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Abstract
The essentials of the Hilbert book model are listed.

Hilbert book model essentials
The Hilbert book model is a simple model of physics that is strictly based on the axioms of quantum logic[1]. Quantum logic is very similar to classical logic, but one of the axioms of quantum logic is weaker than the corresponding axiom of classical logic. This axiom concerns the modular law. The direct result of this weakening is that quantum logic has a lot more complicated structure than classical logic. Where classical logic can be displayed with a simple representation consisting of Venn diagrams, will quantum logic correspond to a complicated mathematical model that has the same lattice structure[2]. This model consists of the set of the closed subspaces of an infinite dimensional separable Hilbert space[3]. Hence that quantum physics is usually carried out within the framework of a Hilbert space. However, because also other types of Hilbert spaces exist, not always a separable Hilbert space is used for that purpose. An example is quantum field theory. This derogation can lead to contradictions that must be solved by a renormalization of the solution thus obtained. But, there are better ways to address fields that keep the direct relation with quantum logic intact. Such a different approach is applied in the Hilbert book model.

The Hilbert book model uses the broadest choices that can be made for this separable Hilbert space. The most important freedom of choice that still exists is the numbers system with the help of which the inner product between Hilbert vectors can be defined. This number system may consist of real numbers, complex numbers or quaternions[4]. This last one is the widest choice and offers the most flexible opportunities. For this reason, the Hilbert book model also allows quaternions as eigenvalues of operators and as the values of fields and coordinates.

Both quantum logic and the corresponding separable Hilbert space offer no place for fields and can only offer a static representation. Neither quantum logic nor the separable Hilbert space can adapt

[1] http://en.wikipedia.org/wiki/Quantum_logic
[2] http://en.wikipedia.org/wiki/Lattice_(order)
[3] http://en.wikipedia.org/wiki/Separable_Hilbert_space#Separable_spaces
[4] http://en.wikipedia.org/wiki/Quaternions

the equivalent of local time. In addition the operators that work in separable Hilbert space do not possess eigenspaces that have the properties of a continuum. The eigenspaces of these operators have a countable number of eigenvalues. It is not possible to use these ingredients in order to form continuous equations of motion. So it is no wonder that physicists look to the capabilities of other Hilbert spaces. That happens especially in quantum field theories. Such a step breaks the direct relationship with quantum logic. However, there are other solutions to this dilemma.

Every separable Hilbert space is part of a Gelfand triple[5]. This construct features operators that possess eigenspaces with the structure of a continuum. For that reason the Gelfand triple is also falsely called a "rigged Hilbert space". However, it is not a real Hilbert space. It's a sandwich, where a separable Hilbert space is part of.

The next step is that the eigenvalues of operators in the separable Hilbert space link to the continuum background eigenspace of corresponding operators in the Gelfand triple. This link will not be one on one. We allow the link to be inaccurate in a stochastic way. In other words, a probability distribution is added that for the eigenvector of the operator in the separable Hilbert space selects an exact value that at a test event is taken from the continuum background eigenspace[6].

Instead of directly applying a probability density distribution we use a quaternionic probability amplitude distribution[7]. However, the square of the modulus of this distribution is a probability density distribution. It determines the probability of presence.

We can separate the amplitude distribution into a charge density distribution and a current density distribution. For a while the interpretation of these charges and currents will be left in the middle. In the described way we achieve several goals at one blow. It opens the possibility to apply continuity equations[8]. Continuity equations are also called balance equations. The equations of motion of the charge-bearing quanta are in fact continuity equations. By using this approach, we have created the possibility to analyze the movement of these quanta, whatever those quanta may be.

This interpretation also determines the kind of operator that is involved. It is an operator that delivers an observable, which changes dynamically in the realm of a background continuum space.

We now have a powerful weapon in the hands to describe the behavior of quanta. Unfortunately, neither the separable Hilbert space that is extended with quaternionic probability amplitude distributions, nor the similarly extended quantum logic can represent anything else than a static

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[5] http://en.wikipedia.org/wiki/Gelfand_triple
[6] http://en.wikipedia.org/wiki/Eigenspace#Eigenspace
[7] http://en.wikipedia.org/wiki/Probability_amplitude
[8] http://en.wikipedia.org/wiki/Continuity_equation

status quo. Since the charge distributions and flow distributions are known in the form of probability distributions at least something is known about how the following static status quo will look. Despite the containment of these these preconditions the somewhat extended model is still a static model and not a dynamic model.

The solution is obvious. It consists of an ordered sequence of consecutive static models. Each static model consists of a sandwich in the form of a Gelfand triple and the stochastic but static links that exist between the separable Hilbert space and the Gelfand triple. The picture that emerges is that of a book where the consecutive pages represent successive sandwiches. The page number acts as a progress counter. It is a global working counter. It adds a parameter that represents the Hilbert space wide progress for each Hilbert space in the Hilbert book model. So this parameter is not our common notion of time, but the progression counter has certainly much relation with it.

This model shows that no direct relationship exists between the progression parameter and the position of a quantum. The progression is represented by a Hilbert space wide parameter. The position is an eigenvalue of a corresponding operator. Only when the quantum moves, a relationship emerges between these quantities. A uniform movement can be described by a Galileo transformation or, when a maximum speed exists, by a Lorentz transformation[9]. The Lorentz transformation introduces the notions of proper time and coordinate time. It offers the opportunity to bind coordinate time and space into the notion of spacetime.

We now have a dynamic model that can display the movement of quanta and can describe the behavior of related fields.

The beauty of this model is that it is literally based on pure logic. Only mathematics is used in order to extend that foundation. The main extra ingredient is the stochastic link between eigenvalues in the separable Hilbert space and eigenspaces in the Gelfand triple.

For more details see: Http://www.crypts-of-physics.eu/OntheoriginofdynamicsBoek2.pdf.

[9] http://en.wikipedia.org/wiki/Lorentz_transformation#Derivation