

Physics 113 -Lecture 11

DeBroglie -The Beginning of Quantum Mechanics

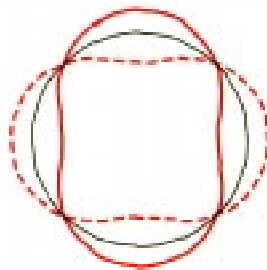
Moving massive particles also act like waves!

$$\begin{aligned} \text{photon : } \lambda &= \frac{h}{p} \\ \text{matter : } \lambda &= \frac{h}{p} = \frac{h}{mv} \end{aligned}$$

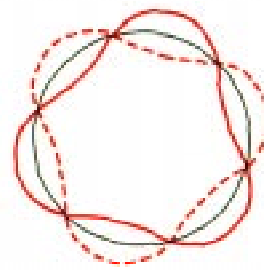
Larger mass \longrightarrow Shorter wavelength

Explains Bohr Formula:

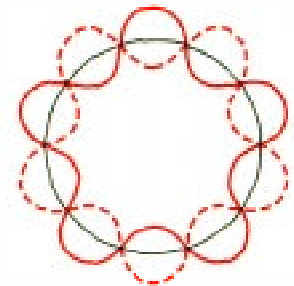
$$L = \frac{nh}{2\pi} = mv_n r_n$$



n=2



n=3



n=5

Electron Energy Levels are Standing Wave Modes !