| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | | 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 |
| **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 | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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° | 229° | +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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | Sidereal period (days) | Ellipsoidal model a/b | b/c | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 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 |
| 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— | | 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— | | 285° | −52° | 0.28646325 | 1.15 | 1.8 | | Eri+99 |
| EAM[32] | —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 | 1.15 | 1.8 | | 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 | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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° | −80° | 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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | Sidereal period (days) | Ellipsoidal model a/b | b/c | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | Sidereal period (days) | Ellipsoidal model a/b | b/c | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | **Sidereal period** (days) | **Ellipsoidal model** a/b | b/c | **Albedo varieg.** | **Reference code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 | Ellipsoidal model | | Albedo varieg. | Refer- ence code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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 Carlova** | | | | | | | | | | | | | |
| 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 | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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** | **Ellipsoidal model** | | **Albedo varieg.** | **Refer-ence code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | Sidereal period (days) | Ellipsoidal model a/b | b/c | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | 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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | Sidereal period (days) | Ellipsoidal model a/b | b/c | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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) $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | **Sidereal period** (days) | **Ellipsoidal model** a/b | b/c | **Albedo varieg.** | **Reference code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 |
| **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 |
| **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 |
| **2063 Bacchus** | | | | | | | | | | | | | |
| R | | | | | 24° | −26° | | | 0.652 | shape[30] | | | Ben+99 |
| **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 |
| **3200 Phaeton** | | | | | | | | | | | | | |
| EAM | —E— | | —E— | | 97° | −11° | 276° | −15° | 0.5906 | | | | Kru+02 |
| Synthesis | —E— | | —E— | | 97° | −11° | 276° | −15° | 0.5906 | | | | Synthesis |

| Basic data | Spin vector solutions (ecliptic coordinates of equinox 1950) | | | | | | | | Sidereal period | Ellipsoidal model | | Albedo varieg. | Reference code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | $\lambda_0$ | $\beta_0$ | (days) | a/b | b/c | | |
| **3908 Nyx** | | | | | | | | | | | | | |
| EAM | 177° | +23° | 312° | +61° | —E— | | —E— | | 0.18441 | 1.3 | 1.2[2] | | Dru+90 |
| Synthesis | 177° | +23° | 312° | +61° | —E— | | —E— | | 0.18441 | 1.3 | 1.2 | | 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 |
| **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 |
| **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 |
| **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 |
| **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 |
| 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 Jocobi 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.