° -25°		0.22458829	1.05	1.16		Mag90a
EA	—E—		—E—		145° -43°		—		0.22458832	1.18	1.00		DeA95
L	—		—		138° -21°		—		0.22458829	1.1	1.1 ³¹		Ka+02a
Synthesis	—ES—		—ES—		136° -28°		—S—		0.2245883	1.1	1.1		Synthesis
30 Urania													
EAM	114° +34°		293° +33°						-----	1.5	1.1		Mic96a
31 Euphrosyne													
AM	186° +67°		317° +4°		137° -4°		6° -67°		-----	1.12	1.0 ¹		Bar+85
A	178° +72°		315° +5°		135° -5°		358° -72°		-----	1.12	1.00		McC+85
EAM	—E—		—E—		126° -31°		—		0.2316828	1.14	1.59		Mic93
A D	300° +75°		282° +30°		102° -30°		120° -75°		-----	1.08			Lic+94
EAM	—E—		—E—		—		273° -60°		0.2304828	1.09	1.60		Kry+96
Synthesis	—E—		—E—		—		273° -60°		0.2304828	1.09	1.60		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
32 Pomona													
AM	91°	+34°	263°	+46°	83°	−46°	271°	−34°	-----	1.34	1.0 ¹		Za+86b
EA	103°	+59°	267°	+70°	—E—		—E—		0.393652	1.4			Eri+93
EA	83°	+33°	253°	+43°	—E—		—E—		-----	1.76	1.00		DeA95
EA	89°	+43°	260°	+57°	—E—		—E—		0.393654	1.40	1.00		Dot+95
L	-----		267°	+58°	-----		-----		0.39365287	1.3	1.3 ³¹		Ka+02a
Synthesis	92°	+45°	262°	+58°	—E—		—E—		0.393653				Synthesis
34 Circe													
AM	113°	+17°					293°	−17°	-----	1.32	1.00		Bla+00
36 Atalante													
AM			299°	+19°	119°	−19°			-----	1.282	1.000		Bla+98
37 Fides													
EA	100°	+5°	280°	−5°					0.305573	1.2			Mag86
L	-----		-----		85°	−26°	264°	−34°	0.3055622	1.1	1.05 ³¹		Tor+03
Synthesis	-----		-----		85°	−26°	264°	−34°	0.3055622	1.1	1.05		Synthesis
39 Laetitia													
EA	—E—						280°	−66°	0.2144712	shape ⁹			Cai56
A	114°	+28°					294°	−28°	-----				HG+58
EA	—E—						283°	−61°	0.2144712	1.7	3.3		Cai60
AM	130°	+10°					310°	−10°	-----				Geh+62
M	121°	+37°					301°	−37°	-----	1.64	1.80		Sat76
A	128°	+38°	339°	+48°	159°	−48°	308°	−38°	-----	1.53	1.31 ²		McC+84
AM	116°	+49°	338°	+57°	158°	−57°	296°	−49°	-----	1.58	2.08		Zap+84
A	111°	+56°	365°	+70°	185°	−70°	291°	−56°	-----	1.53	3.1 ²		McC+85
E	Prograde rotation				—E—		—E—		0.21409				Lup+85
EAM	129°	+30°	324°	+35°	—E—		—E—		0.21409332	1.49	1.49		Mag86
EAM	-----		318°	+26°	—E—		—E—		0.21409327	1.45	1.48		Dr+88b
EAM	130°	+29°	325°	+37°	—E—		—E—		0.21409333	1.50	1.50		Mag90a
AMF	125°	+19°	317°	+26°	137°	−26°	305°	−19°	-----				Lum+90
EAM	-----		319°	+28°	—E—		—E—		0.21409330	1.49	1.48		Dru+91
AMF			327°	+36°	147°	−36°			-----			X ¹⁶	Lum+91
EA			325°	+23°	—E—		—E—		0.21409327	1.42	1.10		DeA95
L	-----		323°	+35°	-----		-----		0.21409321	1.4	1.4 ³¹		Ka+02a
Synthesis	-----		324°	+31°	—E—		—E—		0.2140932	1.4			Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
40 Harmonia													
A D	Solution curve								-----	1.31 ²			Tan+91
EAM	-----		208° +21°	—E—	—E—				0.3712522	1.24	2.07		Mic93
EA	22° +28°		203° +38°	-----	-----				0.3711872	1.31	1		LGR99
EA	12° +34°		201° +41°	-----	-----				0.3712535	1.31	1		LGR99
Synthesis	17° +31°		204° +33°	-----	-----				0.37123	1.3			Synthesis
41 Daphne													
AM	15° +36°		157° +28°	195° -36°	337° -28°			-----		1.51	1.00		Bar83
AM	19° +35°		159° +32°	199° -35°	339° -32°			-----		1.44	1.0 ¹		Bar+85
EA	—E—		—E—	186° -40°	335° -33°			0.2495001		1.30	1.0		Mag86
AM	18° +48°		135° +43°	198° -48°	315° -43°			-----		1.31	1.16		Za+86b
R	Concentric ring region ⁶								-----				Ost87
EAM	—E—		—E—	-----	334° -32°			0.2494996		1.28	1.23		Dr+88b
EA	—E—		—E—	197° -36°	344° -38°			0.2494994		1.28	1.00		Mag90a
EAM	—E—		—E—	-----	340° -32°			0.2494993		1.25	1.19		Dru+91
EA	—E—		—E—	190° -27°	343° -31°			0.24949931		1.37	1.00		DeA95
L	-----		-----	196° -31°	-----			0.2494993		shape ³¹			Ka+02
Synthesis	—E—		—E—	194° -31°	342° -34°			0.2494994		1.3	1.1		Synthesis
42 Isis													
AM			302° +36°	122° -36°				-----		1.419	1.000		Bla+98
EAM	—E—		—E—	117° -5°	288° -16°			0.5665417					Den+98
L	-----		-----	120° -14°	294° -23°			0.566542		1.1	1.0 ³¹		Tor+03
Synthesis	-----		-----	119° -18°	291° -20°			0.566542		1.1	1.0		Synthesis
43 Ariadne													
A	73° +40°		249° +43°	69° -43°	253° -40°			-----		1.69	1.8 ²		McC+84
AM	73° +25°		248° +20°	68° -20°	253° -25°			-----		1.79	1.10		Bar+86
E	—E—		—E—	55° -16°	241° -21°			0.2400784					Mic88
EAM	78° +13°		256° +13°	—E—	—E—			0.2400924		1.40	1.10		Dr+88b
EA	—E—		—E—	68° -14°	251° -16°			0.2400828		1.76	1.01		Mag90a
EAM	—E—		—E—	-----	248° -10°			0.2400830		1.60	1.24		Dru+91
EA	—E—		—E—	-----	249° -14°			0.2400817		1.59	1.10		DeA92
E	—E—		—E—	Retrograde rotation				-----					Kru+92
AMD	72° +13°		250° +8°	70° -8°	252° -13°			-----		1.84	1.52		Det+92 ²⁵
EAMD			250° +1°	70° -1°				-----		1.0 ¹	1.0 ¹	X ¹⁵	Det+92 ²⁵
EAMD	73° +25°		248° +20°	68° -20°	253° -25°			-----		shape ¹⁴			Det+92 ²⁵
EAMD	70° +5°				250° -5°			-----		shape ¹⁴			Det+92 ²⁵
E	—E—		—E—	70° -22°	254° -24°			0.24008258					Det+92 ²⁵
EAM	—E—		—E—	68° -22°	253° -28°			0.2400824		1.64	1.16		Mic93
EA	—E—		—E—	-----	249° -14°			0.2400817		1.59	1.10		DeA95
EA	—E—		—E—	-----	251° -9°			0.2400824		1.68	1.10		Dot+95
E	—E—		—E—	71° -25°	251° -25°			0.2400818					Sza+99
L	-----		-----	-----	253° -15°			0.24008275		1.6	1.2 ³¹		Ka+02a
