

1. Inertial & Non-Inertial Frames

Ans. An inertial reference is either at rest or moves with a const velocity. Non inertial frame is a reference frame that is accelerating either in linear fashion or reference frame that is accelerating either in linear fashion or rotating around some axis.

Example:- Inertial reference frames - A train moving with constant velocity

2. Galileo & Lorentz Transformations

Ans: Lorentz Transformations, set of eqns in relativity physics they related the space & time coordinates of two systems moving at a const velocity relative to each other required to describe high speed phenomenon approaching the speed of light, Lorentz transformations formally express the relative concepts that space & time aren't absolute that length, time, & mass depend on the relative motion observer, & that the speed of light in vacuum is constant & independent of the motion of the observer or the source. Galilean transformations, set of eqns in classical physics that relate the space & time coordinates of two systems

moving at a const velocity relative to each other. Adequate to describe phenomena at speeds much smaller than the speed of light Galilean Transformations formally express the ideal that space & time are absolute that length time & mass are independent of the relative motion of the observer & that the speed of light depends upon the relative motion of the observer.

3. Time dilation & length contraction

Ans. length contraction: shortening of distance

Time dilation: clocks moving relative to an observer runs more slowly compared to the clocks that are rest relative to the observer.

Twin Paradox : Illustrates questions on the relativity of time.

4. Variation of mass with velocity

Ans to explain the variation of mass with velocity. consider the collision of two exactly similar balls A & B, each of mass m , moving in opposite direction along x-axis to speed u in frames S . After collision they coalesce into one body. The mass of a moving body appenrigred than its rest mass.