New Aspects of Known Problems

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ABSTRACT: At the beginning one has evinced that the Lamb shift is the proof of the existence of unempty vacuum – in other words: ether. It has been stated that the complex states of the parity implicate the existence of new objects and new interactions. It has been suggested, as well, that the Planck constant may be a function of different values in different universes, so the quantum effects appear in them with different intensity.

1. The Lamb shift canceling the degeneration of the levels with the same i and j arises, because an interaction of electron with the fluctuations of a quantized field of radiation. And it is the proof of the existence of unempty vacuum.
   An interaction of an electron treated non-relativistically with the fluctuations of the vacuum of the electromagnetic fields is considered.
   As the dynamics of the normal model of an electromagnetic field is equivalent to the dynamics of the harmonic oscillator, so each mode after quantization gets the energy $\frac{\omega}{2}$.
   The fluctuations of an electromagnetic field are the result of this quantized effect even then when none outside field exists. Although the middle intensity of the field is equal zero, the middle value of its square doesn't disappear [1].
   So we have next proof of the existence of unempty vacuum, so in other words - ether.

2. The Nature is very economical as far as it admits the breaking of the principle of the conservation of the parity for an elimination of the unnecessary degrees of freedom, but the Nature is very prodigal admitting an existence of the complex states of the parity safeguarding an existence of the new objects and new interactions [2].

3. The Planck constant may be a function. It can be the function of the density of the Dirac sea and of the density of the sea of loops. The Planck constant would

be different in different Universes. Generally the quantum effects can play different role in the different Universes [3].

In the region of tunnels binding the Universes the wave function of "the Planck constant" would be continuous and so it would pass in the continuous way from the value in one Universe to the value in another one.

References:

[1] E. Leader, E. P. Predazzi, "An Introduction to Gauge Theories and «the New Physics»"
[2] Z. Morawski, "Facts of Theory of Particles", this website
[3] Z. Morawski, "Black Holes and Parallel Universes" , this website