

Multiple Night Observations

Figure 8 (row 2, column 3). For each of the 10 asteroids, we averaged the distances from all 15 observations, and find the residuals by comparison with NASA JPL Horizons Data

R1: .06328 R2: .04289 Quit About Open... NewObj AddObj ephM Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGravs

(1)Mer (2)Ven (6)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (6)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Sep 20.05395 ± 0.00664 TT = 1:17:41 (JD 2460573.55395)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0029 Find_Orb

M 357.01834976 ± 0.023 (J2000 ecliptic)

n 0.26973621 ± 0.00199 Peri. 185.37601 ± 0.0043

a 2.37233787 ± 0.0117 Node 172.33539 ± 0.0024

e 0.5755265 ± 0.00208 Incl. 7.74510 ± 0.019

P 3.65397 U 8.6

q 1.00699455 ± 8.75e-6 Q 3.73768119 ± 0.0233

From 15 observations 2024 Sept. 5-9; mean residual 0".02

MOIDs: Me 0.641602 Ve 0.282746 Ea 0.002932 Ma 0.219488

MOIDs: Ju 1.704310 Sa 5.688648 Ur 14.548517 Ne 26.498665

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.91771

Tisserand relative to Jupiter: 3.28762

Earth encounter velocity 8.6060 km/s

Barbee-style encounter velocity: 8.8366 km/s

Score: 0.303204

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	269.09732616+05.56962958				807		.02+	.00	.06328	1.0257
C2460558.62500000	269.08861470+05.51091130				807		.00	.01-	.06267	1.0254
C2460559.46875000	269.23005353+05.09007548				807		.00	.00	.05846	1.0234
C2460559.50000000	269.22755277+05.07328913				807		.01+	.03+	.05830	1.0234
C2460559.53125000	269.22516984+05.05626708				807		.02-	.03-	.05815	1.0233
C2460559.56250000	269.22320001+05.03905991				807		.02-	.02+	.05800	1.0232
C2460560.56250000	269.39389474+04.44168868				807		.02-	.01+	.05302	1.0210
C2460560.59375000	269.39346524+04.42085683				807		.01-	.01-	.05287	1.0209
C2460560.62500000	269.39404899+04.39981040				807		.02+	.02-	.05272	1.0209
C2460561.53125000	269.61425063+03.74419563				807		.01-	.00	.04819	1.0190
C2460561.56250000	269.61412676+03.71912812				807		.00	.01-	.04803	1.0190
C2460561.59375000	269.61485960+03.69380962				807		.03+	.01+	.04788	1.0189
C2460562.53125000	269.89763128+02.85944383				807		.00	.01-	.04320	1.0171
C2460562.56250000	269.89897076+02.82831577				807		.02+	.02+	.04305	1.0171
C2460562.59375000	269.90127179+02.79686378				807		.02-	.01-	.04289	1.0170

R1: .09837 R2: .08958 Quit About Open... NewObj AddObj ephM Full Herget Vaisa resid Gauss constr Epoch all_perts Undo FilterObs NonGra

(1)Mer (2)Ven (5)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (5)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Sep 9.91029 ± 0.0102 TT = 21:50:48 (JD 2460563.41029)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0686 Ma: 0.0675

