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On Algebra and Tachyons

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Abstract: Problem statement: After formulating the special theory of rel[illegible]ity in [illegible] Albert Einstein politely remarked: "for velocities that are greater than light [illegible] deliberations [illegible] meaningless". In 1962, Sudarshan and his co-researchers proposed a hy[illegible] that particles/[illegible] whose rest mass is imaginary can travel by birth faster than light. Afte[illegible] pu[illegible]on of Sudarsh[illegible]'s research, many scholars began to probe into faster than light phenome[illegible]. In exte[illegible]elativity, many properties of tachyons have been found. But still this micro second, the velocity of a[illegible]achyon with respect to us is unknown. In this research the researchers fo[illegible]n velocity. **App[illegible]ch:** In this research, Einstein's variation of mass with velocity equatio[illegible]s transformed into quadratic equation. We introduced a new hypothesis to find the roots of the qu[illegible]atic equation. **[illegible]sults:** By introducing a new hypothesis in tachyon algebra, the researchers found t[illegible]he velocity of [illegible]erluminal objects with respect to us is v = c√3 where c is the velocity of the ligh[illegible]**nclusion/Re[illegible]mendations:** But the road to tachyon is too long. Hereafter it is up to ex[illegible]ental [illegible]cists to establish the existence/generation of tachyons.

Key words: Einstein, special theory of relati[illegible] su[illegible] hypothesis, superluminal phenomena, quadratic equations and new conje[illegible]

INTRODUCTION

Algebra is one of the most po[illegible]ul tools [illegible]study other branches of mathemati[illegible]or exa[illegible] application of modern algebra e[illegible]he[illegible]at it [illegible] impossible to solve the [illegible]ous c[illegible] problems trisection of a general a[illegible] with out us[illegible]otractor, squaring the circle, d[illegible] the cube and [illegible]raw a regular septagon[2] [illegible]tudy, the res[illegible]archers introduced a new [illegible]onjectu[illegible]uadratic equations which dates 2[illegible]B.C. and loca[illegible] tachyon velocity with respec[illegible]s.

Assu[illegible]g Sud[illegible]han's tachyon hypothesis in Einste[illegible]arian[illegible] mass with velocity eqn. we get that[1-3] [illegible](1[illegible] where [illegible] the moving mass of the tachyon, n[illegible], v>c an[illegible] imaginary:

Squ[illegible] (1-n) = i^2 (1)

[illegible]i^2 by-1,

$$m^2 (n-1) = 1 \quad (1a)$$

$$n-1 = 1/m^2 \quad (1b)$$

$$m^2 n = m^2 + 1 \quad (1c)$$

Multiplying by n, $m^2 n^2 = m^2 n+n$
Using 1c in RHS:

$$m^2 n^2-n-m^2-1 = 0 \quad (2)$$

Equation 2 is quadratic in n.

According to the laws of quadratic eqns. if K and L are the roots:

$$K+L = -b/a \quad (3)$$

$$KL = c/a \quad (4)$$

Appling (3) and (4) in (2), $K+L = 1/m^2$, $KL = -(m^2+1)/ m^2 = -1-1/m^2$:

Adding $K+L +KL +1 = 0$

$$(K+1) (L+1) = 0 \quad (5)$$

From (5) we have:

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$$K = -1 \quad (5a)$$

Squaring (1a):

$$m4n^2-2m4n+m4-1 = 0 \quad (6)$$

Equation 6 is also quadratic in n.
Assuming (3) and (4) in (6), $K+L = 2m4/m4 = 2$:

$$KL = m4-1/m4 = 1 -1/m4$$

$$\text{Adding } K+L+KL = 3-1/m4$$

Using (1b) in RHS:

$$K+L+KL = 2-n^2+2n \quad (7)$$

In both the quadratic Eq. 2 and 6 the roots K and L denote the velocity of one and the same tachyon. So, putting (5a) in (7) $n^2-3-2n = 0$:

$$(n+1)(n-3) = 0 \quad (8)$$

$$n = -1 \quad [illegible]$$

$$n = 3 \quad (8b)$$

If we put n = -1 in (2) the equation [illegible] and if we apply n = -1 in (6),

$$4m4 = 1$$

$$2m^2 = 1 \quad (9a)$$

using (9a) in (1a) we [illegible]. Applying (8b[illegible]6) we get (9). i.e., 4m4 = [illegible]
So, n = [3, -1] [illegible] the so[illegible]et. Since $n = v^2/c^2$, we get that:

$$v = [illegible]\sqrt{3} \quad (10)$$

i.e., the [illegible] free tac[illegible] w.r.to us is c √3.

MATERIALS AND METHODS

T[illegible]searcher[illegible] politely request the research com[illegible]ttempt/apply this conjecture to the other fi[illegible] of mat[illegible]atical sciences.

RESULTS AND DISCUSSION

It was the Babylonians who gave the solution formula $x = -B \pm [B^2–4AC]^{1/2}$ for the quadratic Eq. 2 of the general form $Ax^2+Bx+C = 0$. Quadratic equat[illegible] an interesting mathematical topic. The membe[illegible] the British parliament had a nice debate on Jun[illegible], 1993 on this topic. Even Einstein's formula E = m[illegible]so a quadratic equation. We can not find th[illegible]olution[illegible] the Eq. 2 and 6 by applying the [illegible]sical form[illegible]. That's why the authors introdu[illegible]nd ass[illegible]med the above hypothesis. Replacing m[illegible]/√2 an[illegible]y 3 the Eq. 1, 2 and 6 satisfy. So, the [illegible]cher[illegible]pothesis [illegible] acceptable and agreeable.

CONCLUSION

It is well k[illegible] tha[illegible]erimental verification is the supreme judge in physic[illegible]result is consistent in theoretical [illegible]ics, it is [illegible] consistent in experim[illegible]sics also. Albert E[illegible]tein requested the physi[illegible] to locate solutions for the burning problems of ph[illegible]s in the easte[illegible]piritual philosophy. Thripura Rahs[illegible] is one of th[illegible]ost famous meta physics in Hindu[illegible] The great [illegible]e Thathathreya reveals the existence [illegible] this masterpiece. If tachyons are inconsis[illegible]ot easy to derive Eq. 8b. Here [illegible] it is up to experimental physicists to locate or ge[illegible]hyons.

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