Interference

$$pd = n\lambda$$

order maximum

$$n\lambda = d\sin\theta$$

order maximum; size of slit

Refractive Index

refractive index; from normal

$$n = \frac{\sin\theta_{\mathrm{BIG}}}{\sin\theta_{\mathrm{SMALL}}} = \frac{v_a}{v_m} = \frac{\lambda_a}{\lambda_m}$$

$$n = \frac{1}{\sin\theta_C}$$

refractive index; critical angle

Intensity

$$I = \frac{P}{A}$$

intensity (Wm^{-2}) — I; power — P; area — A

$$I \propto \frac{1}{d^2}$$

Radioactivity

$$A = \frac{N}{t}$$

activity (Bq) — A; number of decays — N

$$D = \frac{E}{m}$$

dose (Gy) — D; energy absorbed — E; by unit mass — m

$$H = DQ$$

dose equivalent (Sv) — H; dose — D; quality factor — Q

$$\dot{H} = \frac{H}{t}$$

dose equivalent rate (eg $mSvyr^{-1}$) — $\dot{H}$; dose equivalent — H

Photoelectric Emission

$$E = hf$$

E — energy of photon; f — frequency of photon

$$P = Nhf$$

P — power; N — number of photons

$$E_0 = hf_0$$

E_0 — work function; f_0 — threshold frequency

If $E_{in} > E_0$, electron gets E_k :

$$E_k = hf - hf_0$$

$$f = \frac{\Delta E}{h}$$

f — frequency of emitted photon caused by an electron falling from a higher energy level