

# Information Field and Physical Noise Generator Entanglement

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## Abstract

In experiments with physical noise generators based on electronic or photonic quantum events, significant deviations from random distributions have been repeatedly observed. To explain these effects, intention-based interactions between consciousness and mind with physical random processes have been suggested, either being caused by individual minds or by a proposed global mind. As these explanations involve physically undefined objects such as “mind” and “consciousness”, an explanatory model based on the concept of an information field is given herein, based on the concept of generalized quantum entanglement, including the entanglement of physical noise processes with information fields and an analogy to quantum teleportation. In addition, the non-random hypothesis of using such a physical noise generator in capturing qualitative characteristics of individuals is tested in a randomized controlled study with 100 participants.

## Keywords

Entanglement, Physical Noise Generator, Information Field, Observer Effect, Quantum Teleportation, Consciousness, Quantum Information

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## 1. Information as the Most Fundamental Reality

According to quantum physicists like C.F.V. Weizsäcker, T. Görnitz and A. Zeilinger, information is the most fundamental physical category in the universe. In a more orthodox approach, it has to be recognized as the third category next to matter and energy, so that a complete description of physical reality is composed of matter, energy and information, each related to and transformable into the other two. Just as Einstein developed an equation for the relation of matter and energy, C.F.V. Weizsäcker [1] calculated the equivalence of matter and informa-

tion. Th. Görnitz *et al.* [2] developed the theory of absolute quantum information (AQI), which he considers to be the most fundamental category of physical reality. Energy and matter are derived from the dynamics of AQI. Zeilinger [3] also consider information to be the most fundamental unit of reality from which matter and energy emerge due to the dynamics of quantum theory. Görnitz [4] holds that fundamental information is without any meaning for anything, so he denies any subject-object relationship on the fundamental level of physics, as such a relationship would be essentially needed to define meaning in the context of an objectifying theory; for him, living entities are information processing systems that generate meaning.

## 2. The Emergence of Meaning

Meaning is reflection [5], and reflection requires the distinction of subject and object, or in a more fundamental sense at least the inherent referentiality of a subject to itself. The meaning of information emerges in the information processing dynamics of a living entity [6]. Living entities are self-referential units, constantly reflecting on their environment. In such a dynamic process, a subject-object relationship emerges, including the self-referential relationship of the subject to itself. Both relationships are intrinsically and inseparably connected to each other in the dynamics of a living entity. For the living entity the information about its environment and about itself contain meaning. In this way, living entities generate information with meaning, termed active information by David Bohm [7], whose model of an implicate order as an underlying field of information behind energetic and material processes also recognizes meaning as an essential property of information. Meaning emerges from information through the dynamics of a self-referential process (a living system).

## 3. The Information Field

According to Tononi, consciousness emerges from the information processing dynamics of a brain if this process possesses a sufficient amount of informational integration [8]. This parameter Phi is defined by Tononi as a balance of integration and differentiation [9]. Meaningful information in relation to the conscious and unconscious dynamics of a living entity is defined in this paper as the information field of the living entity. Henry Stapp describes the information field as consisting of intrinsic unities of mind and matter [10]. The information field manifests itself on the material and energetic level as quantum entanglement of particles and states of complex systems. They indicate the deeper levels of interconnectedness on the informational level. Meaning of information thus manifests itself as quantum entanglement of a system, both internally and externally [11]. The internal entanglement establishes the unity of the living entity in itself as a subject and an object for itself, whereas the external entanglements connect the system with the environment. The self-referentiality and self-organizing properties of the information field depend on those double dynamics of self-referen-

tiality and the relation to each other.

#### 4. The Physical and Semantic Vacuum

The Russian scientist and philosopher V.V. Nalimov [12] proposes a semantic vacuum as the field of all potential meaning entangled with the physical vacuum. The lowest energy states of the physical vacuum can entangle with specific states of meaning of the semantic vacuum. In this way, complex configurations of both kinds of vacuum can entangle with those of the other forming elements of the information field. The lowest energy states of the physical vacuum are represented in the organic living matter as long-range correlations and coherent domains of water and matter with decreased entropy [13]. The ordering influence of quantum vacuum states is generally shown in the decrease of entropy in a system otherwise dominated by quantum fluctuations.

