

- Schrodinger's theory says that electrons can be found in the nucleus, but because the physical volume of the nucleus is so small, so is the probability of measuring the electron's presence there.
- $\lambda = h/p$ Wavelength = Planck's constant / momentum (mass * velocity) Anything that has a wavelength has a momentum and vice versa
- Waves also carry energy in their intensity (brightness for light) which is related to the amplitude of the waves. So, it is possible to have a very bright red light with more energy than a dim blue light, yet the red light won't work and the blue light will.
- $n = \text{NRG level}$. Any integer.
 $l = \text{number of angular nodes}$. Determines the type of orbital. Values $0 \dots n-1$
 $m = \text{spatial orientation (p}_x \text{ v. p}_y \text{ v. p}_z)$. Values $-l \dots 0 \dots l$
 $m_s = \text{spin}$. Magnetic property of electron. Values $+ \text{ or } - \frac{1}{2}$.
- QN are the variables in S's eqn. They determine the shape, size, nodes and spatial orientation of the orbitals described by the equation.
- $5s, 5p_x, 5p_y, 5p_z, 5d_{xy}, 5d_{xz}, 5d_{yz}, 5d_{x^2-y^2}, 5d_z$
- all three will have 2 nodes. Check your notes
- quantum leaping: the idea that an electron "leaps" from one place to another instantaneously without ever being in between...physically impossible. Schrodinger's orbitals overlap so the electron doesn't have to move at all to go from one to another.
- Pb: $[\text{Xe}]6s^2 4f^{14} 5d^{10} 6p^2$, Pb^{+2} : $[\text{Xe}]6s^2 4f^{14} 5d^{10}$, Pb^{+4} : $[\text{Xe}]4f^{14} 5d^{10}$
Both the +2 and the +4 ions have only filled and empty shells making them stable.
- Au: $[\text{Xe}]6s^1 4f^{14} 5d^{10}$, Au^{+1} : $[\text{Xe}]4f^{14} 5d^{10}$, Au^{+3} : $[\text{Xe}]4f^{14} 5d^8$
- $\text{As}^{-3}, \text{Se}^{-2}, \text{Br}^{-1}, \text{Rb}^{+1}, \text{Sr}^{+2}, \text{Y}^{+3}$