

## Individual space-time

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Generally, we simply consider that matter is comprised of atoms, which seems to be only part of the truth (1,2). Space should also be considered as part of matter. Also, upon reflecting on particles, the associated waves should also be taken into consideration (3,4).

Space is understood as a quantity conjoint with time, and subject to others, hence being more correct to speak in terms of space-time. We tend to separate space from time, however, some phenomena indicate otherwise. In various situations we are led to believe that space-time can undergo alterations which can be determined as well as the conditions that let to such alterations.

It is said that the gravity field can curve space, indicating that it might be comprised of elementary particles subject to the gravity field. It can be hypothesized that space be consisted of a lattice of elementary particles allowing the occurrence of certain phenomena that cannot occur in its absence.

Considering it is possible to relate mass, length and time with a subject's velocity one can reasonably suppose that these quantities are realities which are, at least partially, built upon other more basic quantities.

We already know there is a factor called  $\Omega$ , which is related to speed according to the Lorentz transformations. These interfere with the basic dimensions of space, mass and the passage of time (1,2).

$$\Omega = \sqrt{1 - v^2/c^2}$$

$$m = m_0/\Omega$$

$$t = t_0/\Omega$$

$$l = l_0 \times \Omega$$

There is an interesting relationship between mass and energy which can be used as a constant functional expression for everything in the world of matter. Hence, we consider energy as an integrating piece of the material world, and its high correlation with mass. We can then reason that in the mate-

rial universe where the human body inhabits, there exist physiologic and pathologic phenomena that can manifest themselves in terms of energy or mass and that it can be possible to act on the human body via both ways (1,2).

$$E = m c^2$$

Observing the Lorentz transformations and the relation between mass and energy some unreasonable situations come up. For example, at high speeds volume reduces a lot and we might ask ourselves, what about mass and energy? Apparently this situation is incompatible with life, but what about with non-life ? (1,2,3)

These realities, mass, energy space and time, are essential for the definition and comprehension of what is material. They define space-time, as part of the building blocks of matter: a well defined universe of matter, without excluding the possibility of the existence of other universes. It is then a hypothesis that space be a condition of matter, resulting from the interaction between particles and waves, the same interactions which define the impossibility of a uniform observation and description for all observers. Space should be understood as a granular reticular reality, discontinuous and where its comprising particles and the spaces between them are within the scale of Planck. According to John Wheeler, at this scale, we enter a dimension very different from the one we are used to perceive. We enter a dimension where there is quantum foam and space and time are not definite (4,5,6).

Another thing to take into consideration is the way space is bent by gravitational force, which suggests space is a reality bound by mass. Space-time is a manifestation of materiality where we consider three dimensions of space, one of time and one of mass and energy of a subject. We propose the existence of particles spaced in the order of Planck and dimensions in the same order which form a mesh interpenetrating objects and which may influence some phenomena. To these distances we propose the designation of spatial quantum and for the grains which make up the vertices of this mesh, the designation granular quanta. If we accept that a gravitational action might act on granular quanta and cause a space curvature, we must

understand an action between masses.

$$F = G \frac{(m_1 \times m_2)}{r^2}$$

$$G = \frac{gR^2}{M}$$

space can be bent when:

$$\frac{m_1 \times m_2}{R^2} > 0$$

Another pressing matter is to understand whether small particles occupy only one place in space at the same time or not. The space considering at such small scale cannot be described by the traditional Cartesian coordinates and must be evaluated using different geometry. In a region in the size of Plank length the space appears as non-smooth. The connection of this particles with gravity and space curvature is an intriguing one. How can they cause space curvature being only individualized structures? In other words, what is in fact space? Can we hypothesize that the space between small particles (d) can determine a curvature which included the non-particles? Can gravity influence not only the particles but also the space between them, the non-particles? Maybe if we vary the space between particles, using an approximation of the variation of space with velocity

$$D = D_0/F_g$$

We can hypothesize that the distance between particles might vary with the gravitational force, which when strong enough so that the distance between particles approaches zero, it alters the geometry of the particles and leads to a curvature of space. We then come up with a different concept of space. One which can change in each instant through the effect of gravitational force, which is characteristic of matter. Not excluding the possibility of a universe of existence outside space.

The time we measure and in which we believe in, is relative to ourselves and is dependent on our velocity in relation to the remaining objects. If one's speed increases to the value c (speed of light), the volume approaches zero, mass increases and time extends. In these conditions the only thing which can be considered Human is probably consciousness, which is volume-less. When time is at its most dilated and still, mass reaches a very great value, but with a corresponding reduction in space, the mass is probably traduced in energy. In such a state, Human is no longer a material object and becomes something outside time and space, outside the material dimension. In this state, Human is no longer part of the conventional material world.

Based on this, one may suppose that in physical terms, death does not necessarily result in an end to existence, resulting instead in just a change of state. Hence, death can be interpreted as a physi-

cal change affecting only the manifestation in the space-time universe. Accepting it to be possible to live in such conditions, it is still amiss in which universe might an individual in this state manifest himself, and how all of this might be proved.

## References

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