M 359.47572771 ± 0.006 (J2000 ecliptic) Find_Orb

n 0.57594193 ± 0.00202 Peri. 152.11775 ± 0.021

a 1.43070550 ± 0.00334 Node 194.53905 ± 0.010

e 0.2628997 ± 0.00155 Incl. 8.77701 ± 0.040

P 1.711/625.051d U 8.6

q 1.05457332 ± 0.000245 Q 1.80683768 ± 0.00644

From 15 observations 2024 Sept. 5-9; mean residual 0".01

MOIDs: Me 0.680465 Ve 0.343709 Ea 0.068586 Ma 0.067509

MOIDs: Ju 3.609084 Sa 7.431927 Ur 16.482278 Ne 28.347209

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.98002

Barbee-style encounter velocity: 5.8432 km/s

Score: 0.146206

YYYY MM DD.DDDDD	RA (J2000)	dec	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	303.57197984	+45.85901935			807	.01+	.02+	.09837	1.0554
C2460558.62500000	303.74852270	+45.85199291			807	.01-	.01+	.09809	1.0554
C2460559.46875000	305.16394044	+45.77365250			807	.01-	.01-	.09624	1.0551
C2460559.50000000	305.21157808	+45.77213974			807	.01-	.00	.09617	1.0551
C2460559.53125000	305.25869855	+45.77005927			807	.04+	.03-	.09610	1.0551
C2460559.56250000	305.30545776	+45.76738077			807	.02-	.00	.09603	1.0551
C2460560.56250000	307.04203651	+45.63393799			807	.02-	.01-	.09386	1.0549
C2460560.59375000	307.09150329	+45.62920066			807	.02+	.00	.09379	1.0549
C2460560.62500000	307.14109000	+45.62379019			807	.02+	.01-	.09373	1.0548
C2460561.53125000	308.81927315	+45.45688085			807	.01-	.01+	.09180	1.0547
C2460561.56250000	308.87166508	+45.45124027			807	.01-	.02+	.09173	1.0547
C2460561.59375000	308.92392448	+45.44491885			807	.01-	.00	.09167	1.0547
C2460562.53125000	310.73982307	+45.22101046			807	.03+	.00	.08972	1.0546
C2460562.56250000	310.79503808	+45.21362775			807	.01-	.00	.08965	1.0546
C2460562.59375000	310.85011569	+45.20555781			807	.01-	.00	.08958	1.0546

2024 RN15

R1: .11999 R2: .10061 Quit About Open... NewObj AddObj ephemeris Full Herget Vaisa resid Gauss constr Epoch all_parts Undo FilterObs NonGra

(1)Mer (2)Ven (3)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (3)Moo (a)Ast

Click on an observation to get information about it. Right-click to get

further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Nov 1.26529 ± 0.0471 TT = 6:22:00 (JD 2460615.76529)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0109 Ma: 0.0768

M 332.70144580 ± 0.21 (J2000 ecliptic) Find_Orb

n 0.51250177 ± 0.00362 Peri. 180.69145 ± 0.14

a 1.54646157 ± 0.00728 Node 225.37639 ± 0.12

e 0.3831818 ± 0.00306 Incl. 1.35717 ± 0.008

P 1.923702.423d U 9.0

q 0.95388562 ± 0.000273 Q 2.13903752 ± 0.0148

From 15 observations 2024 Sept. 5-9; mean residual 0".01

MOIDs: Me 0.635269 Ve 0.232280 Ea 0.010945 Ma 0.076848

MOIDs: Ju 3.262174 Sa 7.605087 Ur 16.332374 Ne 28.190622

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.94329

Earth encounter velocity 7.1439 km/s

Barbee-style encounter velocity: 6.6283 km/s

Score: 0.204375

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	340.35091330+04.00368114					807	.03-	.01+	.11999	1.1262
C2460558.62500000	340.35581016+04.05411581					807	.01-	.01-	.11937	1.1255
C2460559.46875000	340.47069457+04.39943357					807	.01+	.00	.11533	1.1212
C2460559.50000000	340.47360259+04.41289818					807	.02+	.01+	.11517	1.1211
C2460559.53125000	340.47586911+04.42636201					807	.02+	.00	.11501	1.1209
C2460559.56250000	340.47756221+04.43983239					807	.02+	.01+	.11486	1.1207
C2460560.56250000	340.61529359+04.87874229					807	.00	.01-	.11010	1.1157
C2460560.59375000	340.61683178+04.89315013					807	.01-	.00	.10994	1.1155
C2460560.62500000	340.61799777+04.90753332					807	.01+	.00	.10979	1.1154
C2460561.53125000	340.76746772+05.33375072					807	.00	.02-	.10555	1.1108
C2460561.56250000	340.76990663+05.34925925					807	.02-	.01+	.10540	1.1107
C2460561.59375000	340.77184448+05.36473532					807	.02-	.01-	.10525	1.1105
C2460562.53125000	340.94121294+05.83880682					807	.01-	.00	.10090	1.1058
C2460562.56250000	340.94415627+05.85553094					807	.02+	.01+	.10076	1.1057
C2460562.59375000	340.94656850+05.87223085					807	.01+	.00	.10061	1.1055

