

Rotation, Time Revolution and its Biological effect

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1) Introduction

According to a pendulum old clock, we find that the rotation of the pendulum cause passing the time, means rotation cause time revolution .with this simple contrast, we must have an rotation for the time in the universe .here we will try to explain the relation between the effect of rotation on time factors and its biological effects with some physical and biological fields.

As some of our masters have helped us in the physical part of study, due to their suggestion this thesis has been named TRS (Time Revolution and Spin) and for more results, more study and researches are needed.

In the theory of relativity in physics, the parameters which differentiates this theory from other discussions in physics, is the time. So the evaluation of a thing in the space and time will be done and time will be discussed as the four dimension of the space.

The time parameter is a quantity which effects, the distance between two happenings.

As we know one of the material which human use for understanding the time passing is day and night, and these two are dependent on earth rotation.

So if earth stops, time passing will not be felt.

An old mechanical clock system is based on the rotation of the cogwheels. And we try to find a relation between time revolution and spin. And we will look at any rotation as a time revolution.

In quantum mechanics, each rotation is caused by a rotation operator on the system.

This operator is explained as a spin (rotation-generator) in the system.

Experimental trials, has shown that the half life of radioactive material are longer in rotating system.^[3]

2) Time meaning from relativity physics and thermodynamics view

Two important and basic theories in Einstein in special relativity thesis are elongation of height, and delay in time.

Time delay point that the duration between the happening which are in the same position are from a fixed frame system, are less than the duration of the time which a viewer find in a moving system with V speed, i.e. it is said that the clocks work slower. Basically on of the most important results of this matter is relative simultaneity which we can say this matter is another view of time delay and is explained as although duration of two happening in different places is quite the same for a viewer in a referral system. But this frame will differ for another viewer in different referral system, and so we express that simultaneity is a relative matter too.

In physics, time is explained with two different methods:

A) Thermodynamic method

This method was first based on the theories of physicians like Celsius and Kelvin who were interested to heat transit. But the thesis was completed to its today's from with Boltzmann works.

Time thermodynamical explanation is based on the patterns which are seen in simple system. An important part id these systems which are seen around us, are simple systems which contain simple materials, Materials which have an accidental pattern but can be understood by general rules. Evaluation of energy revolutions is based on some keys. These keys are thermodynamic rules. These rules are logically, too simple. For example, zero rule of thermodynamic says if A & B system, be in heat balance, and B & C system has such a balance either, then A & C system are in heat balance too.

As is apparent, this is a heat expression of logical base of simultaneity. 2th rule of thermodynamic reveals that open systems go to irregularity during the time (entropy). This means that a fixed and general factor rules these systems, which is the time.

With a simple example, we can show the relation between time and entropy. Think of an open deodorant in a room. In such a situation density of deodorant molecules in a special point of the room, reveal a form of regularity. Besides, the room which deodorant molecules and air molecules existed in has a regular form and its inner information is more than a room which molecules has an irregular pattern in it. 2th rule of thermodynamic says that the open systems, goes to irregular situation. (like the deodorant).

The thing increases is the room irregularity which is explained as entropy.

B) Historical method

This method explains the time based on complicated systems, which has the possibility of containing experiment and information.

In these systems, time passing, lead to decrease of irregularity and regularity increasing. For example an injured human body, find its regularity during time. So it seems as if the historical method is opposite to thermodynamilcal explanation.

As we know, the most important specially rule the experimental science like physics, is symmetry or invariance. Symmetry means that the rules mentioned before can be seen in all situations and this express that the quantity of research subject and its pattern is based on the mentioned rules, and is not dependent, on the situation around.

All the physics rules are invariant in all situations the only parameter which breaks this symmetry is the time and the 2th thermodynamic rule cause this. Time is the only physical factor which has an apparent ay and according to its way, the pattern of the system differ.

3) Time meaning from Quantum Physics view

Having focused in the first part of this term on measurement and the representation of states, it's now time to move on to *dynamics*. In fact, the *physical* principles of quantum dynamics are much simpler than those of representation and measurement. But it can take a fair bit of mathematical sophistication to solve the dynamical equations and interpret the results.

