

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference 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	
S			298° +78°				186° -58°	-----	1.08	1.06	X ³⁶	Dru+98	
Synthesis			315° +74°					-----	1.08	1.06		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			—O—	54° -6°				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	
Synthesis				44° -9°				0.325551	1.1	1.05		Synthesis	
3 Juno													
EA	71° +49°			—E—		—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°			—E—		—E—		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°	0.4453666	1.14	1.0 ¹		Hau58	
EA	57° +74°							—E—	0.2225884				Cha+62	
E	126° +65°							—E—	0.22258871				Geh67	
E	139° +47°	333° +39°						—E—	0.4451021	shape ²¹			Tay73	
I	Prograde rotation								-----				Mor77	
I	Prograde rotation								-----				Han77	
E	103° +43°	301° +33°						—E—	0.2225889				Tay+85	
E	120° +65°	325° +55°						—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—	-----	1.07	1.14		Dr+89a	
EA	160° +52°	340° +40°						—E—	0.2225885				Rey+93	
S	—S—	343° +56°							-----	1.06	1.15		McC+94	
S	—S—	336° +63°						—S—	-----	1.03	1.2		Tho+97	
S	—S—	321° +62°							-----	1.05	1.26		Dru+98	
Synthesis	—S—	325° +55°						—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—	0.700026	1.27			Eri+93	
EA	114° +57°							—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—	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—	0.3031025	1.14	1.2		Mag86	
R		Concentric ring region ⁶								-----				Ost87
E		363° +60°						—E—	0.3031024				Mic88	
EA		365° +27°						—E—	0.3031023	1.13	1.06		DeA95	
EA	—O—	353° +24°						—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—	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°	-15°	216°	-10°	0.1748311	1.25	1.25		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
Synthesis	58°	+12°	240°	+25°					0.5110845	1.3	1.0		Synthesis
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°	+10°	225°	+10°	—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—		—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.	Reference 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.	Reference 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.	Reference 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													
EA	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+04
L	67°	+25°	254°	+38°						0.2345816	1.15	1.3 ³¹	Mic+04
Synthesis	69°	+28°	258°	+42°						0.2345815	1.2	1.2	Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference 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—	—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	—E—	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	—E—	225° +10°	—E—	—E—					0.2001685	1.2	1.2 ³¹		Tor+03
Synthesis	30° +38°	228° +27°	—E—	—E—					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	—E—	305° +36°	125° -36°						-----	2.39	1.00		Bla+00
L	—E—	—E—	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°	—E—					0.1661266	1.08	1.74		Dr+88b
EAM	—E—	—E—	25° -49°	—E—					0.1683549	1.09	1.69		Dru+91
EA	—E—	—E—	34° -23°	—E—					0.1683552	1.05	1.37		DeA95
Synthesis	—E—	—E—	28° -41°	—E—					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.	Reference 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	
71 Niobe														
AM			274°	+14°	94°	-14°			-----	1.202	1.345		Bla+98	
75 Eurydike														
EAM			253°	+30°					0.2231746	1.19	1.60		Tun+02	
77 Frigga														
AM	57°	+39°					236°	-40°	-----	1.224	1.010		Bla+98	
79 Eurynome														
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—			65°	-36°	245°	-36°	0.2490706				Sza+99	
80 Sappho														
R			Concentric ring region ⁶							-----				Ost87
83 Beatrix														
EAM	—E—	—E—			3°	-37°	172°	-31°	0.4213796	1.26	1.16		Kru+94	
EA	—E—	—E—			6°	-46°	173°	-38°	-----	1.22	1.10		DeA95	
Synthesis	—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—			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—			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.	Reference 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
93 Minerva													
EA	-----		203° +15°		-----		-----		0.249087	1.07	1.10		Eri00
EAM	-----		189° +10°		-----		-----		0.2491288	1.12	1.00		Tun+02
Synthesis	-----		196° +13°		-----		-----		0.2491	1.10	1.05		Synthesis
97 Klotho													
EAM			340° +8°						1.4632286	1.33	1.10		Tun+02
105 Artemis													
EAM			192° +68°						0.7729158	1.09	1.53		Tun+02
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° +74°		—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
113 Amalthea													
EAM					70° -18°				0.4140702	1.45	1.17		Tun+02
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
EAM	7° +34°		-----		-----		-----		0.3017257	1.23	1.03		Mic+04
L	23° +33°		-----		-----		-----		0.3016652	1.1	1.1 ³¹		Mic+04
Synthesis	15° +34°		-----		-----		-----		0.30169	1.2	1		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
119 Althaea													
EAM					21°	-77°			0.4783486	1.29	1.33		Tun+02
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
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									-----	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

