

SO FAR:

Conservation of Momentum
Conservation of Energy

Newton's Laws

MAGIC: These work in exactly the same way if moving at a constant velocity
(not true if accelerating)

Laws of mechanics are the same in any inertial reference frame.

reference frame: system of observers at rest relative to each other

inertial frame: "non-accelerating"
- frame where Newton's 1st Law holds.

observers in different frames

→ measure different velocity, momentum, energy for same object.

BUT → find that same rules apply (Newton's 2ND Law holds, conservation of momentum holds, etc...)

Einstein's Principle of Relativity:

The Laws of Physics are the same in all inertial reference frames

Maxwell's equations for electromagnetism → light is an electromagnetic wave with speed c .

If Einstein is right, all observers must measure same speed of light.