

Definition

Operational Lorentz Transformation

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An extension of the classical Lorentz transformation that incorporates an irreducible minimum temporal limit in the calculation of event coordinates. It establishes that the relationship between reference frames is not purely geometric but is conditioned by the impossibility of instantaneous causal interactions. A set of kinematic equations linking ideal Lorentz coordinates with measured coordinates (x'_{med} , t'_{med}), incorporating irreducible operational terms associated with physical interaction. They are defined as:

$$x'_{med} = \gamma(x - vt) + \delta x$$

$$t'_{med} = \gamma\left(t - \frac{vx}{c^2}\right) + \delta t$$

where δx and δt are the operational bounds of measurement, related by $\delta x = c \cdot \delta t$.

Declarations

Potential competing interests: No potential competing interests to declare.