APPENDIX III. *Fundamental constants*

Quantity	Symbol	Value	SI-unit	Auxiliary value
Speed of light in vacuum	c	299 792 458	m/s	Basic SI unit (exact)
Elementary charge	e	$1.602\,177\,3 \times 10^{-19}$	C	
Planck constant	h	$6.626\,076 \times 10^{-34}$	J s	$= 4.135\,669 \times 10^{-15}$ eV s; $\hbar = h/2\pi = 1.054\,572\,7 \times 10^{-34}$ J s
Avogadro constant	N_A	$6.022\,137 \times 10^{23}$	mol^{-1}	
Atomic mass unit	u	$1.660\,540 \times 10^{-27}$	kg	$= 931.494\,3$ MeV; mass of $^{12}C = 12$ u
Electron rest mass	m_e	$9.109\,390 \times 10^{-31}$	kg	$M_e = N_A \times m_e = 5.485\,799\,0 \times 10^{-4}$ u $= 0.510\,999\,1$ MeV
Proton rest mass	m_p	$1.672\,623 \times 10^{-27}$	kg	$M_p = N_A \times m_p = 1.007\,276\,47$ u $= 938.272\,3$ MeV
Neutron rest mass	m_n	$1.674\,929 \times 10^{-27}$	kg	$M_n = N_A \times m_n = 1.008\,664\,90$ u $= 939.565\,6$ MeV
Faraday constant	F	96 485.31	$C\,mol^{-1}$	$= N_A \times e$
Rydberg constant	R_∞	10 973 731.53	m^{-1}	$R_\infty \times h \times c = 13.605\,698$ eV
Inverse fine structure constant	α^{-1}	137.035 990		$= \mu^0 \times c \times e^2 / 2 \times h$; μ^0 (permeability of vacuum) $= 4\pi \times 10^{-7}$ H m^{-1}
Bohr radius	a_0	$0.529\,177\,25 \times 10^{-10}$	m	$= \alpha / 4\pi R_\infty$
Electron magnetic moment	μ_e	$-9.284\,770 \times 10^{-24}$	$J\,T^{-1}$	
Proton magnetic moment	μ_p	$1.410\,607\,6 \times 10^{-26}$	$J\,T^{-1}$	
Neutron magnetic moment	μ_n	$-0.966\,237\,0 \times 10^{-26}$	$J\,T^{-1}$	
Bohr magneton	μ_B	$9.274\,015 \times 10^{-24}$	$J\,T^{-1}$	$= e \times \hbar / 2 \times m_e$; $(1\ J\,T^{-1} = 10^3$ erg $gauss^{-1})$
Nuclear magneton	μ_N	$5.050\,787 \times 10^{-27}$	$J\,T^{-1}$	$= e \times \hbar / 2 \times m_p$
Molar gas constant	R	8.314 51	$J\,mol^{-1}\,K^{-1}$	$= 0.082\,06$ l atm $mol^{-1}\,K^{-1}$
Molar volume of ideal gas at STP	V_0	$22.414\,1 \times 10^{-3}$	$m^3\,mol^{-1}$	$= R\,T_0 / p_0$; $T_0 = 273.15$ K, $p_0 = 1$ atm $= 101\,325$ Pa
Boltzmann constant	k	$1.380\,66 \times 10^{-23}$	$J\,K^{-1}$	$= R/N_A = 8.617\,39 \times 10^{-5}$ eV K^{-1}; $1/k = 11\,604.4$ K eV^{-1}
Gravitational constant	G	$6.672\,0 \times 10^{-11}$	N $m^2\,kg^{-2}$	
Acceleration of gravity at sea level	g	9.806 65	m s^{-2}	(at 45° latitude)