In a recent paper M. Bukhari postulates a similar hypothesis regarding an information field underlying even quantum fields [14]. Herein quanta of information entangle with quanta of the electromagnetic field, guiding their interaction and the creation and annihilation of particle/antiparticle pairs from the quantum vacuum. The information field consists of quanta, which group information into meaningful words, consisting of  $n$  elements of weighted information contents. Bukhari proposes measurement processes to distinguish this kind of fundamental quanta of meaningful information from thermal and systemic noise. By assigning a fundamental energy to information quanta he derives a Hamiltonian of the complete quantum system which consists of the known part from the electromagnetic field, a part from the scalar information field and a third part for the interaction of the electromagnetic and information fields. Like Nalimov, Bukhari proposes an entanglement between the orthodox states of the quantum vacuum and the semantic level of the underlying information field on a common topological and geometrical basis.

#### 5. The Information-Field in the Pauli-Jung Dialogue

David Bohm's idea of implicate order appears to be similar to Wolfgang Pauli's and C. G. Jung's concept of the unified psycho-physical or psychoid reality. Pauli and Jung assumed that individual consciousness is able to enter a relation with this implicate order. By such an act of consciousness, directed to the unified psychophysical reality, the implicate order could unfold into the physical and psychological reality [15].

As we see it, the information field is the unified psycho-physical reality before it splits into matter and psyche. If the individual consciousness is directed towards this reality (the information field, as information is the hidden third behind matter and psyche), this implicate order (David Bohm's term for the holomovement or unified reality) explicates or unfolds. In an information field analysis the individual consciousness of the user and the client are directed towards the information field. The quantum process as the link between the informa-

tional, physical and psychological realities brings out meaningful resonances from the information field and can also resonate them back. Pauli envisioned the radioactive decay, which is a specific case of a quantum process (which we replace by a physical noise generator<sup>1</sup>) to be the link between these three realities. In this way, analysis and harmonization of the information field can be considered to be the un- and enfolding of the implicate through a quantum noise process directed by intentional and attentional consciousness towards the implicate order (information field or unified psycho-physical reality).

Pauli and Jung call the elements of the unified psycho-physical reality psychoid archetypes [16]. Jung states “that it manifests itself not only psychically-subjectively but also physically-objectively.” Further, the psychoid archetype is an attribute of natural numbers and of synchronicity, since in both there is a quantitative outer aspect and a qualitative-symbolic inner one [16] [17].

The psychoid archetype mentioned here by Pauli is the unified psycho-physical reality which we call information field (Bohm’s implicate order). This information field is attributed to natural numbers (frequencies) and synchronicities. This world cannot be directly observed, but through quantum processes and synchronicities some aspects of it can be explicated or unfolded. The enfolding of meaning into the implication can occur in the opposite direction by the same means. The mentioned numbers can refer to the tension between the psychic and the physical, and its energy can be represented by frequencies.

Synchronicities between the actual situation of a client in an information field analysis may manifest themselves through a physical random process that evaluates the resonance of a certain meaning contained in a list of information patterns. In the same way, the physical noise process may conversely serve to establish resonance between a certain meaning in an optimization list with the underlying information field.

According to Remo Roth, synchronicity is the transformation of psychic energy into psycho-physical energy and its retransformation into psychic energy of a higher order. This means that in a spontaneous, a causal moment, the meaning of synchronicity is being understood. This corresponds to the analysis of the information field and its observation by the practitioner of the system. The other process consists of a transformation of outer physical energy into matter-psyche and its retransformation into outer physical energy of a higher order. It creates a state of higher coherence and wellbeing. This corresponds to

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<sup>1</sup>In this paper we are discussing an information field analysis and harmonization system in which a physical noise generator (PNG) evaluates the resonances of information patterns contained in a list (words and symbols) by uploading them to the ram of the computer one by one and simultaneously measuring the change of entropy of the noise. The strongest decrease of entropy indicates a relevance of the respective resonance. A high relevance indicates that the respective information pattern is present in the information field of the analyzed person. In the reversed direction uploading a certain information pattern into the ram of the computer while simultaneously observing the noise of the PNG intends to harmonize the information field of the person. In both directions the PNG is considered to be the interface of the information field interaction through the quantum-entanglement.

the harmonizing effect of the information field.

