

Re: Download a new book on quantum mechanics and relativity.

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-10/1338.html>

From: chaverondier (*bernard.chaverondier_at_wanadoo.fr*)

Date: 10/04/04

Date: 4 Oct 2004 13:05:06 -0700

Eugene Stefanovich <eugenev@synopsys.com> wrote in message news:<4160E7A0.5040306@synopsys.com>...

Eugene Stefanovich

- > *Could you please explain to me the meaning of "absolute*
- > *synchronization" in your approach. I feel, it plays a*
- > *significant role there, but I don't understand what it means.*

Chaverondier

If all symmetries of relativity are satisfied, then, there can be only one speed c at which interactions propagate at a speed independent on the motion of their source.

If this speed of propagation is infinite you get the Galilean Relativity and the space-time you get is the Newtonian space-time with an absolute time, but no absolute space.

If the speed of propagation is c , then you get the Special Relativity and the space-time you get is the Minkowski space-time with no absolute time and no absolute space.

If space-time translations and space rotations invariance are satisfied by any phenomenon, but that

- * some interactions propagate at a speed c independent on their source
- * some interactions propagate at a speed $C > c$ independent on their source

then, the principle of relativity of motion is broken (I will detail this point later). You are not any more in Minkowski space-time. Lorentz covariance is still possible (and so can be satisfied by free particles) but is not any more required. You are in the Aristotle space-time.

In this framework, it is possible to define Lorentz inertial frames. In such a frame R the relativist simultaneity means that an event z_A occurring at A and an event z_B occurring at B are said to be

sci.physics.relativity: Re: Download a new book on quantum mechanics and relativity.

simultaneous (with regard to the simultaneity prevailing in frame R) when a flash emitted at event z_A located at A at rest in R and a flash emitted at event z_B at B at rest in R (both propagating at speed c) reach the middle I of [AB] at the same time.

Only a class of frames R_0 (images of each others by space-time translation or space rotation) satisfies the requirement that when I is the middle of points A and B at rest in R_0 , a signal propagating at speed C emitted from I reaches A and B simultaneously according to the relativist simultaneity prevailing in this frame. These preferred frames R_0 are Aristotle frames (ie motionless inertial frames).

Eugene Stef