

# Constants

## Constants

Name	Variable	Value	Unit
Speed of light in a vacuum	$c$	299 792 458	m/s
Planks Constant	$\hbar$	$6.626\,070\,15 \cdot 10^{-34}$	Js
Planks Constant	$h$	$4.135\,667\,87 \cdot 10^{-15}$	eVs
The Elemental Charge	$e$	$1.602\,176\,634 \cdot 10^{-19}$	C
Bohr Radius	$a_0$	$5.291\,772\,109\,03 \cdot 10^{-11}$	m
Electron Mass	$m_e$	$9.109\,383\,7015 \cdot 10^{-31}$	kg
Electron Mass	$m_e$	0.510 998 954	MeV/c <sup>2</sup>
Proton Mass	$m_p$	$1.672\,621\,923\,69 \cdot 10^{-27}$	kg
Proton Mass	$m_p$	938.272 096	MeV/c <sup>2</sup>
Proton Mass	$m_p$	1836.152 673 43	$m_e$
Neutron Mass	$m_n$	$1.674\,927\,498\,04 \cdot 10^{-27}$	kg
Neutron Mass	$m_n$	939.565 428	MeV/c <sup>2</sup>
Neutron Mass	$m_n$	1838.683 661 73	$m_e$
Boltzmanns Constant	$k$	$1.380\,649 \cdot 10^{-23}$	J/K
Boltzmanns Constant	$k$	$8.617\,333\,6333 \cdot 10^{-5}$	eV/K
Avogadros Constant	$N_A$	$6.022\,140\,76 \cdot 10^{23}$	mol <sup>-1</sup>
Rydbergs Constant	$R_y$	$\frac{\hbar^2}{2ma_0^2}$	
Rydbergs Constant	$R_y$	13.6057	eV
Rydbergs Constant	$R_y$	109 737.32	cm <sup>-1</sup>
The General Gas Constant	$R$	8.314 462 618	J/(mol · K)
The Fine Structure Constant	$\alpha$	$\frac{e^2}{4\pi\epsilon_0\hbar c} = \frac{1}{137.036}$	
Dielectric Constant for Vacuum	$\epsilon_0$	$0.885\,419 \cdot 10^{-11}$	As/Vm
Permeability of Vacuum	$\mu_0$	$1.256\,637\,062\,12 \cdot 10^{-6}$	Vs/Am
Permeability of Vacuum	$\mu_0$	$4\pi \cdot 10^{-7}$	Vs/Am
The Bohr Magnetone	$\mu_B$	$\frac{e\hbar}{2m} = 9.274\,010\,0783 \cdot 10^{-24}$	Am <sup>2</sup>