If we become conscious of the possibility of such processes—unique inner quantum leaps—and allow their spontaneous emergence in a state of intentionless relaxed consciousness, they will act in a constructive manner.

The above dual processes can in fact be seen as self-reproducing mirroring processes, in which in the case of synchronicity, higher meaning, higher quality of mind/spirit and, in the physical case, matter/energy of higher quality, subtle body or the harmonizing essence for disturbances are created. These are the two directions of the information field process, analysis and harmonization.

The quantum process of a physical noise generator is the interface between the three levels of psychological, physical and information (matter-psyche) reality.

In this way, the functioning of information field analysis and harmonization can be traced back to the content and results of the Pauli-Jung dialogue, which are also much discussed in the scientific community. According to their common insight there is a psycho-physical unity reality, the information field, which unfolds as implicate order into the explication when the consciousness is directed towards the information field in the right way. This happens through our descriptions and trainings, through the user and the user's focus. The process has two directions because it is a twin process: On one side, the user's intention and question resonates with the information field (through the synchronicity mediating quantum noise) and then brings back insights from the information field (analysis, awareness). On the other hand, the same noise process resonates an information pattern with the information field, which then appears as a state of higher order or higher coherence in the client.

## 6. Physical Noise Generator Entanglement

In experiments with physical noise generators based on electronic or photonic quantum events, significant deviations from random distributions have been repeatedly observed [18] [19] [20] [21]. Here we are following the hypothesis that physical noise generators based on quantum effects can be entangled with states of the physical vacuum corresponding to elements of the information field [13] and also with organisms as a whole by the intention of a conscious observer [22]. The renowned quantum theorist Henry Stapp suggested an extension of quantum theory to model interaction between the conscious intention of an observer with correlated behavior of physical noise generators [23]. For this purpose, Stapp uses a non-linear generalization of quantum theory developed by S. Weinberg [24] to explain the influence of intentional brain states on the probabilities related to the collapse of the quantum mechanical wave function of the rest of the universe.

“However, a generalization of Weinberg's nonlinear quantum mechanics allows the probabilities for the possible reductions of the state of the brain of the observer to be biased, relative to those predicted by orthodox quantum theory,

by features of the state of the brain of the conscious observer [23].”

In this paper we generalize this approach by assuming the conscious intent of an observer to non-locally correlate (quantum entangle) a random quantum process to a specified element of the information field. In the quoted paper, Stapp argues that in nature biological organisms might developed in such a way, that they exploit the potential bias in the non-linear behavior of quantum systems in order to allow consciousness to influence physical events by intention. This kind of consciousness-matter interactions are supported by the formalism of quantum theory if the Hamiltonian function is allowed to be unreal (non-zero imaginary part).

Indications for this hypothesis are given by the experiments of R. Jahn and B. Dunne at the PEAR lab [19] and the Global Consciousness Project by R. Nelson. In those historic experiments physical noise generator data correlate significantly with mental, emotional and intention-based events [25]. Roger Nelson describes the information field to be a field like extended background interface connecting consciousness and the quantum events which are underlying a physical noise generator due to information being their common language [26].

Literature has related this effect to a generalized version of entanglement as described by Walach [27] and Vitiello [28]. The influence of conscious intention and attention on physical and neurological processes has also been proposed by H. Stapp *et al.* [29], J.C. Eccles and F. Beck [30].

A paired double generalized entanglement of a quantum physical noise generator could cause a correlation of the emergence of meaningful quantum vacuum information (information field) with the decrease of entropy in the physical noise generator, correlated to the decrease of coherence in a quantum entangled organism.

## 7. Resonance Analysis in the Information Field

Herein the information field of a human being has been defined as the sum total of the internal and external generalized quantum entanglements. This acts as a counterpart to the global information field, which contains the quantum entangled information fields of all beings and objects [11].

