Fundamental Constants

Quantity	Symbol	Value
Speed of light[†]	c	$2.997\ 924\ 58 \times 10^8$ m s^{-1}
Elementary charge	e	$1.602\ 177 \times 10^{-19}$ C
Faraday constant	$F = eN_A$	$9.648\ 53 \times 10^4$ C mol^{-1}
Boltzmann constant	k	$1.380\ 658 \times 10^{-23}$ J K^{-1}
Gas constant	$R = kN_A$	$8.314\ 51$ J K^{-1} mol^{-1}
		$8.205\ 78 \times 10^{-2}$ dm^3 atm K^{-1} mol^{-1}
		62.364 L Torr K^{-1} mol^{-1}
Planck constant	h	$6.626\ 08 \times 10^{-34}$ J s
	$\hbar = h/2\pi$	$1.054\ 573 \times 10^{-34}$ J s
Avogadro constant	N_A	$6.022\ 14 \times 10^{23}$ mol^{-1}
Atomic mass unit	u	$1.660\ 540 \times 10^{-27}$ kg
Mass of electron	m_e	$9.109\ 39 \times 10^{-31}$ kg
proton	m_p	$1.672\ 62 \times 10^{-27}$ kg
neutron	m_n	$1.674\ 93 \times 10^{-27}$ kg
Vacuum permeability	μ_0	$4\pi \times 10^{-7}$ J s^2 C^{-2} m^{-1}
		$4\pi \times 10^{-7}$ T^2 J^{-1} m^3
Vacuum permittivity	$\varepsilon_0 = 1/c^2\ \mu_0$	$8.854\ 188 \times 10^{-12}$ J^{-1} C^2 m^{-1}
	$4\pi\varepsilon_0$	$1.112\ 650 \times 10^{-10}$ J^{-1} C^2 m^{-1}
Bohr magneton	$\mu_B = e\hbar/2m_e$	$9.274\ 02 \times 10^{-24}$ J T^{-1}
Nuclear magneton	$\mu_N = e\hbar/2m_p$	$5.050\ 79 \times 10^{-27}$ J T^{-1}
Electron g value	g_e	$2.002\ 32$
Bohr radius	$a_0 = 4\pi\varepsilon_0\hbar^2/m_ee^2$	$5.291\ 77 \times 10^{-11}$ m
Rydberg constant	$R_\infty = m_ee^4/8h^3c\varepsilon_0^2$	$1.097\ 373 \times 10^5$ cm^{-1}
Fine structure constant	$\alpha = \mu_0e^2\ c/2h$	$7.297\ 353 \times 10^{-3}$
Gravitational constant	G	$6.672\ 59 \times 10^{-22}$ N m^2 kg^{-2}
Standard acceleration of free fall[†]	g	$9.806\ 65$ m s^{-2}

[†]Exact (defined) values

SI prefixes

f	p	n	µ	m	c	d	k	M	G
femto	pico	nano	micro	milli	centi	deci	kilo	mega	giga
10^{-15}	10^{-12}	10^{-9}	10^{-6}	10^{-3}	10^{-2}	10^{-1}	10^3	10^6	10^9

Conversion Factors

1 eV $= 8\ 065.53$ cm^{-1} 1 H $= 27.211\ 4$ eV

1 cm^{-1} $= 2.859\ 15$ cal 1 B $= 5.291\ 77 \times 10^{-11}$ m $= 0.529\ 177$ Å