

Single Night Observations

Figure 8 (row 1, column 3). For each of the 12 asteroids, we averaged the distances from all six observations, and find the residuals by comparison with NASA JPL Horizons Data.

2024 ON

R1: .05815 R2: .05737 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resid Gauss constr Epoch all_perts Undo FilterObs NonGravz Ca
 (o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 19.83543 ± 3.48 TT = 20:03:01 (JD 2460573.33543)

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0029 Find_Orb

M 355.99072106 ± 5.7 (J2000 ecliptic)

n 0.25318402 ± 0.309 Peri. 185.42303 ± 0.7

a 2.47463897 ± 2.02 Node 172.12689 ± 3.3

e 0.5930922 ± 0.332 Incl. 7.86262 ± 2.3

P 3.89285 U 12.0

q 1.00694970 ± 0.00076 Q 3.94232823 ± 4.03

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 0".02

MOIDs: Me 0.641454 Ve 0.282661 Ea 0.002889 Ma 0.221216

MOIDs: Ju 1.499623 Sa 5.487058 Ur 14.343757 Ne 26.294196

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.91340

Tisserand relative to Jupiter: 3.20270

Earth encounter velocity 8.8285 km/s

Barbee-style encounter velocity: 9.0615 km/s

Score: 0.318049

YYYY MM DD.DDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	17 56 54.84	+05 04 46.7	FixMel			807	.01+	.00	.05815	1.0233
C2024 09 06.01944	17 56 54.25	+05 03 45.8	FixMel			807	.01+	.00	.05799	1.0233
C2024 09 06.05069	17 56 53.73	+05 02 44.1	FixMel			807	.03-	.01-	.05784	1.0232
C2024 09 06.08194	17 56 53.35	+05 01 41.7	FixMel			807	.01-	.03+	.05768	1.0231
C2024 09 06.11319	17 56 53.17	+05 00 38.5	FixMel			807	.05+	.02-	.05752	1.0230
C2024 09 06.14444	17 56 53.23	+04 59 34.7	FixMel			807	.02-	.00	.05737	1.0230

2024 SJ

R1: .03794 R2: .04121 Quit About Open... NewObj AddObj ephemeris Full Hergen Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGrav C
(c) Mer (o) Ven (o) Ear (o) Mar (o) Jup (o) Sat (o) Ura (o) Nep (o) Plu (o) 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 Aug 31.17306 ± 172673 TT = 4:09:12 (JD 2460553.67306)
Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0273 Find_Orb
q 1.02362416 ± 1459 (J2000 ecliptic)
Peri. 349.89090 ± 300000 Earth encounter velocity 53.7658 km/s
z -2.2255529901 ± 3138 Node 342.38511 ± 15000 Barbee-style encounter velocity: 79.1483 km/s
e 3.2781298 ± 1910 Incl. 61.24197 ± 90000 Score: 27061.468663

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 74457".29

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	20 20 46.48	+45 46 22.0	FixMel			807	491'-	30d+	.03794	1.0391
C2024 09 06.01944	20 20 57.83	+45 46 15.3	FixMel			807	475'-	29d+	.03857	1.0393
C2024 09 06.05069	20 21 09.08	+45 46 06.5	FixMel			807	459'-	28d+	.03921	1.0395
C2024 09 06.08194	20 21 20.28	+45 45 55.4	FixMel			807	443'-	27d+	.03986	1.0396
C2024 09 06.11319	20 21 31.50	+45 45 42.0	FixMel			807	428'-	26d+	.04053	1.0398
C2024 09 06.14444	20 21 42.79	+45 45 26.2	FixMel			807	413'-	25d+	.04121	1.0400

2024 RN15

R1: .12117 R2: .10844 Quit About Open... NewObj AddObj epheM Full Herget Vaisa resiD Gauss constr Epoch all_perts Undo FilterObs NonGr
 (o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 14.78037 ± 3838 TT = 18:43:44 (JD 2460568.28037)

