Physics
Theory Part 19

Topics: Mechanics of Collisions/ Thermal Physics

Course: B.Sc/ Physics

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Mechanics of Collision

Coeff. of Resistitution is defined as

$$C_R = \frac{v}{u} = \frac{\text{velocity of the object after impact}}{\text{" " " before "}}$$

If $0 \le C_R \le 1$, if $C_R = 1$ then elastic collision

$= 0$ " inelastic "

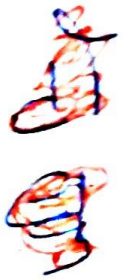
Coeff of Resistitution indicates the general bounciness of objects/surfaces involved. If the ball used for testing the surface is solid then it will be observed that the ball rises to maximum height in case of ~~Rubber~~ wood surface ($C_R \sim 1$) and on the rubber bouncing back is minimum i,e almost it stick to surface i,e $C_R \sim 0$.

Experiment: Drop the Basket ball on the surfaces from the same height, several times and count the bounces and heights. Since no. of bounces will be very large, video camera will do that well.

Record the height & time, calculate velocities before & after impact then calculate C_R. From C_R value we can find typer of surfaces.

In Isothermal Process.

Entropy change is given by



$$\Delta S = \frac{\delta_{rev}}{T}$$

δ_{rev} = Heat transferred to the system reversibly

T = Absolute Temp. (K).

If the process is reversible then

$$\Delta S = 0.$$

And ΔS will always be Positive in case of irreversible process.

So; $\boxed{\Delta S \geq 0}$

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Thanksss