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Newton's First Law of motion is not real

K.H.K. Geerasee Wijesuriya
Department of Physics, Faculty of Science, University of Colombo
94,Cumaratunga Munidasa Mawatha,Colombo 00300,Western Province, Sri Lanka
geeraseew@gmail.com (Author)

ABSTRACT

Newton's first law of motion is well recognized theory for physics. But my attempt is to obtain a contradiction to Newton's first law of motion. It may be a challenge to the physics world.

Consider an object that has carried to the empty space that has not effected by any external force. Then apply an external force with some heat. At time T=0, the force applies to the object. Then, after some time duration, we take away the force. By considering the behaviors of fundamental building particles of the object, we obtain a contradiction to the Newton's first law of motion.

There are large number of applications of Newton's first law of motion. Specifically, for the space-based experiments, this new concept plays a major role.

Indexing terms/Keywords

Particle; Kinetic Energy; Motion; Force; Time; Matter; Situation; Quantum Level

Academic Discipline And Sub-Disciplines

Particle Physics; Quantum Mechanics; Mathematicle Logic

SUBJECT CLASSIFICATION

Fundamental Physics Subject Field Classification, Particle Physics Subject Field Classification

TYPE (METHOD/APPROACH)

Particle Physics, Quantum Mechanics, Mathematical Logic

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Introduction

The development of science happens through two major aspects. Those are theoretical and the experimental. Once a scientist investigated some specific phenomenon, other experimental scientists have to confirm that through an experiment.

Before hundreds years ago Sir Isaac Newton investigated several groundbreaking scientific ideas (those were suited with that era) regarding the nature of the Universe. Among those innovative ideas, the Newton's Universal theory of gravity, Newton's first law, 2^{nd} law and 3^{rd} law are the concepts those carried a physical revolution to the physics world.

With the Newton's Universal theory of gravity, Newton pointed out an idea that was containing the fundamental understanding of the nature of the gravity at that time. But, in 1916 Albert Einstein re- formulated the understanding of the nature of the gravity by using several mathematical equations and solutions for them. The very important feature of Einstein's investigation was his new idea gathered the understanding of the space-time and the mass-energy. Before Einstein, nobody had gathered the nature of the space-time and the nature of the mass-energy into one single framework.

But recent scientists have investigated several new specific ideas those contradict the Einstein's fundamentals through the experiments and through the day-to-day observations as well. With the development of science, scientists have the capability to investigate several new notions (easier than previous) those can break all the basis of the physics subject. They can use the experimental procedures and the theoretical arguments to change the world.

Similar to Einstein's works, my attempt is to emphasize an incorrectness of Newton's first law of motion.

Through this new article my attempt is to give an innovative idea that is carrying a contradiction to the Newton's first law of motion. That is: "If there is not any external force acting on an object, the object should move with a constant velocity or that object should be at rest". But my attempt is to change this idea through a mind-based experiment. I may express this innovative idea by considering an object which is in the empty space-time.

Research Content

Let's consider an object, which has carried to the empty space. Here, empty space is a space-time which does not contain any matter particles. Also, this empty space has not been affected by any external force such as gravitational force, Electromagnetic force, Weak force or Strong nuclear force. After carrying the object to the empty space, we apply some non-zero pushing force to that object at time T=0.

Let's use a diagram to understand the situation.