Synthesis	—E—		—E—	-----	252° -16°			0.240082		1.6	1.1		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
44 Nysa													
EA			—E—		178°	−84°			0.26737846	shape ⁹			Cai56
AM	105°	+30°					285°	−30°	-----				Geh+62
EA			358°	+84°	—E—				0.26730938				Cha+62
AM	100°	+50°					280°	−50°	-----	1.58	1.30		Zap+79
E	100°	+60°	265°	+55°	—E—		—E—		0.26755902				Tay+83
EA	94°	+59°	288°	+63°	—E—		—E—		0.26755895				Mag83
AM	99°	+49°	295°	+54°	115°	−54°	279°	−49°	-----	1.51	1.18		Zap+84
EAM	105°	+57°	300°	+61°	—E—		—E—		0.26755902	1.37	1.4		Mag86
AMF	112°	+46°	304°	+47°	124°	−47°	292°	−46°	-----				Lum+90
EA	92°	+47°	283°	+49°	—E—		—E—		0.26755903	1.44	1.13		DeA93
L	98°	+58°	-----		-----		-----		0.26755904	shape ³¹			Ka+02
Synthesis	100°	+53°	296°	+52°	—E—		—E—		0.26755903	1.44			Synthesis
45 Eugenia													
E	—E—		—E—		115°	−34°	286°	−26°	0.2374645				Tay+88
EAM	—E—		—E—		127°	−44°	-----		0.2374646	1.33	1.65		Dr+88b
EAM	—E—		—E—		125°	−35°	296°	−26°	0.2374646	1.36	1.48		Mag90a
AMF	128°	+16°	313°	+25°	133°	−25°	308°	−16°	-----				Lum+90
A D			Solution curve						-----	1.42 ²			Tan+91
EA	—E—		—E—		109°	−27°			0.2374650	1.33	1.23		DeA95
EA			check ⁵						-----				Lag+95
EA	-----		-----		106°	−42°	313°	−41°	0.2374644	1.33	1.4		LGR99
L	-----		-----		124°	−30°	-----		0.23746429	1.4	1.5 ³¹		Ka+02a
Synthesis	—E—		—E—		119°	−34°	301°	−27°	0.2374647	1.36	1.5		Synthesis
47 Aglaja													
EAM	139°	+33°	313°	+19°	—E—		—E—		0.549549	1.21	1.20		Mic96a
Synthesis	139°	+33°	313°	+19°	—E—		—E—		0.549549	1.21	1.20		Synthesis
48 Doris													
AM	113°	+27°					293°	−27°	-----	1.445	1.000		Bla+98
51 Nemausa													
E F	—E—		—E—		133°	−61°	?	⁴	0.324368				Kri91
E F	—E—		—E—		166°	−62°	?	⁴	-----				Kri92
EA	176°	+62°					356°	−62°	-----	1.15	1.00		DeA95
E F					160°	−68°			0.3242890				Kri97
Synthesis					160°	−64°	365°	−62°	0.3243	1.15	1.0		Synthesis
52 Europa													
A	0°	+37°	203°	+38°	23°	−38°	180°	−37°	-----	1.12	1.0 ¹		Bar+86
EAM	17°	+65°	-----		—E—		—E—		-----	1.11	2.79		Mic93
EA	—E—		—E—		80°	−55°	250°	−40°	0.2346504	1.21	1.30		Dot+95
EAM	—E—		—E—		84°	−32°	257°	−18°	0.2347019	1.20	1.17		Mic+95
EA	63°	+46°	261°	+60°	-----		-----		0.2345855	1.19	2.2		LGR99
L	-----		-----		79°	−57°	246°	−44°	0.23465042	1.2	1.2 ³¹		Ka+02a
EAM	71°	+31°	262°	+46°	-----		-----		0.2345813	1.21	1.04		Mic+03
Synthesis	71°	+31°	262°	+46°	-----		-----		0.2345813	1.2	1		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
54 Alexandra													
A D	Solution curve								-----	1.3 ²			Tan+91
EA	160°	+45°	290°	+55°	—E—		—E—		0.292766				Bel+93
Synthesis	160°	+45°	290°	+55°	—E—		—E—		0.292766				Synthesis
55 Pandora													
AM	36°	+32°	226°	+19°	46°	−19°	216°	−32°	-----	1.27	1.10		Za+86b
EAM	—E—		—E—		—		202°	−26°	0.2001593	1.76	1.52		Dr+88b
EAM	32°	+40°	224°	+32°	—E—		—E—		0.2001596	1.34	1.47		Dru+91
EAM	—		239°	+28°	—E—		—E—		0.2001595	1.29	1.32		Mic93
EA	—E—		—E—		50°	−18°	216°	−34°	0.2001603	1.29	1.25		DeA95
EA	25°	+30°	220°	+30°	—E—		—E—		0.2001686	1.29	1.1		Lag+95
EAM	28°	+48°	232°	+42°	—E—		—E—		0.2001685	1.32	1.25		Mic96a
L	—		225°	+10°	—		—		0.2001685	1.2	1.2 ³¹		Tor+03
Synthesis	30°	+38°	228°	+27°	—		—		0.2001685	1.25	1.2		Synthesis
60 Echo													
EAM	95°	+34°	275°	+42°	—E—		—E—		1.048226	1.50 ²	1.38		Mic93
Synthesis	95°	+34°	275°	+42°	—E—		—E—		1.048226	1.5	1.4		Synthesis
63 Ausonia													
AM	130°		310°		130°		310°		-----	2.4	1.0		Zap+83
AM	127°	+38°	298°	+28°	118°	−28°	307°	−38°	-----	2.25	1.0 ¹		Zap+84
EAM	—E—		—E—		120°	−30°	305°	−30°	0.3873987	2.06	1.04		Mag86
E	—E—		—E—						0.387230				Lu+87a
EA	—E—		—E—				313°	−42°	0.3873992	2.16	1.04		DeA95
EAM	—E—		—E—		122°	−26°	310°	−40°	0.3874027	2.08	1.05		Mic96a
AM			305°	+36°	125°	−36°			-----	2.39	1.00		Bla+00
L	—		—		120°	−15°	304°	−22°	0.3873995	1.9	1.0 ³¹		Tor+03
Synthesis	—E—		—E—		120°	−27°	308°	−34°	0.3874027	2.1	1.0		Synthesis
64 Angelina													
EAM	119°	+29°	299°	+27°	—E—		—E—		0.3647784	1.38	1.05		Mic93
Synthesis	119°	+29°	299°	+27°	—E—		—E—		0.3647784	1.4	1		Synthesis
65 Cybele													
EAM	—E—		—E—		26°	−52°	—		0.1661266	1.08	1.74		Dr+88b
EAM	—E—		—E—		25°	−49°	—		0.1683549	1.09	1.69		Dru+91
EA	—E—		—E—		34°	−23°			0.1683552	1.05	1.37		DeA95
Synthesis	—E—		—E—		28°	−41°			0.1683551	1.07			Synthesis
66 Maja													
AM			345°	+50°	165°	−50°			-----	1.660	1.000		Bla+98
AM	156°	+62°					336°	−62°	-----	1.66	1.40		Bla+00

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
69 Hesperia													
E	131°	+42°	315°	+59°	—E—	—E—			0.2358226				Ve+89b
E					—E—	—E—			- - - - -				Kru+92
EA			243°	+51°	—E—	—E—			0.2356040	1.25	1.45		DeA+95
AM	64°	+39°	250°	+42°	70°	−42°	244°	−39°	- - - - -	1.247	1.250		Bla+98
L	—	—	—	—	73°	−45°	—	—	0.2356333	1.1	1.4 ³¹		Tor+03
Synthesis	—	—	—	—	72°	−44°	—	—	0.2356040	1.25	1.45		Synthesis
71 Niobe													
AM			274°	+14°	94°	−14°			- - - - -	1.202	1.345		Bla+98
77 Frigga													
AM	57°	+39°					236°	−40°	- - - - -	1.224	1.010		Bla+98
