ONE-PAGE ROUND-NUMBER HANDBOOK OF PHYSICS

$c = 3\times10^{10}$ cm/sec $e = 4.8\times10^{-10}$ esu $= 1.6\times10^{-19}$ coul $m_e = 10^{-27}$ gm
$\hbar = 10^{-27}$ erg-sec $k = 1.4\times10^{-16}$ erg/deg $G = 7\times10^{-8}$ erg-cm/gm^2
$N_0 = 6\times10^{23}$/mole $R = 2$ cal/mole-deg n_0 at N.T.P. $= 3\times10^{19}$/cm^3

1 newton $= 10^5$ dynes
1 ft $\approx$ 30 cm 1 pound $\approx$ 4.4 newt.

$\mu_0 = 4\pi\times10^{-7}$ newt/amp^2 1 ohm^{-1} $= 9\times10^{11}$ cm/sec
$\epsilon_0 = 8.8\times10^{-12}$ coul^2/newt-m^2 $\sqrt{\mu_0/\epsilon_0} = 377$ ohms

"classical electron radius" $r_0 = e^2/m_e c^2 \approx 3\times10^{-13}$ cm
"Compton wavelength" $\lambda\!\!\!^{-}_c = \hbar/m_e c \approx 4\times10^{-11}$ cm
"Bohr radius" $a_0 = \hbar^2/m_e e^2 \approx 5\times10^{-9}$ cm
"Rydberg w'length" $\lambda\!\!\!^{-}_R = \hbar^3 c/m_e e^4 \approx 7\times10^{-7}$ cm

$\alpha = e^2/\hbar c = 1/137$
Bohr magneton $e\hbar/2mc = 10^{-20}$ erg/gauss

1 cal $= 4$ watt-sec $= 4\times10^7$ erg 1 ev $= 1.6\times10^{-12}$ erg
$m_e c^2 = .5$ Mev $e^2/a_0 = 26$ ev vis. photon ≈ 2 ev
$kT_{room} = .025$ ev band gap: Si: 1.1 ev Ge: 0.7 ev

black body radiates
6×10^{-12} watts/deg^4/cm^2
680 lumens = 1 watt (5550 Å)

$m_{nucleon} \approx 2000\ m_e$
$m_{kaon} \approx 1000\ m_e$
$m_{pion} \approx 270\ m_e$
$m_{muon} \approx 200\ m_e$
$R_{nucleus} = A^{1/3}\times10^{-13}$ cm
spin precession { e: 3 MHz/gauss; p: 4 kHz/gauss

$g = 10^3$ cm/sec^2 $P_{at} = 10^6$ dyne/cm^2 $\approx$ 15 psi
air density $= 10^{-3}$ gm/cm^3 scale height $= 8$ km
air at 300°K: $v_{sound} \approx v_{molec} \approx 4\times10^4$ cm/sec
mean free path (air, NTP) $\approx 7\times10^{-6}$ cm

$pc_{(ev)} = 300\,Br_{(gauss-cm)}$
min. ionizt. loss: 2 Mev/gm/cm^2
rad. length in air: 36 gm/cm^2
1 curie $= 4\times10^{10}$ disint./sec

1 parsec $= 3\times10^{18}$ cm
1 mag $= -4$ db
$m_{abs} = m_{app}$ at 10 pc
$m_\odot = 5$

resistivity, usual temperature:
Cu: 2×10^{-6}; pure H_2O: 2×10^7; sea water: 25 ohm-cm
specific heat (solid or liquid) ≈ 0.5 cal/cm^3/deg
linear expansion (") $\lesssim 2\times10^{-5}$/deg
heat conduction (insulator) $\approx 10^{-2}$ cal/sec-cm-deg
heat cond. (metal) $\approx 1.0\,(\rho_{Cu}/\rho_{metal})$ cal/sec-cm-deg
heat of combustion (food or fuel) $\approx 10^4$ cal/gm
heat of vaporization $\approx 10^4$ cal/mole
elastic moduli (solids) $\approx 10^{11}-10^{12}$ dyne/cm^2
tensile strength (solids) $\approx 10^8-10^{10}$ dyne/cm^2
surface tension $H_2O \approx 50$ dynes/cm
diffusion: H_2O 10^{-5}, air 0.2 cm^2/s
viscosity: H_2O 10^{-2}, air 2×10^{-4} dyne-s/cm^2

earth field at pole $\approx .5$ gauss
$M_e = 6\times10^{27}$ gm $R_e = 6\times10^8$ cm
$M_\odot = 2\times10^{33}$ gm $R_\odot = 8\times10^{10}$ cm
$L_\odot = 4\times10^{33}$ erg/sec $= 1$ kw/m^2 at earth
starlight energy density: 10^{-12} erg/cm^3
primary cosmic rays: 1/cm^2/sec
distance to moon: 4×10^{10} cm
distance to sun: 1.5×10^{13} cm
to center of Galaxy: 3×10^{22} cm
mass of Galaxy: 2×10^{44} gm
dist. between galaxies: 10^{25} cm
$R_{universe} \approx 3000$ Mpc $\approx 10^{28}$ cm

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