Relativistic time

Soumendra Nath Thakur

Potential competing interests: No potential competing interests to declare.

Definition:

Relativistic time encompasses phenomena of **time distortion, error in time**, **time delay,** and **time shift**.

Description:

Relativistic time emerges from the interplay of relative frequencies under the influence of relativistic effects, such as motion or gravitational potential difference. It can be understood as a phase shift in relative frequencies due to two primary mechanisms:

1. Infinitesimal Loss of Wave Energy in Oscillators with Mass (**Time Distortion**/**Error in Time**): This aspect of relativistic time arises from the influence of motion on time measurement. It manifests as a phase shift or error in time measurement due to the loss of wave energy in systems with mass.
2. Infinitesimal Loss of Energy of Propagating Waves (**Time Delay**/**Time Shift**): Another facet of relativistic time relates to the loss of energy in propagating waves, resulting in a time delay or time shift.

Both of these effects are not limited to motion but also encompass gravitational potential differences, leading to variations in the passage of time. The associated phase shift in relative frequencies reflects the relative energy loss experienced by these waves.