Mathematical Foundations of Biopsychology - Part II

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In analogy to the described neuronal assemblies (A_n), we can postulate sets of synchronized Microvita ($अ_m$), producing and annihilating the appropriate quasiparticles at/for a defined frequency (μ) and time (t).
In short we can write:

$$अ_m = (अ_1, अ_2, ... अ_m)^t_\mu$$

Now, regarding the proposed quantum Zeno effect, the duration of the synchronized state (t) should equal the time of observation (T); and the frequency of the quasiparticle production and annihilation (μ) should be the number of measurements (N) divided by T. Consequently, we can write:

$$अ_m = (अ_1, अ_2, ... अ_m)^T_{N/T}$$

and then, the survival probability after N measurements is:

$$P^N(T) = (1 - T^2 / N^2 \tau_z^2)^N$$

with $\tau_z = 1 / \Delta H$ (Zeno time factor) (1, 2).

Hence, the survival probability $P^N(T)$ heavily depends on the size of the Zeno time factor τ_z - a factor representing the system's susceptibility to the quantum Zeno effect.

Thereupon, the statement holds that the survival probability is high ($P^N(T) > 0{,}9$), if $\tau_z > 0{,}35$ and $N_u \geq 100$ per unit time interval ($T_u = 1$). In such cases, the time of observation (T) approximates the duration (D) of the neuronal assembly's activated state ($T \rightarrow D$).

In other words: If the observation stops, the activated state of the neuronal assembly is likely to end, which means that the state of a neuronal assembly can be controlled by a set of Microvita ($अ_m$), executing the quantum Zeno effect.

Remarkably, in this setting, the many-body problem of neuronal assemblies is hidden in the size of the Zeno time factor (τ_z) - a factor which could be determined experimentally. And by implication, an activated neuronal assembly would be confirmed as an unstable quantum system susceptible to the quantum Zeno effect, if a Zeno time factor > 0,35 could be measured.

(1) D. Georgiev, Mind Efforts, Quantum Zeno Effect and Environmental Decoherence. NeuroQuantology, Volume 10, Issue 3, p. 374 (2012)
(2) Simple explanation of Quantum Zeno Effect