

SOME FUNDAMENTAL PHYSICAL CONSTANTS (CODATA RECOMMENDATION OF 2002)

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Universal constants

Speed of light in vacuum	c	299 792 458 (exact)	$\text{m}\cdot\text{sec}^{-1}$
Magnetic constant	μ_0	$4\pi \times 10^{-7}$ (exact)	$\text{N}\cdot\text{A}^{-2}$
Electric constant	ϵ_0	$8.854187817\dots \times 10^{-12}$	
Newtonian constant of gravitation	G	$6.6742(10) \times 10^{-11}$	$\text{m}^3\cdot\text{kg}^{-1}\cdot\text{sec}^{-2}$
Planck constant	h	$6.6260693(11) \times 10^{-34}$	$\text{J}\cdot\text{sec}$
Rydberg constant, $\alpha^2 m_e c / 2h$	R_∞	10973731.568525(73)	m^{-1}

Electromagnetical constants

Elementary charge	e	$1.60217653(14) \times 10^{-19}$	C
Electron mass	m_e	$9.1093826(16) \times 10^{-31}$	kg
Electron magnetic moment	μ_e	$928.476412(80) \times 10^{-26}$	$\text{J}\cdot\text{T}^{-1}$
Magnetic flux quantum, $h/2e$	Φ_0	$2.06783372(18) \times 10^{-15}$	Wb
Bohr magneton, $e\hbar/2m_e$	μ_B	$927.400949(80) \times 10^{-26}$	$\text{J}\cdot\text{T}^{-1}$
Bohr radius	α_0	$0.5291772108(18) \times 10^{-10}$	m
Nuclear magneton, $e\hbar/2m_p$	μ_N	$5.05078343(43) \times 10^{-27}$	$\text{J}\cdot\text{T}^{-1}$

Physicochemical constants

Avogadro constant	N_A	$6.0221415(10) \times 10^{23}$	mol^{-1}
Atomic mass constant, $m(^{12}\text{C})/12$	m_u	$1.66053886(28) \times 10^{-27}$	kg
Faraday constant, $N_A e$	F	96485.3383(83)	$\text{C}\cdot\text{mol}^{-1}$
Molar gas constant	R	8.314472(15)	$\text{J}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$
Boltzmann constant, R/N_A	k	$1.3806505(24) \times 10^{-23}$ $8.617343(15) \times 10^{-5}$	$\text{J}\cdot\text{K}^{-1}$ $\text{eV}\cdot\text{K}^{-1}$
Molar volume of ideal gas, RT/p ($T = 273.15 \text{ K}$, $p = 101.325 \text{ kPa}$)	V_m	$22.413996(39) \times 10^{-3}$	$\text{m}^3\cdot\text{mol}^{-1}$
Stefan–Boltzmann constant	σ	$5.670400(40) \times 10^{-8}$	$\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-4}$
First radiation constant	c_1	$3.74177138(64) \times 10^{-16}$	$\text{W}\cdot\text{m}^2$
Second radiation constant	c_2	$1.4387752(25) \times 10^{-2}$	$\text{m}\cdot\text{K}$
Wien displacement law constant, $b = \lambda_{\text{max}} T = c_2 / 4.965114231$	b	$2.8977685(51) \times 10^{-3}$	$\text{m}\cdot\text{K}$