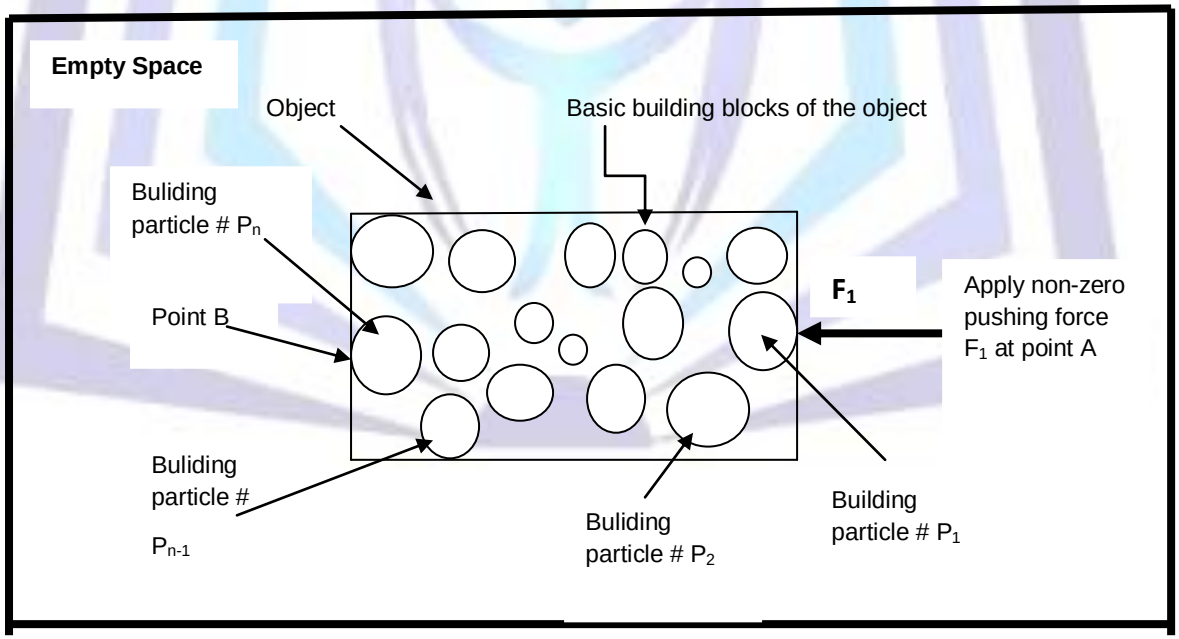

Figure # 1

The object consists large number of fundamental building matter particles (Those have denoted by P_1, P_2, P_{n-1} and P_n in the diagram number 1). The dimensions of each fundamental building matter particles cannot be changed under any influences of any external force.

When we apply some non-zero pushing force (F_1) to the object at point A (At point A, the matter particle is P_1), P_1 absorbs some amount energy due to that F_1. We apply the pushing force to the object at time T=0. Again, after Δt time we remove the applied force. After that, we do not again apply any pushing or any force to the object. Then start to count time flowing starting from T=

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T_0. Where $T(=0) + \Delta t = T_0$.

Let's consider P_1 absorbed E_1 energy due to the applied pushing force (But remember P_1 particle should be the particle which is the nearest particle to the point A). Then P_1 has kinetic energy and then it moves along the direction which was the force applied and passes some amount of energy to the next nearest particle. Let's consider that particle as P_2. Then P_2 also absorbs some amount of energy E_2 (E_2 should be less than E_1) and moves some distance. Again, the particle nearest to P_2 absorbs some amount of energy (E_3) from P_2 and moves. Then, the same chain of procedure happens for all other particles inside the object. **After the most faraway particle (P_n) absorbed some amount of kinetic energy, the whole object start to move through space-time at time T*.** But we cannot observe any time difference between T_0 and the time T* (Time interval that spends to pass the absorbed energy by the particles near point A to the particles near point B) practically.

But after the very first process of passing energy; **P_1 has E_1' (< E_1) energy** and again **passes some amount** of energy from E_2 to other particles (In the second cycle of passing energy throughout the block of matter) similar to the previous procedure. And, happens the same procedure for all other particles inside the object.

But in the very-first cycle of absorbing energy by the particles, P_1 has the highest kinetic energy rather than other particles. Just after P_1 absorbed kinetic energy from the pushing force there may be several particles those **haven't absorbed** any amount of energy due to the pushing force. **But P_1 has**. Since all the particles have the same mass, P_1 should move faster than other particles (Because $E_1 > E_2 > \ldots\ldots E_n$; Here E_n is the kinetic energy absorbed by the particle which is most far away from the point A during the very first cycle of energy passing procedure). But all the particles have created a single block of matter which is the object. But during the **very first cycle** of passing the kinetic energy throughout the block of matter, due to the energy differences of the particles, the object should **compress** (Because the particles near the point A has higher energy than the particles near the point B- Then particles near the point A move long distances, but some particles near B haven't absorbed any amount of energy yet OR those particles near B have low amount of kinetic energy).

But during the 2^{nd} time of passing energy through the block of particles (in addition to the newly absorbing energy in the 2^{nd} cycle of passing energy), there are non-zero previous energies (Due to the 1^{st} cycle of passing energy throughout the block of matter) remaining yet with each fundamental particle. i.e. after the first cycle of passing energy among each other by particles, we cannot guarantee any order of energy that they should have (Such as Energy of P_1 > Energy of P_2 >…….). But due to the concentration system of particles inside the object, every particle move with several velocities depending on the energy they have absorbed through the other particles (Due to the initially absorbed Energy from the pushing force that we applied at time T=0). i.e. depending on the location of each particle inside the object, the size and the volume of the whole object should change. Let's figure out the situation as below.

