

On Timepoint and Time

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Purpose

In this paper, I define the concept of a timepoint and a time. A timepoint is the ordinal number of an energy exchange. A time is a difference between a timepoint and the other timepoint.

1. The definition of a timepoint and a time

Aim

In this chapter, I define a timepoint and a time. A timepoint is the ordinal number of an energy exchange. A time is a difference between a timepoint and the other timepoint.

Word

An energy exchange is that Object A receives energy or gives energy or exchanges energy.

Definition

Object A exists. Let t_A be a timepoint of Object A. Let $T_{A,n,m}$ be a time between timepoint n and timepoint m. Let \vec{t}_A be a vector which represents a timepoint. Let $\vec{T}_{A,n,m}$ be a vector which represents a time. Let \vec{e}_A be a vector which represents a unit time. Let n_A be an ordinal number of an energy exchange. Let $n_{A,n}$ be an ordinal number of an energy exchange at timepoint n. Let $n_{A,m}$ be an ordinal number of an energy exchange at timepoint m.

$$\vec{t}_A = n_A \vec{e}_A \quad (1.1)$$

$$t_A = n_A \quad (1.2)$$

$$\vec{T}_{A,n,m} = (n_{A,n} - n_{A,m}) \vec{e}_A \quad (1.3)$$

$$T_{A,n,m} = n_{A,n} - n_{A,m} \quad (1.4)$$

The timepoint and the time in (1.2) and (1.4) are the components of each vector. A unit time is a time that Object A exchange energy at regular intervals. In realistic example, Object A continues to emit light at regular intervals. The interval is a unit time.

I represent the difference between ordinal numbers as follows.

$$\vec{dt}_A = (dn_A) \vec{e}_A \quad (1.5)$$

$$dt_A = dn_A \quad (1.6)$$

Unit

In system of units, any ordinal number no unit. A unit time has unit s which is second.

Logic

If object A does not exchange energy, then, the timepoint of Object A does not exist. The timepoint is not zero but undefined. Because, I define a timepoint by the product of the ordinal number of an energy exchange and an unit time.

Example

Timepoint zero is not that a time of energy exchanges is zero. If we define one time of an energy exchange as the origin of a coordinate system, then, the timepoint is zero. Because, a timepoint is not a time of energy exchanges but the ordinal number of an energy exchange. The ordinal number is dependent on the definition of the origin.

Example

Timepoint two thirds is that the ordinal number of an energy exchange is two thirds. When Object A emits light one time, I define the ordinal number as timepoint zero. Object A receives light from the other object. When the ordinal number of the energy exchange is two thirds, the timepoint is two thirds.