Physics 210 Formula Sheet 4

$$-\left(\frac{\hbar^2}{2\,m}\right)\left(\frac{d^2R}{dr^2}-\frac{2}{r}\frac{dR}{dr}\right)+\left(\frac{\ell\,(\ell+1)\,\hbar^2}{2\,m\,r^2}-\frac{k\,Z\,q^2}{r}\right)R=E\,R$$

$$P=\int_0^{\infty}4\,\pi\,r^2\,R^2\,dr$$

$$N=N_o\,e^{-\lambda t}$$

$$L=\sqrt{\ell\,(\ell+1)}\;\hbar$$

$$R=\left|\frac{dN}{dt}\right|$$

$$L_z=m_\ell\,\hbar$$

$$Q=\left(m_f-m_i\right)c^2$$

$$\mu=\frac{q\,L}{2\,m}$$

$$Q=\left(m_f-m_i\right)\left(931.5\,\frac{Mev}{u}\right)$$

$$\omega_L=\frac{e\,B}{2\,m_e}$$

$$U=\hbar\,\omega_L\,m_\ell$$

$$f_{MB}=A\,e^{-\frac{\varepsilon}{k_B T}}$$

$$f_{BE}=\frac{1}{e^{\frac{\varepsilon}{k_B T}}-1}$$

$$f_{FD}=\frac{1}{e^{\frac{\varepsilon-\varepsilon_F}{k_B T}}+1}$$

$$N=\int_0^{\infty}f\,g\,(\varepsilon)\,d\varepsilon$$

$$E=\int_0^{\infty}\varepsilon\,f\,g\,(\varepsilon)\,d\varepsilon$$

$$r=r_o\,A^{\frac{1}{3}}\quad,\quad r_o=1.2\times10^{-15}\,m$$

$$\frac{dN}{dt}=-\lambda\,N$$