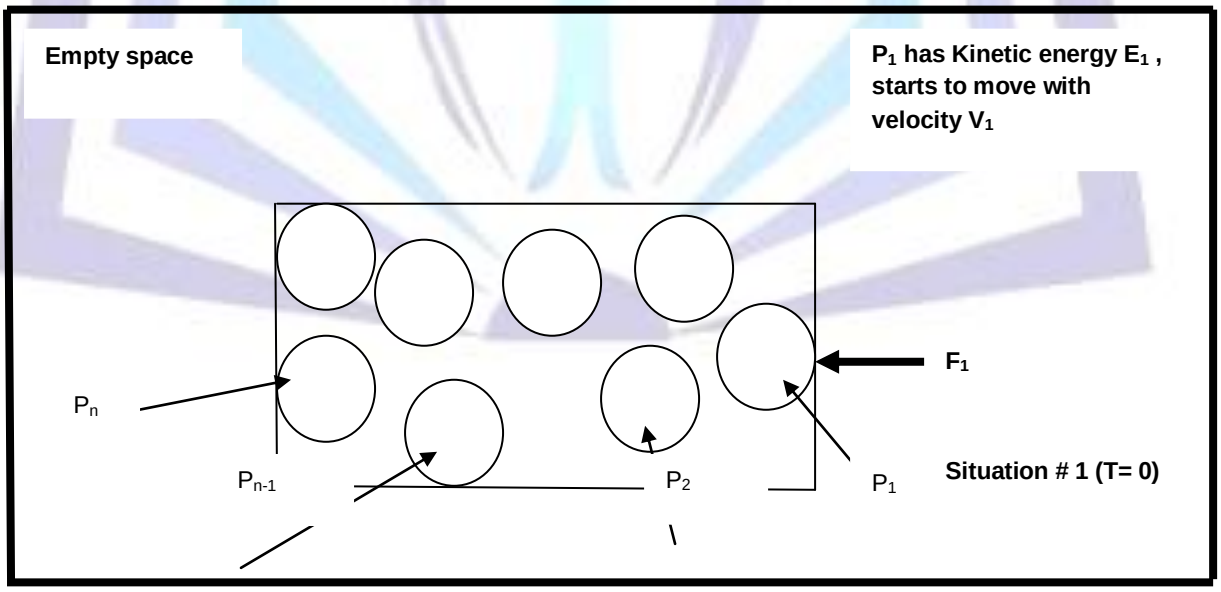

Figure # 2

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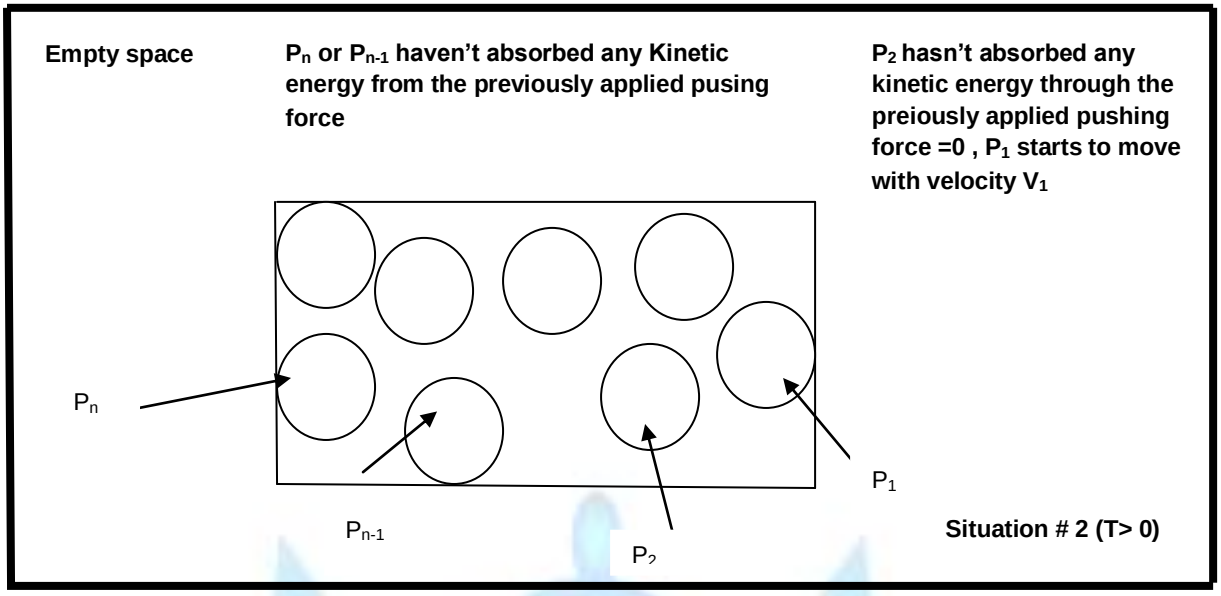