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0024 Ju: 0.8618

q 0.71697648 ± 52.5

Ma: 0.0569 Find_Orb

Peri. 45.27682 ± 33000

z -28.2337740770 ± 25486

Node 343.52401 ± 23000

e 21.2429521 ± 24144

Incl. 16.54999 ± 19000

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 130564".67

MOIDs: Me 0.404102 Ve 0.132474 Ea 0.002360 Ma 0.056904

MOIDs: Ju 0.861835 Sa 1.854791 Ur 3.525453 Ne 6.046199

Find_Orb ver: 2025 May 15

Earth encounter velocity 145.6708 km/s

Barbee-style encounter velocity: 185.6479 km/s

Score: 147457.523860

YYYY MM DD.DDDD	RA (J2000)	dec	-----	mag	ref Obs	Xres	Yres	delta	R
C2024 09 05.98819	22 41 53.42	+04 24 28.1	FixMel		807	41d+	38d+	.12117	1.0905
C2024 09 06.01944	22 41 54.02	+04 25 16.6	FixMel		807	41d+	38d+	.11861	1.0883
C2024 09 06.05069	22 41 54.48	+04 26 05.1	FixMel		807	41d+	38d+	.11607	1.0861
C2024 09 06.08194	22 41 54.81	+04 26 53.5	FixMel		807	41d+	38d+	.11352	1.0839
C2024 09 06.11319	22 41 55.04	+04 27 41.9	FixMel		807	42d+	38d+	.11098	1.0817
C2024 09 06.14444	22 41 55.20	+04 28 30.3	FixMel		807	42d+	38d+	.10844	1.0796

2024 SS

R1: .08953 R2: .07584 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGrav
(o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 12.12666 ± 5038 TT = 3:02:23 (JD 2460565.62666)
Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0247 Find_Orb
q 0.90054798 ± 123 (J2000 ecliptic)
Peri. 210.18347 ± 13000
z -27.5285485501 ± 113073 Node 166.06717 ± 13000
e 25.7907788 ± 107133 Incl. 101.34052 ± 27000
From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 98672".16
MOIDs: Me 0.547086 Ve 0.247892 Ea 0.024654 Ma 0.321521
MOIDs: Ju 3.467681 Sa 7.545031 Ur 16.151233 Ne 25.359458
Find_Orb ver: 2025 May 15
Earth encounter velocity 170.9218 km/s
Barbee-style encounter velocity: 159.4844 km/s
Score: 110111.389231

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	21 48 09.63	+36 44 01.1	FixMel			807	38d-	210'-	.08953	1.0630
C2024 09 06.01944	21 48 08.07	+36 43 56.7	FixMel			807	39d-	171'-	.08675	1.0615
C2024 09 06.05069	21 48 06.37	+36 43 51.2	FixMel			807	39d-	7761-	.08399	1.0599
C2024 09 06.08194	21 48 04.56	+36 43 44.4	FixMel			807	40d-	5056-	.08124	1.0584
C2024 09 06.11319	21 48 02.66	+36 43 36.1	FixMel			807	40d-	2146-	.07853	1.0569
C2024 09 06.14444	21 48 00.72	+36 43 26.3	FixMel			807	41d-	992+	.07584	1.0554

2024 RJ16

R1: 499829 R2: 187018 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resid Gauss constr Epoch all_perts Undo FilterObs No
ToggDn BanObs SaveOrbs ShowFile
(o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 11.15405 ± 11.3 TT = 3:41:49 (JD 2460594.65405)
Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0001 Ju: 0.1877
q 0.73831242 ± 0.457 Ve: 0.0711 Sa: 0.4545 Find_Orb
Peri. 241.84453 ± 36 MOIDs: Me 0.424487 Ve 0.071058 Ea 0.000115 Ma 0.14890
z -0.0324302777 ± 0.0131 Node 163.85853 ± 21 MOIDs: Ju 0.187713 Sa 0.454534 Ur 1.885016 Ne 2.92116
e 1.0239436 ± 0 Incl. 11.25897 ± 32 Find_Orb ver: 2025 May 15
Earth encounter velocity 23.8994 km/s
Barbee-style encounter velocity: 69.0999 km/s
Score: 26134.356217

