

Charge-Time Duality in Spacetimes Containing More than One Time

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Abstract: It has been proved that charge-time duality may be connected with every time dimensions.

We know that

$$Q \leftrightarrow T \quad (T - \text{time}) [1]$$

Q – any kind of charge, T – field of time

The equiponderance $Q \leftrightarrow T$ is the consequence of the existence of Dirac's sea for every kind of particles, which have all these charges; it means that every kind of charge exists at least in one kind of particles.

In Witten's spacetimes (9,1) or (5,5) [2] there are more than one time dimension.

So we have:

$$T_1 \leftrightarrow Q_1$$

$$T_2 \leftrightarrow Q_2$$

$$T_3 \leftrightarrow Q_3$$

... ..

$$T_m \leftrightarrow Q_m$$

Q_i - i-th field of time

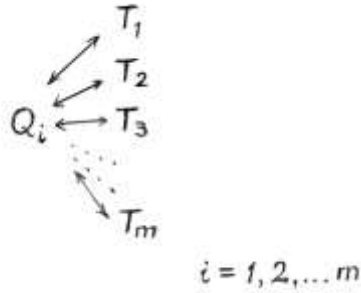
Moreover, every charge may exist in as many versions as many time dimensions exist (so each kind of charge: an electric charge, color, flavor, gluon, etc.).

We put: m - the number of time dimensions

n - the number of spacetime dimensions.

Naturally $n > m$, because if $n = m$ we could not define v (velocity), so in this spacetime there would not be Relativity.

So we have:



In the spacetime with m time dimensions there are m^2 charge states for every color, flavor, and electric charge.

For $m = 1$, $m^2 = 1$ and at the limit case all corresponds with the generality.

That is true [3] that it has been stated that the “Ockham razor principle” is obligatory and says that “one should not multiply the beings”. However, what the principle is worth which must be broken if somebody wants to do something both in natural sciences and mathematics.

Therefore this “principle” is formulated differently now: “One should not multiply the beings without need”. But, what does it mean “without need”?

Each scientist must decide only himself whether there is the need to introduce a new entity or not. So this version of the “Ockham razor” contributes nothing.

References:

- [1] Z. Morawski, this website (time- and charge equation)
- [2] E. Witten, one of His great articles
- [3] Aleksy B., private communication