Figure # 3:

There is no any external pushing force (P_1 starts to move with velocity V_1). But P_2, P_3,.., P_{n-1}, P_n are at rest

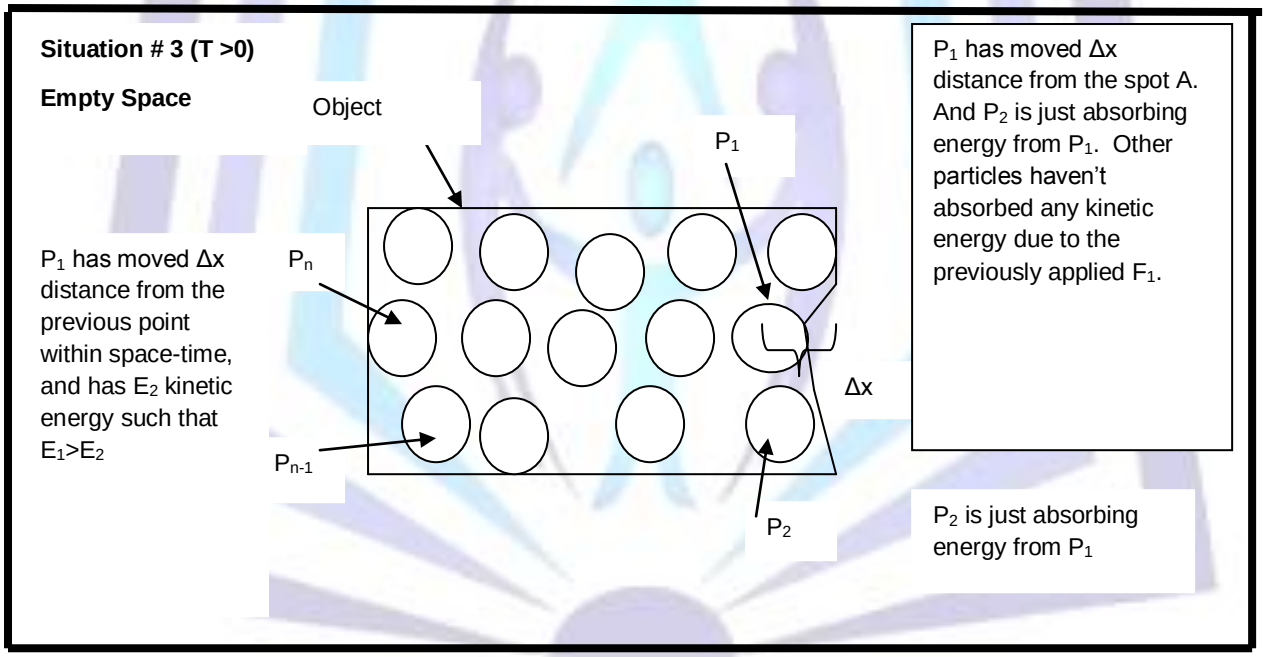

Figure # 4

The object has compressed along the direction of previous F_1. P1 is moving with velocity V_1. All other particles are at rest. The shape of the object at point A was determining by P_1. Therefore with the motion of P_1, the shape of the object at point A changes.

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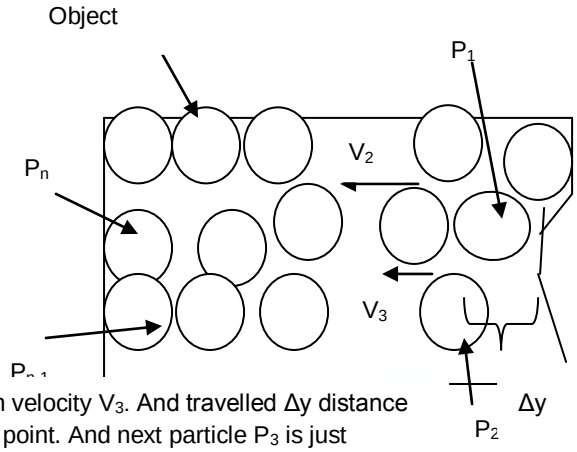
Situation # 4 (T>0)

Empty Space

P_1 is passing energy to another particle P_k. And P_1 is moving with V_2 further in the direction of force applied



P_2 is moving with velocity V_3. And travelled Δy distance from the starting point. And next particle P_3 is just absorbing due to the preiously applied F_1

P_1 has moved further distance from the spot A. And P_2 is moving with velocity V_3. Another particle is just absorbing Kinetic Energy. But there are several particles those are still at rest. Moreoer, the object further compresses due to the motion of P_1

Figure # 5

Therefore, as above described, all the particles inside the object do not start the motions simultaneously after applying some pushing force.

