

A Perspective on the Newtonian Gravity Paradox

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ABSTRACT

There are four branches of mechanics i.e., classical, relativistic, quantum and the quantum field theory, which are fundamentally based on dichotomised parameter (speed and size of the object). Since many years Physicists have made efforts to establish the "Theory of Everything" by correlating between each of these mechanics. In this report I provide my perspective on the correlation between Classical and Relativistic mechanics by proving that mass is proportional to velocity³ x time.

Key words: Newtonian Gravity Paradox, Quantum theory, Mechanics, Theory of relativity.

Approach to proving that mass is proportional to velocity³ x time.

The concept of theorizing was based on the analysing the fundamental equations used in the classical mechanics. As per theory of classical mechanics, the following three equations are used.¹⁻⁴

1. $v = u + at$
2. $s = ut + \frac{1}{2}at^2$
3. $v^2 - u^2 = 2as$

(Where v is the average final velocity, u is initial velocity, a is acceleration, t is time and s is displacement)

I looked at each of these equations in detail by considering an initial velocity of 0, which is described below.

Theorizing by using the $v = u + at$:

Assuming u as 0

Then; $v = 0 + at$ or $v = at$ (i)

According to Newton's law of Gravitation: $a = GM/s^2$
(Where G =Gravitational Constant, M =Mass of the moving object)

Putting the value of a in equation (i)

$v = (GM/s^2) \cdot t$ (ii)

or $v = GM \cdot t / s^2$ (iii)

It is known that $s = v \cdot t$

Thus I can conclude $v = GM / v^2 \cdot t$ (iv)

Hence the equation which we can establish is as follows: $v^3 = GM/t$

Therefore; mass is proportional to $v^3 \cdot t$.

Theorizing by using the $s = ut + \frac{1}{2}at^2$

Assuming u as 0

This leads to $s = \frac{1}{2}at^2$ (i)

According to Newton's law of Gravitation: $a = GM/s^2$
(Where G =Gravitational Constant, M =Mass of the moving object)

Putting the value of a in equation (i)

$s = \frac{1}{2} (GM/s^2)t^2$ (iii)

It is known that $s = v \cdot t$

$v \cdot t = \frac{1}{2} (GM/v^2 \cdot t^2)t^2$

Thus I can conclude $v^2 \cdot v \cdot t = \frac{1}{2}GM$ (iv)

Hence the equation which can be established by this is: $v^3 \cdot t = \frac{1}{2}GM$

Therefore; mass is proportional to $v^3 \cdot t$.

Theorizing by using the $v^2 - u^2 = 2as$:

Assuming u as 0

Then; $v^2 = 2as$ (i)

According to Newton's law of Gravitation: $a = GM/s^2$
(Where G =Gravitational Constant, M =Mass of the moving object)

Putting the value of a in equation (i)

$v^2 = 2 (GM/s^2)s$ (ii)

$v^2 = 2(GM/s)$ (iii)

It is known that $s = v \cdot t$

Thus I can conclude that $v^2 \cdot v \cdot t = 2GM$ (iv)

Hence the equation which can be established here is $v^3 \cdot t = 2GM$

Therefore; mass is proportional to $v^3 \cdot t$.

Theorizing by using Gravitational equation:

According to Newton's Law of Gravitation: $a = GM/s^2$
(Where G =Gravitational Constant, M =Mass of the moving object)

By further simplifying the equation we get:

$M = (a \cdot s^2) / G$

It is known that $a = v/t$ (by assuming u as 0 and $s = v \cdot t$) (i)

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History

- Submission Date: 15-11-2021;
- Review completed: 12-12-2021;
- Accepted Date: 24-12-2021.

DOI : 10.5530/bems.8.1.1

Article Available online

<http://www.bemsreports.org>

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Cite this article : Saini A. A perspective on the Newtonian Gravity Paradox. BEMS Reports. 2022;8(1):1-2.

Thus from equation (i), I can conclude that: $M = [(v/t)(v^*t)^2]/G$

i.e, $M = v^3t/G$

Therefore; mass is proportional to v^3t

Modifying the equation using relativistic formula

The Einstein gravitational constant is defined as:

$$k = \frac{8\pi G}{c^4} \approx 2.077 \times 10^{-43} \text{ N}^{-1}$$

Where k =Einstein gravitational constant $\pi=3.14$ G =Gravitational constant
 c =speed of light

$$(K^*c^4) = 8\pi G$$

$$G = (K^*c^4)/8\pi$$

As theorised above:

$$GM = v^3t \quad (M = \text{mass of moving object})$$

$$G = (v^3t)/M$$

Thus, the equation becomes: $M = v^3t^*8\pi/(K^*c^4)$

Therefore, the modified equation further establish relation between mass and velocity with respect to Einstein's gravitational constant.

The correlation between observed mass and velocity of the object is exponential.⁵⁻⁸ The exponential correlation is relative to the observer. Since many years' physicists have been trying to find one final theory that would unify all the mechanics of physics. Current proposed theory in this report can further support to establish link between Classical and Relativistic mechanics. The mathematical derivation of this correlation

could be one significant step toward the efforts of making "Theory of Everything".

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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Cite this article : Saini A. A perspective on the Newtonian Gravity Paradox. *BEMS Reports*. 2022;8(1):1-2.