Received from George Ryazanov via Gary Bekkum.

Now I will present here some new relations between notions (and quantities)that today seem to be unconnected – in a highly simplified symbolic form:

1. The mass of electrons as a function of near and far environment

$$m = \frac{e^2}{R}\sqrt{\frac{N}{\ln N}}\int_0^{R\left(1-\frac{1}{\sqrt{N}}\right)}\left(\frac{1+v}{1-v}\cdot e^{i\varphi}+\frac{1-v}{1+v}\cdot e^{-i\varphi}\right)d\varphi$$

where N – number of particles under the horizon
R – distance to the horizon
e – charge of electron
v – velocity of the matter of the universe (along a radius-vector)

$$\varphi = 4\alpha\int_0^r \frac{e^2\rho}{m\omega}dr$$

ρ – density of particles at the distance r

$\omega = \frac{1}{R}\sqrt{\frac{N}{\ln N}}$ – a special undamping frequency

Here the mass depends on the velocities of near environment
and in some cases it can change the sign.

2. Planck constant (and fine structure constant)

$$h = \frac{2}{\ln N}\left(\frac{1}{e^2}+\frac{1}{g^2}+\frac{1}{f^2}\right)^{-1}$$

where e^2 – constant of electromagnetic interaction
g^2 – constant of strong interaction
f^2 – constant of fundamental (quark's) interaction

The first approximation to the fine structure constant is $\frac{e^2}{hc} = \frac{2}{\ln N}$

I omit here the dependence of h on the environment. It is similar to written above dependence of m on velocities of near environment.

3. Gravitational constant

$$k = \frac{R^2}{N^{3/2}(e^2+g^2+f^2)}$$

Actually it also depend on environment.

4. Relations between the strengths of basic interactions (at low energies):

$$\frac{km^2}{h} = e^{-\frac{e^2}{h}} \qquad \frac{e^2}{h} = e^{-\frac{g^2}{h}} \qquad \frac{g^2}{h} = e^{-\frac{f^2}{h}}$$

The constant f^2 will be discussed in the next chapter. Here electromagnetism is not something basic, it is derived. The groups of symmetry of particles, the nature and Higgs field are also explained.

5. Collapse of ψ-function in the act of measurement

$$\frac{\partial \psi}{\partial t} = -\omega_0 \cdot \sqrt{N} \cdot \psi$$

6. Frequency of the natural cutoff in quantum field theory

$$\omega = \sqrt{N} \cdot \omega_0$$

7. Dependence of mass on expansion or contraction of the near environment

$$\Delta m = v \cdot \frac{r}{R} \cdot \frac{\rho}{\rho_0} \cdot M_0$$

where
- v – velocity of a uniform expansion or contraction (in the units of the velocity of light)
- r – size of an expanding or contracting volume
- ρ – density of particles in this volume
- R – distance to the horizon
- ρ_0 – density of particles in the universe
- M_0 – mass of the universe (under the horizon)..

8. The condition for macroscopic change of the arrow of causality in a volume with negative temperature (for some frequencies)

$$r\rho T = R\rho_0 T_0$$

where
- r – size of volume
- ρ – density of particles in this volume
- T – negative temperature
- T_0 – the temperature of primordial radiation

.

The most interesting result from two last relations
is prediction of existence of new local universes
with inverted sign of time or causality
on usual scales of space-time and energy.

These local universes
have some very unusual consequences:

9. The influence of our emotions on some chemical reactions is calculated.
With applications for biochemistry.

10. The dependence of some rituals on a person and the time is calculated.
With applications for today's observance.

11. The mechanisms of fortune telling is calculated.
With renewal of ancient practice.

12. Time and effort needed for designing absolute flight is estimated.
This time turns out to be 5-50 years.