Two Tests for Special Relativity

5 mensajes

Juan Joaquín Schulz Poquet <jjschulzpoquet@gmail.com> 30 de marzo de 2011 18:10
Para: tprusti@rssd.esa.int
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Dr. Tino Prusti
ESA Science & Technology

Dear Dr. Prusti,

I sent the following text to "Letters of Interest" using the official form. In doubts of having prepared it correctly, I'm sending it hereby directly to you also.

Dear Sirs,

I am writing to bring your attention upon two astronomical tests that aim to probe the second postulate of the Special Theory of Relativity (that of the light's speed constancy) in a direct way. I want to emphasise "in a direct way" because, in fact, this is the case for these tests, as opposed to probing the postulate through its consequences, such as the deviation from their theoretical orbits of electrical particles in a synchrocyclotron, the bending of photons by gravitational fields, the time delays in the muons life, the isotropy of light in vacuum, etc., all the facts that were giving to Relativity the present assent.

In the 1960's decade, Prof J. G Fox published two papers in the American Journal of Physics in which he postulates that all the experiments carried out until then in laboratories to this purpose were invalidated by the fact of the dispersion's light phenomenon in the air or other dielectric means such as lens, mirrors, water, etc., as well as he argues the need of a direct experiment that could lay so transcendental part of Physics out of ambiguities. (J.G. Fox."Experimental Evidence for the Second Postulate of Special Relativity". Am.J. Phys. 30 (1962) 297 - "Evidence Against Emission Theories". 33 (1965) 1).

On the other hand, reading the 2004 proceedings of the official presentation of the GAIA project, by F. Mignard or by M.A.C. Perryman, one can see how relevant it is still for the scientific community to probe Relativity with more refined instruments, capable to measure Stellar Aberration even in the second order term, in the Einstein's formula.

In my humble opinion, there is a more simple way to do this, through the measurement of Stellar Aberration also, but without appealing to such extreme precision.

As you well know, Bradley discovered this phenomenon, and he understood it as a composition of speeds: the one of the becoming light from a star, "c", with that of the Earth's on its way around the Sun,"v", resulting at that time a definitive back-up for the heliocentric theory. The expression for this aberration is the angle A necessary to tilt a telescope to focusing a certain star in respect to its actual position, and in its maximum and simplest expression (without considering the star's declination) is such so that tg A = v/c.

Let us now suppose that "c" could vary. In this case so would do A. This fact conducted me to imagine a direct test for the mentioned postulate, based on accurate measurements of the relative positions in the sky of specified celestial bodies (carefully selected to fulfil requirements of brightness, apparent proximity and quite different radial velocities) during, at least, six months, in order to detect eventual changes in its relative positions.
The test could be reduced to the simple lecture of available registers, if that was the case, and would yield a positive result if changes of about 0.05" could be detected, or even less, depending on the difference of its radial speeds in the selected celestial bodies.
But I am an Industrial Engineer and this analysis (selection of the adequate sector of the sky and lecture of the registers) must be done by professional Astronomers, experienced in Astrometry. I don't know if the data yielded by the Hipparcos mission are sufficient to this purpose. I neither know if the lack of radial velocities registers in this mission may be replaced by previously known ones, and whether or not they were registered in the convenient epochs. (Reading the Hipparcos Catalogue I wondered if the troubles experienced with double stars could be related with this phenomenon). But surely enough, the whole necessary data will be provided through the upcoming GAIA mission, according to the respective mentioned proceedings.

In the first pdf document attached to this e-mail you will find the basis of this test -and the foundation of my above assertions-, which I published in APEIRON in April 2005 under the title "An Astronomical Test for the Second Postulate of the Theory of Relativity". The second one, published in July 2010 in the same magazine under the title "A Test in the Outer Space for the Constancy of the Velocity of Light", is another experiment pursuing the same purpose, much more complex but effective, and I'm including it here only as a curiosity that surely will deserve your attention for future missions if the present test yielded a positive result.

I must emphasise that a null result also ought to be considered as scientific achievement, for its direct way to prove such a relevant theory. And, of course, a positive one would certainly have a huge transcendence, for the opposite reason.

I don't know if it remained clear that I'm only offering the idea of these tests and that I'm not applying for any researcher's fund or intending to integrate any researcher's group. It is up to you to decide how to carry them out, if that was your decision. I'm a free-lance researcher and I am passionate about Fundamental Science.

I would very much appreciate your reply, and welcome any suggestion or advice.

Apologising for my bad English, I remain yours sincerely,

Juan J. Schulz Poquet

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2 archivos adjuntos

AP-05-04-Schulz-Astron.Test..pdf
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AP-10-07-Schulz-Test in Outerspace.pdf
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31 de marzo de 2011 12:34

To:

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31 de marzo de 2011 22:39

Timo Prusti <tprusti@rssd.esa.int> 1 de abril de 2011 12:10
Para: Juan Joaquín Schulz Poquet <jjschulzpoquet@gmail.com>

Dear Mr. Schulz Poquet,

If your submission through the official form has gone correctly, then you should have received an automatic confirmation Email back to you. In any case your proposal seem to me rather like a proposal for a scientific experiment w ith the Gaia data than a contribution to archive access activities w hich w e are seeking at this moment. Nevertheless, I can ensure proper evaluation of your Letter of Interest as long as you have formally submitted your contribution through the Call w eb-pages.

Yours sincerely,
Timo Prusti

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