- Roger Nelson calls this Global Consciousness [31] [32];
- Rupert Sheldrake calls it the Morphic Field [33];
- Burkhard Heim called it the trans dimensions x5 and x6 [34];
- David Bohm refers to it as the Field of Hidden Variables, the Implicate Order and Quantum Wholeness [35].

More fundamentally, the global information field is referred to by:

- Thomas Görnitz, the level of the Absolute Quantum Information, AQI;
- Anton Zeilinger [3], the Level of Pure Quantum Information.

Concluding the approaches of these scientists, the global information field guides the individual information fields in the process of evolution [36] and contains the blueprint of the specific organism in its fully functional original

form<sup>2</sup> [37].

In this paper a concept is studied in which quantum events-based noise generators [20] are considered to find resonances of a defined set of informational patterns with the bioenergetic field of a person. The bioenergetic field corresponds to the projection of the quantum vacuum into the coherent quantum structure of water in an organism. The dipole waves of water are organized by dipole-waver-quanta, which condensate as lowest energy states in the quantum vacuum. The molecular structure of the organism is organized within this bioenergetic field resp. coherent quantum domain of water [38]. To find the resonances of informational patterns with the bioenergetic field, an algorithm and a database, containing sets of informational patterns such as different herbs, remedies or frequencies, are applied to test their resonances with the bioenergetic system of the person in order to harmonize it. The resonance is observed by measuring the changes of entropy (order) of the quantum noise signal [39] during the time period of addressing a specific information pattern by uploading it to the *ram memory* of the used hardware system. According to Roger Nelson's and Robert Jahn's conclusions, the entropy of the quantum noise generator reacts on the context of meaning by increased coherence. Therefore an entropy decrease indicates a higher resonance with the bioenergetic field of a certain informational pattern [39]. The underlying intention is to find those resonances which can increase the coherence of the whole organism (the bioenergetic state of the person). According to the Weak Quantum Theory [27], the underlying meaning of the system—amplified by the individual intention of the user—causes the quantum entanglement of

- the physical noise generator (A);
- with the bioenergetic field (B);
- the individual information field (C); and
- the informational pattern ( $\rho_i$ ), contained in the ram memory of the hardware.

Their paired quantum entanglement results in a systematic information transfer of the respective components to project the original intention and the meaning of the informational pattern through the noise generator. This pattern is confirmed by Roger Nelson [32] referring to David Bohm's theory of Quantum Wholeness that stresses the importance of intention for information transfer [35]. In this model a healing intent can be available as an information pattern possessing nonlocal, global extent, providing the meaning and hence the resonant channel through which the information becomes active.

In this way resonance analysis is possible in the same way the informational pattern can quantum entangle to balance the individual information field.

<sup>2</sup>Robert Gilman p. 32: "Morphogenetic fields carry information only (no energy) and are available throughout time and space without any loss of intensity after they have been created. They are created by the patterns of physical forms (including such things as crystals as well as biological systems). They help guide the formation of later similar systems. And finally, a newly forming system 'tunes into' a previous system by having within it a 'seed' that resonates with a similar seed in the earlier form."

The following figure (Figure 1) shows the four components of the global system:

This process has two functional directions:

- 1) The first direction is the analysis of the resonance of individual information patterns with the bioenergetic field of the user.
- 2) The second direction is using the complex system of quantum entanglements to synchronize the individual information field and the quantum noise [40], which again is quantum entangled with the bioenergetic field of the person, using the observation and display of the specific information patterns as a classical way of information transfer.

In this way a transfer of information from the individual information field to the bioenergetic field is enabled in analogy to the information transmission in the standard form of quantum teleportation. Quantum teleportation is used here as an analogy for the information exchange between the information field and the bioenergetic field of a living being.

