Space of Charge

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ABSTRACT: At the beginning the space of charge has been defined which describes the distribution of charge described by the unifying formulas [1]. The difference between the n-regular polygon and the circle in this space has been discussed. Next the spaces (of charge) with any dimensions have been introduced. The Kaluza-Klein [2] conception of an influence of additional dimensions is in the context of the space of charge. Next the dimension–charge dualism has been introduced.

1. Space of charge

The space of charge is the space described by the formulas unifying the charge [1]. The n-dimensional spaces corresponding with regular polyhedron with n vertices are relativistically favoured. It is so at the case n = 8 (cube) and n = 4 (regular tetrahedron). n is simultaneously the number of dimensions of such a space.
The regular polygon describing n-pole interactions passes in the limit into the circle with an infinite number of poles.
In the three dimensional space the sphere is an analog of the circle, although the number of the regular bodies is dramatically reduced in E^3 and it is the basic advantage of the sphere.
In any n-dimensional space the (n-1) dimensional spheres exist and it is the next possibility of a generalization.
The passage from the vertices of the regular polygon to the circle means the passage from the discrete set to the continuous segment. This dramatic change means the change of the type of interaction whose poles are vertices.
It is probably the supergravitation with n = 0 [3]. Here n = ∞ but one should remember that in a certain sense $0 \sim \infty$.
We have an n–pole regular polygon on the plane of the complex charge. We define the i-th superficial charge as the triangle with the vertices i, i+1, 0 without the line 0 – i+1. We can define so the system of (n-1) charges. The remaining n-th charge is used and it has the character of the hole of the superficial charge.

2. Dimension-charge dualism

The dodecahedron (12 regular pentagons) means that the number of vertices of the walls is equal to the number of the dimension of the Kaluza-Klein space [2]. The case of icosahedrons with 20 walls means the number of dimensions of the Kaluza-Klein space multiplied by 4 (the

quaternion effect). The existence of a dodecahedron confirms the statement that between the spaces with d = 13 dimensions and d = 11 dimensions the space d = 12 dimensions exist.
The dualism vertex-wall exists, so both 12 walls and 5 vertices of each wall mean the characteristic number of dimensions.
In the case of a regular polygon the dualism wall-vertex is reduced to the dualism side-vertex.
2 points of the vertex determine one side, 1 point determines zero sides and just this corresponds to supergravitation.
Every two vertices of the regular polygon (not necessarily neighboring) can be bound with an interval corresponding to the number n = 1. This means just that each interaction is equivalent to the gravitation.
The dualism dimension-charge exists. The following fact was discovered by Th. Kaluza and O. Klein: taking the fourth dimension into consideration permitted to unify gravitation and taking the fifth dimension into consideration permitted to include the dipolar electromagnetic interactions.
Moreover, the dualism: the wall (the edge, the point) of an n-dimensional solid of an n-dimensional space of an n-dimensional charge with the dimension exists.
Not only the polygons on the plane and solids in the three dimensional space but the walls and edges of the solids in n-dimensional space of charge are dual to the space dimension.
Such solids exist. For example, one adds a point in the fourth dimension to the regular tetrahedron and we have its analog in the four-dimensional space and analogically, one adds a point in the n-dimensional space to the n-hedron.

References:

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