Recall that the evolution of an isolated quantum system is given by the Schrödinger Equation (SE).^[2]

4) Time Revolution and Spin

As we know, in Physics, Quantum and Relativity are two known theories which both remove so many ambiguities.

But, relationship between these two theories is one of the main concerns of scientist. Is it possible to relate quantum and relativity?

In this article we try to establish a relation between quantum and relativity using some physics concept, this paper entitled as TRS hypothesis.

It is remarkable to mention that much more studies and investigations should be spent in order to come to a definite result.

4 - 1) Starting point

What makes a relativity theory different from other concepts of physics is time.

A phenomenon is examined in space-time frame and time is considered as the forth dimension of space. So the interval between two phenomena is calculated from this relation:^[4]

$$ds^2 = dx^2 + dy^2 + dz^2 - c^2 dt^2 \quad (1)$$

, i.e. time parameter is a quantity which, influence the interval of two occurrences. In quantum theory system spin is one of the controversial concepts which, is often, considerable.

Since we know that concept of spin is only definable in quantum frame, we have a quantity which is indicative of relativity theory, and also a quantity which is indicative of quantum theory.

Now if we can interpret a relationship between these two quantities, then we would hope that there is a relationship between these two theories.

How can the concept of rotation and time help us to find a relationship between them?

4 - 2) Spin is rotation generator

In quantum mechanics each rotation is a result of the influence of a rotation operator on system and this rotation operator is a result of system spin. Operator of this rotation is defined by this relation:^[1,2,3]

$$\exp\left(\frac{-i\vec{J}\cdot\vec{n}\varphi}{\hbar}\right) \quad (2)$$

That \vec{j} is operator of spin and combination of intrinsic spin and angular momentum and \vec{n} is direction of rotation.

Now we suppose a system with intrinsic spin \vec{s} which rotates in direction of \vec{z} .so that rotation operator for this system is defined as:

$$\exp\left(\frac{-iS_z\varphi}{\hbar}\right) \quad (3)$$

4 - 3) Time Revolution of a system

In quantum mechanics, we use operator of time revolution to investigate time revolution system .when Hamiltonian for a system, H is known, time revolution operator for this system defined as: ^[1,2,3]

$$\exp\left(\frac{-iHt}{\hbar}\right) \quad (4)$$

So, if $\psi(r,0)$ is the system ground state when $t = 0$ at moment of t we have: ^[1,2,3]

$$\psi(r,t) = \exp\left(\frac{-iHt}{\hbar}\right)\psi(r,0) \quad (5)$$

Now, we describe a Hamiltonian based on a system to consider a relationship between Time Revolution of that system and its rotation.

4 - 4) Time revolution of Spin in Magnetic Field

As we know for a spin system with a magnetic momentum $\vec{M} = a\vec{S}$ (a is constant), that is in the external magnetic field ,we defined Hamiltonian as following: ^[1,2,3]

$$H = -\vec{M} \cdot \vec{B} = a\vec{S} \cdot \vec{B} \quad (6)$$

Here spin of system is discussable and we don't discuss the constant a .

So according to (4), for time revolution operator we have:

$$\exp\left(\frac{-iHt}{\hbar}\right) = \exp\left(\frac{-iaS \cdot Bt}{\hbar}\right) \quad (7)$$

Now, the question raised here is that why we use such a Hamiltonian?

Since we are looking for a relationship between Time Revolution and Spin .In order to find this relationship we define such a Hamiltonian and we mention the result of this definition at end.

Now if we notice the relationships (3) and (7), we'll get $\varphi \propto t$, i.e. each rotation is proportional with a Time-Passing .and we know that rotation of system originates from its spin .so rotation of system spin makes Time Revolution.

The question raised here is that whether we have Time Revolution for a system with zero spin.

As we know the examination of Time Revolution is done in this world, so we can consider a spin, for this world, which locates in an external magnetic field and its rotation caused Time Revolution of this

world and each system whose spin is zero locating in this world is under the influence of Time Revolution and if the spin of system is not zero, it has a Time Revolution made by the rotation of its own spin, in addition to having Time Revolution caused by spin of this world.

