Gaussian gravitational constant
Astronomical unit (au)
Speed of light in vacuo
Dynamical form-factor J2 for the Earth
Product of gravitational constant and mass of the Earth
Earth-Moon mass ratio
Moon’s sidereal mean motion
Obliquity of the ecliptic (2000)
Constant of nutation in obliquity (2000)
Solar parallax
Light-time for unit distance
Constant of aberration
Mean distance Earth to Moon
Constant of sine Moon’s parallax
Lunar inequality
Parallactic inequality

Length of the year:
- Tropical (equinox to equinox)
- Sidereal (fixed star to fixed star)
- Anomalistic (apse to apse)
- Eclipse (Moon’s node to Moon’s node)
- Gaussian (Kepler’s law for a = 1)

Length of the month:
- Tropical (equinox to equinox)
- Sidereal (fixed star to fixed star)
- Anomalistic (apse to apse)
- Draconic (node to node)
- Synodic (New Moon to New Moon)

Length of the day:
- Mean solar day
- Mean sidereal day
- Sidereal rotation period of the Earth

Solar radiation:
- Solar constant
- Radiation emitted
- Radiation emittance at surface.
- Total internal radiant energy
- Radiation emitted per unit mass
- Visual absolute magnitude (Mv)
- Colour indices (B-V, U-B)
- Spectral type
- Effective temperature
The Galaxy:
- Pole of galactic plane (1950): $12^h 49^m.0, \delta +27^\circ 24'$
- Point of zero longitude (1950): $17^h 42^m.4, \delta -28^\circ 55'$
- Galactic Longitude of North Celestial Pole: $123^\circ.00$
- Mass: $1.1 \times 10^{11}$ solar masses = $2.2 \times 10^{41}$ kg
- Average density: $0.1$ solar mass pc$^{-3} = 7 \times 10^{-21}$ kg m$^{-3}$
- Diameter: 25,000 pc
- Thickness: 4,000 pc
- Distance of Sun from centre: 8,200 pc
- Distance of Sun above galactic plane: 8 pc
- Solar apex (1950) (from bright stars): $\alpha 18^h 06^m, \delta + 30^\circ$
- Solar motion (from bright stars): 20.0 km s$^{-1}$
- Period of revolution of Sun about centre: $2.2 \times 10^8$ yr

Conversion factors:
- Light-year (ly): $9.4607 \times 10^{12}$ km = 63,240 au = 0.30660 pc
- Parsec (pc): $30.857 \times 10^{12}$ km = 206,265 au = 3.2616 ly

Figure of the Earth:
- Equatorial radius: 6,378,136.6 m
- Polar radius: 6,356,751.9 m
- Flattening: 0.0033528197

\[\begin{align*}
* \rho \sin \phi' &= S \sin \phi, \quad \rho \cos \phi' = C \cos \phi \text{ where:} \\
S &= 0.99497418 - 0.00167082 \cos 2\phi + 10^{-8} (210 \cos 4\phi + 15.7 \, h) \\
C &= 1.00167997 - 0.00168208 \cos 2\phi + 10^{-8} (212 \cos 4\phi + 15.7 \, h) \\
\rho &= 0.99832707 + 0.00167644 \cos 2\phi - 10^{-8} (352 \cos 4\phi - 15.7 \, h) + 10^{-8} \cos 6\phi \\
\tan \phi' &= 0.9933054 + (0.11 \times 10^{-8} \, h)) \tan \phi \\
\phi - \phi' &= 692''.74 \sin 2\phi - 1''.16 \sin 4\phi \\
1^\circ \text{ of latitude} &= [111.1333 - 0.5598 \cos 2 \varphi + 0.0012 \cos 4\varphi] \text{ km} \\
1^\circ \text{ of longitude} &= [111.4133 \cos \varphi - 0.0935 \cos 3 \varphi + 0.0001 \cos 5\varphi] \text{ km} \\
\end{align*}\]

Acceleration due to gravity
\[g = 9.780310 [1 + 0.00530239 \sin^2 \varphi - 0.00000587 \sin^2 2\varphi - (31.55 \times 10^4) \, h] \, \text{m s}^{-2}\]

Length of seconds pendulum
\[l = [0.9935769 - 0.0026272 \cos 2\varphi + 0.0000029 \cos 4\varphi - (3133 \times 10^{-10}) \, h] \, \text{m}\]

Constant of gravitation
\[6.67428 \times 10^{-11} \text{kg}^{-1} \text{m}^3\text{s}^{-2}\]

Centennial general precession
\[p = 5028''.796195 + 2''.2108696 \, T\]

* $\varphi =$ Geographic or geodetic latitude
* $\rho =$ Geocentric distance in equatorial radii
* $\varphi' =$ Geocentric latitude
* $h =$ Height in metres
* $T =$ Time measured in Julian centuries from J2000.0