But after all the single building particles of the object absorbed kinetic energy due to F_1, we can't guarantee the order of the kinetic energies each particle has (i.e. Kinetic energy of P_1 > Kinetic energy of P_2 >……..P_n likewise). But the amount of kinetic energies the particles have at some particular moment after T* depend on the particle concentration system inside the object. But just before T* time, P_1, P_2, P_3,….., P_{n-1} all are moving toward the object's moving direction without any negative component.

But after all the fundamental building particles of the object absorbed the kinetic energy from F_1; we can observe that the object is moving along the direction of motion.

But before T*, there was not any motion of the whole object; but there were several motions near the point A. Therefore, before T*, the object should compress along the direction of motion. Let's figure out the situation as below.

Figure # 6

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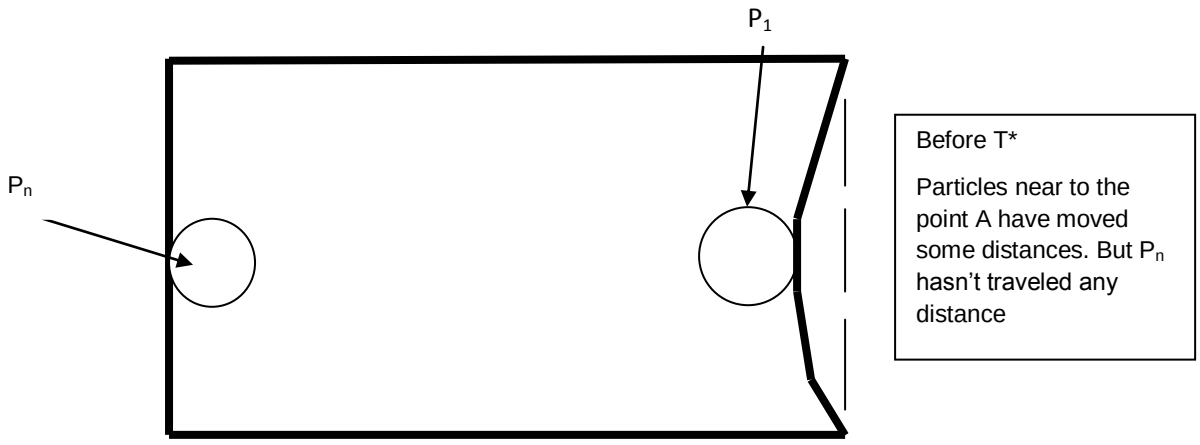

Figure # 7

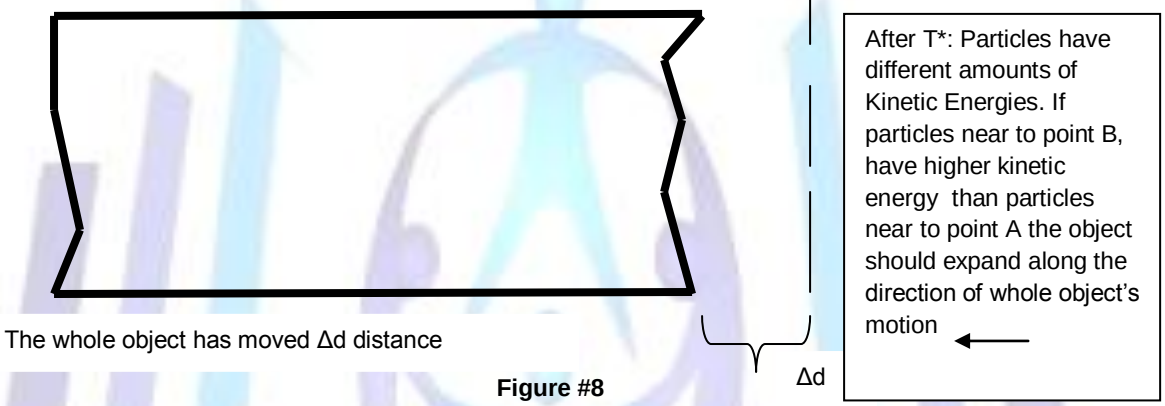

Figure #8

Distance travelled by an object we measure as below.

We consider some point on the object. Then, we measure the distance between two locations of that particular point for two moments.

But if we consider some point q on the object, that point does not move uniformly throughout unit time intervals after T=0 (That is due to the non-uniform Kinetic Energy amounts of each particle during each unit time interval).

