

<https://nssdc.gsfc.nasa.gov/planetary/factsheet/mercuryfact.html>
Bulk parameters

Mercury	Earth	Ratio			
(Mercury/Earth)					
Mass (1024 kg)	0.33010	5.9722	0.0553		
Volume (1010 km3)	6.083	108.321	0.0562		
Equatorial radius (km)	2440.5	6378.1	0.383		
Polar radius (km)	2438.3	6356.8	0.384		
Volumetric mean radius (km)		2439.7	6371.0	0.383	
Ellipticity (Flattening)	0.0009	0.00335	0.269		
Mean density (kg/m3)	5429	5513	0.985		
Surface gravity (mean) (m/s2)		3.70	9.82	0.378	
Surface acceleration (eq.) (m/s2)		3.70	9.78	0.378	
Surface acceleration (pole) (m/s2)			3.71	9.83	0.377
Escape velocity (km/s)	4.3	11.2	0.384		
GM (x 106 km3/s2)	0.022032		0.39860	0.0553	
Bond albedo	0.068	0.294	0.231		
Geometric albedo	0.142	0.434	0.327		
V-band magnitude V(1,0)	-0.613	-3.99	-		
Solar irradiance (W/m2)	9082.7	1361.0	6.674		
Black-body temperature (K)		439.6	254.0	1.731	
Topographic range (km)	7	20	0.350		
Moment of inertia (I/MR2)		0.35	0.3308	1.058	
J2 (x 10-6)	50.3	1082.63	0.055		
Number of natural satellites		0	1		
Planetary ring system	No	No			
Orbital parameters					

Mercury	Earth	Ratio		
(Mercury/Earth)				
Semimajor axis (106 km)		57.909	149.598	0.387
Sidereal orbit period (days)		87.969	365.256	0.241
Tropical orbit period (days)		87.968	365.242	0.241
Perihelion (106 km)	46.000	147.095	0.313	
Aphelion (106 km)	69.818	152.100	0.459	
Synodic period (days)	115.88	-	-	
Mean orbital velocity (km/s)		47.36	29.78	1.590
Max. orbital velocity (km/s)		58.97	30.29	1.947
Min. orbital velocity (km/s)		38.86	29.29	1.327
Orbit inclination (deg)	7.004	0.000	-	
Orbit eccentricity	0.2056	0.0167	12.311	
Sidereal rotation period (hrs)		1407.6	23.9345	58.785

Length of day (hrs) 4222.6 24.0000 175.942

Obliquity to orbit (deg) 0.034 23.44 0.001

Inclination of equator (deg) 0.034 23.44 0.001

gemiddelde afstand tot de zon: 0,3871 A.E. (57,909 milj. km)
kleinste afstand tot de zon: 0,3075 A.E. (46,001 milj. km)
grootste afstand tot de zon: 0,4667 A.E. (69,817 milj. km)
siderische omlooptijd: 0,2408518 jaar
synodische periode: 115,877 dagen
baansnelheid: 47,872 km/sec

$u := 10^{-6}$ $n := 10^{-9}$ $c := 2.998 \cdot 10^8$ $k := 1000$

$$Fz(M1,M2,r) := \left| \begin{array}{l} Gc \leftarrow 6.67 \cdot 10^{-11} \\ \frac{Gc \cdot M1 \cdot M2}{r^2} \end{array} \right|$$

$miljoen := 10^6$

$87.968 \cdot 24 \cdot 3600 = 7.6 \times 10^6$ seconden per omwenteling mercurius

$dt := 3600$ $k := 1000$

$M1 := 1.989 \cdot 10^{30}$ $M2 := 0.33010 \cdot 10^{24}$

$km := 1000$ $Gc := 6.67 \cdot 10^{-11}$ $88 \cdot 24 \cdot 60 \cdot 60 = 7.603 \times 10^3 \cdot k$

pos(M1, vx1, vy1, x1, y1, M2, vx2, vy2, x2, y2, dt) :=

c ← 2.998·10⁸

r ← √[(x1 − x2)² + (y1 − y2)²]

F1 ← Fz(M1, M2, r)

a1 ← $\frac{-F1}{M1}$

a2 ← $\frac{F1}{M2}$

a1x ← $\frac{a1 \cdot (x1 - x2)}{r}$

a1y ← $\frac{a1 \cdot (y1 - y2)}{r}$

a2x ← $\frac{a2 \cdot (x1 - x2)}{r}$

a2y ← $\frac{a2 \cdot (y1 - y2)}{r}$

vx1 ← vx1 + a1x·dt

vy1 ← vy1 + a1y·dt

vx2 ← vx2 + a2x·dt

vy2 ← vy2 + a2y·dt

dy1 ← vy1·dt

dx1 ← vx1·dt

dx2 ← vx2·dt

dy2 ← vy2·dt

x1 ← x1 + dx1

y1 ← y1 + dy1

x2 ← x2 + dx2

y2 ← y2 + dy2

posl₀ ← x1

posl₁ ← y1

posl₂ ← x2

posl₃ ← y2

posl₄ ← vx1

posl₅ ← vy1

posl₆ ← vx2

posl₇ ← vy2

posl

xy :=

n ← 0

v1 ← 0

v2 ← 58.97k

vx1 ← 0

vy1 ← 0

vx2 ← 0

vy2 ← v2

x1 ← 46.001k·k·k

y1 ← 0

x2 ← 0

y2 ← 0

for n ∈ 0, 1.. 87.968·24

a ← pos(M1, vx1, vy1, x1, y1, M2, vx2, vy2, x2, y2, dt)

