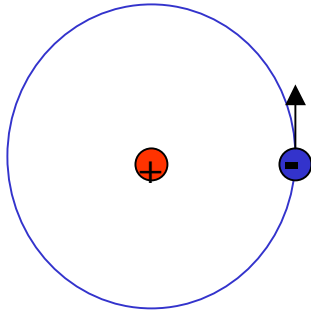


Physics 113 -Lecture 13

Schrodinger Equation \rightarrow Standing Wave Solutions Hydrogen Atom



Notation

$l=0$ S state

$l=1$ P state

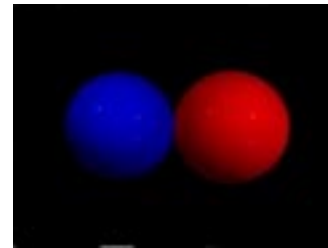
$l=2$ D state

$l=3$ F state

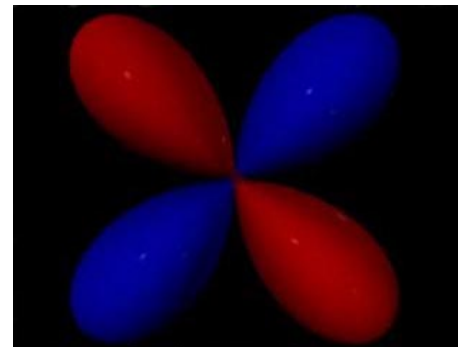
1S



2P



3D



4 Quantum Numbers

n - principle(radial)	$E_n = \frac{-13.6}{n^2}$	$n = 1, 2, 3, \dots$
l - angular momentum	$L = \sqrt{l(l+1)} \frac{h}{2\pi}$	$l < n$
m_l - z comp. angular mom.	$L_z = m_l \frac{h}{2\pi}$	$-l \leq m_l \leq l$
m_s - electron spin	$S_z = m_s \frac{h}{2\pi}$	$m_s = \pm \frac{1}{2}$

Selection Rule

electrons can transition only if $\Delta l = \pm 1$
other transitions are forbidden