R1: .13108 R2: .11286 Quit About Open... NewObj AddObj epheM Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGrav

(1)Mer (2)Ven (6)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (6)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Oct 13.71281 ± 0.0154 TT = 17:06:26 (JD 2460597.21281)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0393 Ma: 0.0924

M 349.61507122 ± 0.17 (J2000 ecliptic) Find_Orb

n 0.29916705 ± 0.00479 Peri. 201.67627 ± 0.025

a 2.21408117 ± 0.0236 Node 181.72810 ± 0.008

e 0.5329663 ± 0.00489 Incl. 2.48260 ± 0.016

P 3.29451 U 9.2

q 1.03405036 ± 0.000236 Q 3.39411197 ± 0.0471

From 15 observations 2024 Sept. 5-9; mean residual 0".02

MOIDs: Me 0.696909 Ve 0.310405 Ea 0.039330 Ma 0.092364

MOIDs: Ju 2.056997 Sa 6.244630 Ur 14.980251 Ne 26.913895

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.96736

Earth encounter velocity 5.4202 km/s

Barbee-style encounter velocity: 6.5490 km/s

Score: 0.284420

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	330.53698397	-04.00211549				807	.00	.02-	.13108	1.1361
C2460558.62500000	330.59433576	-03.99193935				807	.02-	.02+	.13049	1.1355
C2460559.46875000	331.08219660	-03.91765393				807	.02-	.01+	.12667	1.1314
C2460559.50000000	331.09899380	-03.91505276				807	.00	.00	.12652	1.1313
C2460559.53125000	331.11529387	-03.91241901				807	.01+	.00	.12638	1.1311
C2460559.56250000	331.13118688	-03.90975393				807	.04+	.01-	.12623	1.1310
C2460560.56250000	331.74780837	-03.81720617				807	.01+	.01+	.12175	1.1262
C2460560.59375000	331.76495804	-03.81432661				807	.03+	.01-	.12161	1.1261
C2460560.62500000	331.78188651	-03.81140032				807	.01-	.02-	.12147	1.1259
C2460561.53125000	332.40211195	-03.72168548				807	.02-	.03-	.11748	1.1217
C2460561.56250000	332.42133230	-03.71863299				807	.02-	.00	.11734	1.1216
C2460561.59375000	332.44022382	-03.71553725				807	.01-	.03+	.11720	1.1214
C2460562.53125000	333.13634657	-03.61635657				807	.04+	.00	.11314	1.1172
C2460562.56250000	333.15748378	-03.61308044				807	.02-	.00	.11300	1.1170
C2460562.59375000	333.17831153	-03.60975560				807	.01+	.00	.11286	1.1169

2024 RO2

R1: .15103 R2: .12699 Quit About Open... NewObj AddObj epheM Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGr

(1)Mer (2)Ven (6)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (6)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Nov 1.33435 ± 0.0492 TT = 8:01:27 (JD 2460615.83435)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0010 Find_Orb