xy_{n,0} ← a₀

xy_{n,1} ← a₁

xy_{n,2} ← a₂

xy_{n,3} ← a₃

xy_{n,4} ← a₄

xy_{n,5} ← a₅

xy_{n,6} ← a₆

xy_{n,7} ← a₇

vx1 ← a₄

vy1 ← a₅

x1 ← a₀

y1 ← a₁

vx2 ← a₆

vy2 ← a₇

x2 ← a₂

y2 ← a₃

xy

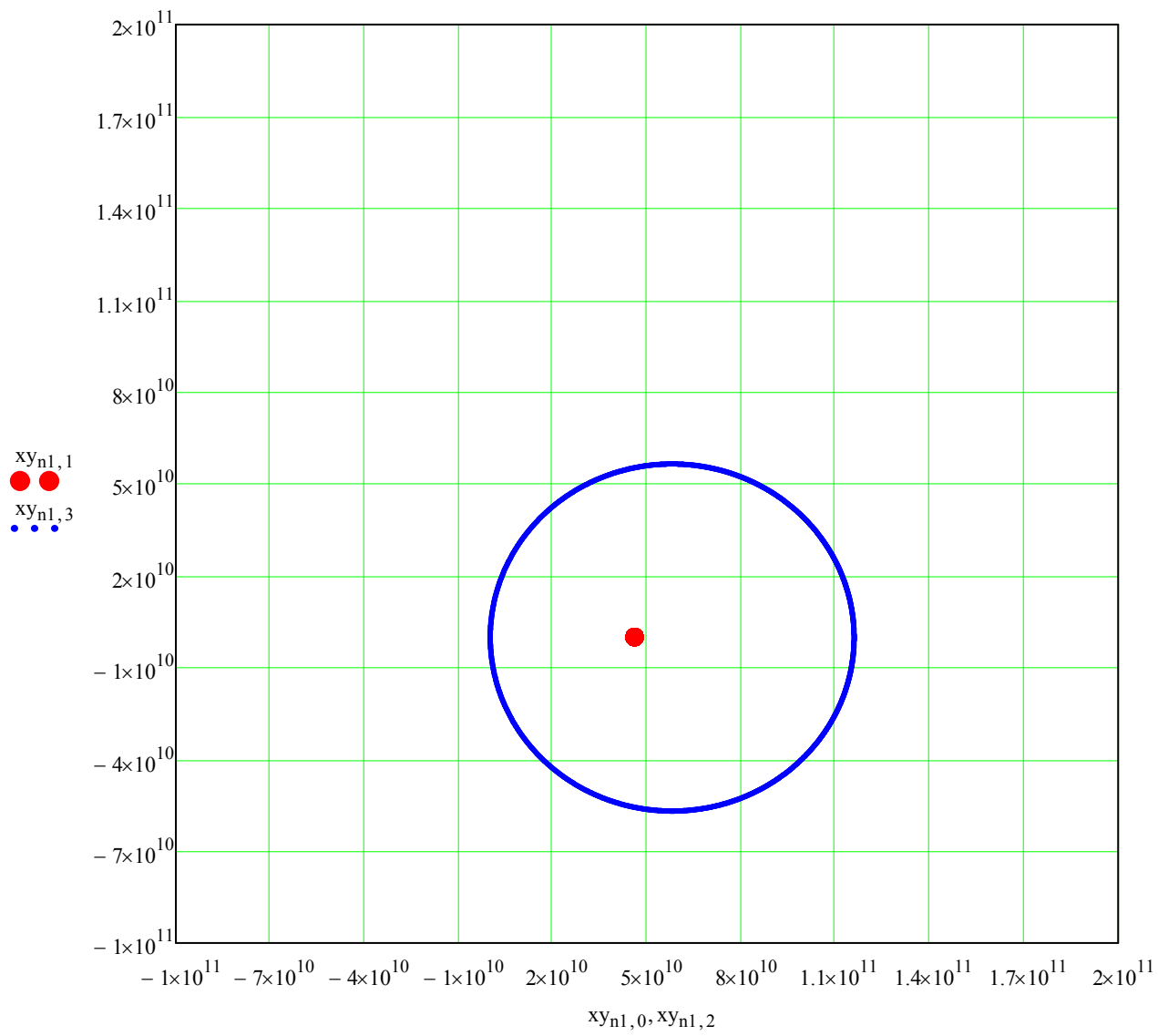
$xy_{0,0} = 4.6 \times 10^{10}$

$n1 := 0, 1.. 115.88 \cdot 24$

$\frac{365}{88} \cdot 100 = 414.773$

omlopen per eeuw $2.0375e+007 - 1322.9 = 2.037 \times 10^7$

$\overset{\text{kk}}{k} := 1000$



$$1.4805e+008 - 1.2694e+008 = 2.111 \times 10^7$$

$$\frac{574}{60 \cdot 60} = 0.159 \quad \text{graden per eeuw}$$

$$\frac{1.4805e+008 - 1.2694e+008}{7e+010} \cdot 3600 = 1.086$$