

SPECIAL THEORY OF RELATIVITY - OVERVIEW

Difference between relativistic and non relativistic physics

Define frame of reference, types viz inertial and non inertial

Failures of Galilean Transformations

Einstein's postulates of special theory of relativity

Lorentz transformations

Velocity transformation equations

Mass variation

$$E=mc^2 \text{ and } E^2=p^2c^2 +m_0^2c^2$$

What is Photon? Discuss about its mass, momentum and energy

$$\text{Potential Energy} = m_0c^2$$

Relativistic Kinetic Energy $T = (m-m_0)c^2$ and show that it reduces to

$$\frac{1}{2}m_0v^2 \text{ when } v \ll c$$

Length Contraction

Time Dilation - eg decay of μ -meson