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 44839".40

YYYY MM DD.DDDD	RA (J2000)	dec	-----	mag	ref Obs	Xres	Yres	delta R
C2024 09 05.98819	22 04 22.25	-03 54 57.7	FixMel		807	2162+	817' -	499829 1.0112
C2024 09 06.01944	22 04 26.21	-03 54 48.3	FixMel		807	520-	863' -	436206 1.0108
C2024 09 06.05069	22 04 30.05	-03 54 38.7	FixMel		807	4067-	924' -	372907 1.0104
C2024 09 06.08194	22 04 33.81	-03 54 29.1	FixMel		807	9034-	17d -	310066 1.0100
C2024 09 06.11319	22 04 37.51	-03 54 19.2	FixMel		807	276' -	19d -	247927 1.0096
C2024 09 06.14444	22 04 41.18	-03 54 09.2	FixMel		807	489' -	22d -	187018 1.0092

2024 RO2

R1: 792366 R2: 611281 Quit About Open... NewObj AddObj ephem Full Herget Valsa resID Gauss constr Epoch all_perts Undo FilterObs NonGrav
(o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 10.20281 ± 7349 TT = 4:52:02 (JD 2460593.70281)	MOIDs: Me 0.541341 Ve 0.147401 Ea 0.001070 Ma 0.060640
Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0011 Ju: 0.4203	MOIDs: Ju 0.420307 Sa 4.731356 Ur 13.435651 Ne 25.299885
M 352.94473834 ± 11000 Ma: 0.0606 Find_Orb	Find_Orb ver: 2025 May 15
n 0.19488161 ± Peri. 224.68800 ± 7000 Tisserand relative to Earth: 2.77438	Tisserand relative to Jupiter: 2.83347
a 2.94638033 ± Node 167.64406 ± 17 Earth encounter velocity 14.2499 km/s	Barbee-style encounter velocity: 13.9585 km/s
e 0.7048002 ± 213 Incl. 1.05825 ± 3000 Score: 13509.900068	
P 5.05747 U 16.4	
q 0.86977061 ± 13.4 Q 5.02299005 ± 2759 (J2000 ecliptic)	
From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 36717".93	

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	22 10 20.22	+17 34 12.0	FixMel	807	363'	925'+	792366	1.0130		
C2024 09 06.01944	22 10 20.10	+17 34 37.7	FixMel	807	344'	880'+	755415	1.0128		
C2024 09 06.05069	22 10 19.86	+17 35 03.2	FixMel	807	324'	830'+	718781	1.0125		
C2024 09 06.08194	22 10 19.53	+17 35 28.1	FixMel	807	303'	775'+	682514	1.0123		
C2024 09 06.11319	22 10 19.14	+17 35 52.5	FixMel	807	280'	715'+	646665	1.0121		
C2024 09 06.14444	22 10 18.71	+17 36 16.4	FixMel	807	254'	647'+	611281	1.0118		

2024 SH7

R1: .43899 R2: .44149 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resID Gauss constr Epoch all_parts Undo FilterObs NonGrav
(o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 Jun 27.43309 ± 667655 TT = 10:23:38 (JD 2460488.93309)

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0681 Find_Orb

M 28.91326689 ± 800000

(J2000 ecliptic)

