

### Comparison of 1986, 1998 and 2002 values

<i>Quantity</i>	<i>Symbol</i>	<i>1986 Value</i>	<i>1998 Value</i>	<i>2002 Value</i>	<i>Unit</i>
Planck constant	$h$	6.626 075 5 (40)	6.626 068 76 (52)	6.626 069 3 (11)	$\times 10^{-34}$ J s
elementary charge (charge on a proton)	$e$	1.602 177 33 (49)	1.602 176 462 (63)	1.602 176 53 (14)	$\times 10^{-19}$ C
electron rest mass	$m_e$	9.109 389 7 (54)	9.109 381 88 (72)	9.109 382 6 (16)	$\times 10^{-31}$ kg
proton rest mass	$m_p$	1.672 623 1 (10)	1.672 621 58 (13)	1.672 621 71 (29)	$\times 10^{-27}$ kg
atomic mass constant (dalton, or unified atomic mass unit, $m(^{12}\text{C})/12$ )	$m_u$ = Da = u	1.660 540 2 (10)	1.660 538 73 (13)	1.660 538 86 (28)	$\times 10^{-27}$ kg
Avogadro constant	$L, N_A$	6.022 136 7 (36)	6.022 141 99 (47)	6.022 141 5 (10)	$\times 10^{23}$ mol <sup>-1</sup>
Boltzmann constant	$k, (k_B)$	1.380 658 (12)	1.380 650 3 (24)	1.380 650 5 (24)	$\times 10^{-23}$ J K <sup>-1</sup>
Faraday constant	$F$	9.648 530 9 (29)	9.648 534 15 (39)	9.648 533 83 (83)	$\times 10^4$ C mol <sup>-1</sup>
gas constant	$R$	8.314 510 (70)	8.314 472 (15)	8.314 472 (15)	J mol <sup>-1</sup> K <sup>-1</sup>
fine structure constant $e^2/4\pi\epsilon_0\hbar c$	$\alpha$	7.297 353 08 (33)	7.297 352 533 (27)	7.297 352 568 (24)	$\times 10^{-3}$
Bohr radius	$a_0$	0.529 177 249 (24)	0.529 177 208 3 (19)	0.529 177 210 8 (18)	$\times 10^{-10}$ m
Hartree energy	$E_h$	4.359 748 2 (26)	4.359 743 81 (34)	4.359 744 17 (75)	$\times 10^{-18}$ J
Rydberg constant	$R_\infty$	10 973 731.534 (13)	10 973 731.568 548 (83)	10 973 731.568 525 (73)	m <sup>-1</sup>
Bohr magneton	$\mu_B$	9.274 015 4 (13)	9.274 008 99 (37)	9.274 009 49 (80)	$\times 10^{-24}$ J T <sup>-1</sup>
Landé g factor for free electron	$g$	2.002 319 304 386 (20)	2.002 319 304 373 7 (82)	2.002 319 304 371 8 (75)	
nuclear magneton	$\mu_N$	5.050 786 6 (17)	5.050 783 17 (20)	5.050 783 43 (43)	$\times 10^{-27}$ J T <sup>-1</sup>
Newtonian constant of gravitation	$G$		6.673 (10)	6.674 2 (10)	$\times 10^{-11}$ m <sup>3</sup> kg <sup>-1</sup> s <sup>-2</sup>

The values are presented in a concise notation whereby the standard uncertainty is given in parenthesis next to the least significant digits to which it applies; for example,  $h = 6.626\ 069\ 3\ (11)$  is the concise form of the expression  $h = 6.626\ 069\ 3 \pm 0.000\ 001\ 1$