

Maxwell's Law of Distribution of velocities

Statement →

The mean kinetic energy of all gas molecules remains constant at fixed temperature. But at any instant, the molecules are moving with different velocities due to large number of collisions.

$$\frac{dn}{dc} = \frac{4N}{\sqrt{\pi}} \left(\frac{3m}{2KT} \right)^{3/2} e^{-\frac{E}{2KT}}$$

Assumptions →

1. Due to large no of molecules, the no of molecules in any region is some and it possess same velocity in all direction.
2. Velocity components along three perpendicular axes are independent of each other.
3. Randomly selected molecule has certain velocity limit, is related to probability and it is function of velocity.