MOIDs: Me 0.336764 Ve 0.136346 Ea 0.068054 Ma 0.315466

n 0.42167957 ±

Peri. 281.60703 ± 800000

MOIDs: Ju 3.540358 Sa 7.258831 Ur 16.750923 Ne 28.013835

a 1.76122296 ±

Node 323.44760 ± 70000

Find_Orb ver: 2025 May 15

e 0.6363756 ± 17120

Incl. 50.24128 ± 290000

Tisserand relative to Earth: 1.87722

P 2.337/853.713d U 19.3

Earth encounter velocity 31.7884 km/s

q 0.64042349 ± 3512 Q 2.88202243 ± 884311

Barbee-style encounter velocity: 32.0662 km/s

Score: 7225.481088

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 7368".80

YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	20 02 09.08	+49 30 57.5	FixMel			807	9345+	3704+	.43899	1.2337
C2024 09 06.01944	20 02 10.04	+49 31 04.8	FixMel			807	9387+	3789+	.43949	1.2340
C2024 09 06.05069	20 02 10.95	+49 31 10.8	FixMel			807	9428+	3873+	.43999	1.2343
C2024 09 06.08194	20 02 11.84	+49 31 15.3	FixMel			807	9470+	3955+	.44049	1.2346
C2024 09 06.11319	20 02 12.76	+49 31 18.5	FixMel			807	9511+	4037+	.44099	1.2350
C2024 09 06.14444	20 02 13.72	+49 31 20.2	FixMel			807	9553+	4118+	.44149	1.2353

2024 SR4

R1: .01074 R2: .01395	Quit	About	Open...	NewObj	AddObj	epheM	Full	Herget	Vaisa	resID	Gauss	constr	Epoch	all_perts	Undo	FilterObs	NonGrav		
(o) Mer	(o) Ven	(o) Ear	(o) Mar	(o) Jup	(o) Sat	(o) Ura	(o) Nep	(o) Plu	(o) 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 0.550958 Ve 0.245058 Ea 0.006534 Ma 0.327829										
Perihelion 2024 Aug 26.64504 ± 14332 TT = 15:28:51 (JD 2460549.14504)									MOIDs: Ju 2.595176 Sa 5.044030 Ur 8.602476 Ne 14.407601										
Epoch 2024 Sep 4.0 TT = JDT 2460557.5									Earth MOID: 0.0065 Find_Orb										
q	0.95705772 ± 39.1	Find_Orb ver: 2025 May 15									Earth encounter velocity 44.9177 km/s								
		(J2000 ecliptic)									Barbee-style encounter velocity: 90.1143 km/s								
z	-2.7671757389 ± 12.6	Peri. 337.89280 ± 28000									Score: 6575.777127								
e	3.6483469 ± 0	Node 343.23972 ± 7000																	
		Incl. 33.30926 ± 22000																	
From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 20600".89																			
YYYY MM DD.DDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R									
C2024 09 05.98819	22 38 40.31	+14 28	14.8	FixMel		807	40.5-	3108-	.01074	1.0180									
C2024 09 06.01944	22 38 40.34	+14 28	09.2	FixMel		807	3146-	215'-	.01134	1.0183									
C2024 09 06.05069	22 38 40.28	+14 28	03.4	FixMel		807	5997-	362'-	.01196	1.0187									
C2024 09 06.08194	22 38 40.14	+14 27	57.3	FixMel		807	8623-	493'-	.01260	1.0191									
C2024 09 06.11319	22 38 39.95	+14 27	50.8	FixMel		807	184'-	611'-	.01327	1.0194									
C2024 09 06.14444	22 38 39.71	+14 27	44.0	FixMel		807	222'-	718'-	.01395	1.0198									

2024 SD3

R1: .51979 R2: .51738 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGrav
(o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 8.05056 ± 44443 TT = 1:12:48 (JD 2460622.55056)