79 Euryome													
EA	64°	+45°	226°	+52°	—E—	—E—			0.2490706	1.28	2.0 ²		Mi+90a ²⁴
EA	62°	+26°	226°	+41°	—E—	—E—			0.2490708	1.24	1.20		DeA93
EA	56°	+28°	236°	+38°	—E—	—E—			0.2490705	1.25	1.42		DeA+95
EAM	40°	+35°	214°	+38°	—E—	—E—			0.2490716	1.22	1.22		Mic96a
E	—E—	—E—	—E—	—E—	65°	−36°	245°	−36°	0.2490706				Sza+99
Synthesis	61°	+33°	229°	+44°	—E—	—E—			0.2490707	1.26			Synthesis
80 Sappho													
R			Concentric ring region ⁶						- - - - -				Ost87
83 Beatrix													
EAM	—E—	—E—	—E—	—E—	3°	−37°	172°	−31°	0.4213796	1.26	1.16		Kru+94
EA	—E—	—E—	—E—	—E—	6°	−46°	173°	−38°	- - - - -	1.22	1.10		DeA95
Synthesis	—E—	—E—	—E—	—E—	4°	−42°	172°	−34°	0.4213796	1.24	1.1		Synthesis
85 Io													
EA	120°	+89°	303°	+82°	123°	−82°	300°	−89°	- - - - -	1.18	1.00		Dot+95
EAM ³²	—E—	—E—	—E—	—E—	—E—	—E—	285°	−52°	0.28646325	1.15	1.8		Eri+99
EAM ³²	—E—	—E—	—E—	—E—	108°	−46°	290°	−16°	0.2864629	1.19			Eri+99
L	—	—	—	—	105°	−45°	295°	−14°	0.2864629	1.1	1.0 ³¹		Tor+03
Synthesis	—E—	—E—	—E—	—E—	106°	−46°	293°	−15°	0.28646325	1.1	1.0		Synthesis
87 Sylvia													
EAM	89°	+52°	288°	+40°	—E—	—E—			0.2159852	1.41	1.17		Dr+88b
EAM	66°	+67°	296°	+59°	—E—	—E—			0.2159851	1.44	1.5		Mag90a
EAM	89°	+52°	291°	+42°	—E—	—E—			0.2159853	1.43	1.17		Dru+91
EAM	84°	+55°	297°	+50°	—E—	—E—			0.2159859	1.37	1.41 ²		Mic93
EA	86°	+45°	—	—	—E—	—E—			0.2159850	1.45	1.05		DeA95
L	71°	+66°	—	—	—	—	—	—	0.21598508	1.4	1.1 ³¹		Ka+02a
Synthesis	82°	+55°	—	—	—E—	—E—			0.2159853	1.42			Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
88 Thisbe													
AM	32°	+69°	205°	+54°	25°	−54°	212°	−69°	-----	1.13	1.0 ¹		Za+86b
EAM	-----		129°	+78°	—E—		—E—		0.2517222	1.12	1.30		Dr+88b
EA	40°	+70°	200°	+70°	—E—		—E—		0.2517223	1.13			Mag90a
EAM	-----		110°	+58°	—E—		—E—		0.2517222	1.15	1.16		Dru+91
EA	-----		243°	+74°	—E—		—E—		0.2517224	1.11	1.22		DeA95
L	-----		207°	+48°	-----		-----		0.2517208	1.1	1.2 ³¹		Tor+03
Synthesis			190°	+64°	—E—		—E—		0.25172	1.1	1.2		Synthesis
107 Camilla													
EAM	71°	+61°	233°	+74°	—E—		—E—		0.2018306	1.45	1.72		Dr+88b
EAM	74°	+55°	239°	+76°	—E—		—E—		0.2018305	1.46	1.6		Mag90a
EAM	-----		229°	+73°	—E—		—E—		0.2018305	1.47	1.49		Dru+91
EA	-----		230°	+69°	—E—		—E—		0.2018307	1.46	1.58		DeA95
L	72°	+51°	-----		-----		-----		0.2018304	1.4	1.2		Tor+03
Synthesis	72°	+56°	232°	+72°	—E—		—E—		0.2018306	1.46	1.6		Synthesis
108 Hecuba													
AM	79°	+13°					259°	−13°	-----	1.180	1.101		Bla+98
AM	79°	+6°					259°	−6°	-----	1.180	1.101		Bla+98
110 Lydia													
EAM	24°	+75°	210°	+78°					-----	1.17			Mic96a
115 Thyra													
EA	175°	+60°	330°	+60°	—E—		—E—		0.301565	1.14	1.30		Dot+95
AM	197°	+30°	358°	+35°	17°	−30°	178°	−35°	-----	1.224	1.088		Bla+98
EAM	-----		-----		-----		182° −43°		0.3017940	1.21	1.03		Mic+03
Synthesis	-----		-----		-----		180° −40°		0.3017940	1.2	1		Synthesis
121 Hermione													
EA	163°	+12°	342°	+30°	162°	−30°	343°	−12°	-----	1.10	1.00		DeA95
AM	40°	+32°					220°	−32°	-----	1.294	1.288		Bla+96
AM			240°	+42°	60°	−42°			-----	1.294	1.393		Bla+98
125 Liberatrix													
EAM	80°	+74°	-----		—E—		—E—		0.1653422	1.28	2.68		Dr+88b
E	+70°		+70°		—E—		—E—		0.1653425				Mag90a
EAM	-----		228°	+71°	—E—		—E—		0.1653420	1.35	1.23		Dru+91
EA	15°	+47°	181°	+53°	—E—		—E—		0.1653418	1.55	1.10		DeA95
Synthesis	48°	+64°	205°	+65°	—E—		—E—		0.1653422				Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
129 Antigone													
AM	331° +30°		133° +48°		313° -48°		151° -30°		-----	1.37	1.0 ¹		Bar+85
EA	20° +50°		180° +72°	—E—		—E—			0.2065566	1.27	1.0		Mag86
EAM	————		196° +64°	—E—		—E—			0.2065486	1.27	1.05		Dr+88b
EA	38° +27°		202° +53°	—E—		—E—			0.2065485	1.32	1.02		Mag90a
EAM	————		195° +65°	—E—		—E—			0.2065486	1.23	1.07		Dru+91
AM	42° +36°		208° +68°		18° -68°		222° -36°		-----	1.45	1.05		Dot+92
EA			194° +72°	—E—		—E—			0.2065483	1.32	1.01		DeA95
L	————		207° +58°	————		————			0.2065480	1.3	1.0 ³¹		Tor+03
Synthesis	————		200° +65°	—E—		—E—			0.2065484	1.3	1.04		Synthesis
130 Elektra													
EAM	—E—		—E—		190° -81°		————		0.2176951	1.29	1.63		Dr+88b
EAM	—E—		—E—		180° -85°		240° -40°		0.2176942	1.41	1.2		Mag90a
EAM	—E—		—E—		344° -86°		246° -32°		0.2176942	1.32	1.06		Mic93
EA	—E—		—E—		192° -83°				0.2176950	1.55	1.45		DeA95
Synthesis	—E—		—E—		190° -84°		243° -36°		0.2176946	1.4			Synthesis
133 Cyrene													
E	Prograde rotation				—E—		—E—		0.5295				Har+84
135 Hertha													
A D			Solution curve						-----	1.23			Tan+91
AM	135° +46°		310° +43°		130° -43°		315° -46°		-----	1.34	1.22		Dot+92 ²²
EAM	—E—		—E—		126° -28°		310° -31°		0.347818	1.36	1.20		Mic93
EA	106° +2°						286° -2°		0.350238	1.16	1.14		Lag+95
EAM	118° +52°		291° +47°						-----	1.25	1.24		Mic96a
L	96° +58°		274° +53°	————		————			0.350025	1.1	1.4 ³¹		Tor+03
Synthesis	100° +52°		292° +50°	————		————			0.350238	1.15	1.2		Synthesis
137 Meliboea													
AM	149° +8°						329° -8°		-----	1.18	1.11		Bla+00
139 Juewa													
EAM	117° +50°	————		—E—		—E—			-----	1.21	1.68		Mic93
