Physics Constants

$c := 2.997925 \cdot 10^{8} \cdot \frac{m}{s}$ speed of light

$q_e := 1.60219 \cdot 10^{-19} \cdot coul$ fundamental charge

$nm := 10^{-9} \cdot m$

$\mu m := 10^{-6} \cdot m$

$eV := q_e \cdot volt$ $eV = 1.602 \times 10^{-19}\,J$ the electron-volt unit

$h := 6.62618 \cdot 10^{-34} \cdot joule \cdot sec$ Planck's constant $h \cdot c = 1.23985\,eV \cdot \mu m$

$h' := \frac{h}{2 \cdot \pi}$ $hbar := h'$ Planck's reduced constant

$m_e := 9.10953 \cdot 10^{-31} \cdot kg$ Electron rest mass $m_e \cdot c^2 = 5.11003 \times 10^{5}\,eV$

$k_B := 1.38066 \cdot 10^{-23} \cdot \frac{J}{K}$ Boltzmann constant $k_B \cdot 300 \cdot K = 0.02585\,eV$

$\varepsilon_0 := 8.854 \cdot 10^{-14} \cdot \frac{F}{cm}$ Permittivity of free space

$a_0 := \frac{4 \cdot \pi \cdot \varepsilon_0 \cdot h'^{2}}{m_e \cdot q_e^{2}}$ Bohr radius $a_0 = 0.053\,nm$