Fundamental Physical and Mathematical Constants

Physical Constants

QUANTITY	SYMBOL	VALUE
Atomic mass unit (Dalton)	amu	1.661×10^{-24} g
Avogadro constant	N_A, L	6.0221367×10^{23} mol^{-1}
Bohr magneton	μ_B	$9.2740154 \times 10^{-24}$ J T^{-1}
Boltzmann constant	k	1.380658×10^{-23} J K^{-1}
Electron mass	m_e	$9.1093897 \times 10^{-31}$ kg
Elementary charge	e	$1.60217653 \times 10^{-19}$ C
Faraday constant	F	9.6485309×10^{4} C mol^{-1}
Gas constant	R	8.314510 J mol^{-1} K^{-1}
		8.314510×10^{-2} L bar mol^{-1} K^{-1}
		8.20578×10^{-2} L atm mol^{-1} K^{-1}
		6.2364 L Torr mol^{-1} K^{-1}
		1.9872 cal mol^{-1} K^{-1}
Gravitational constant	G	6.67259×10^{-11} m^3 kg^{-1} s^{-2}
Molar volume of ideal gas at STP	V_m	22.413996×10^{-3} m^3 mol^{-1}
Neutron mass	m_n	$1.6749286 \times 10^{-27}$ kg
Nuclear magneton	μ_N	$5.0507866 \times 10^{-27}$ J T^{-1}
Permeability of vacuum	μ_0	$4\pi \times 10^{-7}$ H m^{-1}
Permittivity of vacuum	ε_0	8.85419×10^{-12} J^{-1} C^2 m^{-1}
Planck constant	h	$6.6260755 \times 10^{-34}$ J s
	h	$4.13566743 \times 10^{-15}$ eV s
	$\hbar = h/2\pi$	$1.05457168 \times 10^{-34}$ J s
Proton mass	m_p	$1.6726231 \times 10^{-27}$ kg
Rydberg constant	R_∞	$1.0973731534 \times 10^{7}$ m^{-1}
Speed of light in a vacuum	c, c_0	2.99792458×10^{8} m s^{-1}
Standard acceleration of gravity	g	9.80665 m s^{-2}
Stefan-Boltzmann constant	σ	5.67051×10^{-8} W m^{-2} K^{-4}

Mathematical Constants

QUANTITY	SYMBOL	VALUE
Ratio of circumference to diameter of a circle	π	3.14159265359
Base of natural logarithms	e	2.71828182846
Natural logarithm of 10	ln 10	2.30258509299