But someone can argue that the gravitational center of the whole object may move uniformly throughout the unit time intervals. But NO. Why? The object sometimes expands. Sometimes compresses (Due to the non-uniform variations of Kinetic energy of the articles near point A and Point B. Then the particle concentration of the object does not vary uniformly throughout the unit time intervals). Then, the gravitational center of the object does not move uniformly throughout unit time intervals. And there is not any point on the object that moves uniformly throughout the unit time intervals (Due to the uncertain expansion and the contraction of the object).

Moreover, someone can say when P_1 absorbed kinetic energy from F_1, it moves some distance towards P_2. Then, due to the repulsive forces presence due to other particles near to P_1, the particle P_1 again goes to its previous location. But it is NOT. Why? The reason has explained in the page 9-10 of this research article.

Every particle should move together with other particles due to their kinetic energies absorbed from F_1. We apply Kinetic energy to P_1 only. There should be a time spending to pass the kinetic energy to the faraway particle from P_1. Therefore, all the particles do not absorb energies at once. Therefore, due to the absorbed kinetic energy differences by each particle, the size/shape/length of the object are not definite.

Therefore, according to the definition of the "Distance travelled by an object" we can conclude the following fact:

After T=0, there was no any external force acting on the whole object. But after T=0, the distances travelling by the object during unit time intervals are not uniform. i.e. after T=0, although there was no any external force acing on the object, the object's moving velocity changes.

But Newton's first law of motion says: If there is no any external force acting on the object, the object should move with a constant velocity or that should be at rest.

Therefore it is obvious that **I have obtained a contradiction to the Newton's first law of motion.**

But when one single building matter particle hasn't any external force acting on it, it must move with a constant velocity (Because, there is no any separate motions of the single fundamental matter particle).

i.e. Newton's first law of motion should be corrected.

Absolutely, a scientist can check my argument experimentally. He should build a vacuum with free space inside it. Here, "Free Space" is a space that has not been affected by any of the fundamental forces of nature. But, how he builds a space-time without any external forces???

Initially, he should consider the gravitational waves inside the experimental frame of box. In order to make that, he has to use exactly same amounts of matter and anti-matter along the two opposite sides. By using those exactly same amounts of matter and anti-matter, he will be able to create space-time without any net gravitational force acting on that space.

He must use the similar procedures to create the vacuum without any electromagnetic net force or net weak force. Strong force is limited to short range. Therefore he does not want to worry about the making procedure of the empty space inside the laboratory.

Then just keep a sensitive shining object inside the experimental vacuum box. At T=0, apply some non- zero pushing force. By using slowly moving instrument (Which is moving along the direction of applied force) it is capable to conclude whether the object is contracting and expanding time to time or not (By considering the photons those are coming towards the instrument from a particular point on the object, it is capable of measuring the locations of that particular point during each unit time intervals).

If the whole volume size of an atom cannot be changed in anyway, then P_1 absorbs E_1 energy and moves along the direction of motion without changing the electron orbital sizes. Also if we supply a sufficient energy to the P_1 atom, its electrons change the quantum state levels of by exciting (Such as a pushing force with some heat). Also the nucleus of the atom P_1 absorbs some amount of energy from the applied external force. Then the quantum levels of the nucleons changes (The change of quantum levels will more obvious if we apply some pushing force by using thermal radiations and etc).

Under these excitations of electrons, protons and neutrons, the principle quantum level, orbital quantum level, orbital magnetic quantum level, spin quantum level, spin magnetic quantum level can be changed.

In the real situation,

$$E_1 = E_K + \sum_1^n E(i,p) + \sum_1^n E(i,l) + \sum_1^n E(i,ml) + \sum_1^n E(i,s) + \sum_1^n E(i,ms) + \sum_1^n E(i,os) + E_2 + E_3 \quad \textbf{.....(1)}$$

Where, E_1 is the energy absorbed by P_1 from F_1 to move Δd distance away from the point A, along the direction of motion. E_K is the energy used to travel Δd distance by P_1. E_2 is the energy that passed to P_2. E_3 is the energy P_1 has after it moved Δd distance.

$\sum_1^n E(i,p)$: Total Energy used to increase the principle quantum level of electrons and nucleons.

$\sum_1^n E(i,l)$: Total Energy used to increase the orbital quantum level of electrons and nucleons

$\sum_1^n E(i,ml)$: Total Energy used to increase the orbital magnetic quantum level of electrons and nucleons

$\sum_1^n E(i,s)$: Total Energy used to increase the spin quantum level of electrons and nucleons

$\sum_1^n E(i,ms)$: Total Energy used to increase the spin magnetic quantum level of electrons and nucleons

$\sum_1^n E(i,\ os)$: Total Energy spent due to the spin-orbit interaction of electrons and nucleons

Where n is the number of fermions in the atom P_1. Where "i" is the fermion order number in the atom P_1.