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0154 Ju: 0.4521

M 357.50997182 ± 4200 (J2000 ecliptic) Find_Orb

n 0.03827835 ± Peri. 228.24208 ± 44000

a 8.71968055 ± Node 189.32095 ± 60000

e 0.9052020 ± 0 Incl. 39.52012 ± 15000

p 25.74844 U 15.1

q 0.82660773 ± 156 Q 16.6127533 ± 1129

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 170589".42

MOIDs: Me 0.542134 Ve 0.195105 Ea 0.015382 Ma 0.359541

MOIDs: Ju 0.452094 Sa 2.161668 Ur 7.644647 Ne 16.965635

Find_Orb ver: 2025 May 15

Tisserand relative to Earth: 2.05080

Tisserand relative to Jupiter: 1.44550

Earth encounter velocity 29.2281 km/s

Barbee-style encounter velocity: 28.7527 km/s

Score: 190505.960517

YYYY MM.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	00 19 55.68	-11 26 20.0	FixMel			807	46d+	59d-	.51979	1.3510
C2024 09 06.01944	00 19 55.85	-11 26 31.2	FixMel			807	46d+	59d-	.51931	1.3506
C2024 09 06.05069	00 19 55.95	-11 26 42.3	FixMel			807	46d+	59d-	.51882	1.3503
C2024 09 06.08194	00 19 55.99	-11 26 53.4	FixMel			807	46d+	59d-	.51834	1.3499
C2024 09 06.11319	00 19 55.98	-11 27 04.5	FixMel			807	46d+	59d-	.51786	1.3495
C2024 09 06.14444	00 19 55.90	-11 27 15.4	FixMel			807	46d+	59d-	.51738	1.3491

2024 YR4

HOME

R1: .34793 R2: .35716 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGrav
 (o)Mer (o)Ven (o)Ear (o)Mar (o)Jup (o)Sat (o)Ura (o)Nep (o)Plu (o)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 Aug 16.62992 ± 390563 TT = 15:07:05 (JD 2460539.12992)

MOIDs: Me 0.484166 Ve 0.105322 Ea 0.009885 Ma 0.098481

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.00999 Ju: 0.5450

MOIDs: Ju 0.545018 Sa 0.842784 Ur 1.790789 Ne 2.321281

q 0.82590354 ± 1388 Ma: 0.0985 Sa: 0.8428 Find_Orb

Find_Orb ver: 2025 May 15

Peri. 317.24416 ± 340000

Earth encounter velocity 103.9252 km/s

z -4.6508616486 ± 131486 Node 335.11264 ± 32000

Barbee-style encounter velocity: 54.1914 km/s

e 4.8411631 ± 125259 Incl. 171.95874 ± 80000

Score: 9558.976483

From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 5709".75

YYYY MM DD.DDDD	RA (J2000)	dec	-----	mag	ref	Obs	Xres	Yres	delta	R
C2024 09 05.98819	18 24 50.48	-17 47 45.2	FixMel			807	3892+	7124+	.34793	1.1793
C2024 09 06.01944	18 24 49.01	-17 47 42.9	FixMel			807	3912+	7104+	.34977	1.1802
C2024 09 06.05069	18 24 47.54	-17 47 40.5	FixMel			807	3931+	7083+	.35162	1.1811
C2024 09 06.08194	18 24 46.08	-17 47 37.9	FixMel			807	3950+	7063+	.35347	1.1821
C2024 09 06.11319	18 24 44.65	-17 47 35.2	FixMel			807	3969+	7043+	.35531	1.1830
C2024 09 06.14444	18 24 43.24	-17 47 32.4	FixMel			807	3987+	7023+	.35716	1.1839

