Unified Principles of Nature:
Solution to the "Problem of Time" V
Calculating the answer to life, universe and everything:

"Sun is not center of Solar System"

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Abstract

Within "Solution to the Problem of Time I, II + III, and IV [1,2,3,4] the author showed serious misconceptions of the concept of energy due to the prominent "Problem of time" in Quantum-Gravity. As the Planck's constant unveils that an inverse proportional concept of Energy in Quantum Theory is used compared to the concept of Energy used in General Relativity, in this paper the author finally suggest a technical definition for time to calculate the answer to life, the universe and everything: The universal wave-function to resolve the wave-particle-dualism.

1. Summary of Previous Publications

In Solution to the Problem of Time I,II+ III and IV [1,2,3], the author introduced the Unified Principle of Nature: "Time = Cause". As the concept of "Energy" is based on the concept of time and space, a theory offering a consistent definition of length of space and length of time is the heart and foundation of all physics and science in general. The "Meter" and "Second" are the building blocks how we see, interpret and measure objective Reality with.

As discussed in Solution to the Problem of Time I, contemporary theoretical physics suffers a major crisis as with Introduction of Electromagnetism by Maxwell, Hertz and later Einstein it was "lost" a consistent melting of Newtons Dynamics with Electromagnetism. While in mechanics time was considered as even flow in Universe, Einstein, Planck and Bohr missed to offer a consistent concept of space and time as a framework for Electrodynamics. In Dynamics, time is a concept defined by the concept of movement, that is a relation between space and time given as a vector in 3 dimensional space.

$$velocity\ of\ movement\ v := \frac{length\ of\ space}{length\ of\ time}$$

On the other hand there is no other way than defining length of space based on a movement

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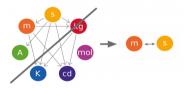$$length\,of\,space := velocity\,of\,movement \cdot length\,of\,time$$

and time itself based on velocity and length of space

$$length\,of\,time := \frac{length\,of\,space}{velocity\,of\,movement}$$

Using scientific method and logic, the velocity used to setup the foundations of our measurement-system must refer to the same physical object for both definitions, as otherwise there would arise two complete different concepts that would never fit together as two complete independent theories using arbitrary foundations of time and space. Exactly that happened when Einstein and Planck set up the interpretation of the nature of photons (E = hf), that was introducing two arbitrary concepts of time and space that can't fit:

$$E = mc^2 \quad and \quad E = hf.$$

Doing so, the 3-dimensional vector of velocity is splitted into a two-dimensional velocity and a one-dimensional speed: The heart of General Relativity vs. the heart of Quantum Theory. In Solution to the Problem of Time IV was shown that time must be treated as 3-dimensional concept to cover the concept of time being proportional concept to space. It was shown in "List of Physical Quanities after Correction of Definition of Time and Planck's Constant in Base-SI-Units" [5] that the measurement-system must be reduced to concepts of length of space and time of space in order to unite General Relativity and Quantum Theory into a picture that covers a real picture of reality and is able to manage a physical theory without the need of imaginary time, dark Energy or information-pardox.

Today we use to define the length of space based on a constant (speed of light) that represents a movement (velocity) in a straight line while we define the length of time (a second) based on a movement (oscillation) that is characteristic for the Caesium$_{133}$ -Atom. This "Setup" of defining space and time is irrational and not covered by scientific method. To emphazise the importance of this issue: Those definitions are ignoring obvious and known (latest since Einstein) facts of reality and every day life: length of space is proportional to length of time. It was suggested to advance in practice to some definitions like:

The second, symbol s, is the SI unit of time. It is defined by taking the fixed numerical value of the speed of light c when expressed in the unit s m^{-1} s: One second is the duration "Photons" needs to travel c meters.

The meter, symbol m, is the SI unit of length. It is defined by taking the fixed numerical value of the speed of light c when expressed in the unit m s^{-1}: One meter of length is the distance "Photons" travels in 1/c seconds.

As in practice it must be build a "clock" that would enable the public to measure time and space (aka the speed of light) and all other quantities in this paper it is now suggested the 3-dimensional universal clock to offer public to measure speed of light with every day experience and unified clocks.

2. Setting up the "Unified Clock"

As time is a 3-dimensional concept, we need to involve a 3-dimensional geometry on the one hand, while we must use one single point in motion to define a movement and a single velocity on that length of time and length of space is defined.
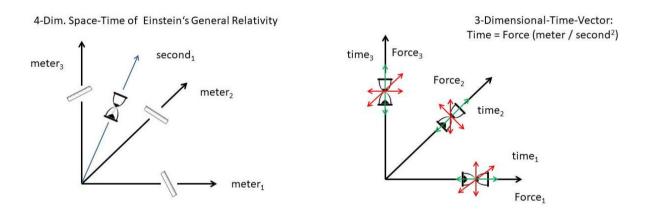

Fig.1: Limited Space-Time as used in General Relativity of Einstein vs. 3-Dimensional "Real" Time unleashed. As Time is proportional to acceleration of mass as well as time is proportional to space, time must be measured as full 3-D Vector..

(6)

To meet the requirement to use the same movement as basis to define length of space and time of space, it is not possible to use the revolution of earth around sun in solar system as we cannot measure the distance between sun and earth with a yard-stick. A "year" (the movement of earth on its orbit in solar system) cannot be used to build a "clock". Also an Oscillation within the atomic scale cannot be used to build a clock, as we must use this "clock" in terms of a "movement" to also define the length of a meter of space. A "Frequency" itself cannot describe a movement in terms of a dynamical movement of matter. But this would be needed to unite "time" for Electromagnetism and Gravity.

