Magnetism

q → charge C

I → current Amp, $\frac{C}{s}$

v → velocity m/s

B → field strength (T)

l → length (m)

F_m → Magnetic Force (N)

μ_0 → Magnetic permeability $(T\frac{m}{A})$ constant of free space

c → speed of light (m/s)

h → planck's constant (Js)

E → energy (J or eV)

f → frequency (H_z)

λ → wavelength (m)

$E_k = hf - w$ → photoelectric effect

E_k: kinetic energy (J)

w: work function (J)

e^- → charge of electron (C)

V_0 → stopping potential (V)

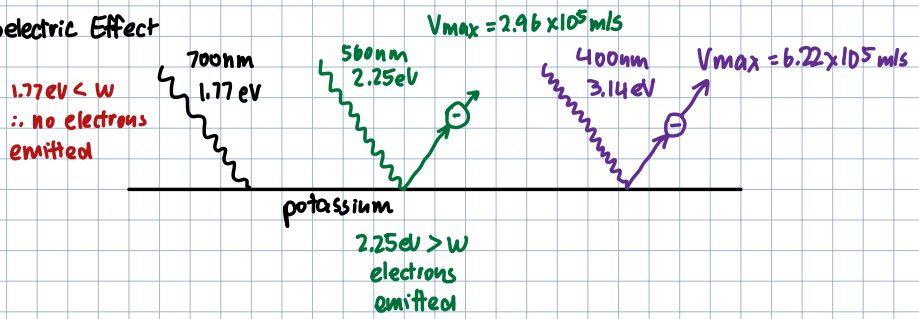
p → momentum $(\frac{kgm}{s})$

Blackbody Radiation

↳ an object does not reflect light. it only absorb and emit energy

(e.g. Sun)

photoelectric Effect



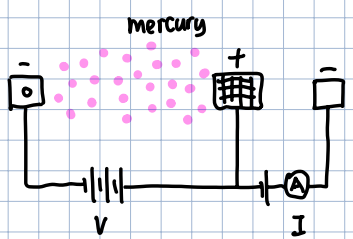
wave particle duality :

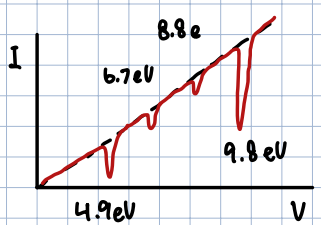
Light act both as a particle and wave in various experiments

photons $\lambda = \frac{h}{p}$

DeBroglie : $\lambda_e = \frac{h}{p} = \frac{h}{m_e v}$

Structure of the atom



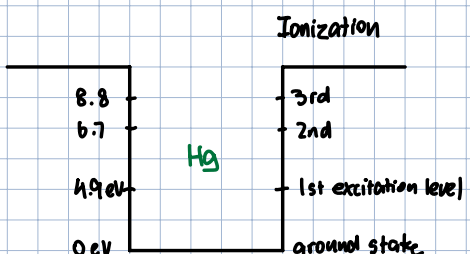


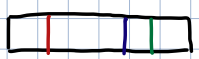
$\Delta E_E = q\Delta V$ Electron: $|v| = 1eV$

$\frac{\Delta E}{q} = \Delta V$

$\frac{1eV \cdot 1.6\times10^{-19}\ J/eV}{1.6\times10^{-19}\ C} = \Delta V$

$1V = \Delta V$





λ $\quad E = hf \quad V = f\lambda$

$E = h\frac{V_c}{\lambda} \quad f = \frac{V}{\lambda}$

$\lambda = \frac{hV_c}{E} = \frac{6.63\times10^{-34}(3\times10^8)}{4.9eV\left(\frac{1.6\times10^{-19}J}{eV}\right)}$

$= 2.54\times10^{-7}m$

Bohr model

wave particle duality

deBroglie

Bohr

de Broglie

standing waves