### 8. Double Entanglement in Quantum Teleportation

The basic transmission path of quantum teleportation in a simplified form [41] consists of the two photons, A and B, which are entangled by a quantum process. The bioenergetic field (B) of the user and the physical noise generator (A) are quantum entangled in a generalized sense. This entanglement corresponds to a

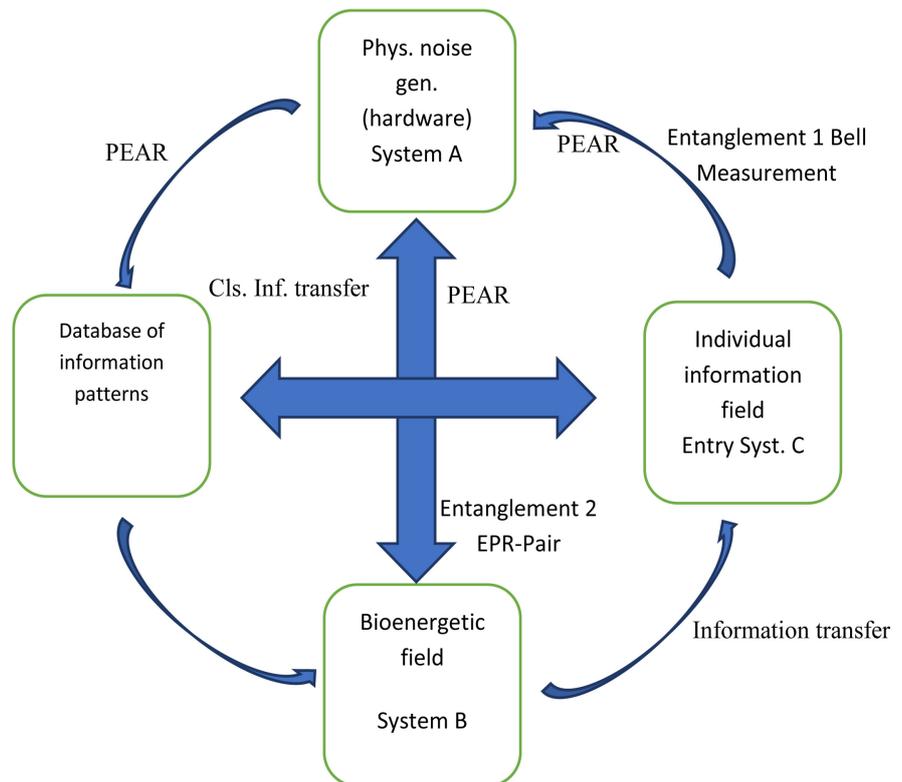


Figure 1. Four components with WQT entanglement relations (PEAR refers to the specific type of quantum entanglement discovered by the PEAR lab experiments).

generalized PEAR effect [42].

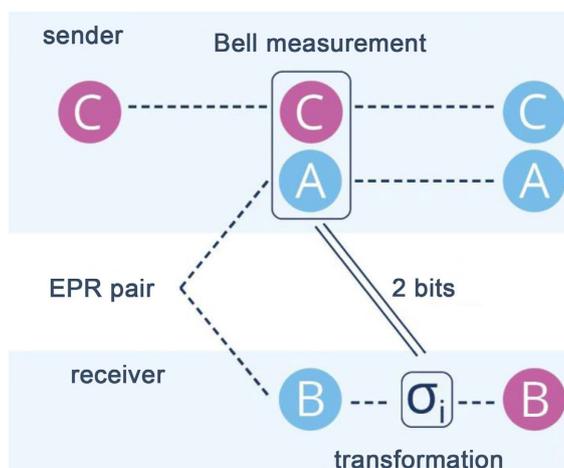
- if the photon C is entangled with photon A by a Bell measurement;
- the quantum state of photon C is transferred to photon B;
- this is only effectively accomplished when information ( $\rho_i$ ) about the Bell measurement is transferred to photon B via a classical channel [43].

A Bell measurement does not provide information about the individual quantum state of the two photons A and C, but provides information about the Bell state containing information about the global state of both photons as a whole quantum object. Here, parts of the information about the individual photons remain hidden. To recover the information of the original photon C during a measurement of photon B, the information about the Bell state of the A-C system must be transferred in the classical way ( $\rho_i$ ) to decode photon B. In the application of this paper, this is achieved by making the results of the information field analysis potentially available to the attentive user of the system (Figure 2 and Figure 3).

