Conceptual FrameWorks
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The objective reality of space and time

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Modern physics describes the observable – and proposed – relations between the phenomena in the microcosm and macrocosm. Unfortunately we cannot observe space and time itself. Therefore we can only determine the mathematical structure of space and time with the help of the mathematical relations between the phenomena.

Introduction

If I close the empty box in front of me I know what's inside: volume. And if I look into the sky I know there is another box and now I am inside: our universe. What we call "space" is the volume of the universe although we cannot observe a boundary like the box in front of me. I even know the relation between myself and space and time; I am an observable phenomenon.

There are some conclusions about observable phenomena that are obvious but we hardly discuss them. For example, it is impossible to push together 2 identical phenomena – e.g. particles – to get one phenomenon with exactly all the properties of one of the original phenomena ($a + a \neq a$). Or the opposite, dividing a particle into 2 identical particles that are both identical to the original particle ($a - a \neq a$).

These simple observations must be really important although it is hard to understand immediately the conceptual consequences.

Displayed properties

If phenomena cannot be pushed together without a change of properties we have to conclude that all the properties of the phenomena are conserved. That doesn't mean that the involved phenomena cannot change, it only means that the involved phenomena are compositions of universal properties and all these properties are conserved. Otherwise $a + a = a$.

Conclusion: *all the phenomena are composed by universal properties and the universal properties are conserved.* [I]

Observable phenomena can exchange properties. For example I can put a hot object in the box in front of me and after a while the box itself gets warmer at the out side. Actually, it is impossible to prevent an observable phenomenon to exchange some of its properties with the phenomena around ($a - a \neq a$). In other words, the properties of the universe are conserved but the properties within the volume of the box in front of me are not conserved.

Conclusion: *local conditions are determined by the properties of the all-inclusive box, the universe.* [II]

There exist 2 kinds of properties, invariant properties and variable properties. Because a variable property cannot be an invariant property and visa versa. Phenomena can transform, therefore the observable phenomena represent variable properties. Conversely the invariant properties must be part of the basic properties inside the all-inclusive box, the general conditions of space and time.

Conclusion: *phenomena represent variable properties and invariant properties represent space and time.* [III]

If I observe an object I never notice a sudden increase or reduction of its volume without any external causation, no matter where I put the object under nearly the same conditions. Moreover, there was never a sudden increase or decrease of the size of our planet. Some kind of an imaginary wave that is the causation of a expansion or deflation of the volume of the earth.

Conclusion: *because of II the volume of space must be invariant.* [IV]

An invariant volume isn't identical to a homogeneous volume. Because a homogeneous volume has no observable internal differentiation of properties within its boundary.

Conclusion: *the volume of space must have a structure that exist of spatial units with an identical amount of volume because of I, II, III and IV.* [V]

If space is a structure that is composed of spatial units and the phenomena represent variable properties (III) the invariant volume of every spatial unit cannot have an invariant shape.

Conclusion: *space is composed by spatial units with identical invariant volumes and a variable surface area (deformable).* [VI]

A spatial structure that is composed by spatial units with identical basic properties cannot change its internal configuration without some kind of an unbalance. Therefore, every spatial unit must have another property that's responsible for the continuous internal alteration of its variable property, the size of its surface area.

The composition of space by units with an invariant volume with a variable surface area means that every spatial unit can change its shape in relation to all the other spatial units around. In other words, the observable phenomena must show a dominant shape at every scale of observable reality. Because the basic properties of the building blocks of a structure determine the properties of larger configurations.

Conclusion

Space is composed by spatial units with identical properties:[1][2]

1. Every unit has an identical invariant volume.
2. Every unit is deformable.
3. Every unit has an identical internal spherical shape forming mechanism.

Property 1 is responsible for the observation that space is homogeneous and isotropic at the macroscopic level. Property 2 enables the condition of change and property 3 is responsible for the continuous alterations within our universe. Actually, property 1 and 2 are enclosed by property 3.

Because our universe shows to be self organizing I have to conclude that our universe is basically a fractal.

References

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