Synthesis	117° +50°	————		————		————				1.2	1.7		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
144 Vibilia													
R	Concentric ring region ⁶								- - - - -				Ost87
150 Nuwa													
AM			253°	+1°	73°	-1°			- - - - -	1.116	1.043		Bla+96
AM			257°	+1°	77°	-1°			- - - - -	1.097	1.015		Bla+98
AM			253°	+27°	73°	-27°			- - - - -	1.097	1.015		Bla+98
158 Koronis													
EAM	-----	-----			19°	-69°	201°	-72°	0.5919043	1.5	1.7		Sli+03
L	-----	-----			35°	-65°	220°	-68°	0.5919038	1.4	1.5		Sli+03
Synthesis	-----	-----			27°	-67°	211°	-70°	0.5919042				Synthesis
161 Athor													
AM	1°	+48°	209°	+47°	29°	-47°	181°	-48°	- - - - -	1.367	0.850		Bla+98
165 Loreley													
AM			339°	+65°	159°	-65°			- - - - -	1.191	1.274		Bla+98
167 Urda													
EAM	-----	-----			30°	-73°	220°	-69°	0.5442240	1.3	1.0		Sli+03
L	-----	-----			40°	-75°	225°	-73°	0.5442238	1.2	1.0		Sli+03
Synthesis	-----	-----			39°	-74°	225°	-71°	0.5442242				Synthesis
173 Ino													
EAM	—E—	—E—			198°	-21°	356°	-47°	- - - - -	1.23	1.69		Mic93
EA	—E—	—E—			186°	-22°	365°	-21°	- - - - -	1.12	1.06		DeA95
Synthesis	—E—	—E—			192°	-22°	360°	-34°	- - - - -	1.2			Synthesis
176 Iduna													
AM	85°	+36°					265°	-36°	- - - - -	1.39	1.28		Bla+00
192 Nausikaa													
A	130°	+40°					310°	-40°	- - - - -				Sc+76a
EA	—E—	—E—	-----				325°	-45°	0.567670	1.35	1.50		Dot+95
L	131°	+36°	-----	-----			306°	-7°	0.5676058	1.3	1.1 ³¹		Ka+02a

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
196 Philomela													
EAM	78° +26°		266° +24°		86° -24°		258° -26°		-----	1.58	1.06		Mic92
EAM	—E—		—E—		99° -16°		273° -22°		-----	1.33	1.17		Mic93
A D	102° +26°		287° +26°		107° -26°		282° -26°		-----	1.50			Lic+94
EA	105° +20°						285° -20°		-----	1.40	1.00		DeA95
EAM	-----		277° +20°		—E—		—E—		0.3475556 ²	1.32	1.16		Kry+96
AM			278° +20°		98° -20°				-----	1.472	0.914		Bla+98
Synthesis	-----		277° +20°		—E—		—E—		0.3475556	1.3	1.2		Synthesis
201 Penelope													
EAM	78° -3°		258° +4°						0.1561283 ²	1.47	1.22		Dr+88b
EAM	—E—		—E—		80° -35°		260° -25°		0.1561443	1.50	1.23		Mag90a
EAM	74° -2°		-----						0.1561287	1.53	1.24		Dru+91
EAM					-----		261° -34°		0.1561440	1.55	1.34		Dru+91
EAM	—E—		—E—		85° -40°		260° -25°		0.1561439	1.42	1.3		Eri+93
EAM	—E—		—E—		-----		258° -22°		0.1561433	1.32	1.06		Mic93
EA	—E—		—E—		93° -14°		-----		0.15614438	1.65	1.20		DeA95
EAM	—E—		—E—		84° -39°		260° -20°		0.1561439	1.49	1.20		Mic96a
L	-----		-----		84° -15°		262° -1°		0.1561439	1.5	1.1 ³¹		Tor+03
Synthesis	—E—		—E—		85° -29°		260° -21°		0.1561439	1.5	1.2		Synthesis
208 Lacrimosa													
EAM	-----		-----		154° -62°		342° -64°		0.5865383	1.5	2.3		Sli+03
L	-----		-----		170° -68°		350° -71°		0.5865383	1.2	1.2		Sli+03
Synthesis	-----		-----		162° -65°		346° -68°		0.5865383				Synthesis
216 Kleopatra													
EA	71° +21°		234° +38°		—E—		—E—		0.2243864				Mag83
A	67° +15°		231° +31°		51° -31°		247° -15°		-----	2.83			Zap+84
E	71° +21°		234° +38°		—E—		—E—		-----				Kos86
EA	72° +20°		235° +34°		—E—		—E—		0.2243865	2.78	1.5 ²		Mag86
E					—E—		—E—		0.22438596				Lu+87a
EAM	69° +10°		-----		—E—		—E—		0.2243870	2.54	1.32		Dr+88b
EAM	71° +19°		236° +34°		—E—		—E—		0.2243868	2.71	1.30		Mag90a
EAM	69° +10°		-----		—E—		—E—		0.2243868	2.56	1.33		Dru+91
AM	78° +25°		229° +45°		49° -45°		258° -25°		-----	2.80	1.36		Dot+92
EA	72° +8°				—E—		—E—		0.22438654	2.54	1.20		DeA95
Synthesis	72° +16°		232° +37°		—E—		—E—		0.2243867	2.6	1.3		Synthesis
218 Bianca													
EAM			340° +60°						-----	1.20	1.33		Kry+96

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
225 Henrietta													
EAM	—E—		—E—		—		241°	−56°	-----	1.27	1.89		Mic93
EAM	135°	+13°							-----	1.23	1.08		Mic+00
230 Athamantis													
AM	91°	+44°	240°	+51°	60°	−51°	271°	−44°	-----	1.318	1.195		Bla+98
L	74°	+27°	238°	+28°	—		—		0.999354	1.1	1.1 ³¹		Tor+03
Synthesis	83°	+36°	239°	+40°	—		—		0.999354	1.1	1.1		Synthesis
236 Honoria													
AM			358°	+66°	178°	−66°			-----	1.224	1.142		Bla+96 ³⁴
238 Hypatia													
EA	139°	+27°	337°	+50°	157°	−50°	319°	−27°	-----	1.38	1.00		DeA95
243 Ida													
EA	—E—		—E—		75°	−56°	264°	−64°	0.1930680	1.81	1.18		Bin+93
EAM	—E—		—E—		81°	−55°	263°	−56°	0.1930680	1.81	1.25	X	Bin+93
AMF					67°	−47°	247°	−47°	-----	1.88	1.04	X	Bin+93
EAM	—E—		—E—		71°	−52°	252°	−54°	0.1930680	1.78	1.10	X	Bin+93
EAM	—E—		—E—		83°	−62°	266°	−64°	0.1930680	1.86	1.31		Bin+93 ²⁷
AM					81°	−52°	264°	−54°	-----	2.04	1.15		Bin+93
C	—C—		—C—		—C—		262°	−68°	-----				Da+94b
C	—C—		—C—		—C—		262°	−67°	0.1930680				Da+96
L	—		—		85°	−47°	262°	−55°	0.19306825	shape ³¹			Ka+01
Synthesis	—C—		—C—		—C—		262°	−68°	0.1930680	1.8	1.2		Synthesis
250 Bettina													
EAM	—E—		—E—		104°	−16°	—		0.2106225	1.32	1.38		Dru+91
AM	96°	+46°	283°	+21°	103°	−21°	276°	−46°	-----	1.51	1.01		Dot+92 ²²
EAM	—E—		—E—		85°	−9°	260°	−35°	0.2106218	1.33	1.66		Mic92
EAM	—E—		—E—		99°	−16°	272°	−48°	0.2106014	1.33	1.3		Eri+93
