

Time Revolution and Spin

H.Poor Imani

*Physics Student Scientific Society ,Physics Department ,The University Of Isfahan,
Isfahan ,Iran ,February 2006*

E-mail : Hamed@iwp.ir

Advisor Professor :

Fallahi- Marvast , Mohammad Taghi

*Ph.D. in Experimental Elementary particles , Professor Of Isfahan University,
Physics Department , Isfahan ,Iran*

E-mail : Mtfall@sci.ui.ac.ir

Javadi,Hossein

Azad University , Tehran ,Iran

E-mail : javadi_hossein@hotmail.com

Abstract:

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.

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:

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

I.e. time parameter is a quantity which influences the interval of two occurrences. In quantum theory system spin is one of the controversial concepts which are 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?

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]:

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

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:

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

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^[2]:

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

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

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

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

4. 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^[2,3] 1:

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

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 hypothesis ,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 Dilation in Relativity

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.

6. Describing Time Dilation from TRS view

When a system moves with a constant velocity ,according to equation (7) Time-Passing in movable systems is with more delay ,i.e. ,time dilation .if a system moves with translational velocity ,such a system is affected less than the rotation of the universe which is the cause of time revolution ,because translational velocity reduces rotation's effect.

Now according to our hypothesis, rotation causes time revolution and increasing rotation causes more Time Revolution.

A system which moves with a constant translational velocity (v) since there is no rotation ,it could be said that because of translational motion ,rotational effects caused

by universe reduced and .less rotation results in delayed passing of time (makes the time-passing longer) This is the concept of time dilation in relativity which can be described ,here ,by quantum concepts.

7. Black Holes and Acceleration of Universe

As seen before in TRS hypothesis there is a direct relationship between time and spin and if we consider that CPH(Creation Particle Higgs) is the most fundamental bit ,and all things are made from CPH ,production of other bits such as proton and electron ,...is possible by increasing CPH' spin .

This process could be seen and justified in the production and decay of electron-proton pair .A photon with high energy loses its whole energy ,coming into collision with nuclear and an electron-positron pair is made .All the properties of positron are the same as electron except for its electric charge and its magnetic momentum because positron has positive electric charge.(Figure1)

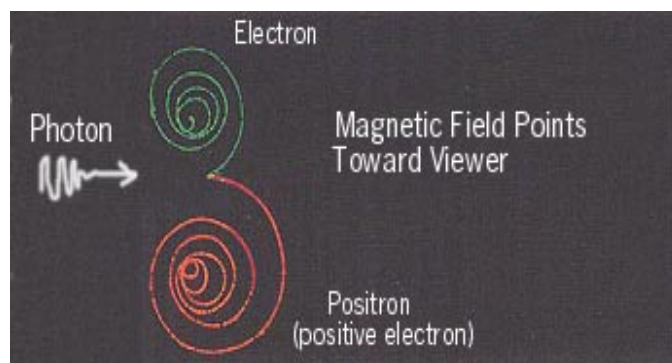


Figure 1 : Electron-Positron production

Pertaining pair-production , there is a reverse process named pair-decay (decay of pair) .compounding of an electron and an adjacent positron which create radiation energy.(Figure 2)

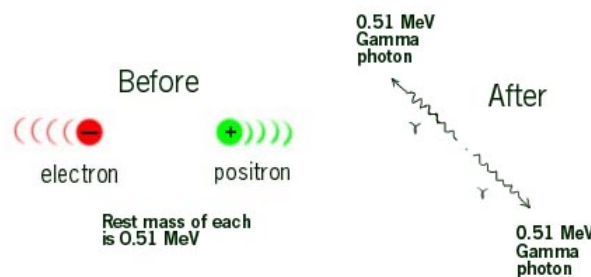


Figure 2: Decay of Pair

Nowadays, observation of the production and decay of an electron-positron pair is common in lab.

For the first time, in1955, pairs of proton-antiproton and neutron-antineutron were created in the lab.

According the above phenomena, we can easily observe that while production of pair happened, linear velocity of CPH, which are at photon structure changes to spin .And at the time of decay of pair, spin changes to linear velocity.

Now by considering Time Dilation we have ^[4]:

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

that relativity emphasize on that and .we can result in relativity time dilation .as we know according to the above relation ,whenever the bit rate is increased ,the time rate is reduced .This fact indicates that there is a provable and acceptable direct relationship between spin and time.

Therefore, we can conclude that there are some worlds with different times(for having different spin) in universe.

Now imagine transition from one world to another world which has different time(different spin) .we show these two worlds by A and B.

