

Re: Relativity as an axiomatic system

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"Eugene Stefanovich" <eugenev@synopsys.com> wrote in message news:41590BA9.20402@synopsys.com...

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| Pentcho Valev wrote:

| > Einstein: "Guided by empirical data, the investigator rather develops
| > a system of thought which, in general, is built up logically from a
| > small number of fundamental assumptions, the so-called axioms."

| >

| > What Einstein describes is an axiomatic system which, by definition,
| > can be presented as a sequence of propositions with the axioms at the
| > beginning followed by theorems (deduced propositions), where each
| > theorem is accompanied by an explicit authentication of the exact
| > deductive path leading to it. In other words, the path from the axioms
| > to a particular proposition (theorem) can be disintegrated into steps
| > each of which has the form

| >

| > a,b,... -> c

| >

| > and can undergo the scrutiny of both critics and sycophants (secretly
| > in the latter case).

| >

| > Perhaps, after 100 years of intensive begging the question, it is time
| > for relativists to perform this important operation. Let me suggest a
| > possible beginning:

| >

| > Axiom (1) Principle of relativity

| > Axiom (2) Constancy of speed of light

| > 1,2 (3) Time dilation in BOTH inertial frames

| >(4).....

| >

| > The derivation is set out as a sequence of numbered lines (1), (2),
| > (3) etc. The fact that line (3) was obtained from (1) and (2) as
| > premises is shown by writing 1,2 to the left of the line number (3).

| >

| > According to Einstein, the sequence eventually leads to

| >

sci.physics.relativity: Re: Relativity as an axiomatic system

|> p,q,... (r) A clock in a non-rotating system undergoes time
|> CONTRACTION relative to a clock on the periphery of a rotating disc.
|>
|> x,y,... (z) Two clocks placed at different gravitational potentials
|> will go at different rates in accordance with $v=v_0(1+\phi/c^2)$.
|>
|> Now relativists should present all the steps leading to the above two
|> propositions and eventually replace p,q,r,x,y,z with real numbers.
|> They will fail because both (r) and (z) are just Einstein's
|> "intuitions", not theorems. Still some truth will be revealed and
|> truth should be valued in science shouldn't it.
|>
|> Pentcho Valev

|
| Actually, the problem with SR begins much earlier than at (r) and (z).
| Take a look at the parallel thread "Download a new book on
| quantum mechanics and relativity". I repeatedly ask relativists there to
| prove statement (3) from axioms (1) and (2). They can certainly do that
| for simple "light clock" (postulate (2) is very handy in this case),
| but they cannot do it for a
| clock of arbitrary design for which axiom (2) is of no help.
| So, in order to get special relativity, Minkowski space-time, etc.
| one should introduce somewhere in this axiomatic system an additional
| postulate
|
| (?) Lorentz transformations are valid for all systems independent on
| their composition and interactions.

LOL!!

"It follows, further, that the velocity of light c cannot be altered by composition with a velocity less than that of light. For this case we obtain $V = (c+w)/(1+w/c) = c$." – Einstein.

$$\frac{1}{2}[\tau(0,0,0,t)+\tau(0,0,0,t+x'/V+x'/V)] = \tau(x',0,0,t+x'/V)$$

|
| Another (correct) approach is to skip this postulate (which turns out to
| be wrong at closer inspection) and derive transformations
| of observables from solution of dynamical problem.
LOL!!

"But the ray moves relatively to the initial point of k , when measured in the stationary system, with the velocity $c-v$..." – Einstein

$$\frac{1}{2}[\tau(0,0,0,t)+\tau(0,0,0,t+x'/(c-v)+x'/(c+v))] = \tau(x',0,0,t+x'/(c-v))$$

That's what
| the "new book on quantum mechanics and relativity" is about.
|
| Eugene.

sci.physics.relativity: Re: Relativity as an axiomatic system

That's what "Eugene is so smart, he can switch sides any time he likes" is about.

Androcles.