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Short Communication

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A Concise Explanation of the Universe

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Abstract

The dynamic universe field plays an ongoing picture of coverages of space by versions of numbering systems.

Describing space

Humans cannot reason or communicate about subjects without giving these subjects an identification and a concise description. If space must be explained, then the simplest subjects must describe it. The concept of location seems suitable for this purpose. Since space is covered with a huge number of locations, a way must be found to identify these locations. A way to identify locations in space is to apply coordinate markers that are generated with the help of the values of numbers in number systems. Many humans learned numbers in primary school. These are the simplest form of numbers. Natural numbers, integers, and ratios cover only a single line in space. Other number systems exist that cover other dimensions. Investigating physical reality must start with investigating all numbering systems. Humans have discovered three associative division rings. These are the real numbers, the complex numbers, and the quaternions. It appears that space can be covered by these number systems in many ways. The main task is to bring order to this potential chaos. A mathematical structure that brings this order is a system of separable quaternionic Hilbert spaces that all share the same underlying vector space.

Hilbert Spaces

Every Hilbert space owns a private version of the number system that the Hilbert space uses. The Hilbert space possesses operators that can archive elements of the number system, and those operators can retrieve these numbers in an orderly manner. The Hilbert space manages its own version of the number system in a special operator's eigenspace. There are functions that can use the dedicated operator's eigenspace as their parameter space. These functions can define the new operator associated with this function. This capability turns every Hilbert space into a function space.

System of Hilbert spaces

The system of Hilbert spaces allows that one of the members acts as a background platform. All other members act as platforms that move with their geometric center over the parameter space of the background platform. A non-separable companion of the background platform embeds the moving objects. A dynamic field describes the embedding process.

Stochastic imaging

Stochastic processes exist that generate cords of members of the selected version of the number system as eigenvalues of a hopping operator. The eigenvalues of this operator represent a hopping path and combine a timestamp with a three-dimensional hop landing location. Each member of the system of Hilbert spaces owns such a hopping path that describes the path of the private state vector of the Hilbert space. This state vector is taken from the underlying vector space, and it aims in a stochastically blurred way to the geometrical center of the private parameter space of the Hilbert space. Consequently, the hopping path recurrently regenerates a hop landing location swarm, and the expected value of the hop landing locations is the geometric center. A stable location density distribution describes the hop landing location swarm. The stochastic process behaves as an imaging process and the quality of this imaging is described by an Optical Transfer Function, which is the Fourier transform of the location density distribution.

Symmetries

If number systems are situated in space, then their symmetries become apparent. Symmetries are selection freedoms that are not settled by the arithmetic of the number system. Physical reality appears to distinguish the coverages of space via arithmetic and

symmetries. Symmetries can be categorized into a small number of basic types. These types appear to correspond to the types of elementary fermions. The differences between the symmetry of the background platform and the symmetry of the fermion types correspond to electric charges.

Depending on the difference in symmetry, the image of the hop landing location may deform the embedding field.

Energy and mass

A common error of physicists is that they consider energy or mass as simple subjects. In comparison with locations and numbers, energy and mass are very complicated items. These subjects relate to changes in ensembles of locations. Change only occurs in continuums. Continuums are uncountable ensembles of locations. Compared to discrete ensembles continuums feature special behavior.

What is important

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