

The psychological conflict from the General Theory of Relativity (1916) and the Proton Radius Puzzle.

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ABSTRACT.

In developing the general theory of relativity, Albert Einstein assert: My main purpose, is to develop this theory, so that the reader is aware that the way we set out, is psychologically the only natural one (book title: La teoria della relatività, from Albert Einstein, paragraph 4).

Then, it can be deduced, that any solution of a physical problem attributable to the general theory of relativity, is psychologically the only natural one.

After a brief introduction we solves the following problem.

Problem: *What will be the effect of muon, when it is inside to the proton of density $J_p = V_p/M_p$ for an infinitely small time?*

INTRODUCTION.

- 1) The general theory of relativity published in the 1916, is a confirmation of existence of ether (book title: Einstein and the ether, from L. Kostro).
- 2) A mass M in a point P of space, generated (see formulas 70a) and 69) from the book La teoria della relatività) the volume $4\pi c^2 a = M J_G$.
- 3) Through a , (see formula 71) from the book La teoria della relatività), determines how much shorten a lenght when it is placed along the radius of a sphere of origin P.
- 4) From the $V_a = 4\pi c^2 a = \frac{4}{3}\pi r_a^3$ we obtain the volume of sphere of radius r_a and from point 3), we deduce that it is the missing volume due to the presence of the mass M in the point P of space.
- 5) Let us image putting and then removing over an infinitely small interval of time, the mass M in the point P of space. Then, because of the presence of the mass M in the point P of space, for the 4), the volume

$$V_a = M J_G = 4\pi c^2 a = \frac{4}{3}\pi r_a^3$$

of sphere of centre P and radius r_a will be missing.

6) Since J_G has the following dimensions [m³/ Kg], we can interpret the volume V_ω as the effect of mass M due to ether of density J_G .

SOLUTION.

According to the general theory of relativity, the volume of the proton should decrease by $\Delta V = M_\mu J_P$, obtaining the following reduced value of proton $V_{P(f)} = V_{P(i)} - \Delta V$.

So, if we measure the proton radius with a muon instead of an electron, we will have to get a reduction of the proton radius.

Therefore, if as initial radius we take the CODATA value 2014, then we get the value of the radius measured by Randolph Pohl et al:

Proton structure from the measurement of 2S- 2P transition frequencies of muonic hydrogen.

CONCLUSION.

Therefore, experiments conducted with electrons and muon to measure the proton radius that will give the same result, come into contradiction with the general theory of relativity.

REFERENCE.

- 1) Ludwik Kostro; Einstein e L'etere
- 2) Albert Einstein; La teoria della relatività (1916)
- 3) Randolph Pohl, Aldo Antognini et al.
Proton structure from the measurement of 2S - 2P transition frequencies of muonic hydrogen.
- 4) M. Horbatsch, E. A. Hessel et al.
A measurement of the atomic hydrogen Lamb shift and the proton charge radius.