Mechanics: Forces, energy, do to objects

Classical Physics

pre quantum mechanics

Assumptions:

1. World is a machine.
2. Describable by laws.
3. Laws are mathematical.

Is world like this? NO

But assumptions are useful!
Description of "World" in Physics

- Math as a Language.
- Everyday word with a precise definition.

Operational Definition (pg 5-6)

by a operation procedure experiment

CHAPTER 1 an overview

§1.1 Motion Diagrams

Visualisation technique
Example: Movie

cut up frames & stack.

Stop to Think 1.1 Excellent!

§1.2 - Models

Important Parts

Model Cars as Particles

1 2 3 4 3 2 1
.. .. .. .. .. ..

§1.3 - Position & Time

Example Projectile

Motion Diagram
Choose coordinate system.
In principle arbitrary
In practice, some choices are clever
Choose a time \( t = 0 \)

Same remarks apply

Notation: \( \vec{A} \) or \( \vec{a} \)

Position Vector: \( \vec{r} \) points from origin to \( n+1 \) position
Displacement Vector $\Delta \vec{r}$

$\Delta$ "delta" = change of

$\vec{r}_n + \Delta \vec{r} = \vec{r}_{n+1}$

$\Delta \vec{r} = \vec{r}_{n+1} - \vec{r}_n$