

LECTURE 7 HYDROGEN ATOM WAVEFUNCTIONS

I. Wavefunctions for H Atom

- A. Stationary state wavefunction
- B. Three quantum numbers to describe a wave in 3D
 - 1. Principle quantum number, n
 - 2. Angular momentum quantum number, ℓ
 - 3. Magnetic quantum number, m
- C. Orbitals
- D. Degeneracy

II. What the H atom wavefunctions look like

- A. Quantum numbers, n , ℓ , m
 - 1. Radial part of wavefunction
 - 2. Angular part of wavefunction
 - 3. Spherical symmetry
- B. s wavefunctions and radial nodes

III. Physical significance of Ψ

- A. Probability density
- B. Radial probability distribution

IV. Bohr's Model and the Uncertainty Principle