Sketch of some aspects of the Hilbert Book Model

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The behavior of the deepest layers of physics can fairly clear be told in a pictorial way. The Hilbert Book Model gives a unique picture of these lower layers.

The Hilbert Book Model (HBM) is a simple model of the lowest levels of fundamental physics. The HBM is strictly based on quantum logic. The concepts in the following text are directly or indirectly derived from this basis.

One of the most remarkable achievements of early quantum physics was the result obtained by the duo John von Neumann and Garret Birkhoff that the set of propositions in a quantum logical system is lattice isomorphic to the set of closed subspaces of an infinite dimensional separable Hilbert space. With other words, in this way two equivalent models are available to act as foundation for quantum physics.

A sturdy and well accepted foundation is chosen because the rest of the model is fully deduced and cannot be supported by experimental verification. By using this basis and further relying on trustworthy deduction the researcher can penetrate deeper in the lower layers of the foundations of physics than when only observable facts may be assumed and yet avoid that fantasy strikes rampantly.

In the Hilbert book Model (HBM) nature moves with universe wide progression steps from one static status quo to the next static status quo. Progression corresponds to proper time. It is the time that ticks at the location of the observed object. In the HBM all proper time clocks are synchronized. As a result, the model resembles a book in which each page describes a static status quo of the universe.

Our common notion of time is coordinate time. It ticks at the location of the observer. In general (due to unknown space curvature) proper time cannot be measured. The progression step size is fixed. This corresponds to an ultra-high frequency. It is the highest frequency that occurs in the model.

In the HBM nature's building blocks (elementary particles) are represented by coherent collections of what I call stepping stones. The stepping stones are temporary reserved locations where the building block can be found. The set of reserved locations are generated at random and are not ordered. This looks as if they are generated by a stochastic process. In fact the planned distribution looks like a 3D normal distribution.

At each progression instant only one step stone is used. It is never known beforehand which step stone is the next one. In this way the building block, even at rest, walks along a stochastic micro-path. At each arrival at a new step stone the building block emits a wave front that carries information about the presence and properties of the building block. This wave front moves with the greatest possible speed away from its source.

The wave fronts slightly fold and thus curve the continuum that embeds the particle. This is the way that the carried information is propagated. It is also the way that space curvature is created.

In the described way, the wave fronts are transmitted from slightly different locations. Already at a short distance the wave fronts seem to be generated at an ultra-high frequency by a source that has a fairly stationary location. Together, these wave fronts form an ultra-high frequency wave. The frequency of this wave is so high that in no way the golf itself can be observed. Only the consequences of the wave become visible.

On a small scale the wave fronts interfere. Together they form some fairly static potentials, each of which represent a typical average impact of the wave fronts. In theory a dedicated Green's function determines the contribution of the wave front to the potential. In this way the gravity potential and the electrostatic potential of the building block are formed.

A sudden change of the energy of the building block is accompanied by a temporary modulation of wave fronts. We know such modulations as photons. Since it is a modulation, its frequency can be much lower. The duration of the modulation is equal to the duration of a complete micro-walk.

Such events occur for electrons that move inside atoms. These electrons move along a micro-path, which is stretched along the path of a spherical harmonic oscillation.

As a result of this stochastic movement the electrons behave as if they are free. Only the stationary behavior is displayed. This means that the gravity potential and the electrostatic potential stay noticeable. Due to the additional movement, the mass of the electron seems to be slightly higher.

However, if due to the fact that the electron switches to a different oscillation mode, its energy level changes, then this goes along with the emission or absorption of a photon that corresponds with the energy jump.

The fact that the energy quantum is reflected in the frequency of the photon leads to the conclusion that the photon is created/destroyed in a fixed number of progressions steps. That number corresponds to the duration of a complete micro-walk. This conclusion also means that the building blocks all contain the same number of stepping stones.

At the beginning of quantum physics physicists were astonished by this phenomenon because instead they expected EM waves that match the spherical harmonic oscillation. This story shows that the turbulent stochastic behavior of the electron hides the oscillation.

Photons ride somewhere on the ultra-high frequency carrier wave. Its presence is described by an object density distribution that describes the probability for the photon of being at that location. Not the photons, but instead these object density distributions control the interference of multiple photons. The photon keeps its energy. At large distance the probability of detecting the particle diminishes but not its capability to trigger a suitable detector.

The background field that forms the curved continuum that we experience as "our space" is formed by the superposition (or as you wish the interference) of the wave fronts that have been emitted by all massive elementary particles. According to field theory, a particle that moves uniformly in this field goes together with a vector field. When the particle accelerates this goes together with an extra field that counteracts the acceleration. This effect is known as inertia. (This is explained in "On the origin of inertia" by Denis Sciama)

For further details, please refer to: http://vixra.org/abs/1307.0106