05/01/21 Dr. Sanjeet Kr.
HOD Physics
HDJC, Vaishali

MPHYCC-8 Statistical Mechanics.

Probability: The probability of occurence of an event is the ratio of the number of cases in which the event occurs to the total number of cases, provided the total number of cases is quite large.

Say a coin is tossed a large number n times. Then the probability of getting head is

$$P(h) = \frac{\text{no. of times head is obtained}}{\text{total no. of times the coin is tossed}} = \frac{n_h}{n}$$

This ratio tends to ½ as one tosses the coin a large no. of times ($n \to \infty$).

Probability Relations: There are two important probability relations or probability theorems:

(i) Addition Theorem: For mutually exclusive events, if the probability of occurence of one event r is $P(r)$ and that of the other event s is $P(s)$, then the probability of occurence of either r or s is $P(r) + P(s)$.

(ii) Multiplication Theorem: If the probabilities of occurence of two independent events are $P(r)$ and $P(s)$, then the probability of occurence of both of them simultaneously is $P(r)\,P(s)$.