Due to the changes of the quantum states of fermions in the atom P_1, there is a sudden change of the forces among the fermions of P_1 and between P_1 and P_2. Let's find the new electromagnetic force among fermions of P_1: E(1,2).

$$E(1,2) = \Sigma E_{i,j}(e,e) + \Sigma E_{i,j}(e,p) + \Sigma E_{i,j}(e,n) + \Sigma E_{i,j}(p,p) + \Sigma E_{i,j}(p,n) + \Sigma E_{i,j}(n,n) \quad \textbf{.....(2)}$$

Where $E_{i,j}(e,p) = q_i \cdot Q_j / 4\pi\epsilon_0 r^2$ = the electromagnetic force between ith electron and jth proton of P_1 and similar symbolizations for other fermions.

Now let's find the ***new strong nuclear force*** inside the nucleus of P_1, E'(1,2).

$$E'(1,2) = \sum_{j=1}^k \sum_{i=1}^l E'(ni,pj)\} + \sum_{j=1}^k \sum_{i=1}^k E'(pi,pj) + \sum_{j=1}^l \sum_{i=1}^l E'(ni,nj) \quad \textbf{.....(3)}$$

Where E'(ni, pj) = The strong nuclear force between ith neutron and the jth proton

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E'(pi, pj) = the strong nuclear force between ith proton and the jth proton

E'(ni, nj) = The strong nuclear force between ith neutron and the jth neutron

k is the # protons in the nucleus of P_1, *l* is the # neutrons inside the nucleus of P_1. Each term in (3) depend on the spin changes and orbital momentum changes of the nucleus of P_1.

Strong nuclear force is a short range nuclear force. Therefore, there is no an observable strong nuclear force acting between nucleus of P_1 and nucleus of P_2. But there is a change of electromagnetic force acing between P_1 and P_2 due to the changes of spin energy quantum levels and the orbital momentum energy quantum levels of P_1.

Let's denote new electromagnetic force acting among the fermions of P_1 and P_2 by E"(1,2).

$E''(1,2) = \Sigma E''_{i,j}(e,e) + \Sigma E''_{i,j}(e,p) + \Sigma E''_{i,j}(e,n) + \Sigma E''_{i,j}(p,p) + \Sigma E''_{i,j}(p,n) + \Sigma E''_{i,j}(n,n)$ **….(4)**

Where $E''_{i,j}(e,p) = q_i \cdot Q_j / 4\pi\epsilon_0 (r')^2$ = The electromagnetic force between ith electron of P_1 and jth proton of P_2 and similar symbolizations for other fermions of P_1 and P_2.

Depending of the sign of E"(1,2) , E'(1,2) and E(1,2); the total distance traveled by P_1 until the situation 03(in the page 04 of this research paper) should vary.

Because if the sign of E"(1,2) is an attractive force, then P_1 should further move along the direction of motion ← rather than Δd. But if E'(1,2) is a repulsive force, then P_1 can't come to the initial position that was at T=0. Why? Because, if P_1 comes to the initial position again due to the repulsive force of E"(1,2), then by (1) and (4); $\mathbf{E_K = E''(1,2)*\Delta d}$.

Then $\mathbf{E_1 - (\Sigma E) - E_2} = \Sigma \Delta d^* E''_{i,j}(e,e) + \Sigma\Delta d^* E''_{i,j}(e,p) + \Sigma\Delta d^* E''_{i,j}(e,n) + \Sigma \Delta d^* E''_{i,j}(p,p) + \Sigma \Delta d^* E''_{i,j}(p,n) + \Sigma\Delta d^* E''_{i,j}(n,n)$**……..(5)**

Where $E_3 = E_0(1,2)+E_0'(1,2) +E_X$; Where E_X is kinetic energy that the particle P_1 has after traveled Δd.

Where $E_0(1,2)$ = new electromagnetic energy among the fermions of P_1, after changed its fermion's quantum levels

$E_0'(1,2)$= new strong nuclear energy among the fermions of P_1, after changed its fermion's quantum levels

But $\Sigma \Delta d^* E''_{i,j}(e,e)$, $\Sigma\Delta d^* E''_{i,j}(e,p)$, $\Sigma\Delta d^* E''_{i,j}(e,n)$, $\Sigma \Delta d^* E''_{i,j}(p,p)$, $\Sigma \Delta d^* E''_{i,j}(p,n)$ and $\Sigma \Delta d^* E''_{i,j}(n,n)$ have magnitudes of 10^{-x}; where x is a natural number.