EAM	—E—		—E—		102°	−30°	272°	−55°	0.2106224	1.36	1.34		Mic93
EA	—E—		—E—				272°	−32°	0.2106016	1.45	1.05		DeA95
EA	—E—		—E—		106°	−11°			0.2106219	1.45	1.05		DeA95
EA				check ⁵					-----				Lag+95
AM			275°	+1°	95°	−1°			-----	1.74	1.58		Bla+00
L	100°	+17°	—		—		282°	−12°	0.2106006	1.3	1.0 ³¹		Tor+03
258 Tyche													
AM	72°	+20°	222°	+40°	42°	−40°	252°	−20°	-----	1.51	1.25		Bla+00
277 Elvira													
EAM	—		—		56°	−78°	251°	−77°	1.2371719	1.5	1.9		Sli+03
L	—		—		50°	−79°	240°	−79°	1.2371733	1.3	1.2		Sli+03
Synthesis	—		—		53°	−79°	245°	−78°	1.2371729				Synthesis
281 Lucretia													
A	+90°		+90°		−90°		−90°		-----				Tay+76

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
287 Nephthys													
AM	99°	+54°					279°	−54°	-----	1.306	1.207		Bla+96 ³⁴
291 Alice													
EAM	66°	+54°	247°	+55°					-----	1.30	1.20		Kry+96
311 Claudia													
EAM	24°	+31°	207°	+38°	-----				0.3138073	1.9	0.9		Sli+03
L	24°	+48°	209°	+48°	-----				0.3138078	1.7	1.2		Sli+03
Synthesis	24°	+40°	209°	+43°	-----				0.3138075				Synthesis
321 Florentina													
EAM	-----		-----		96°	−63°	266°	−67°	0.11961940	1.5	1.6		Sli+03
L	-----		-----		91°	−60°	264°	−63°	0.11961941	1.4	1.4		Sli+03
Synthesis	-----		-----		94°	−62°	265°	−65°	0.11961941				Synthesis
334 Chicago													
EAM	13°	+32°	188°	+42°	—E—		—E—		0.383246	1.68	1.06		Mic93
AM	18°	+46°	180°	+59°	0°	−59°	198°	−46°	-----	2.089	1.742		Bla+98
Synthesis	15°	+35°	184°	+50°	—E—		—E—		0.383246	1.88			Synthesis
335 Roberta													
AM	80°	+15°	258°	+25°	78°	−25°	260°	−15°	-----	2.09	1.14		Bla+00
337 Devosa													
EAM	—E—		—E—		-----		199°	−51°	0.1938078	1.24	1.34		Mic92
EAM	-----		199°	+59°	—E—		—E—		0.1931106	1.20	1.79		Mic93
EA	—E—		—E—		-----		193°	−73°	0.1938078	1.30	1.30		DeA95
L	-----		209°	+43°	-----		-----		0.1939031	1.2	1.5 ³¹		Tor+03
Synthesis	-----		204°	+51°	-----		195°	−62°	0.1938078	1.25	1.56		Synthesis
338 Budrosa													
A	152°	+24°	321°	+33°	141°	−33°	332°	−24°	-----	1.5			GiH+95
349 Dembowska													
E	150°	+25°	330°	+5°	—E—		—E—		0.1958834	<1.3			Mag86
AM	163°	+49°	330°	+29°	150°	−29°	343°	−49°	-----	1.28	1.15		Za+86b
E					—E—		—E—		0.195895				Lu+87a
EAM	153°	+35°	-----		—E—		—E—		0.19588337	1.30	1.12		Dr+88b
EAM	157°	+30°	331°	+15°	—E—		—E—		0.1958835	1.29	1.11		Mag90a
AMF	148°	+35°	180°	+28°	0°	−28°	328°	−35°	-----				Lum+90
EAM	153°	+36°	-----		—E—		—E—		0.19588333	1.30	1.13		Dru+91
EA	152°	+40°			—E—		—E—		0.1958841	1.35	1.10		DeA95
L	150°	+23°	329°	0°	-----		-----		0.195884	1.3	1.4 ³¹		Tor+03
Synthesis	153°	+34°	330°	+12°	—E—		—E—		0.1958836	1.31	1.12		Synthesis
352 Gisela													
AM			213°	+53°	33°	−53°			-----	1.47	1.38		Bla+00

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
354 Eleonora													
EA			360°	+35°	—E—				-----				Lup+81
A	132°	+45°	357°	+38°	177°	-38°	312°	-45°	-----	1.36	1.0 ¹		Zap+84
A	137°	+44°	363°	+28°	183°	-28°	317°	-44°	-----	1.35	1.0 ¹		Bur+85
A			355°	+36°	175°	-36°			-----				Pii+85
EA	159°	+22°	339°	+2°	—E—		—E—		0.1782160	1.23	1.0		Mag86
EAM	170°	+39°	366°	+2°	—E—		—E—		0.17821593	1.17	1.24		Dr+88b
EAM	148°	+35°	350°	+21°	—E—		—E—		0.1782161	1.21	1.11		Mag90a
EAM	-----		364°	+9°	—E—		—E—		0.17821596	1.17	1.20		Dru+91
EA			365°	+22°	—E—		—E—		0.1782158	1.26	1.00		DeA95
L ³²	-----		356°	+20°	-----		-----		0.17821583	1.2	1.1 ³¹		Ka+02a
Synthesis	-----		360°	+18°	—E—		—E—		0.1782159	1.21	1.1		Synthesis
356 Liguria													
R			Concentric ring region ⁶						-----				Ost87
360 Carlota													
EA	108°	+51°	337°	+47°	157°	-47°	288°	-51°	-----	1.57	1.00		Dot+95
EAM ³²	105°	+47°	-----		—E—		—E—		0.2578997	1.42	1.52		Mic+00
Synthesis	106°	+48°	-----		—E—		—E—		0.2578997	1.45			Synthesis
372 Palma													
AM	44°	+78°	241°	+7°	61°	-7°	224°	-78°	-----	1.202	1.066		Bla+98
L	-----		-----		68°	+2°	-----		0.35796	1.1	1.3 ³¹		Tor+03
Synthesis	-----		-----		65°	-3°	-----		0.35796				Synthesis
376 Geometria													
EAM	50°	+36°	230°	+38°					-----	1.35	1.70		Kry+96
377 Campania													
AM	86°	+3°	266°	0°	86°	0°	266°	-3°	-----	1.318	0.898		Bla+96 ³⁴
382 Dodona													
EAM ³²	88°	+68°	-----		-----		-----		0.17138450	1.54	1.33		Mic+03
Synthesis	88°	+68°	-----		-----		-----		0.17138450	1.54	1.33		Synthesis
386 Siegena													
AM	56°	+14°					236°	-14°	-----	1.116	0.776		Bla+98
389 Industria													
EAM	—E—		—E—		98°	-55°	314°	-50°	-----	1.26	1.38		Mic93
AM			307°	+52°	127°	-52°			-----	1.393	1.245		Bla+98
Synthesis	—E—		—E—		110°	-54°	314°	-50°	-----	1.33	1.31		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
409 Aspasia													
AM	73°	+48°	216°	+35°	36°	−35°	253°	−48°	-----	1.137	1.080		Bla+98
416 Vaticana													
EAM ³²	132°	+58°	310°	+22°	—E—		—E—		0.2238486	1.50 ²	1.19 ²		Mic+00
Synthesis	132°	+58°	310°	+22°	—E—		—E—		0.2238486	1.5	1.2		Synthesis
419 Aurelia													
AM			192°	+34°	13°	−34°			-----	1.28	1.16		Bla+00
423 Diotima													
AM	170°	+63°	345°	+31°	165°	−31°	350°	−63°	-----	1.14	1.50		Za+86b