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code	
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c			
139 Juewa														
EAM	117°	+50°	————	—E—	—E—	————	————	-----	1.21	1.68			Mic93	
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.	Reference 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	
EAM	-----	-----	84° -32°		0.1561401	-----	-----	1.51	1.24			Tun+02	
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.	Reference 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—	—C—	262°	−68°	-----						Da+94b
C	—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—	—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
270 Anahitia													
EA	—	—	300°	+65°	—	—	0.6268967			1.26	1.24		Eri00
EAM	—	—	285°	+53°	—	—	0.6269955			1.24	1.31		Tun+02
Synthesis	—	—	293°	+59°	—	—	0.6269			1.25	1.28		Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
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
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°	-----	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
EAM	172°	+16°	————	————	————	————	0.1916437	1.54	1.20				Tun+02
Synthesis	162°	+20°	————	————	————	————	0.1916437	1.54	1.20				Synthesis

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code	
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c			
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	
354 Eleonora														
EA			360°	+35°	—E—	—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	

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
382 Dodona													
EAM ³²	88° +68°	————	————	————	————	————	————	————	0.17138450	1.54	1.33		Mic+04
L	83° +64°	248° +55°	————	————	————	————	————	————	0.17138442	1.4	1.3 ³¹		Mic+04
Synthesis	86° +66°	————	————	————	————	————	————	————	0.171384	1.5	1.3		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
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

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
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
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
487 Venetia													
EAM	————		————		————		268°	-24°	0.555897	1.07	2.01		Eri00
EAM	————		————		————		259°	-30°	0.5554876	1.28	1.69		Tun+02
Synthesis	————		————		————		264°	-27°	0.5556	1.17	1.8		Synthesis
495 Eulalia													
Z			224°	+2°	44°	-2°			-----				Bin87

Basic data	Spin vector solutions (ecliptic coordinates of equinox 1950)								Sidereal period (days)	Ellipsoidal model		Albedo varieg.	Reference code	
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c			
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°	—ES—		—ES—		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.	Reference 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.	Reference code	
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c			
674 Rachele														
EAM	12°	+2°							1.2898610	1.93	1.09		Tun+02	
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°	190°	-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	98°	+40°	—	—	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	
776 Berbericia														
EAM	7°	+20°	—	—	—				0.3194588	1.09	1.30		Eri00	
EAM	8°	+23°	—	—	—				0.3194538	1.18	1.18		Tun+02	
Synthesis	8°	+23°	—	—	—				0.319456	1.14	1.24		Synthesis	
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.	Reference code
	λ_0	β_0	λ_0	β_0	λ_0	β_0	λ_0	β_0		a/b	b/c		
887 Alinda													
EAM			190°	+33°					3.0760710	1.06	1.56		Tun+02
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
EAM	20°	+26°							0.2934170	1.58	1.23		Tun+02
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.	Reference 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+04
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+04
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+04
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.	Reference 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+04	
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+04	
Synthesis	————	————	————	————	————	————	197°	-22°	0.12584029	1.1	1.1		Synthesis	
3200 Phaeton														
EAM	—E—	—E—	—E—	97°	-11°	276°	-15°	0.1496080 ²					Kru+02	
Synthesis	—E—	—E—	—E—	97°	-11°	276°	-15°	0.1496080					Synthesis	
3908 Nyx														
EAM	177°	+23°	312°	+61°	—E—	—E—	————	————	0.18441	1.3	1.2 ²		Dru+90	
R	43°	+71°	————	————	————	————	————	————			shape ³⁰		Ben+02	
L	————	————	291°	+69°	————	————	————	————	0.1844208	1.2	1.0 ³¹		Ka+04	
Synthesis	43°	+71°	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+04	
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.	Reference 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	————	————	————	————	253°	-60°	0.210508	2.0	1.2 ³¹				Ka+04
Synthesis	————	————	————	————	253°	-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		345°	+45°				0.25109	1.25					Mot+97
EA ³²		350°	+25°				0.25111	1.6	0.7	X ³⁵			Mot+97
EA ³²				190°	-55°		0.25123	1.25					Mot+97
EA ³²				200°	-55°		0.25125	1.6	1.2	X ³⁵			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 continous 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.
- 35 Model requires albedo variegation
- 36 Suggested albedo variegations of 4%