Thus in TRS hypothesis, we consider a spin for this world, which is located in a magnetic field and its rotation, makes Time Revolution of this world.

More investigation is needed to complete the present hypotheses, we don't know that what is spin field in this world and whether it is possible to show that each rotation makes a Time Revolution?

5) Time and Biological Structure

Period of cellular life starts by a reproduction to the next reproduction when the cells are not controlled and reproduces with maximum speed, this life span may long

10 – 30 hours maximumly.

Life span ends with some physical happenings which are named *mitosis* and lead to two new cells. But mitosis phase long near 30 minutes and so more the 95% of cells life will pass in the phase between mitosis named *Interphase*.

Except special conditions (in rapid cell reproduction) inhibitory factors decrease the reproduction speed or stop it. So the cells of different body organs, have a different life span as 10 hours for neurons. Stimulated bone marrow cells or all life long, for nearly all, neurons.

Nearly most of reproduction evolutions happen in the nucleus and mitosis happen only when, all the DNA, exit in chromosomes, reproduce. And DNA needs 5-10 hours for this process.

DNA reproduction, product are two quite similar copies of the DNA. These copies will be placed in two newborn cells. Following DNA reproduction another phase last near 1-2 hour cause initial changes for mitosis. Then mitosis starts suddenly.

After mitosis, one cell separates to two new cells. As a chromosome reproduces and form, two new chromatids, mitosis happens automatically during 1-2 hours. Phases which are: pro-phase, pro-metaphase, metaphase, anaphase, telophase.

After telophase ends two new chromosomes produce and following the degeneration of mitotic system a new nucleon membrane produces over each new chromosomes.

The important part of all these is the progression of these all phases with time.

For example due to times said in Guyton & Hall Medical Physiology, DNA starts reproduction 5-10 hours before mitosis.

Besides time is passing permanently and biologic system has an unchangeable pattern, i.e. we can't imagine any other ways during mitosis. And what manages the progression of mitosis is the time. And one of important factors which, leads to the end of progress is the time either. In mitosis, 2 new born cells produce from a mother cell and the time needed to produce a mother cell to two new born cells is equal with the time need for this new cell for production two newer ones.

Now if we consider a gap to fit the mitosis in a minute and leads the time to zero, so with exiting the time as the progress of mitosis, the process ends. Till now we have considered three major ways to control growth and development and cellular reproduction.

We know cells like cell of germinal layer of skin, and erythropoietic cells of bone marrow are reproducing during the life and some cells like neurons doesn't have

reproduction except infancy period. In some other organs and tissues like liver, Lack of sufficient cells for continuing life can lead to reproduction of remained cells to produce sufficient number of cells.

The methods to inhibit and control growth and development of cells are:

1) Growth is controlled by growth factors which are produced in other parts of the body. Some of these growth factors are transmitted in the blood and some in the adjacent tissues. This effect of growth controller factors is apparent in pancreas.

2) Most of Alive tissue, cells stops reproduction when no space for growth is existed.

3) The effect of negative feed back of growth control growth and development by increasing secretions of produced cells in tissue.

Besides in the period of some hours between reproduction and mitosis start, the phases of repair happens which is depended on time itself.

This repairment is done by some special enzymes and defected points are repaired. Oncogenes, or Neoplasms. Only some of, Alive cells, can transform to neoplastic

cells. Because, neoplastic cells, has a less force to survive in the normal body situation. Most of these cells die due to 3th rule of inhibition of reproduction. And normally death happens with inhibitory secretions. Many of them experience cell death for immune body systems.

Due to the reproduction process in reproducible non-inhibitory cells like neoplastic cells, the factor which causes development and survival of life is the time. Time, in this process, show with Half-Life. If we decrease the "T", time in this system, Half-Life will go to zero too and then growth and development will stops.