M 336.38319626 ± 0.22 (J2000 ecliptic)

n 0.44280663 ± 0.00382 Peri. 216.26460 ± 0.09

a 1.70474714 ± 0.0098 Node 190.76971 ± 0.06

e 0.4473300 ± 0.00329 Incl. 7.12563 ± 0.038

P 2.226/812.981d U 9.0

q 0.94216249 ± 0.000379 Q 2.46733179 ± 0.0198

From 15 observations 2024 Sept. 5-9; mean residual 0".02

MOIDs: Me 0.624265 Ve 0.221369 Ea 0.001013 Ma 0.149940

MOIDs: Ju 2.945582 Sa 7.328186 Ur 16.041133 Ne 27.863628

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.90404

Earth encounter velocity 9.2931 km/s

Barbee-style encounter velocity: 8.8894 km/s

Score: 0.244030

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	332.55388399	+17.36795013				807	.03-	.03-	.15103	1.1452
C2460558.62500000	332.54803991	+17.39537165				807	.00	.00	.15027	1.1445
C2460559.46875000	332.58434168	+17.56549499				807	.00	.01+	.14527	1.1395
C2460559.50000000	332.58413189	+17.57271380				807	.02+	.04+	.14508	1.1393
C2460559.53125000	332.58341806	+17.57984639				807	.01+	.05+	.14489	1.1391
C2460559.56250000	332.58227857	+17.58684784				807	.01+	.00	.14470	1.1389
C2460560.56250000	332.62425472	+17.79442210				807	.03+	.02-	.13881	1.1330
C2460560.59375000	332.62300671	+17.80140342				807	.02-	.04-	.13862	1.1329
C2460560.62500000	332.62153630	+17.80824288				807	.00	.01+	.13843	1.1327
C2460561.53125000	332.67999631	+17.99829393				807	.01-	.01-	.13315	1.1274
C2460561.56250000	332.67941279	+18.00557524				807	.00	.01-	.13297	1.1272
C2460561.59375000	332.67846971	+18.01270099				807	.02-	.01-	.13278	1.1270
C2460562.53125000	332.75014005	+18.21391186				807	.02+	.00	.12736	1.1216
C2460562.56250000	332.74991015	+18.22138397				807	.00	.02+	.12717	1.1214
C2460562.59375000	332.74932089	+18.22868252				807	.02-	.00	.12699	1.1212

2024 SR4

R1: .20310 R2: .17175 Quit About Open... NewObj AddObj ephM Full Herget Vaisa resid Gauss constr Epoch all_perts Undo FilterObs NonGr

(1)Mer (2)Ven (c)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (c)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Nov 7.73376 ± 0.204 TT = 17:36:37 (JD 2460622.23376)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0179 Find_Orb

M 337.50429019 ± 0.7 (J2000 ecliptic)

n 0.37659958 ± 0.0115 Peri. 231.81155 ± 0.23

a 1.89910726 ± 0.0385 Node 185.00247 ± 0.12

e 0.5253066 ± 0.0111 Incl. 9.48144 ± 0.15

P 2.617/955.904d U 9.7

q 0.90149360 ± 0.00286 Q 2.89672091 ± 0.0798

From 15 observations 2024 Sept. 5-9; mean residual 0".02

MOIDs: Me 0.592154 Ve 0.194442 Ea 0.017946 Ma 0.133015

MOIDs: Ju 2.524902 Sa 7.015059 Ur 15.747781 Ne 27.442112

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.83978

Earth encounter velocity 12.0083 km/s

Barbee-style encounter velocity: 11.6350 km/s

Score: 0.279877

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	339.63627611	+14.52645483				807	.02+	.02-	.20310	1.1993
C2460558.62500000	339.63394984	+14.52173003				807	.02-	.03+	.20211	1.1983
C2460559.46875000	339.66769109	+14.47171511				807	.01-	.03+	.19558	1.1921
C2460559.50000000	339.66805072	+14.47019396				807	.01-	.02-	.19534	1.1919
C2460559.53125000	339.66802578	+14.46863159				807	.01-	.01-	.19509	1.1917
C2460559.56250000	339.66766070	+14.46698186				807	.02+	.04-	.19484	1.1914
C2460560.56250000	339.70580683	+14.39243469				807	.01+	.00	.18715	1.1841
C2460560.59375000	339.70526606	+14.39014449				807	.02+	.01+	.18691	1.1838
C2460560.62500000	339.70448641	+14.38774219				807	.00	.03+	.18667	1.1836
C2460561.53125000	339.75148448	+14.30192100				807	.02-	.00	.17978	1.1770
C2460561.56250000	339.75139880	+14.29912269				807	.01-	.00	.17953	1.1768
C2460561.59375000	339.75101049	+14.29621095				807	.01+	.03-	.17929	1.1765
C2460562.53125000	339.80576147	+14.18881365				807	.01+	.01+	.17223	1.1697
C2460562.56250000	339.80586686	+14.18535064				807	.01-	.01-	.17199	1.1695
C2460562.59375000	339.80567712	+14.18178466				807	.01+	.00	.17175	1.1693