EA	140°	+55°	—		—E—		—E—		0.1989448	1.16	1.05		Dot+95
Synthesis	155°	+59°	—		—E—		—E—		0.1989448	1.15	1.26		Synthesis
432 Pythia													
AM	121°	+65°					301°	−65°	-----	1.37	1.27		Bla+00
433 Eros													
V	29°	+22°			—V—				-----				Zes32
A	4°	+45°			184°	−45°			-----				Ros32
AM	2°	+53°			182°	−53°			-----	1.79	1.18		Kru+36
V A			—V—		169°	−62°			-----				Wat37
VEA			moving ³		—E—				0.2195937				Sto40
EA	−7°	+13°			—E—				0.21959390				Bey53
EA	10°	+46°			—E—				0.21959386	4.0	1.0 ¹		Cai56
E	13°	+28°			—E—				-----				Ves71
A	17°	+10°							0.21959				Sc+76b
A	15°	+9°							-----	2.3			Mi+76
E	16°	+12°			—E—				0.219599		shape ⁸		Dun76
A	moving ³								-----	4.0	1.25		Che+77
AM	15°	+20°							-----	2.33	1.00		Lum+81
S	23°	+37°			—S—				-----	2.79	1.03		Dr+85a
E	22°	+9°			—E—				0.219588				Tay85
E	16°	+6°			—E—				-----				Kos86
A				check ⁵					-----				Mi+90b
E									0.219593957				Mag90b
C	19°	+14°	—		—		—		-----		shape ¹⁰		Th+00
L	16°	+9°	—		—		—		0.21959387		shape ³¹		Ka+01
C ^{32, 33}	17°	+11°	—		—		—		0.21959273		shape ¹⁰		Mill+02
Synthesis	17°	+11°	—C—		—ESC—		—C—		0.219593				Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
451 Patientia													
AM	153°	+67°	345°	+25°	165°	−25°	333°	−67°	-----	1.07	1.0		Za+86b
471 Papagena													
AM	21°	+31°					201°	−31°	-----	1.25	1.38		Bla+00
495 Eulalia													
Z			224°	+2°	44°	−2°			-----				Bin87
505 Cava													
Z	113°	+4°					293°	−10°	-----				You+85
EAM	138°	+40°	325°	+27°					-----	1.22	1.20		Mic96a
511 Davida													
AM	122°	+10°					302°	−10°	-----				Geh+62
A	-----		306°	+34°	126°	−34°	-----		-----				Cha+63
E			285°	+45°	—E—				-----				Ves+85
AM	92°	+33°	303°	+34°	123°	−34°	272°	−33°	-----	1.19	1.13		Za+86a
S	—S—		291°	+37°	—S—		—S—		-----	1.30	1.4		Dru+86
AM			307°	+32°	127°	−32°			-----	1.25	1.14		Dru+86
EAM	-----		300°	+32°	—E—		—E—		0.21372345	1.25	1.16		Dr+88b
EAM	99°	+26°	299°	+26°	—E—		—E—		0.21372348	1.22	1.13		Mag90a
EAM	-----		300°	+32°	—E—		—E—		0.21372345	1.25	1.16		Dru+91
EAM	96°	+32°	303°	+31°	—E—		—E—		0.2137234	1.23	1.12		Mic93
EA			298°	+22°	—E—		—E—		0.21372354	1.24	1.06		DeA95
EA			check ⁵						-----				Lag+95
L	-----		303°	+44°	-----		-----		0.2137236	1.2	1.3 ³¹		Tor+03
Synthesis	—S—		300°	+34°	—E—		—E—		0.2137235	1.24	1.12		Synthesis
516 Amherstia													
EA	75°	+63°	256°	+55°	76°	−55°	255°	−63°	-----	1.82	1.85		DeA95
EAM	76°	+30°							-----	1.53	1.23		Mic96a
EAM ³²	75°	+17°					225°	−17°	0.3116333 ²	1.36	1.82		Mic+00
532 Herculina													
S							132°	−59°	-----	1.21	1.01		Dr+85b
E					96°	−1°			0.3918711	1.0 ¹	1.0 ¹	X ¹⁹	Tay+87
EAM			284°	+34°					0.3918764	1.13	1.05		Kwi+92
EA					87°	−7°			0.3918710	1.24	1.06		DeA95
EAM	-----		291°	+18°	—E—		—E—		0.3918720	1.21	1.13		Mic+95
A ²⁸			295°	+18°					-----	1.21	1.20		Mic96b
E	91°	+21°	271°	+21°	—E—		—E—		0.3918712				Sza+99
L	-----		289°	+10°	-----		-----		0.39187296	1.1	1.2 ³¹		Ka+02a
Synthesis	-----		287°	+17°	-----		-----		0.391872	1.2	1.2		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
534 Nassovia													
EAM	52°	+42°	238°	+47°	————	————			0.3945380	1.4	1.5		Sli+03
L	58°	+50°	244°	+51°	————	————			0.3945400	1.3	1.4		Sli+03
Synthesis	55°	+46°	241°	+49°	————	————			0.3945392				Synthesis
537 Pauly													
AM			290°	+40°	110°	−40°			-----	1.25	1.88		Bla+00
554 Perago													
R			Concentric ring region ⁶						-----				Ost87
579 Sidonia													
Z	96°	+7°					276°	−7°	-----				Bin87
584 Semiramis													
EAM	—E—		—E—		————		327°	−55°	0.2112053	1.19	1.28		Dr+88b
EAM	—E—		—E—		110°	−40°	320°	−30°	0.211206	1.17	1.1		Mag90a
EAM	—E—		—E—		112°	−51°	————		0.2112062	1.36	1.34		Mic93
EA	—E—		—E—		122°	−56°	315°	−43°	0.2112060	1.27	1.14 ²		DeA95
EAM	—E—		—E—		————		334°	−51°	0.2112061	1.25	1.12		Mic96a
L	————		————		106°	−39°	————		0.211205	1.3	1.2 ³¹		Tor+03
Synthesis	—E—		—E—		113°	−47°	335°	−50°	0.2112061	1.25	1.12		Synthesis
624 Hektor													
E	————		324°	+10°	—E—		—E—		0.28843884	shape ⁸			Dun+69
A			313°	+11°	133°	−11°			-----	2.00	2.63 ¹¹		Pou81
A			315°	+10°	135°	−10°			-----	2.02	1.0 ¹		Pou81
EA	144°	+10°					322°	−4°	0.2884382				Mag83
AM	152°	+29°	314°	+15°	134°	−15°	332°	−29°	-----	2.66	1.13		Zap+84
A D	152°	+27°	315°	+16°	135°	−16°	332°	−27°	-----	2.26	1.35 ²		Pos+85
EA	—E—		—E—		134°	−15°	330°	−30°	0.2883544	2.70	1.43		Mag86
EAMD			314°	+17°	—E—		—E—		0.288335	2.22	1.19		Uch+87
E	—E—		—E—		134°	−17°	336°	−32°	0.2883546				Mic88
EA	—E—		—E—				328°	−26°	0.2883541	2.57	1.30		DeA92
AMD	152°	+27°	315°	+16°	135°	−16°	332°	−27°	-----	2.26	1.36 ²		Det+92 ²⁵
EAMD	145°	+3°					325°	−3°	-----	1.0 ¹	1.0 ¹	X ¹⁵	Det+92 ²⁵
EAMD	149°	+22°					329°	−22°	-----	shape ¹⁴			Det+92 ²⁵
EAMD	144°	+11°					324°	−11°	-----	shape ¹⁴			Det+92 ²⁵
E	—E—		—E—		133°	−17°	336°	−33°	0.28835459				Det+92 ²⁵
EA	—E—		—E—				328°	−26°	0.2883541	2.57	1.30		DeA95
AM	147°	+20°	316°	+3°	136°	−3°	327°	−20°	-----	2.779	1.000		Bla+98
E	—E—		—E—		128°	−14°	308°	−14°	0.28835474				Sza+99
