

# Physical constants

$a_0$	$5.29177210544 \times 10^{-11}$	m	Bohr radius
$\alpha$	$7.2973525643 \times 10^{-3}$		Fine structure constant
$c$	299792458	$\text{m s}^{-1}$	Speed of light in vacuum (exact)
$e$	$1.602176634 \times 10^{-19}$	A s	Elementary charge (exact)
$\varepsilon_0$	$8.8541878188 \times 10^{-12}$	$\text{A}^2 \text{s}^2 \text{J}^{-1} \text{m}^{-1}$	Vacuum electric permittivity
$h$	$6.62607015 \times 10^{-34}$	J s	Planck constant (exact)
$\hbar$	$1.05457182 \times 10^{-34}$	J s	Reduced Planck constant $h/2\pi$
$k$	$1.380649 \times 10^{-23}$	$\text{J K}^{-1}$	Boltzmann constant (exact)
$m_e$	$9.1093837139 \times 10^{-31}$	kg	Electron mass
$m_p$	$1.67262192595 \times 10^{-27}$	kg	Proton mass
$\mu_0$	$1.25663706127 \times 10^{-6}$	$\text{J A}^{-2} \text{m}^{-1}$	Vacuum magnetic permeability

Eigenmath script

## Notes

1. Data are from physics.nist.gov/cuu/Constants
2. Numerical values for  $c$ ,  $e$ ,  $h$ , and  $k$  are exact.
3. In SI units, Coulomb is a derived unit defined as one Ampere second.
4. Bohr radius  $a_0$  is for full electron mass.