Useful QM constants and relations

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$m_0c^2 \approx 0.510983\ Mev$ -- the rest energy of electron

$e^2 = 2|E_H| \times a_H = 14.398258\ eV \times$ Å $\approx 1.44 \times 10^{-7}\ eV \times cm$ -- (electron charge $)^2$

$e = 2|E_H/e| \times a_H = 14.398258\ V \times$ Å $\approx 1.44 \times 10^{-7}\ V \times cm$ -- electron charge

$r_e = \dfrac{e^2}{m_0c^2} = \dfrac{\alpha^3}{4\pi R_\infty} \approx 2.817757 \times 10^{-13}\ cm$ -- classical radius of electron

$h = 2\pi\hbar$; $\quad hc \approx 1.24 \times 10^{-4}\ ev \times cm$ --- two different Planck constants

$h \approx 6.6256 \times 10^{-34}\ J \times s \approx 6.6256 \times 10^{-27}\ erg \times s \approx 4.14 \times 10^{-15} eV \times s$

$\alpha = \dfrac{e^2}{\hbar c} = \dfrac{r_e}{\bar{\lambda}_C} = \dfrac{\bar{\lambda}_C}{a_H} = \sqrt{\dfrac{r_e}{a_H}} \approx \dfrac{1}{137.039}$ -- the fine structure constant;

$\lambda_C = \dfrac{h}{m_0c} = \dfrac{\alpha^2}{2R_\infty} \approx 2.4 \times 10^{-10}\ cm = 2.4 \times 10^{-2}$ Å -- Compton wavelength of electron

$\bar{\lambda}_C = \dfrac{\hbar}{m_0c} = \dfrac{r_e}{\alpha} = \dfrac{\alpha^2}{4\pi R_\infty} \approx 3.86 \times 10^{-11}\ cm = 3.86 \times 10^{-3}$ Å -- "bar" e-Compton waveleng

$a_H = \dfrac{\hbar^2}{m_0e^2} = \dfrac{\bar{\lambda}_C}{\alpha} = \dfrac{r_e}{\alpha^2} \approx 0.529166$ Å -- Bohr radius

$-E_H = \alpha^2 m_0c^2/2 = R^{(\omega)} \times h \approx 13.60467\ ev$ -- the ionization limit of hydrogen atom

$R_\infty = |E_H|/hc \approx 1.097 \times 10^5\ cm^{-1}$ -- Rydberg's constant ("wavenumber" Rc)

$R^{(\omega)} = |E_H|/h = R_\infty\, c \approx 3.3 \times 10^{15}\ s^{-1}$ -- "frequency" Rydberg's constant

$E \times \lambda \approx 1.23975 \times 10^{-4}\ ev \times cm$ (or $hc \approx 1.24 \times 10^{-4}\ ev \times cm$), e.g. $1\ \mu m \rightarrow 1.24\ ev$

$N_{gas} \sim 2.69 \times 10^{19}\ cm^{-3}$ -- number of gas molecules in $1cm^3$ under normal conditions

$k \approx 1.38 \times 10^{-23}\ J/K \approx 1.38 \times 10^{-16}\ erg/K \approx 0.8625 \times 10^{-4}\ eV/K$ -- Boltzmann constant

$1\ J = 10^7\ erg \approx 0.624 \times 10^{19}\ eV$ -- different units of energy

$N = 6.025 \times 10^{23}\ (g \times mole)^{-1}$ -- Avogadro number

$\lambda_{max} \times T \approx 0.29\ cm \times degree$ -- peak wavelength of black-body spectrum at temperature T