PHY250: Review and Introduction

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$$\sum_i \vec{F}_i = m\vec{a} \tag{1}$$

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And you have proved that:

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Where

$$E_k = \frac{1}{2} m v^2 \tag{4}$$

is the kinetic energy.

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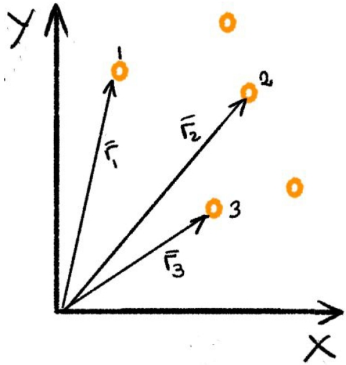
$$E = U + K = constant \tag{7}$$

So, when a force is conservative, that is, there is a function $U(x)$ such that

$$F = -\frac{U(x)}{dx} \tag{8}$$

then, the energy of the particle is constant.

You also studied systems of N particles,:



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And you found the following expressions that relates the motion of the center of mass with the total external force:

$$\vec{P} = M\frac{d}{dt}(\vec{R}_{CM}) = M\vec{V_{CM}} \qquad (15)$$

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So the center of mass moves as a particle acted by the total external force.

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where **I** is the **Moment of Inertia**

$$I = \sum_{i}^{N} m_i r_i^2 \tag{19}$$

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- and we are going to study the thermal properties of matter
- finally, we are going to study the nature of light and how it interacts with different mediums