2014 GL1

R1: .07689 R2: .07582	Quit	About	Open...	NewObj	AddObj	epheM	Full	Herget	Vaisa	resID	Gauss	constr	Epoch	all_perts	Undo	FilterObs	NonGrav
(o) Mer	(o) Ven	(o) Ear	(o) Mar	(o) Jup	(o) Sat	(o) Ura	(o) Nep	(o) Plu	(o) 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 14.08238 ± 362 TT = 1:58:37 (JD 2460567.58238)																	
Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0019 Ju: 0.0488																	
M 359.97745381 ± 3.4				Ma: 0.0269	Sa: 0.1696	Ur: 0.0685					MOIDs: Me 0.629746 Ve 0.280799 Ea 0.001860 Ma 0.026891						
n 0.00223619 ± 0.00345				Peri. 196.71932 ± 270	Find_Orb					MOIDs: Ju 0.048825 Sa 0.169572 Ur 0.068544 Ne 0.333211							
a 57.9156625 ± 5.5				Node 153.57832 ± 22						Find_Orb ver: 2025 May 15							
e 0.9826665 ± 0				Incl. 0.67323 ± 57						Tisserand relative to Earth: 2.83867							
P 440.75175	U 9.1									Tisserand relative to Jupiter: 1.32672							
q 1.003877792 ± 0.248	Q 114.827447 ± 10.7						(J2000 ecliptic)			Tisserand relative to Neptune: 1.03371							
From 6 observations 2024 Sept. 5-6 (3.8 hr); mean residual 15594".07																	
YYYY MM DD.DDDDD	RA (J2000)	dec	-----	mag	ref	Obs		Xres	Yres	delta	R						
C2024 09 05.98819	16 42 10.22	-28 49	35.3	FixMel			807	176'-	320'-	.07689	1.0133						
C2024 09 06.01944	16 42 10.93	-28 49	27.8	FixMel			807	176'-	319'-	.07667	1.0132						
C2024 09 06.05069	16 42 11.65	-28 49	20.2	FixMel			807	175'-	319'-	.07646	1.0131						
C2024 09 06.08194	16 42 12.38	-28 49	12.5	FixMel			807	175'-	318'-	.07624	1.0131						
C2024 09 06.11319	16 42 13.14	-28 49	04.7	FixMel			807	174'-	318'-	.07603	1.0130						
C2024 09 06.14444	16 42 13.92	-28 48	56.9	FixMel			807	174'-	317'-	.07582	1.0129						

Ceres

R1: .45501 R2: .45423 Quit About Open... NewObj AddObj ephem Full Herget Vaisa resID Gauss constr Epoch all_perts Undo FilterObs NonGra
(o) Mer (o) Ven (o) Ear (o) Mar (o) Jup (o) Sat (o) Ura (o) Nep (o) Plu (o) 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 19.53718 ± 4546 TT = 12:53:32 (JD 2460603.03718)

Epoch 2024 Sep 4.0 TT = JDT 2460557.5 Earth MOID: 0.0259 Ju: 0.0793

q: 1.01634817 ± 2.55 Ma: 0.0106 Sa: 0.1123 Ur: 0.1496

MOIDs: Me 0.673449 Ve 0.298109 Ea 0.025866 Ma 0.010606

MOIDs: Ju 0.079283 Sa 0.112292 Ur 0.149597 Ne 0.654611

Find Orb ver: 2025 May 15

Earth encounter velocity 11.8390 km/s

Barbee-style encounter velocity: 71.4399 km/s

Score: 8910.755029

e -1.9958247 ± 9 Incl. 3.59195 ± 53

from 6 observations 2024 Sept. 5-6 (3.8 hr): mean residual 8991".91

YYYY MM DD.D RRRRR RA (J2000) dec ----- mag ref Obs Xres Yres delta R

C2024_09_05_98819_18_34_33_-66_-30_53_07_9_FixMe1 807 6989+ 174+- 45501 1-2519

C2024 09 06-01944 18 34 34.14 -30 53 06.9 FixMeL 807 2002+ 174' - 45485 1-2516

C2024 09 06-05069 18 34 34-62 -30 53 05-7 FixMeL 807 7014+ 174'- -45469 1-2513

C2024_09_06_08194_18_34_35-11_-30_53_04-5 FixMe! 807 2026+ 175'- -45454 1-2510

C2024_09_06_11319_18_34_35_60_-30_53_03-2 FixMeL 807 2038+ 175' - 45438 1_2507

C2024_09_06_144444 18 34 36 10 -30 53 01 9 FixMe! 807 2050+ 175' - 45423 1 2504