Efecto fotoeléctrico

$$eV_0 = K_{máx} = h\nu - \Phi$$

Átomo de Bohr

$$L_n = n\hbar$$
$$E_n = -\frac{13,6eV}{n^2}$$
$$r_n = n^2 a_0$$

Efecto Compton

$$\lambda' - \lambda = \frac{h}{mc}(1-\cos\theta)$$

Cuerpo negro, radiación térmica

$$I = \sigma T^4$$
$$\lambda_m T = 2,90.10^{-3}\,m.K$$
$$I(\lambda) = \frac{2\pi hc^2}{\lambda^5(e^{hc/\lambda kT}-1)}$$

Mecánica cuántica

$$-\frac{\hbar^2}{2m}\frac{\partial^2\psi(x,t)}{\partial x^2} + V(x,t)\psi(x,t) = i\hbar\frac{\partial\psi(x,t)}{\partial t}$$
$$-\frac{\hbar^2}{2m}\frac{\partial^2\varphi(x)}{\partial x^2} + V(x)\varphi(x) = E\varphi(x)$$
$$\psi(x,t) = \varphi(x)e^{\frac{-iEt}{\hbar}}$$

Mecánica estadística

M – B:

$$\frac{n_i}{g_i} = e^{-\frac{\varepsilon_i}{kT}}; \qquad Z = \sum_i g_i e^{-\frac{\varepsilon_i}{kT}}$$
$$\frac{dn}{d\varepsilon} = \frac{N}{Z}g(\varepsilon)e^{-\frac{\varepsilon}{kT}} \qquad Z = \int g(\varepsilon)e^{-\frac{\varepsilon}{kT}}d\varepsilon$$

F – D:

$$\frac{n_i}{g_i} = \frac{1}{e^{\frac{\varepsilon_i-\varepsilon_F}{kT}}+1}$$
$$\frac{dn}{d\varepsilon} = \frac{g(\varepsilon)}{e^{\frac{\varepsilon-\varepsilon_F}{kT}}+1}$$

B – E:

$$\frac{n_i}{g_i} = \frac{1}{e^{\alpha+\frac{\varepsilon_i}{kT}}-1}$$
$$\frac{dn}{d\varepsilon} = \frac{g(\varepsilon)}{e^{\alpha+\frac{\varepsilon}{kT}}-1}$$

Densidad de estados

$$g(\varepsilon) = \frac{4\pi V}{h^3}(2m^3)^{1/2}\varepsilon^{1/2}$$

Electrones en metales

$$\sigma = \frac{1}{\rho} = \frac{ne^2 < \tau >}{m} = ne\mu$$
$$\mu = \frac{|\vec{u}|}{|\vec{E}|}$$

CONSTANTES FÍSICAS

$e = 1,6\ 10^{-19}C$
$m_0 = 9,1\ 10^{-31}\ Kg$
$m_p = 1,67\ 10^{-27}\ Kg$
$c = 2,998\ 10^{8} m/s$
$\varepsilon_0 = 8,854\ 10^{-12} F/m$
$\mu_0 = 4\pi\ 10^{-7}\ H/m$
$k_B = 1,38\ 10^{-23} J/ºK$
$h = 6,6\ 10^{-34} Js$
$\lambda_C = 2,43\ 10^{-12}\ m$