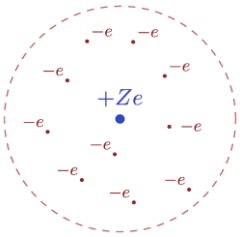
HOME ASSIGNMENT 4



We were taught about multielectron species by taking an example of simple Helium atom which is an 2 electron species. By deriving the Time independent Schrodinger equation for helium, we generalized the Schrodinger for higher multielectron species.

Orbital Approximation for N electron species : Approximation is that multi electron wave function can be considered as product of many single electron wave functions. Single electron wave functions are orbitals. And the total energy is the sum of orbital energies. If we want to calculate orbital energy, then we have to neglect the electronic repulsion.

Effective Nuclear Charge (Z effective): It is the net nuclear attraction experienced by an electron in an orbital. The effective nuclear charge is always less than the actual nuclear charge because of the shielding caused by the electrons present in the inner orbitals.

6th postulate of quantum mechanics : The total wavefunction must be antisymmetric with respect to the interchange of all coordinates of one fermion with those of another. Electronic spin must be included in this set of coordinates.

This postulate is the key principle of quantum mechanics.