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"*Here and Now*" as a Virtual High Energy Particle. Mass of the *"Here and Now"*

The joint point of the Light Cone is shown as a virtual particle. Basing on Heisenberg Uncertainty Principle and Plank's length and time, its energy, momentum and mass are calculated. The calculation brings to superluminal speed of the quasi-particle, which is interpreted here.

In [1] the author supposed that a joint point of the Light Cones, Fig.1, that is *"Here and Now"* point conducts itself as a virtual high energy particle. The base of this assumption was discussed in that work.

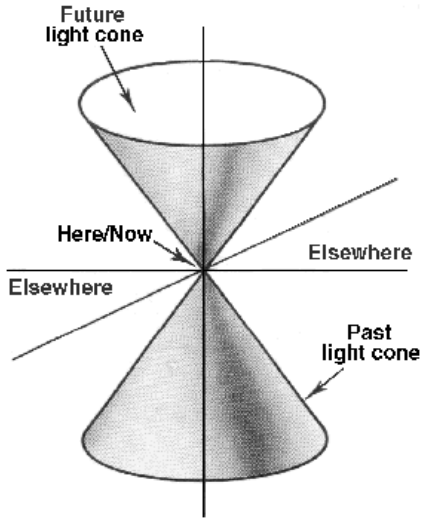

Fig.1. Light Cone with a "Here and *Now"* point.

Indeed, *"Here*" assumes a zero uncertainty on a coordinate in Heisenberg Uncertainty Principle;

$$\Delta x \Delta p \geq \frac{h}{2} \quad (1)$$

"Now" assumes a zero uncertainty on time in other form of this Principle:

$$\Delta E \Delta t \geq \frac{h}{2} \quad (2)$$

We have to understand the zero-uncertainties on the coordinate and time as these values in their physical extremities: Plank's length and time, *1.61599e-35 m* and *1.70863e-43 s,* respectively.

From (2) we get the uncertainty on energy $\Delta E >= 3.88e+9\ J.$

And this is just its minimal value.

By endowing this definition with properties of the particle, we see that the uncertainty on the energy rises to very high values. Consequently, we can assume the high energy of that virtual particle.

Considering the uncertainty as a statistical error in Poisson's statistics, we can define the minimal value of this particle as

$$E_{\min} = (\Delta E)^2 = 1.5e + 19J \quad (3)$$

This implies a huge hidden energy of Physical Vacuum, incompatible with anthrop-scale at such abnormal energy of just one point.

A pale manifestation of this energy was observed in Casimir Effect experiment [2].

As the uncertainty of the momentum Δp is concerned, according to (1), we get $\Delta p >= 20$ *kg*m/s.*
This value looks surprisingly small.

From here, the minimal momentum of "*Here and Now"* is

$$p_{\min} = (\Delta p)^2 = 4.0e + 2kgm/s \quad (4)$$

The minimal mass of *"Here and Now"* is

$$m_{\min} = \frac{p_{\min}^2}{2E_{\min}} = 5.3e - 15kg \quad (5)$$

Although the "*Here and Now"* looks much more massive than the electron, the considerable question rises: how the particle with such a small mass has such an abnormal energy? The answer is its speed v.

$$v_{\min} = \frac{p_{\min}}{m_{\min}} = 0.75e + 13m/s \quad (6)$$

The speed of the "*Here and Now"* exceeds that of light.
Which does not look surprising: **this quasi-particle belongs both to subluminal and superluminal domains,** as it follows from the Fig.1.
So, this particle has features of real and imaginable simultaneously. The real component is an accessory of our subluminal world. The imaginable component can be a base of non-linear phenomena like a violation of a *cause and effect*, which really takes place in reality [3,4].

As it follows from (5), the "*Here and Now"* can contain certain number of elemental particles, having a lesser mass, which can compose some mini-structure.
Electric neutrality is an important property of *"Here and Now"*. According to (5), its mass is enough to contain millions of oppositely charged particles which can statistically neutralize each others.

Literature.

1. Mark Krinker. *Virtuality and Imaging the Future,* http://www.scribd.com/doc/186381680/Virtuality-and-Imaging-the-Future
2. John D. Barrow, *The Book of Nothing*, p.206, Panteon Books, New York, 2000.
3. M. Krinker, A. Goyhadosh. *Role of de Broglie Waves On Origination of Non-Linear Phenomena in Torsion Field and Spin-to-Spin Interaction Experiments,* LISAT-2014, IEEE Explore.
4. V.A. Polikarpov. Non-Local Interaction in Context of the Temporal Feedback Theory, Journal of Unconventional ScienceNo.3, pp. 18-22, 2014 (in Russian).