

UNIVERSAL CONSTANTS

Quantity	Symbol	Value	Units	Rel.Uncertainty (ppm)
speed of light in vacuum	c	299792458	ms^{-1}	(exact)
permeability of vacuum	μ_0	$4\pi \times 10^{-7}$ $=12.566370614\dots$	NA^{-2} 10^{-7}NA^{-2}	(exact)
permittivity of vacuum	ϵ_0	$1/\mu_0 c^2$ $=8.854187817\dots$	10^{12}Fm^{-1}	(exact)
Newtonian constant of gravitation	G	6.67259(85)	$10^{-11}\text{m}^3\text{kg}^{-1}\text{s}^{-2}$	128
Planck constant	h	6.6260755(40)	10^{-34}Js	0.60
$h/2\pi$	\hbar	1.05457266(63)	10^{-34}Js	0.60
elementary charge	e	1.60217733(49)	10^{-19}C	0.30
magnetic flux quantum, $h/2e$	Φ_0	2.06783461(61)	10^{-15}Wb	0.30
electron mass	m_e	9.1093897(54)	10^{-31}kg	0.59
proton mass	m_p	1.6726231(10)	10^{-27}kg	0.59
proton-electron mass ratio	m_p/m_e	1836.152701(37)		0.045
fine-structure constant, $\mu_0 c e^2 / 2h$	α	7.29735308(33)	10^{-3}	0.045
inverse fine-structure constant	α^{-1}	137.0359895(61)		0.045
Rydberg constant, $m_e c a^2 / 2h$	R_∞	1093731.534(13)	m^{-1}	0.0012
Avogadro constant	N_A, L	6.0221367(36)	10^{23}mol^{-1}	0.59
Faraday constants, $N_A e$	F	96485.309(29)	Cmol^{-1}	0.30
Molar gas constant	R	8.314510(70)	$\text{Jmol}^{-1}\text{K}^{-1}$	8.4
Boltzmann constant, R/N_A	k	1.380658(12)	10^{-23}JK^{-1}	8.5
Stefan-Boltzmann constant, $(\pi^2/60)k^4/\hbar^3 c^2$	σ	5.67051(19)	$10^{-8}\text{Wm}^{-2}\text{K}^{-4}$	34