Besides as we know the neoplastic cells are not under normal pattern of cellular growth. And doesn't need the growth factors .Process of development and disease both need time passing. And the causes of each disease can lead to a disease only when the necessary causes gather together to form the sufficient causes and then disease happens.

In another view, growth and happening of a disease needs a group of causes to make a disease which need a sufficient period of time.

So with decreasing the time parameter and exiting it from disease system, we can hope that the space and situation for a disease never gather for a disease and so we can control or decrease the process of disease by this way.

Now the question is the effect of time revolution on biologic system?

Time on earth is caused by movement of earth round itself and round the sun. This movement is caused by translocation in resultant of two rotations.

Each point of earth has a unique time because of placing in a special place. This point's reveal Einstein views about time relativity and considering a unique time for each alive system.

With exception that biological time has no opposition with physical time and that biological time is organized with physical time and exception that one of important parts of alive biological systems is the time, which is a basic discussion in Quantum Physics about any systems (alive or not alive) in forming an inner structure to receive more valance and more independency in this maximum balance, then we can consider a group of possibilities for each function and those systems select these possibilities to gain to maximum balance (minimum energy).

If we, except this thesis, then we can consider a fourth way to inhibit growth and development and cellular reproduction. And this 4th way is exiting the time from mitosis.

When thinking of rotation groups explained before the we can consider with a similar arrange of time in biological systems and physical time, we can lead cellular time to a way that helps to in crease or decrease the duration.

One of most interesting human ideas, was the idea of translocation in time. in a view we all are passengers in time.

Right away while you are reading this assay, time is passing by and future to now and the time being goes to past. The sign for this is growth. We get older and die. So time passes. Albert Einstein showed this things is possible theoretically. Because, on this theory, if a subject, receive to light speed, then time will passes slower for it.

So if we get to that speed, time will get back to the past. The problem is when a subject receives to light speed, then, its relative mass receives to ∞ . Someday this problem may be solved. Opposite to writers and dreamers who think passage in time should be done in a machine, scientist believe this can be done in the natural ways (Black Holes,...).

Time Dilation in Relativity Theory :

When a system moves with a constant velocity v to a static system according to time dilation we have: ^[4]

$$T = \frac{T_0}{\sqrt{1 - \left(\frac{v}{c}\right)^2}} \quad (8)$$

Now our hypothesis should explain this completely relativity equation by quantum concepts.

In the universe the passing of time cannot be clearly perceived as matter and space directly; one can perceive only irreversible physical, chemical, and biological changes in the physical space-the space in which material objects exists. On the basis of elementary perception (sight) one can conclude that physical time exists only as a stream of change that runs through physical space. The important point is: Change does not "happen" in physical time-change itself is physical time. This is a different and more correct perspective than the conventional view in physics, in which space-time is the theater or "stage" on which physical change happens. The terms "physical time" and "material change" describe the same phenomenon.

Physical time is irreversible. Change A transforms into change B, B transforms into C and so on. When B is in existence A does not exist anymore, when C is in existence B does not exist anymore. Here physical time is understood as a stream of irreversible change that runs through physical space. Theoretically in physical space without material change physical time does not run. Physical space itself is A-Temporal. The idea of space-time is developed into idea of A-Temporal physical space in which physical time run. With clocks we measure duration and speed of physical time.

"Time Dilatation" and "Space Contraction". In the fast moving inertial system the duration of physical time is longer for the outside observer. Lets imagine that a train is passing a station with the speed v . The observer on the train throws a ball that is rolling on the floor of the corridor. The duration of physical time of ball rolling will be for him T , for the observer on the embankment the duration (time) of the ball rolling will be T_0 , the connection between two durations is (8) equation.

For the observer on the embankment the clocks on the train run slower than the clocks on the embankment because the speed of physical time is slower on the train than on the embankment. This would be the exact meaning of "time dilatation": the speed of physical time in faster inertial system is slower than the speed of physical time in slower inertial system. That's why the twin-brother that travels in the fast spaceship is getting older slower than his brother that has remained on the earth. Coming back on the earth he will be younger than his brother. ^[4]

6) References

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To give thanks:

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