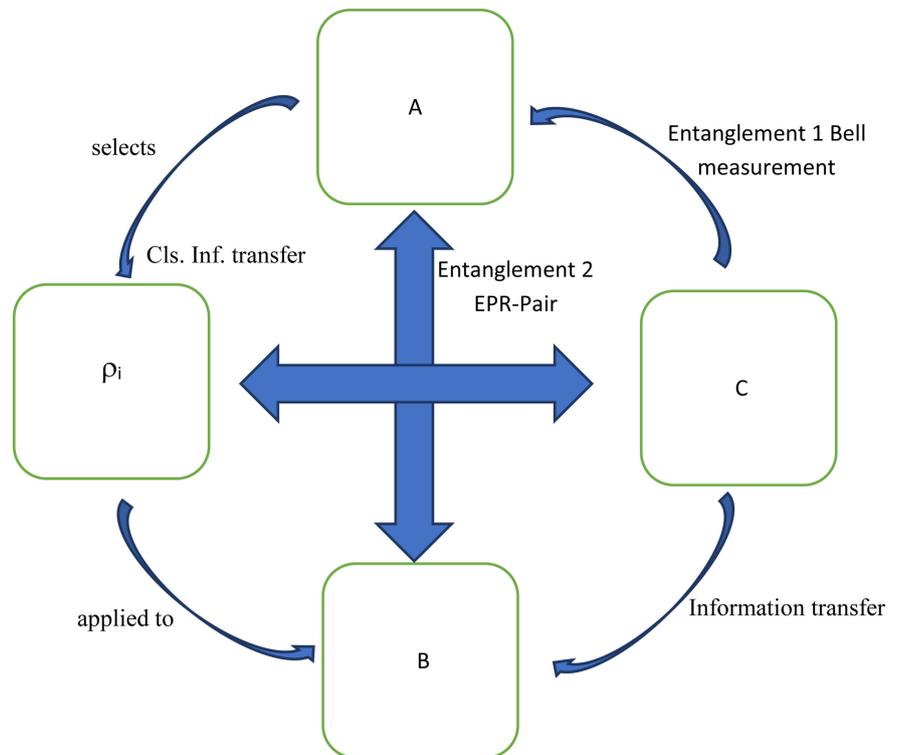
This second process is also directed by the quantum entangled intentions of the user and the system. This quadrupole of entangled components of one global system is structurally similar to the therapeutic square [44] and to the famous quadrupoles developed by Carl Gustav Jung and the Physics Nobel Laurate Wolfgang Pauli [45] to formalize the connection of physics and psychology, or matter and mind.

The information field being able to explain the effects which are observed in this kind of quantum entangled holistic systems is described by Robert Nelson [32], using the terms “zero-point field” (information field) and “quantum connectivity” (quantum entanglement). He brought consciousness into the picture, playing an effective role, suggesting that we, as observers, are a necessary component in the determination of physical reality.

Roger Nelson also concludes that generalized quantum entanglement can serve as a basis for information transfer between



**Figure 2.** Principle of quantum teleportation based on double quantum entanglement.



**Figure 3.** Principle of quantum teleportation in the quadrupole shape.

- an individual;
- a number of persons;
- a physical system; and
- contents of consciousness like individual intention (meaning) and the possibility of intentional effects independent of direct material causation.

Atoms and molecules come together in strong covalent bonds. They lose their individuality, forming a larger unit similar to physical systems or individuals forming a larger global system, characterized by additional information, not contained in the single part of the system. In such a coherent system, the formerly individual parts seem to be quantum entangled so that the additional information can manifest simultaneously in its components [19] [46]. The additional global information can be defined as the information field of the larger system, expressing the meaning of the larger bonded system.

Roger Nelson repeatedly states that information (present non-locally, everywhere in the nonlocal information field) is activated locally by meaning. Meaning refers to a content of mind either in the individual or in the global consciousness, which in our context is called the intention, consisting of the entangled individual intention and the meaning of the complete system. Intention either implies meaning or is the active psychological counterpart of meaning [20]. Introducing meaning into the scientific vocabulary and methodology will be a next step of its evolution towards understanding the human being and the universe in a more holistic and relevant way.