7-1.The First state: time at B is faster than A

Since time at B is faster than A, spin at B is more than A .entering from world A to world B, CPH 'spin increases and their translational energy changes to rotational energy .so density of CPH increases in the border of these two worlds.

Sins we have less transition. If there is enough density, black holes gradually come into existence .in this case an outside observer can't see passing of time in the black hole because black hole is on the border of two worlds with different time.

7-2. The Second state: time at B is slower than A

Since time rate at B is slower than A, spin at B is less than A. so CPH motion of spin state changes to translational state .By increasing translational motion of CPH, their linear impulse result in increasing world impulse and an increase in translational energy (rotational energy of CPH changes to translational energy, but its energy is constant) which causes acceleration of world B.

To our understanding, this is the mystery of acceleration of the world and source of force and energy supply which are necessary for this acceleration!

8. Expansion or Contraction?

Our entire universe consists of worlds that like mathematics theorem, these worlds don't have any partition on each other and they can't affect each other. (They don't have any action on each other).

But when CPH transfers from one world to another one (moving from one world with more time to another world with less time) ,in this case enters in to new world and gets a translational velocity resulting in expansion of world in which day entered .so that new world in which CPH entered is expanded .because this world by entering new CPH increases the number of CPH and it causes translational velocity and this results in extension and expansion .Expansion is not just for extending of external layer to internal layer ,if there is an inside extension we have expansion as well.

Another point is that what would happen to world if CPH leaves it?

In this case this world should be contracted in a way that in general a kind of expansion and contraction happens for the whole universe .since its subsets expose to this change ,one world expand ,another one contract and the whole set is under this change.

So our statement not only can describe acceleration of our world but also it can cover argument of parallel and oscillatory universe.

We mean that these expansion and acceleration which are related to our world might be contraction for another world!!

So again the matter of expanding and contracting of worlds and their creation and destruction and multi universe are mentioned.

9. Some Points

9-1. At first, we should state that the expansion of each world which happens by entrance of CPH with more spin, is not necessary to be a homogeneous expansion. Entrance of CPH in one area causes expansion of the world .when we interpret space by existence of CPH .therefore every CPH enters in a new world ,makes a new space for it.

Extra space is regarded as an expansion in one part of world (which every entrance in different conditions include expansion from different area s).

All expansions result in total expansion in different directions.

Acceleration increases day by day .we can describe this fact in this way that our world is exchanging CPH with several worlds .which have more spins (more time).

This exchanging results in expansion of our world and contraction of other worlds .we mean a part of other worlds' space is added to our worlds by each transition .(we certainly should experience scientifically and reach to rational reasons).

9-2. Passing of time specifies whether our world will be contracted or not .But in our present world exchanging CPH has expansion as a result .and it is possible in one period, Our world exchanging CPH with a world which causes contraction, i.e., a world with less spin overcomes this world .It is noticeable that in our present world exchange of CPH is in such a way that the results of several exchanges is followed by expansion.

That means acceleration and expansion of the present world are the results of several expansion and contraction.

9-3. When a world has a definite time by its spin ,as soon as entrance of CPH ,it should adopt itself with that time because according to physics rules ,CPH which enters in new world should match itself with new rules and new time .therefore it adopt its spin with a new time ,.because it has to follow new rules and new time .

9-4. Notice that our world doesn't only exchange CPH with one world and our world acceleration is not only supplied by exchanging CPH ,but any kind of translational motion of CPH can provide acceleration .So ,every explosion from absolute black holes .(when density of CPH increases) can cause acceleration at world's border ,that means we have Multi Bang and Multi Universe and we can probably state that the main factor of acceleration is the exchange of CPH by several Worlds .This statement needs testing and investigating data.

10. Conclusion

As considered, in this paper, we are seeking a new view describing whole universe. In this paper we start with pre-hypothesis that time revolution is a result of universe rotation ,and basic structure of universe is CPH(Creation Particle Higgs) factor .we intend to prove this pre-hypothesis by presenting a series experimental tests .we have already started and in order to attaining final results we need more time and more examination.

We hope to prove this hypothesis.

11. Reference

- [1]. Sakurai, Jun, *Modern Quantum Mechanics*, Reading, MA : Addison-Wesley, 1985
- [2]. Dirac, P. A. M. *Quantum Mechanics*, 4th ed., London : Oxford Univ. Press, 1958.
- [3]. Bohm, D. *Quantum Mechanics*, Englewood Cliffs, NJ : Prentice – Hall, 1951
- [4]. Weidner R. T. and Sells R., *Elementary Modern Physics*, Allyn and Bacon, 1973