Astrodynamical Constants

Quantity	Value	References and Remarks
Time		
MJD(J2000)	51544.5	IAU 1976 (Seidelmann 1992)
TT−TAI	32.184 s	IAU 1991 (Seidelmann 1992)
GPS−TAI	−19 s	Hofmann-Wellenhof et al. (1997)
Universal		
c	299 792 458 m/s	IAU 1976 (Seidelmann 1992)
G	$6.67\underline{3}\cdot10^{-20}$ km^3/(kg s^2)	Cohen & Taylor 1987
Earth		
$GM_\oplus$	398 600.441$\underline{5}$ km^3/s^2	JGM-3
J_2	0.0010826$\underline{3}$	JGM-3
$R_\oplus$	6378.137 km	WGS-84 (NIMA 1997)
f	1/298.257223563	WGS-84 (NIMA 1997)
$\omega_\oplus$	$0.7292115\cdot10^{-4}$ rad/s	Moritz 1980
Sun		
$GM_\odot$	$1.32712440018\cdot10^{11}$ km^3/s^2	DE405 (Standish 1998)
AU	149 597 870.691 km	DE405 (Standish 1998)
$R_\odot$	$6.96\cdot10^5$ km	Seidelmann 1992
$P_\odot$	$4.560\cdot10^{-6}$ N/m^2	IERS 1996 (McCarthy 1996)
Moon		
GM_M	4 902.801 km^3/s^2	DE405 (Standish 1998)
a_M	384 400 km	Seidelmann 1992
R_M	1738 km	Seidelmann 1992
Satellites		
r_GEO	42 164 km	$23^\mathrm{h}56^\mathrm{m}04^\mathrm{s}$ orbital period
v_GEO	3.075 km/s	
r_GPS	26 561 km	$11^\mathrm{h}58^\mathrm{m}02^\mathrm{s}$ orbital period
v_GPS	3.874 km/s	
r_LEO	6678…7878 km	300…1500 km altitude
v_LEO	7.726…7.113 km/s	

Underlined numbers indicate a rounding of the original value to the given number of digits. DE405 constants refer to the TDB time system.