R1: .49995 R2: .50180 Quit About Open... NewObj AddObj epheM Full Herget Vaisa resid Gauss constr Epoch all_perts Undo FilterObs NonGrav

(1)Mer (2)Ven (3)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (0)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Oct 23.33187 ± 0.55 TT = 7:57:53 (JD 2460606.83187)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.1119 Find_Orb

M 338.83062305 ± 1.0 (J2000 ecliptic)

n 0.47752050 ± 0.0173 Peri. 205.51238 ± 0.6

a 1.62109337 ± 0.0392 Node 157.13569 ± 0.6

e 0.3166020 ± 0.012 Incl. 7.15469 ± 0.18

P 2.064/753.880d U 10.0

q 1.10785195 ± 0.00736 Q 2.13433479 ± 0.0711

From 15 observations 2024 Sept. 5-9; mean residual 0".02

MOIDs: Me 0.743200 Ve 0.381440 Ea 0.111856 Ma 0.184573

MOIDs: Ju 3.311088 Sa 7.219978 Ur 16.156486 Ne 28.095550

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 3.01351

Barbee-style encounter velocity: 4.7481 km/s

Score: 0.156699

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	260.81907689	-17.58697472				807	.00	.01-	.49995	1.1904
C2460558.62500000	260.88264340	-17.62258584				807	.00	.01+	.50003	1.1900
C2460559.46875000	261.33993528	-17.86706547				807	.03-	.01-	.50042	1.1873
C2460559.50000000	261.35608136	-17.87604611				807	.00	.00	.50043	1.1872
C2460559.53125000	261.37226787	-17.88498013				807	.00	.00	.50045	1.1871
C2460559.56250000	261.38854866	-17.89386397				807	.03+	.01+	.50047	1.1870
C2460560.56250000	261.94077457	-18.18174042				807	.00	.03+	.50093	1.1840
C2460560.59375000	261.95760565	-18.19055122				807	.02-	.00	.50094	1.1839
C2460560.62500000	261.97458321	-18.19931611				807	.02-	.01+	.50096	1.1838
C2460561.53125000	262.49012607	-18.45956044				807	.02+	.03-	.50135	1.1810
C2460561.56250000	262.50729924	-18.46834894				807	.03+	.01+	.50136	1.1809
C2460561.59375000	262.52457689	-18.47711032				807	.00	.01-	.50138	1.1808
C2460562.53125000	263.07041967	-18.74476372				807	.02-	.00	.50176	1.1780
C2460562.56250000	263.08804934	-18.75351040				807	.02+	.00	.50178	1.1779
C2460562.59375000	263.10577095	-18.76221279				807	.02-	.01+	.50180	1.1778

2024 YR4

RL: .63369 R2: .62866 Quit About Open... NewObj AddObj ephM Full Herget Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGra

(1)Mer (2)Ven (3)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (0)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Nov 22.51408 ± 2.45 TT = 12:20:16 (JD 2460637.01408)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0026 Find_Orb