Usually we apply F_1 = 1N or like that as F_1. It is not enough to apply 10^{-x} ordered pushing force to a considerably large object. But E_K is the kinetic energy used by P_1 to travel Δd distance. But after we apply F_1, the whole object should move within very small time gap. Therefore, the velocity of P_1 should be a high value. Although the mass of P_1 is a small value, due to high velocity of P_1, the energy E_K cannot be a small value as $\Sigma \Delta d^* E''_{i,j}(e,e)$ and other terms in (5). Therefore the situation in (5) cannot happen.

Therefore, due to the repulsive force, P_1 can't come to the initial position that was at T=0 (As in situation number 03).

After that, energy amount of E_2 is absorbs by P_2. Then we can write similar equations for P_2 by considering the previous procedures. We can write similar equations as (5) for all other particles.

Therefore, after some particle moved some distance due to the energy absorbed from F_1, they do not come to their initial positions due to the repulsive electromagnetic forces from other surrounding particles.

But in the atomic levels, the gravitational forces are negligible. Weak forces do not apply to this particular situation. Also strong nuclear force is limited to very small area (i.e. nucleus) and does not appear across two atoms.

Therefore, the only considerable force acting between two atoms is the electromagnetic force. As above details, after P_1 moved distance Δd, it does not come to its initial position. And the same incident for all other particles.

Here we can observe that although P_1 has moved Δd distance along the direction of motion, all other particles are at rest. In the 2^{nd} step, we can observe that although P_1 and P_2 are moving along the direction of motion all other particles are at rest.

Therefore the situations described by situation # 1, situation # 2, situation # 3 and situation # 4 all are real.

If some one says: All the particles have bounded together, and all particles move together; **Then it is okay**. Why? Then, that bounded object becomes our fundamental particle inside the block of matter. But in order to disprove the Newton's first law of motion, I have used an example, i.e. an object that contains more than one fundamental particle. Our fundamental particle is: A particle with fixed dimensions and cannot change the size of the particle under any influences of an external force.

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Conclusion

After T=0, there was no any external force acting on the whole object. But after T=0, the distances travelling by the object during unit time intervals are not uniform. That means, after T=0, although there was no any external force acing on the object, the object's moving velocity changes.

Therefore, I have ended up with the result:

"NEWTON'SFIRST LAW OF MOTION IS NOT REAL"

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I would be thankful to my parents who gave me the strength to move forward with physics knowledge and achieve my scientific goals. And I would like to mention my Undergraduate University. University of Colombo is the place that I gained the knowledge for the new discoveries. I would like to thank the University of Colombo, Faculty of Science.

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Author's Biography with a photo

The author of this research article is K.H.K. Geerasee Wijesuriya (Normally identify as Geerasee Wijesuriya). And the idea in this research article is innovative and it is completely K.H.K. Geerasee Wijesuriya's notion. Geerasee studied at Faculty of Science, University of Colombo Sri Lanka. And she graduated with BSc(Hons) from the University of Colombo, Sri Lanka in 2014 June.

Geerasee has investigated several new concepts and notions regarding Physics, Astronomy and Cosmology as listed below.

Detecting an Asteroid
http://www.nerdynaut.com June 2015

This is Geerasee's own way to detect an asteroid and ways of identifying its physical features.

An indirect eveidence for the existence of Dark Energy/Dark Matter by considering a pulsar

http://www.nerdynaut.com June 2015

This is Geerasee's own notion regarding a way to get an indirect proof for the existence of dark energy and the dark matter.

Possibilities of existence of life on the moon

http://www.nerdynaut.com

March 2015

This is Geerasee's article regarding the life on the moon.

Importance of the sun and wonderful influences from the sun to the upper atmosphere of Earth

www.hubpages.com

April 2015

Geerasee's article of Astronomy

Geerasee has published her own scientific articles annually 3 times with **SIGMA Magazine** published by Mathematical and Astronomical society, University of Colombo, Sri Lanka.

1st article: Relativity, published with 2011 SIGMA Magazine (This article contains a paradox that can be obtain using special theory of relativity)

2nd article: Simultaneous observing and quantity paradox,2012 SIGMA Magazine (With this article she has pointed out a very important result related with simultaneous incidents, also she has discovered a range for the refraction index of a material)

She has published her own scientific articles with **Guardian Express magazine USA.**

1st article Title: Nuclear Fusion the Big Bang Theory, Date: May 9, 2013, Website: www.guardianexpress.com

2nd article:

Title: American Academy of Arts Sciences and The Big Bang theory, Date: April 25, 2013, Website:

www.guardianexpress.com

3rd article: Energy states of a matter wave respect its force suppliers and spacetime curvature creates mass- energy in the universe, 2013 SIGMA.

She has investigated a new scientific concept of generating electricity by using the radiations those are in the environment

NASA, Date: April 7, 2013