

Fundamental Physical Constants — Universal constants

Quantity	Symbol	Value	Unit	Relative std. uncert. u_r
speed of light in vacuum	c, c_0	299 792 458	m s^{-1}	exact
magnetic constant	μ_0	$4\pi \times 10^{-7}$ $= 12.566\,370\,614\dots \times 10^{-7}$	N A^{-2} N A^{-2}	exact
electric constant $1/\mu_0 c^2$	ϵ_0	$8.854\,187\,817\dots \times 10^{-12}$	F m^{-1}	exact
characteristic impedance of vacuum $\mu_0 c$	Z_0	376.730 313 461...	Ω	exact
Newtonian constant of gravitation	G	$6.674\,08(31) \times 10^{-11}$	$\text{m}^3 \text{kg}^{-1} \text{s}^{-2}$	4.7×10^{-5}
	$G/\hbar c$	$6.708\,61(31) \times 10^{-39}$	$(\text{GeV}/c^2)^{-2}$	4.7×10^{-5}
Planck constant	h	$6.626\,070\,040(81) \times 10^{-34}$	J s	1.2×10^{-8}
		$4.135\,667\,662(25) \times 10^{-15}$	eV s	6.1×10^{-9}
$h/2\pi$	\hbar	$1.054\,571\,800(13) \times 10^{-34}$	J s	1.2×10^{-8}
		$6.582\,119\,514(40) \times 10^{-16}$	eV s	6.1×10^{-9}
	$\hbar c$	197.326 9788(12)	MeV fm	6.1×10^{-9}
Planck mass $(\hbar c/G)^{1/2}$	m_{P}	$2.176\,470(51) \times 10^{-8}$	kg	2.3×10^{-5}
energy equivalent	$m_{\text{P}} c^2$	$1.220\,910(29) \times 10^{19}$	GeV	2.3×10^{-5}
Planck temperature $(\hbar c^5/G)^{1/2}/k$	T_{P}	$1.416\,808(33) \times 10^{32}$	K	2.3×10^{-5}
Planck length $\hbar/m_{\text{P}} c = (\hbar G/c^3)^{1/2}$	l_{P}	$1.616\,229(38) \times 10^{-35}$	m	2.3×10^{-5}
Planck time $l_{\text{P}}/c = (\hbar G/c^5)^{1/2}$	t_{P}	$5.391\,16(13) \times 10^{-44}$	s	2.3×10^{-5}