

B.Sc. (Hons) Physics,
Class: VI Sem, Sec.-A
Paper: Statistical Mechanics
Teacher: Dr. Arpita Vajpayee

Following topics will be discussed in this week:

- 1) Relativistic Fermi gas
- 2) White Dwarf Stars
- 3) Chandrasekhar Mass Limit
- 4) Comparison of the three statistics

Please read the above mentioned topics.

I am available for discussion on the class WhatsApp group at the time of our scheduled class according to the timetable. You can post your doubts/queries on this group. Several E-books have already been shared on the class WhatsApp group.

Numerical problems:

Q-1) Estimate the Fermi-level for copper and calculate the average electron energy at $T = 0\text{K}$. The molecular weight of copper is 63.57 and density of copper is 8.94 g/cm^3 . Take $h = 6.62 \times 10^{-34}\text{ Js}$, $m_e = 9.11 \times 10^{-31}\text{ Kg}$, $N_A = 6.023 \times 10^{23}\text{ mol}^{-1}$.

Q-2) Considering a relativistic particle (eg. electron, proton etc.), calculate the density of states.

Q-3) Find out the different macrostates and microstates of a system of three particles distributed in three cells assuming the particles to be (i) indistinguishable and (ii) distinguishable.

Please send your solutions by e-mail.