## 9. A Test of the Non-Random Hypothesis

Using an equally constructed information field system based on the formerly described resonance analysis with a physical random process based on white noise, the non-random hypothesis was tested with 100 participants in a randomized controlled trial. With one hundred healthy subjects who reported their personal problems in a survey, the physical noise generator was applied to select three organs each that were bioenergetically related to these problems. This so-called organ coherence analysis is used to select those organs out of 48 options whose bioenergetic field shows the strongest deviation from equilibrium. In this way, three organ fields are related for each participant to each of the 100 self-described issues.

An uninvolved physician trained in western and traditional Chinese medicine (TCM) was asked to assign three of these 48 organs to the 100 self-described issues that were related to them according to bioenergetic understanding. Finally, the two lists (the analysis of the three organs with the noise generator and the assignment of the TCM physician to the same self-described problems of the 100 individuals) were compared to verify their correlation and to compare them with the random hypothesis. The random hypothesis is represented by 200 experimental runs, each with 100 random repetitions. None of the 100 data sets had two or three matches, while 17.5% (with a confidence interval of 16.5% to 18.5%) of the simulation runs showed one matching organ.

Of the actual 100 data sets, 25% had one matched organ, which is statistically significantly more than the random match of  $17\% \pm 1\%$ . Of the 16 random trials, only one exceeded a value of 25 (Figure 4).

Considering the various subjective influencing factors, 25% matching of one organ seems to be a good indication towards a meaningful result regarding the bioenergetic background of the described issues. The main subjective influences are:

- Subjective description of personal issues;
- The subjective assignment of 3 organs to each description of an issue according to TCM;

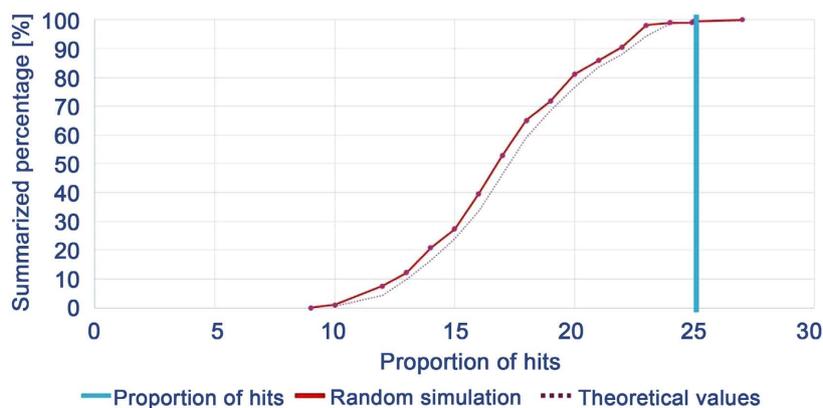


Figure 4. Matching of one organ in 16 trials with 200 repetitions each.

- Each bioenergetic case is individual and can't be objectified in terms of the cause or involved organs;
- In bioenergetics the organs only have semi-objective meanings, as they are referring to psychosomatic and also emotional conditions.

For further assessment of the quality of bioenergetic analysis of the coherence of organ fields with physical noise generators, further trials are necessary and planned. According to Harald Walach's decline theorem [47] a rigid documentation of analysis results based on non-local quantum entanglement leads to the risk of a decreasing effect. For this reason, the modalities of the studies shall be modified constantly in order to avoid a systematic escaping effect. As in real life, as each case is fundamentally different, much higher correlations are expected and reported by practitioners of such analysis systems.

## 10. Conclusion

The concept of an information field, defined as the sum of a system's internal and external generalized quantum entanglements, is well suited for establishing its internal unity and external interconnectedness. Measuring the entropy change of a physical noise generator can be used to connect to a system's information field, which is established by the conscious intent of its operators. In addition, the physical noise generator can be used to transfer contents of the information field to the bioenergetic field of a person.

## Conflicts of Interest

The author is the inventor of the tested information-field system.

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