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# Domain of Relativistic Mechanics

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## ABSTRACT

It is astonishing to note that, Special Relativity Theory Equations are incongruous beyond half the speed of light, by mere Number Theory considerations, specifically 'time dilation' and 'length contraction' equations. Nevertheless, there is an exception to this theory, for particles of masses less than 1kg, or time intervals between events which are less than 1s or length contraction less than 300000km, where it could be absolutely accurate as Einstein predicted and therefore it implies, these could change up to only 13.3%.

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## Introduction

### Einstein's Theory undermined.

A century old theory is being investigated by a mind for 20 years. The result in this case, Einstein's theory seems to be undermined.

We will prove it in 3 parts.

PART1: A three way related algebraic formula developed by me and its significance like number theory could be the basis of even a theory like Special theory of Relativity.

PART2: In the shadow of Einstein

PART3: Relativistic Mechanics probed to find the domain of it. Note that, part3 might seem independent, but the formula derived in part1 has a bearing on this..

### Part – 1:

#### Lord Kelvin's Statement

*"I often say, if you can express what you know of something, in numbers, you know something about it. Otherwise, your knowledge is of a meager and unsatisfactory kind. It may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of science, whatever the matter may be".*

#### The bombshell of the 21<sup>st</sup> century: An algebraic formula developed by me

I was preparing for SAT almost 2 decades back. I studied and observed squares of numbers.

$$20^2=400$$

$$21^2=441$$

$$22^2=484$$

$$23^2=529$$

$$24^2=576$$

$$25^2=625$$

$$26^2=676$$

$$27^2=729$$

$$28^2=784$$

$$29^2=841$$

$$30^2=900$$

The difference between the first and last numbers, second and second last numbers and so on are as follows: 500, 400, 300, 200 and 100. This difference looked unbelievable to me. To my

observation, it was stunning to observe that the squares of the difference of numbers was falling into a definite pattern.

$$30^2 - 20^2 = 500 = [26^2 - 24^2] \times 5$$

$$29^2 - 21^2 = 400 = [26^2 - 24^2] \times 4$$

$$28^2 - 22^2 = 300 = [26^2 - 24^2] \times 3$$

$$27^2 - 23^2 = 200 = [26^2 - 24^2] \times 2$$

$$26^2 - 24^2 = 100 = [26^2 - 24^2] \times 1$$

At this stage, insight, intuition and creativity had been triggered. The pattern, was further checked and studied by extending it to 10-20 range.

$$10^2 = 100$$

$$11^2 = 121$$

$$12^2 = 144$$

$$13^2 = 169$$

$$14^2 = 196$$

$$15^2 = 225$$

$$16^2 = 256$$

$$17^2 = 289$$

$$18^2 = 324$$

$$19^2 = 361$$

$$20^2 = 400$$

$$20^2 - 10^2 = 300 = 60 \times 5$$

$$19^2 - 11^2 = 240 = 60 \times 4$$

$$18^2 - 12^2 = 180 = 60 \times 3$$

$$17^2 - 13^2 = 120 = 60 \times 2$$

$$16^2 - 14^2 = 60 = 60 \times 1$$

These observations, were further extensively checked and it led me to the formula.

$$[N^2 - (N-2)^2] \times X = 4(N-1)X = [N - (1-X)]^2 - [N - (1+X)]^2$$

where N and X are two variables. Now, it is the triumph of creativity. It is a three way related formulae and hence, can be used to pose a question like given an equation,  $[A^2 - B^2] C = D = E^2 - F^2$  where given E and F to find A, B, C and D. or alternatively posed as given A and C, to find B, D, E and F. where the Capital letters denote numbers, either Real or Complex. This is a formula so revolutionary that I would call it miracle equation. It is God's gift to me. Note, that my formula is capable of solving 2 variables in a single equation, which is

conventionally impossible from a mathematical point of view. Also, understand that the modified form of special theory of relativity equations contain 3 variables. For instance  $(t')^2 = (t)^2 - (tv/c)^2$ . Using my formula, 2 of the variables are determinate. Hence, the only remaining variable, which is the only unknown now could be found out. In effect, in totality, in reality, all the variables can be determined or solved ie meaningful interpretation of the same can be made. From, hereon, we proceed keeping, this in mind. No longer, is the Special Theory of Relativity Equations mysterious, inscrutable or perplexing. Armed with a formula like the above, we will pursue the same.

Pythagoreans believed that the number 4 governs the world. It is there in my formula.

Number theory can be the key to the understanding or unlocking the limits of the special theory of Relativity. It reinforces the maxim "Mathematics is the Mother of all sciences".

**Vital Deduction:** The formula developed by me, serves as a way of solving two variables minimum or upto 3, maximum in a single equation relating two sets of difference of squares of numbers. Hence, it is a paradox from mathematical point of view, although, it is only a particular solution. That can be miraculous, in nature, will be proved later, when considered it is analogous to special relativity equations in number theory form. Something of trivial significance, is mentioned below.

Deviation : (Formula has one more use)  
Let me rearrange the formula:

$[\sqrt{N^2 - (N-2)^2} X]^2 + [N - (1+X)]^2 = [N - (1-X)]^2$  ie of the form  $A^2 + B^2 = C^2$

Hence,

Pythagorean triplets can be generated by using this formula.