Synthesis	—E—		—E—		133°	−16°	329°	−25°	0.2883544	2.4	1.3		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
675 Ludmilla													
EAM	—E—		—E—		12°	−45°			0.3215510	1.44	1.89		Vel+95
EAM	—E—		—E—		15°	−35°	205°	−50°	0.321551	1.37	1.3		Vel+95
L	—		—		20°	−36°	215°	−54°	0.3215506	1.3	1.1 ³¹		Tor+03
Synthesis	—E—		—E—		16°	−39°	210°	−52°	0.321551	1.3	1.2		Synthesis
683 Lanzia													
EA	198°	+55°	342°	+55°	162°	−55°	378°	−55°	-----	1.85	1.00		DeA95
EA	—E—		—E—		15°	−52°	195°	−52°	0.1964156	1.15	1.05		Kis+99
Synthesis	—E—		—E—		16°	−53°	196°	−53°	0.1964156				Synthesis
694 Ekard													
R			Concentric ring region ⁶						-----				Ost87
EAM	96°	+32°	—		—E—		—E—		0.246744	1.42	1.38		Dr+88b
EAM	105°	+29°	267°	+56°	—E—		—E—		0.2467465 ²	1.45	1.32 ²		Dru+91
EAM	98°	+40°	—		—E—		—E—		0.2467460	1.46	1.73		Mic93
EA	86°	+25°	242°	+25°	—E—		—E—		0.2467459	1.34	1.22 ²		DeA95
L	—		—		89°	−48°	—		0.2467501	1.2	1.1 ³¹		Tor+03
Synthesis	—		—		89°	−48°	—		0.2467501	1.3			Synthesis
704 Interamnia													
Z	70°	+10°					250°	−10°	-----				Har+79
EAM	—E—		—E—		43°	−21°	224°	−22°	-----	1.19 ²	1.07		Mic93
EA					47°	−3°	227°	+1°	-----	1.11	1.06		DeA95
EAM	51°	+22°	—		—E—		—E—		0.3636372	1.11	1.13		Mic+95
Synthesis	51°	+22°	—		—E—		—E—		0.3636372	1.1	1.1		Synthesis
720 Bohlinia													
EAM ³²	65°	+40°	249°	+37°	—		—		0.3716084	1.4	1.2		Sli+03
L ³²	40°	+43°	230°	+41°	—		—		0.3716090	1.4	1.3		Sli+03
Synthesis	48°	+41°	236°	+38°	—		—		0.3716088				Synthesis
747 Winchester													
EAM	27°	+50°	—		—E—		—E—		-----	1.16	2.60		Mic93
EA			353°	+39°	173°	−39°			-----	1.18	1.00		DeA95
804 Hispania													
EAM	90°	+28°					270°	−28°	-----	1.17	1.92		Mic92
EA	107°	+49°	227°	+50°	47°	−50°	287°	−49°	-----	1.20	2.00		DeA95
852 Wladilena													
A	53°	+24°	235°	+21°	55°	−21°	233°	−24°	-----	1.23	1.15		DeA+95
A	30°	+30°	210°	+30°	30°	−30°	210°	−30°	-----	2.3	1.2		Kis+99

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
951 Gaspra													
EAM	20°	+22°	198°	+13°	—E—		—E—		0.2934197	1.6	1.1		Mag+92
C	15°	+16°	—C—		—C—		—C—		-----				Dav+92
EA	19°	+20°	-----		—E—		—E—		0.2934194	1.59	1.10		DeA92
AMF	15°	+24°							-----	shape ^{13, 12, 17}			Bar+92
C	19°	+21°	—C—		—C—		—C—		-----				Da+94a
C	19°	+21°	—C—		—C—		—C—		-----	shape ²⁶			Tho+94
E C									0.2934177				Sim+95
EA	19°	+20°	-----		—E—		—E—		0.2934194	1.75	1.00		DeA95
L ³²	20°	+19°	-----		-----		-----		0.2934191	shape ³¹			Ka+01
Synthesis	19°	+21°	—C—		—C—		—C—		0.293419				Synthesis
984 Gretia													
AM	46°	+47°	48°	+12°	228°	−12°	226°	−47°	-----				Bla+00
1036 Ganymed													
E	Prograde rotation								0.42951				Lu+87b
E					Retrograde rotation								Hah+89
L	-----		-----		-----	208°	−76°		0.42967	1.0	1.5 ³¹		Ka+02a
Synthesis	-----		-----		-----	208°	−76°		0.42967	1.0	1.5		Synthesis
1219 Britta													
E					Retrograde rotation				0.232290				Bin+87
1223 Neckar													
EAM ³²	70°	+45°	225°	+42°	—E—		—E—		0.3232105	1.47	1.28		Mic+00
EAM	73°	+45°	258°	+42°	-----		-----		0.3258850	1.6	1.3		Sli+03
L	73°	+44°	259°	+41°	-----		-----		0.3258850	1.5	1.4		Sli+03
Synthesis	72°	+45°	247°	+42°	-----		-----			1.5	1.3		Synthesis
1566 Icarus													
E	49°	0°	229°	0°					0.09471				Geh+70
EA			214°	+5°					0.094735	1.23	1.40		DeA95
Synthesis			214°	+5°					0.094735	1.23	1.40		Synthesis
1572 Posnania													
EAM ³²	—E—		—E—		46°	−65°	-----		0.3353931	1.35	1.04		Mic+01
Synthesis	-----		-----		46°	−65°	-----		0.3353931	1.35	1.04		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
1580 Betulia													
A			140°	+20°			320°	−20°	-----	1.21 ¹⁰			Ted+78
EAM	80°	+12°			212°	−5°			0.2565	1.7	1.4		Dru+90
L	136°	+22°	-----		-----		-----		0.255765	1.1	1.4 ³¹		Ka+03a
Synthesis	136°	+22°	-----		-----		-----		0.255765	1.1	1.4		Synthesis
1620 Geographos													
E			—E—		20°	−60°			0.2176378	shape ⁸			Dun74
A				check ⁵					-----				Mi+90b
EAM			—E—		15°	−77°			0.2176342	2.7	1.05		Kwi94
EAM			—E—		15°	−77°			0.2176390	2.7	1.05		Kwi94
EAM			—E—		54°	−52°			0.21763867	2.6	1.1		Mic+94
EA			—E—		54°	−52°			0.21763866	2.5	1.1		Kwi95
EA			—E—		54°	−52°			0.21764381	2.5	1.1		Kwi95
EAM	—E—		—E—		56°	−47°	-----		0.21763860	2.58	1.00		Mag+96
R	-----		-----		55°	−46°	-----		0.21763863	2.5	1.0 ²⁹		H+O99
L	-----		-----		55°	−45°	-----		0.21763858	shape ³¹			Ka+01
Synthesis	-----		-----		55°	−46°	-----		0.21764	2.6	1.1		Synthesis
1627 Ivar													
E	Prograde rotation								0.19991				Lup+86
E	147°	+13°	333°	+18°					0.199953				Ve+89a ²³
EA	110°	+20°	320°	+40°					0.19995				Hah+89
E	—E—		—E—		143°	−37°			0.1999154				Kis+99
A	145°	+34°	325°	+34°	145°	−34°	325°	−34°	-----	2.0	1.09		Kis+99
L	-----		333°	+43°	-----		-----		0.1997987	1.9	1.3 ³¹		Ka+03a
Synthesis	-----		333°	+43°	-----		-----		0.1997987	1.9	1.3		Synthesis
1685 Toro													
EA			200°	+55°	—E—				0.42481	3.2			Dun+73
EA			220°	+30°	—E—				0.424808	2.08	1.80		DeA95
Synthesis			210°	+43°	—E—				0.424808	2.1	1.8		Synthesis
1862 Apollo													