As pointed out in Solution to the Problem of Time II+ III [2] we can only access the surface of earth for measurement and must define a center of the universe in order to calculate with consistent mathematics. It is not possible to describe a geometry mathematically without contradiction if there is no definition of a "center", whether this could be a point, an axis (1 dim), a surface (2dim) or whatever geometrical concept. Using the surface of earth we can define a given geographical point on the surface to represent the object in motion to define length of time (1 dim axis in space) and length of space on the surface of earth (2 dim space).

In Example:

Length of Space : The meter could be defined to be 1/40075017 of the length of circumference of earth at latitude 0°.

Length of Time : The second could be defined to be 1/864000 of the duration of a full revolution of earth around its own axis.

Everyone would be able to set up latitude 0° by observing the sky (Planets and Stars) and everyone would be able to measure the distance of a full revolution with a yard-stick as well as he could measure the length of a meridian on the surface of earth with the same yard-stick that is calibrated on the latitude.

A definition of length of time and length of space based on a single isolated movement on surface of earth is imperative in order to dissolve the contradictions between Quantum Theory and General Relativity. It is important in order to be able to set the Electromagnetic field of earth in relation to the movement of bodies in universe ("Solar System") as the electric current (Ampere) is to be measured in [second / meter^2] while the Kilogram is to measured in [meter^4/second^3]

One might ask why we (human being) have not found Theory of Everything yet if it is "this" simple as demonstrated in this paper:

If we want to have ONE single Theory of Reality, we must use one single Velocity as a reference for Both, the length of space and the length of time. If we use TWO different velocities (I.E. speed of light to define length of meter (space) and Frequency of Caesium-Atoms to define length of second (time), then we end up with TWO different Theories of Energy (Quantum Theory and General Relativity) that will never melt together, as we cannot use mathematical "addition" for the different concepts of "time" and therefore "Energy".
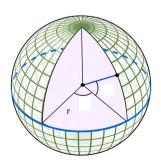
One might ask: why have we been so blind to not see the obvious?. In fact once understood Theory of everything is very easy. But to understand that "time" is a 3-dimensional concept as space and therefore time must be fixed not by relation of two different rotations (earth around its own axis and earth around sun), but by using one single 3-dimensional rotation (earth around its own axis) to relate volume (m^3) of earth with surface of its equator (m^2) to cancel out π that is not defined as "number" and cannot be used for rational mathematical addition. "Velocity" in general is an intense quantity in physics and is not "open" for the concept of addition.

3. Defining geometrical Center of Universe

The Roman Church remained opposed to heliocentrism a long time. Knowing the Theory of Everything it is useful to keep sceptic about a world model in which planet earth is in orbit of sun. In fact the Pythagorean world model is more accurate once using a 3-dimensional clock for universe. In such, the center of the universe is the surface of planet earth, while this center (earth) is in orbit to a fixed point (the hypothetical center and axis of rotation of planet earth if assumed that earth is a 3-dimensional volume). We need to consider the historical development from Young's double slit experiments to Maxwell, Hertz, Einstein and Planck as well as Bohr and the Foundations of Quantum-Mechanics. Galileo already have had serious problems in suggesting a change of a world model. If Einstein would have suggested to skip Sun as center of Solar system, it is likely that this would have been rejected as "nonsense" at that time.

But Einstein pointed out that time is proportional to space. Therefore time is measured in spacial representation as well as space is measured in spacial representation. We can't measure time "directly", but only as "effect". This "effect" is "motion". The most important point on the road of reasoning now is, to see that time is not "connected" to the concept of causality, but time IS the concept of causality itself: Time is like space but the difference is: time is representing the cause (Action) in our perception while space is representing the effect (Reaction) in our perception Time causes motion, but we can distinguish between time and space within the measurement although we always measure space only. As space-time is a relative concept, we can (and Must) only define the surface of earth as the center of universe (inc. Solar System) in order to solve the measurement problem that makes general relativity contradictory to quantum theory. To supply a universal clock for 4-dim-space-time, it is only possible to define a single point on the surface of earth to represent the measurement of a 1-dimensional time-scale for a concept of Energy that unites Quantum-Theory with General Relativity. (A 3 dimensional Vector in space rotating a 1-diensional. axis in space.)

Doing so, sun ist not longer center of "Solar System", but by convention the center of universe is where we can use a yard-stick to measure a 2-dimensional surface to relate this to measure the Electromagnetism (a 3-dimensional Volume). We don't know if the center of earth is billions of kilometer or ligh-years far away from the surface of earth. One could argue that the center of earth could be as far away from its surface as the edge of the universe. We can only measure the circumference from North to South and the circumference from East to West. Therefore we are limited to use a clock based on a well defined measurement of spacetime itself.

$r = c_1$

Length of space := Meter := $2 \pi \ c_1 \ / \ 40\ 075\ 017$

Length of time := second := $86\ 400 \ / \ (\ 2 \pi \ c_1 \ )$

c_1 = Meter / Second = constant.

4. Why it is imperative to change the Definitions for Measurement of time and space

As shown in previous papers, the Ampere (electric current) is to measure in $[s/m^2]$ while the Kilogramm is to be measured in $[m^4/s^3]$. To unite Quantum Theory and Electromagnetism (earth electromagnetic motions / geodynamo) with Theory of General Relativity (Gravity) the measurement of time and space must be calibrated. A unification can only be done if the length of Meter and length of Second are defined in relation to the magnetic field of earth in both in scale and rotation to relate Ampere of electric current with Kilogram of mass. Using the image of earth moving in an orbit of sun is causing an inverse proportional scale of Energy and therefore an error of about 95%, as 95% of the universe seem to consist of dark energy and dark matter due to our ill defined concept of Time and Energy in the Measurement-System (Base-SI-Units).

5. References

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