Physical and astronomical constants

Table 1. Physical constants (CODATA 2018)

		cgs	MKS
gravitational constant	G	$6.674\ 30(15) \times 10^{-8}$ cm^3 g^{-1} s^{-2}	10^{-11} m^3 kg^{-1} s^{-2}
speed of light in vacuum	c	$2.997\ 924\ 58 \times 10^{10}$ cm s^{-1}	10^8 m s^{-1}
Planck constant	h	$6.626\ 070\ 15 \times 10^{-27}$ erg s	10^{-34} J s
Boltzmann constant	k	$1.380\ 649 \times 10^{-16}$ erg K^{-1}	10^{-23} J K^{-1}
electron volt	eV	$1.602\ 176\ 634 \times 10^{-12}$ erg	10^{-19} J
electron charge	e	$4.803\ 26 \times 10^{-10}$ esu (= dyn$^{1/2}$ cm)	
			$1.602\ 176\ 634 \times 10^{-19}$ C
electron mass	m_e	$9.109\ 383\ 7015(38) \times 10^{-28}$ g	10^{-31} kg
	$m_e c^2$	$510.998\ 950\ 00(15)$ keV	
proton mass	m_p	$1.672\ 621\ 923\ 69(51) \times 10^{-24}$ g	10^{-27} kg
	$m_p c^2$	$938.272\ 088\ 16(29)$ MeV	
neutron mass	m_n	$1.674\ 927\ 498\ 04(95) \times 10^{-24}$ g	10^{-27} kg
	$m_u c^2$	$939.565\ 420\ 52(54)$ MeV	
atomic mass unit	m_u	$1.660\ 539\ 066\ 60(50) \times 10^{-24}$ g	10^{-27} kg
Stefan-Boltzmann constant	$\sigma = 2\pi^5 k^4/15 h^3 c^2$	$5.670\ ... \times 10^{-5}$ erg cm^{-2} s^{-1} K^{-4}	10^{-8} J m^{-2} s^{-1} K^{-4}
radiation density constant	$a = 4\sigma/c$	$7.565\ ... \times 10^{-15}$ erg cm^{-3} K^{-4}	10^{-16} J m^{-3} K^{-4}
gas constant	R	$8.314\ ... \times 10^{7}$ erg K^{-1} mol^{-1}	10^0 J K^{-1} mol^{-1}

Table 2. Astronomical constants

		cgs	MKS
Solar mass	$M_\odot$	$1.998\ 4 \times 10^{33}$ g	10^{30} kg
Solar radius	$R_\odot$	6.957×10^{10} cm	10^8 m
Solar luminosity	$L_\odot$	3.84×10^{33} erg s^{-1}	10^{26} J s^{-1}
year	yr	$3.155\ 76 \times 10^7$ s	
astronomical unit	AU	$1.495\ 978\ 71 \times 10^{13}$ cm	10^{11} m
parsec	pc	$3.085\ 678 \times 10^{18}$ cm	10^{16} m