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MULTIDISCIPLINARY RESEARCH AND REVIEWS

On Tachyon Physics

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1. Abstract

In this brief note, the authors attempt to show that Einstein's variance of mass with velocity equation doest permit the existence or generation of tachyon particles/objects.

Keywords: Real; Positive; Negative and imaginary numbers and quadratic equations

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Let $m = \frac{i}{(1-n)^{\frac{1}{2}}}$ where i is imaginary, m and n are real (1)

Squaring $m^2(1-n)=i^2$ (2)

Replacing I by -1,

$m^2(n-1) = 1$ (3)

$m^2 n = m^2 + 1$ (4)

n $= 1 + \frac{1}{m^4}$ (4a)

Multiplying (3) by (n+1), $m^2(n^2-1) = n+1$

i.e $m^2n^2 - m^2 - n - 1 = 0$

(5)

Equation (5) is quadratic in n

$n = \frac{1 \pm [1+4m^4+4m^2]^{\frac{1}{2}}}{2m^2}$

$= \frac{1 \pm [(2m^2+1)^2]^{\frac{1}{2}}}{2m^2}$

n$= \frac{1+2m^2+1}{2m^2}$ (6)

Taking positive value, n $= \frac{2+2m^2}{2m^2}$, i.e n $= 1 + \frac{1}{m^2}$ (6a)

Taking negative value in (6), n = -1. (7)

According to the laws of quadratic equations the roots, α+β

$= -B/A$ and αβ=C/A.

So, α+β+αβ$= \frac{C-B}{A} =$-1. Applying this relation in (5)

i.e α+β+αβ+1=0

i.e α(1+β)+(1+β)=0

i.e (1+α)(1+β)=0 (7a)

i.e α=-1 (7b)

(7) and (7b) are one and the same result.

From (7a) we get,(1 + β) =0

Putting (6a) in the above relation, $1 + \frac{1}{m^2} + 1$=0

i.e., 2$m^2 + 1 = 0$

i.e., $m^2 = \frac{-1}{2}$

Taking square root on both sides, m = $\frac{i}{\sqrt{2}}$ (8)

Applying (8) in (1), $\frac{i}{\sqrt{2}} = \frac{i}{(1-n)^{\frac{1}{2}}}$

Squaring on both sides, $\frac{i^2}{2} = \frac{i^2}{(1-n)}$

i.e., n = -1 (9)

(7) and (9) are one and the same.

The above analysis establishes that α and β are distinct. (10)

According to the laws of quadratic

equations of the general form Ax^2 + B x + C = 0,

the roots are distinct if B^2 - 4AC = 0 (11)

Assuming (11) in (5), 1+4$m^2 + 4m^4 = 0$

i.e., $(1+2m^2)^2 = 0$

I.e., 1+2$m^2 = 0$

i.e. $m^2 = \frac{-1}{2}$

Taking square root on both sides, m$= \frac{i}{\sqrt{2}}$ (12)

Equations (8) and (12) are one and the same.

Putting (12) in (1) we have n = -1

(13)

Putting n = -1 in (5) the equation satisfies.

The above analysis shows as clear as crystal that n= -1

is the only consistent solution for (5) (14)

2. Discussion

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