The physical constants below are given with a relative precision of $10^{-3}$ which is sufficient for the numerical applications in this book.

| | |
|---|---|
| Speed of light in vacuum | $c = 3.00 \times 10^{8}\ \mathrm{m\,s^{-1}}$ |
| Planck constant | $h = 6.63 \times 10^{-34}\ \mathrm{J\,s}$ |
| Planck constant divided by $2\pi$ | $\hbar = 1.055 \times 10^{-34}\,\mathrm{J\,s}$ |
| Electronic charge (absolute value) | $q_\mathrm{e} = 1.602 \times 10^{-19}\,\mathrm{C}$ |
| Fine structure constant | $\alpha = q_\mathrm{e}^2/(4\pi\varepsilon_0\hbar c) = e^2/(\hbar c) = 1/137$ |
| Electron mass | $m_\mathrm{e} = 9.11 \times 10^{-31}\ \mathrm{kg} = 0.511\ \mathrm{MeV}\,c^{-2}$ |
| Proton mass | $m_\mathrm{p} = 1.67 \times 10^{-27}\ \mathrm{kg} = 938\ \mathrm{MeV}\,c^{-2}$ |
| Bohr magneton | $\mu_\mathrm{B} = q_\mathrm{e}\hbar/(2m_\mathrm{e}) = 5.79 \times 10^{-5}\,\mathrm{eV\,T^{-1}}$ |
| Nuclear magneton | $\mu_\mathrm{N} = q_\mathrm{e}\hbar/(2m_\mathrm{p}) = 3.15 \times 10^{-8}\,\mathrm{eV\,T^{-1}}$ |
| Bohr radius | $a_0 = \hbar^2/(m_\mathrm{e}e^2) = 0.529 \times 10^{-8}\,\mathrm{m}$ |
| Rydberg constant | $R_\infty = m_\mathrm{e}e^4/(2\hbar^2) = 13.61\,\mathrm{eV}$ |
| Boltzmann constant | $k_\mathrm{B} = 1.38 \times 10^{-23}\,\mathrm{J\ K^{-1}}$ |
| Electron volt and temperature | $1\ \mathrm{eV} = 1.602 \times 10^{-19}\ \mathrm{J} = k_\mathrm{B} \times 11\,600\ \mathrm{K}$ |
| Gravitational constant | $G = 6.67 \times 10^{-11}\ \mathrm{N\ m^2\ kg^{-2}}$ |