Chapter Title: Center of Mass and Linear Momentum

Sections: Collisions

Collision

Elastic and Inelastic Collisions

Elastic collision:

In an elastic collision, the kinetic energy of each colliding body may change, but the total kinetic energy of the system does not change.

Inelastic collision:

A collision in which the total kinetic energy decreases is called inelastic.

Collision: Inelastic

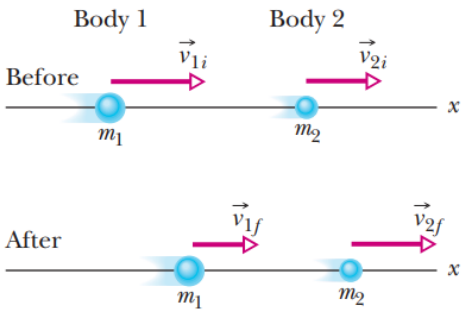

Figure: Bodies 1 and 2 moves along an x axis, before and after they have an inelastic

If a body is attached to the other body after a collision, then the incoming body is called the projectile, and the other is called the target.

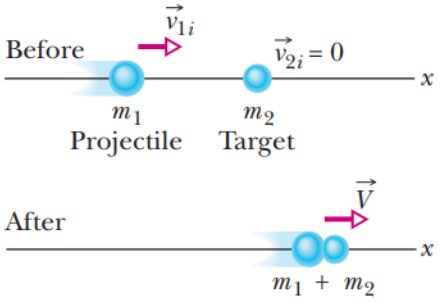

Figure: Bodies 1 moves along an x axis and Body 2 is at rest. After collision, they stuck together bodies move with the same velocity, V.

Collision: Elastic

In a closed and isolated system, two bodies are colliding with each other. Let us assume that Body 2 is at rest ($v_{2i} = 0$) and Body 1 is moving (v_{1i}) towards the Body 2.

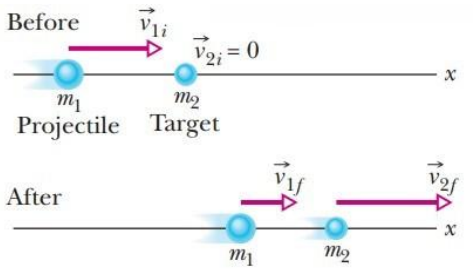

Figure: Body 1 moves along an x axis before having an elastic collision with Body 2, which is initially at rest. Both bodies move along that axis after the collision.