Charge Effects

Zygmunt Morawski

ABSTRACT: At the beginning there has demonstrated the possibility of the tunneling of charges described by the numbers n and m in the equation $Q = Q_0 \, exp \, i\left(\frac{2m\pi}{n} + \varphi_0\right)$. [1]
It has been proved that this effect isn't discrepant to the principle of the conservation of charge. The charge oscillations between the states described by different numbers n and n' or bigger number of such states have been foreseen. Next the formula describing the charge oscillations has been compared with the equation Q = αt [2]; the scopes of using of both formulas have been determined and again the lack of the discrepancy to the conservation of charge has been shown, particularly the lack of growth to infinity. In the end the consequences of M. J. Duff's periodic time [3] for the charge oscillations have been presented.

1. The operation of the charge symmetry:
SQ = Q
is analogous to the formula

$$\sum\prod\int \delta \, O = O \qquad (1)$$

The shift on the axis of charge with the integer multiple of the quantum of charge or the rotation with $\frac{2k\pi}{n}$ on the plane of charge are this operation.

2. If we compact the rotation first with n and then with m, we have the rotation with $\frac{2k\pi}{mn} = \frac{2k\pi}{l}$, l = mn.
The tunneling from the first charge state to the second charge state with different numbers n (here n and m) is possible.
While $Q = Q_0 \, exp \, i\left(\frac{2k\pi}{n} + \varphi_0\right)$ so the tunneling between the charge states with different n is possible, because their poles have the possibility to be situated on the axes binding the center with the vertices of the polygon.
However, the charges are connected, so the same velocities of the passage from the charge described by the number of the poles n to the charge described by the number of poles n' and in the opposite direction (it means backwards) are equal.
The particular facility of the passage between the charge states described by the big numbers n and simultaneously near such numbers n exists.

3. The formula (1) implicates:

$$DQ = Q$$

and the easiest consequences are:

$$\Box Q = Q$$

and yet easier:

$$\frac{\partial Q}{\partial t} = \alpha Q.$$

$Q = Q_0 [\cos(\omega t) + \sin(\omega t)]$ (2)

This formula describes the charge oscillations between the states described by the numbers n and n'.
The charge flows between two states described by the numbers n and n'. This flowing has the oscillation character.
This effect is difficult to discover both for small and big numbers of ω. There is a possibility to observe it for mean values of ω.
In the instance of small values of ω these sinusoids resemble straight lines and in the case of big values of ω there is a great inertia.
Such oscillations can exist between a few charge states described by the different numbers n.
There is only one definite value ω for each pair of numbers n and n'.
The formula [2]

$Q = \alpha t$ (3)

deals with the field of all charges if each charge and α may be positive or negative and different in different cases, what the growing of the charge to the infinity eliminates.
The formula:

$Q = Q_{OA}\sin(\omega t) + Q_{OB}\cos(\omega t)$

shows however the oscillations between the charges described by different numbers n.
We have:

$Q = \alpha t$

and nevertheless the charge doesn't increase to infinity because there are the regions of the Universe in which the charge increases and the regions in which it decreases.
These regions can be big or small.
Besides the decrease in the charge may be connected with $\alpha < 0$ or $t < 0$, it means when the time flows backwards.
The charge oscillations can be connected with the periodic time of M. J. Duff [3], which unifies the formulas (2) and (3).
The Duff equation is valid however only in certain regions of the space-time but the equation of the charge transformation (2) is valid for all these interactions described by the numbers n and n' in all regions of the space-time if only $Q_{OA} \neq 0$ or $Q_{OB} \neq 0$.
These considerations support the idea that the equations (2) and (3) aren't discrepant to the principle of the conservation of the charge.

References:

[1] Z. Morawski, "Attempt at Unification of Interactions and Quantization of Gravitation", this website
[2] Z. Morawski, "Attempt at Nature of Time", this website
[3] M. J. Duff, C. N. Pope, E. Sezgin, Physics Letters B, vol. 225 nr 4, 27 July 1989
[4] Z. Morawski, "Equation of Objects and Equation of Field"