M 341.89677816 ± 1.9 (J2000 ecliptic)

n 0.24295034 ± 0.0177 Peri. 134.61067 ± 0.7

a 2.54365206 ± 0.124 Node 271.34234 ± 1.4

e 0.6645012 ± 0.0117 Incl. 3.44377 ± 0.16

P 4.05683 U 10.0

q 0.85339196 ± 0.0122 Q 4.23391215 ± 0.235

From 15 observations 2024 Sept. 5-9; mean residual 0".01

MOIDs: Me 0.536543 Ve 0.141537 Ea 0.002636 Ma 0.105300

MOIDs: Ju 1.213327 Sa 5.645454 Ur 14.350410 Ne 26.108001

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.77250

Tisserand relative to Jupiter: 3.08869

Earth encounter velocity 14.3090 km/s

Barbee-style encounter velocity: 13.8562 km/s

Score: 0.346771

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	276.39006341	-17.81580981				807	.02+	.00	.63369	1.3878
C2460558.62500000	276.36394645	-17.81303447				807	.01-	.01+	.63355	1.3866
C2460559.46875000	276.21414702	-17.79626265				807	.02-	.00	.63251	1.3785
C2460559.50000000	276.20800365	-17.79564996				807	.03-	.01+	.63247	1.3782
C2460559.53125000	276.20188043	-17.79500349				807	.01+	.00	.63243	1.3779
C2460559.56250000	276.19578925	-17.79431326				807	.02+	.00	.63240	1.3776
C2460560.56250000	276.02979367	-17.77383034				807	.00	.01+	.63117	1.3680
C2460560.59375000	276.02423592	-17.77310311				807	.01-	.03-	.63114	1.3677
C2460560.62500000	276.01877149	-17.77232484				807	.01-	.01-	.63110	1.3674
C2460561.53125000	275.88405950	-17.75378048				807	.01+	.01-	.62998	1.3587
C2460561.56250000	275.87891531	-17.75306653				807	.02+	.01-	.62994	1.3584
C2460561.59375000	275.87383757	-17.75231314				807	.02+	.01-	.62991	1.3581
C2460562.53125000	275.74777367	-17.73272528				807	.02-	.03+	.62873	1.3492
C2460562.56250000	275.74310748	-17.73201082				807	.00	.02-	.62870	1.3489
C2460562.59375000	275.73850622	-17.73123686				807	.00	.02+	.62866	1.3486

2014 GL1

R1: 0.9994 R2: 1.0110 Quit About Open... NewObj AddObj epheM Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGra

(1)Mer (2)Ven (3)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (0)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

Perihelion 2024 Dec 6.20000 ± 0.989 TT = 4:48:00 (JD 2460650.70000)

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Earth MOID: 0.0144 Ve: 0.0053

M 303.81629193 ± 3.2 Ma: 0.0635 Find_Orb

n 0.63700349 ± 0.0421 Peri. 60.18552 ± 1.0

a 1.33774963 ± 0.0589 Node 12.40807 ± 2.3

e 0.6471237 ± 0.0096 Incl. 4.81695 ± 0.11

P 1.547/565.135d U 10.6

q 0.47206008 ± 0.011 Q 2.20343917 ± 0.109 (J2000 ecliptic)

