

**Lecture summary**

- Group I (alkali) elements – Quantum defect theory
  1. Asymptotic behavior of the Hydrogen radial wavefunction
  2. Quantum defect
  3. Core shielding : Modification to the Coulomb potential
  4. Polarization of the ionic core by the valence electron
  5. Core penetration
  6. Connection to the classical picture and scattering theory

**Homework** (due on 4/16)

1. Textbook 4.3

**Suggested Reading**

R.R. Freeman and D. Kleppner, “Core polarization and quantum defects in high-angular-momentum states of alkali atoms”, Phys. Rev. A **14**, 1614 (1976).