EA			—E—		56°	−26°			0.1277265				Har+87
EA			—E—		38°	−36°			0.127754	2.08	1.80		DeA95
Synthesis			—E—		47°	−31°			0.127754	2.08	1.80		Synthesis
1980 Tezcatlipoca													
L	-----		-----		-----		334°	−66°	0.302177	1.4	1.4 ³¹		Ka+03a
Synthesis	-----		-----		-----		334°	−66°	0.302177	1.4	1.4		Synthesis
2063 Bacchus													
R					24°	−26°			0.652	shape ³⁰			Ben+99
Synthesis					24°	−26°			0.652				Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
2100 Ra-Shalom													
L	73°	+13°	————		————				0.824992	1.2	1.3 ³¹		Ka+03a
Synthesis	73°	+13°	————		————				0.824992	1.2	1.3		Synthesis
3103 Eger													
E	Prograde rotation								0.2377819				Vel+92
L	————		————		10°	−50°	————		0.23778217	1.5	1 ³¹		Ka+02a
Synthesis	————		————		10°	−50°	————		0.23778217	1.5	1		Synthesis
3199 Nefertiti													
L	————		————				197°	−22°	0.12584029	1.1	1.1 ³¹		Ka+03a
Synthesis	————		————				197°	−22°	0.12584029	1.1	1.1		Synthesis
3200 Phaeton													
EAM	—E—		—E—		97°	−11°	276°	−15°	0.5906				Kru+02
Synthesis	—E—		—E—		97°	−11°	276°	−15°	0.5906				Synthesis
3908 Nyx													
EAM	177°	+23°	312°	+61°	—E—		—E—		0.18441	1.3	1.2 ²		Dru+90
L	————		291°	+69°	————		————		0.1844208	1.2	1.0 ³¹		Ka+03a
Synthesis	————		291°	+69°	————		————		0.1844208	1.2	1.0		Synthesis
4179 Toutatis													
R					Precessing				- - - - -	2.10	1.35 ²⁹		H+O95
4769 Castalia													
R							253°	−56°	0.17038				Hud+97
R					62°	−7°			0.17058				Hud+97
EAM							253°	−56°	0.17038				Eri+00
EAM			242°	+7°					0.17058				Eri+00
Synthesis	————		————		————		235°	−56°	0.17058				Synthesis
4957 Brucemurray													
L	————		————		————		358°	−50°	0.120510	1.1	1.1 ³¹		Ka+03a
Synthesis	————		————		————		358°	−50°	0.120510	1.1	1.1		Synthesis
4979 Otawara													
EAM	————		————		50°	−30°	————		0.112776	1.21			For+03
Synthesis	————		————		50°	−30°	————		0.112776	1.2			Synthesis
5145 Pholus													
EAM	149°	+26°					337°	−5°	0.4159256	1.8	1.0		Far+01

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Refer- ence code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
5587 1990 SB													
L	————		————		————		358°	−60°	0.210508	2.0	1.2 ³¹		Ka+03a
Synthesis	————		————		————		358°	−60°	0.210508	2.0	1.2		Synthesis
6053 1993 BW3													
E	—E—		—E—		175°	−9°	359°	−26°	0.107238 ²	1.08	1.5		Pra+97
L	178°	+10°	————		————		358°	−8°	0.107246	1.1	1.6 ³¹		Ka+02a
L	————		————		180°	−6°	345°	−14°	0.107238 ²		shape ³¹		Dur02
Synthesis					178°	−7°	354°	−16°	0.10723	1	1.5		Synthesis
6489 Golevka													
EA ³²	————		347°	+35°	—R—		—R—		0.25110	1.4	1.0		Mot+97
R	————		————		————		202°	−45°	0.251204	1.01	1.0 ^{29, 30}		Hud+00
L	————		————		————		208°	−47°	0.251238		shape ³¹		Ka+01
Synthesis	————		————		————		205°	−46°	0.25122				Synthesis
9969 Braille													
C	————		314°	+65°	————		————		— — — —	2.1	1.0		Ob+01
25143 1998SF36													
L	————		————		————		355°	−84°	0.50550	2.0	1.3 ³¹		Ka+03
EA	————		————		39°	−87°	————		0.50550	1.9	1.2		Ka+03
EA	————		————		————		320°	−75°	— — — —	2.13	1.68		Oh+03
Synthesis	————		————		39°	−87°	355°	−84°	0.50550	1.95	1.25		Synthesis

Footnotes:

- ¹ Assumed value.
- ² Mean value of two significantly different solutions.
- ³ Different spin axis solutions for different apparitions was interpreted as indicating a precessing motion.
- ⁴ Symmetric solution obtained, but quantitative specification is missing.
- ⁵ Consistency check of previous spin vector determinations.
- ⁶ Based on a radar experiment giving constraints on the aspect angle at the time of observation.
- ⁷ Based on two radar experiments giving an aspect circle at the time of observation.
- ⁸ Modelled as a cylinder with hemispherical ends.
- ⁹ Modelled as a cylinder cut out of a sphere.
- ¹⁰ Complex shape.
- ¹¹ Modelled as a Jacobi ellipsoid.
- ¹² Modelled as 8 octants of ellipsoids put together to form a continuous surface.
- ¹³ Modelled as an ellipsoid with a piece removed by a plane cut.
- ¹⁴ Modelled as an irregular polyhedron.
- ¹⁵ Modelled as a sphere with free albedo facets.
- ¹⁶ Results show that there is no significant albedo variegation.
- ¹⁷ Modelled using a spherical harmonics expansion of the shape.
- ¹⁸ Albedo model with a single big spot.
- ¹⁹ Modelled as a sphere with 2 dark regions.
- ²⁰ Speckle images showing albedo variegation.

- 21 Bi-axial ellipsoid ($a/b=1.15$) with a flat region just off the South Pole.
- 22 Also presented in Ful+91.
- 23 Also presented in English in Lup+90.
- 24 Also presented in Mi+90c.
- 25 Also presented in Det+94.
- 26 Detailed model from space images.
- 27 Also presented in Mic94.
- 28 The spin axis is not aligned with the c-axis of the ellipsoid model.
- 29 DEEVE - dynamicaly equivalent equal volume ellipsoid adopted for the complex shape.
- 30 Complex radar model.
- 31 Convex shape obtained with lightcurve inversion.
- 32 Pole coordinates calculated for J2000.
- 33 Values for pole coordinates are 17.238, 11.351
- 34 Also presented in Bla+98.