From 15 observations 2024 Sept. 5-9; mean residual 0".01

MOIDs: Me 0.164563 Ve 0.005338 Ea 0.014389 Ma 0.063480

MOIDs: Ju 3.124107 Sa 7.809481 Ur 16.600573 Ne 28.101113

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.50486

Earth encounter velocity 21.1098 km/s

Barbee-style encounter velocity: 20.5013 km/s

Score: 0.336280

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	250.44179247	-28.89043737				807	.01+	.01-	0.9994	1.4227
C2460558.62500000	250.45260643	-28.88168029				807	.01-	.01+	0.9998	1.4216
C2460559.46875000	250.54079423	-28.82775746				807	.02+	.02-	1.0023	1.4140
C2460559.50000000	250.54370472	-28.82568733				807	.02+	.02+	1.0024	1.4137
C2460559.53125000	250.54664688	-28.82359845				807	.03-	.00	1.0025	1.4134
C2460559.56250000	250.54967333	-28.82147488				807	.01-	.00	1.0026	1.4131
C2460560.56250000	250.66361344	-28.75857146				807	.01+	.02-	1.0055	1.4040
C2460560.59375000	250.66706830	-28.75646347				807	.00	.02+	1.0056	1.4037
C2460560.62500000	250.67061710	-28.75435519				807	.01+	.01-	1.0057	1.4034
C2460561.53125000	250.78488356	-28.69936134				807	.02-	.01-	1.0082	1.3951
C2460561.56250000	250.78862000	-28.69733810				807	.01+	.01-	1.0083	1.3948
C2460561.59375000	250.79242563	-28.69528619				807	.01+	.01+	1.0084	1.3945
C2460562.53125000	250.92039317	-28.63969480				807	.01-	.00	1.0109	1.3859
C2460562.56250000	250.92446715	-28.63771986				807	.01+	.00	1.0109	1.3856
C2460562.59375000	250.92861139	-28.63572139				807	.00	.00	1.0110	1.3853

Ceres

R1: 2.2869 R2: 2.3347 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGra

(1)Mer (2)Ven (3)Ear (4)Mar (5)Jup (6)Sat (7)Ura (8)Nep (9)Plu (0)Moo (a)Ast

Click on an observation to get information about it. Right-click to get further options. Ctrl-click to select multiple observations.

Version 2025 May 15

Using DE405/DE405; covers years 1599.9 to 2201.1

Orbital elements: [Unnamed]

MOIDs: Me 2.261429 Ve 1.867161 Ea 1.605403 Ma 1.092885

Perihelion 2025 Nov 22.98413 ± 320 TT = 23:37:09 (JD 2461002.48413)

MOIDs: Ju 2.291198 Sa 6.320496 Ur 15.322971 Ne 27.214766

Epoch 2024 Sep 9.0 TT = JDT 2460562.5 Find_Orb Find_Orb ver: 2025 May 15

M 268.85946998 ± 110 (J2000 ecliptic) Score: 0.189951

n 0.20714503 ± 0.103 Peri. 319.19828 ± 60

a 2.82891365 ± 0.933 Node 79.09567 ± 11

e 0.0852777 ± 0.317 Incl. 10.10333 ± 5.4

P 4.75806 U 11.2 SR

q 2.58767029 ± 0.919 Q 3.07015702 ± 6.86

From 15 observations 2024 Sept. 5-9; mean residual 0".53

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2460558.50000000	278.57360456	-30.89479775				807	1.3-	.17-	2.2869	2.8576
C2460558.62500000	278.58092537	-30.89355247				807	1.0-	.13-	2.2884	2.8575
C2460559.46875000	278.63900453	-30.88571235				807	.14+	.03+	2.2981	2.8567
C2460559.50000000	278.64101980	-30.88542617				807	.23+	.03+	2.2985	2.8567
C2460559.53125000	278.64302340	-30.88511882				807	.28+	.04+	2.2988	2.8567
C2460559.56250000	278.64503451	-30.88479524				807	.31+	.04+	2.2992	2.8567
C2460560.56250000	278.71920349	-30.87471046				807	.84+	.12+	2.3108	2.8558
C2460560.59375000	278.72143868	-30.87433968				807	.86+	.14+	2.3112	2.8558
C2460560.62500000	278.72371503	-30.87398301				807	.91+	.05+	2.3116	2.8558
C2460561.53125000	278.79727970	-30.86434250				807	.47+	.07+	2.3222	2.8550
C2460561.56250000	278.79969682	-30.86397233				807	.47+	.07+	2.3225	2.8549
C2460561.59375000	278.80212016	-30.86358687				807	.43+	.06+	2.3229	2.8549
C2460562.53125000	278.88382019	-30.85298176				807	.82-	.10-	2.3340	2.8541
C2460562.56250000	278.88642955	-30.85260038				807	.86-	.14-	2.3343	2.8541
C2460562.59375000	278.88905309	-30.85218302				807	.93-	.11-	2.3347	2.8541