## Physical Constants

| | | |
|---|---|---|
| Gravitational constant | $G$ | $= 6.67259 \times 10^{-8}$ dyne cm$^2$ g$^{-2}$ |
| Speed of light (exact) | $c$ | $= 2.99792458 \times 10^{10}$ cm s$^{-1}$ |
| Planck's constant | $h$ | $= 6.6260755 \times 10^{-27}$ erg $s$ |
| | $\hbar$ | $\equiv h/2\pi$ |
| | | $= 1.05457266 \times 10^{-27}$ erg s |
| Boltzmann's constant | $k$ | $= 1.380658 \times 10^{-16}$ erg K$^{-1}$ |
| Stefan–Boltzmann constant | $\sigma$ | $= 5.67051 \times 10^{-5}$ erg cm$^{-2}$ s$^{-1}$ K$^{-4}$ |
| Radiation constant | $a$ | $= 4\sigma/c$ |
| | | $= 7.56591 \times 10^{-15}$ erg cm$^{-3}$ K$^{-4}$ |
| Proton mass | $m_p$ | $= 1.6726231 \times 10^{-24}$ g |
| Neutron mass | $m_n$ | $= 1.674929 \times 10^{-24}$ g |
| Electron mass | $m_e$ | $= 9.1093897 \times 10^{-28}$ g |
| Hydrogen mass | $m_H$ | $= 1.673534 \times 10^{-24}$ g |
| Atomic mass unit | 1 u | $= 1.6605402 \times 10^{-24}$ g |
| | | $= 931.49432$ MeV/$c^2$ |
| Coulomb law constant (cgs) | $k_C$ | $\equiv 1$ |
| (SI) | | $= 8.9875518 \times 10^9$ N m$^2$ C$^{-2}$ |
| Electric charge (cgs) | $e$ | $= 4.803206 \times 10^{-10}$ esu |
| (SI) | | $= 1.60217733 \times 10^{-19}$ C |
| Electron volt | 1 eV | $= 1.60217733 \times 10^{-12}$ erg |
| Avagadro's number | $N_A$ | $= 6.0221367 \times 10^{23}$ mole$^{-1}$ |
| Gas constant | $R$ | $= 8.314510 \times 10^7$ ergs mole$^{-1}$ K$^{-1}$ |
| Bohr radius | $a_o$ | $= \hbar^2/m_e e^2$ |
| | | $= 5.29177249 \times 10^{-9}$ cm |
| Rydberg constant | $R_H$ | $= \mu e^4/4\pi\hbar^3 c$ |
| | | $= 1.09677583 \times 10^5$ cm$^{-1}$ |

## Astronomical Constants

| | | |
|---|---|---|
| Solar mass | 1 $M_\odot$ | $= 1.989 \times 10^{33}$ g |
| Solar luminosity | 1 $L_\odot$ | $= 3.826 \times 10^{33}$ ergs s$^{-1}$ |
| Solar radius | 1 $R_\odot$ | $= 6.9599 \times 10^{10}$ cm |
| Solar effective temperature | $T_\odot$ | $= 5770$ K |
| Earth mass | 1 $M_\oplus$ | $= 5.974 \times 10^{27}$ g |
| Earth radius | 1 $R_\oplus$ | $= 6.378 \times 10^8$ cm |
| Light year | 1 ly | $= 9.4605 \times 10^{17}$ cm |
| Parsec | 1 pc | $= 3.0857 \times 10^{18}$ cm |
| | | $= 3.2616$ ly |
| Astronomical unit | 1 AU | $= 1.4960 \times 10^{13}$ cm |
| Sidereal day | | $= 23^h\ 56^m\ 04.09054^s$ |
| Solar day | | $= 86400$ s |
| Sidereal year | | $= 3.155815 \times 10^7$ s |
| Tropical year | | $= 3.155693 \times 10^7$ s |