### Part – 2

#### IN THE SHADOW OF EINSTEIN – Applications in Special Theory of Relativity.

The formula was invented 2 decades back. It was rejected, or considered trivial among most people I met or submitted, in India.

Subconsciously, feeling always, analogous to Special Relativity-- those issues, were boiling in my mind, for more than a decade, when at last, it was serving as a catapult to my long standing cherished view, that it could be applied to Special Relativity equations and the domain of Relativistic Mechanics could be identified. I was awestruck at how, I arrived at it.

#### The sequence of events:

Knowledge of inequalities is required in order to understand this.

### Part – 3

#### Domain of Relativistic Mechanics:

One needs to have, a great knowledge of Inequalities (part of mathematics-algebra), to scrutinize relativistic mechanics and understand the crux of its deficiency. Let us probe

#### Time Dilaton Equation

$$t = \frac{t'}{\sqrt{1 - v^2/c^2}}$$

where t is the time measured in S frame is slower than the time t' measured in inertial frame S' by time dilation equations. In all these cases, c stands for velocity of light and equal to it, whereas v is the velocity of the frame S' with respect to S.

On rearranging the relativistic equation, simplifies to  $(t')^2 = (tc)^2 - (tv)^2$ , which finally leads to  $(t')^2 = (t)^2 - (tv/c)^2$

We proceed like this: At this stage, my invented formula's most simplified form will be adequate in proving my contention. A simpler form of my formula could be treated as, the formula  $4AB = (A+B)^2 - (A-B)^2$ , when we apply  $(N-1) = A$  and  $X = B$  which on further simplification leads to  $AB = [(A+B)/2]^2 - [(A-B)/2]^2$  by rearranging, will thereby have the merits and advantages of my formula, which is worth mentioning.

Please note also, in reality,

$(A+B)/2 > (A-B)/2$  for both A and B greater than 0.

#### CASE1

BOARD A/PHYSICS STEP1	BOARD B/NUMBER THEORY STEP1	BOARD C/MATHEMATICS STEP1
$(t')^2 = (t)^2 - (tv/c)^2$ , time dilation equation modified form involving 3 variables, which have their usual meanings.	$AB = [(A+B)/2]^2 - [(A-B)/2]^2$ is true and has the properties of miracle equation	$(k)(k-2w) = (k-w)^2$ — (w) is an algebraic identity involving 2 variables.
STEP2 Note, that each term of the above equation has the same unit. (second squared)	STEP2 All Equations are analogous to $X^2 = Y^2 - Z^2$ , in which X equals squareroot of (AB) or $[k(k-2w)]$ . This is the instance when physics and mathematics are identical.	STEP2 Further let $Z = w = tv/c$ above. Let us introduce $w = t v/c$ , then
STEP3 But $t > 0$ and $t' > 0$ and $t < k$ , hence maximum of $t = k$ , comparing physics equation divested of its units, with mathematics equation	STEP3 Maximum of $tv/c = kv/c$ is the first value of w.	$(k)(k-2tv/c) = (k-tv/c)^2 - (tv/c)^2$ Since $A > 0$ , $B > 0$ & $A > B$ , we get $(tv < ck/2)$ , Also $(A+B)/2 > 0$ gives $(tv < ck)$ , ergo, $tv < ck/2$ is the deduction. Hence, the maximum value of
	STEP4 Equating first value of w with second value, we get $kv/c = k/2$ . Cancelling out k from both sides in it and rearranging, we get maximum of $v = c/2$ units.	$tv = ck/2$ , since even $(A-B)/2 > 0$
	VERY IMPORTANT In the basic equation $[N^2 - (N-2)^2] X = 4(N-1)X = [N - (1-X)]^2 - [N - (1+X)]^2$ where N and X are two variables, N, (N-1) and (N-2) ought to be positive which implies k has to be greater than 1.	STEP3 It follows since max. of $tv = ck/2$ , therefore, max. of $tv/c = k/2$ . This is the second value of w.
	CASE2 For values of $k < 1$ , The transformed equation is $1(1 - 2tv/c) = (1 - tv/c)^2 - (tv/c)^2$ , where Einstein's special theory of relativity be valid and the limitations, I tried to impose upon invalid. Hence v almost could be equal to c, implies $t < 1$ , which also implies $t' < 1$ .	

#### Conclusion

#### CASE1

$v = \frac{c}{2}$   
Maximum of  $\frac{c}{2}$  units in  $tv < ck/2$ , time in frame S', t', element of 1 to k seconds and also  $t < k$  seconds. Where k stands for any fixed value, however large in seconds, greater than 1.

In case 1 not only numerical verification is done by number theory developed by me, even if, units and dimensions are considered as issues, will not hamper the conclusion.

**Main Conclusion:**

In less than or equal to 1 second time interval between events, mass less than 1 kg or length contraction less than 300000km, Einstein's special theory of relativity is 100% accurate. Beyond the same, it is only accurate upto half the speed of light, for Time dilation, mass variation and Length

contraction .Also, Special Relativity is absurd in momentum and energy considerations also in this affected domain.

Ergo, my theory serves to destroy, a century's unabashed approval of Special Theory of Relativity by world's leading scientists, of much, of its miraculous nature. Einstein's view "The distinction between past, present and future is illusory, however tenacious, it may appear to be" does not seem vindicated.