

The collapse expectations of matter proportion in the quantum cloud theory

Wenjing Qu

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ABSTRACT

Most of metabolic processes are extremely complicated but occur spontaneously and steadily, the essential reason of which may be either a thermodynamic problem or related to some quantum properties. Here, collapse selection is interpreted with an analytical model of energy transfer, from which the concept of quantum cloud is defined as that during undetectable changes of a group of particles between its effective changes, particles are in the superposition of various energy states and the group is named as a

cloud. It is deduced from the interpretation of collapse selection and the notion of matter proportions that cloud collapses have different expectations: active cloud collapses have least-time expectation while passive collapses have matter-proportion expectation.

Key Words: *Quantum superposition; Quantum biology; Quantum zeno effect; Dark matter; Dark energy*

INTRODUCTION

Ten years ago, scientists realized the phenomena of quantum coherence may well be ubiquitous in the natural world [1]. Although evidence suggests that a variety of organisms may metabolize with some quantum properties, the essential relationship between quantum properties and biological phenomena hasn't been found. And recently, extensive research was motivated by the hypothesis that nature used quantum coherences to direct energy transfer, which may be a great foresight [2]. However, this body of work, a cornerstone for the field of quantum biology, rests on the interpretation of small-amplitude oscillations in two-dimensional electronic spectra of photosynthetic complexes, which may not be the core property of coherence in metabolism [3]. Actually, until now, quantum biology seems still a frontier and marginal subject in biology as whether quantum properties participate in general cell metabolism and establish the metabolic order isn't known. To get the answer, we need to explore the nature of life and the nature of matter.

Many scientists believe that the quantities that can't be observed or detected are meaningless, including many quantum scientists. Their reasons are that these quantities can't have an influence on us, and they could hardly be proved. Since the Heisenberg uncertainty principle was put forward, no experiment can refute it substantially. However, if the unobserved quantities will not be studied, we may never know how we exist. Although real physical hidden variables may not exist, some conservation may be beyond the scope of reality. Some virtually hidden variables may affect our world all the time in

quantum changes and cause the cosmological phenomena of dark matter and dark energy.

The analytical model of energy transfer

Although there are maybe still be arguments, many scientists did not believe in action at a distance between bodies, and yet there is no analogous property of which action at a distance is a consequence; that is to say: all unitary energy transfers require particle contact [4]. It is defined that a quantum energy transfer is a point and the matter between two next points is a link. A point can be from one or more links, usually from two a real and a virtual; a link is only from a point. A link is a particle, such as a molecule, an atom, an electron, a photon, etc., or a unit of them, but a particle can be many links or parts of them as a superposition. The probable points from a common particle are named parallel points, which exist for a while after they occur. Parallel points will cause other points until a point is linked to a target point. And then other different-effect parallel points collapse while the series of linked points become real for the target point [5].

Every real point makes an effect on reality. If reality means all the existent changes that will make effects humans and human minds, the target points for reality are the points of mind metabolism, which are objectively existent but are quite different from and can't be considered as subjective consciousness [6].

If a point through a finite number of points is linked to the target points, it is a bright point and all its parallel points collapse. A series

Key Laboratory of Bionic Engineering, Jilin University, Changchun, China

Correspondence: Wenjing Qu, Key Laboratory of Bionic Engineering, Jilin University, Changchun, China. Telephone +8613756171398, email uu002200@163.com

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of linked points from one bright point to another bright point is called a route. A complete route needs to define the initial states of particles.

Heat determination and global linking

According to the relativity theory, no energy transfer could travel faster than light, so if a point is observed directly, it has the most chance to be a bright point. However, a human can't directly see most quantum changes, but the points with significant heat generation or heat transfer may make effects by the target points by thermal radiation [7].

Moreover, one point, such as a point with heat generation or a heat transfer, may establish many links and form many points. Once one of the formed points is detected, there is a route from the initial point to the target points. The process of the initial point is linked to other points and the linked points become more and more is called global linking. Most of the points may not establish a route to the target points or take a long time to establish a route after their occurrence, but they may make a global linking soon, so though they aren't linked to the target points and aren't determined as real, they are difficult to be replaced by their parallel points when we detect them. Therefore, such points that make a global link can be seen as bright points as soon as occurrence and are named definitive points or thermodynamic points, namely, they have some thermodynamic directions or thermodynamic effects. However, not every change has a thermodynamic effect in time.

Quantum cloud

The points that haven't been linked to the target points or definitive points are named dark points. The existent time of dark points on the earth is usually very short, and then they may become bright points or collapse [8].

If a particle is a link from a bright point directly, the energy state of the particle is definite and the particle is a unique and definite particle without parallel links. If a particle is linked or part of links from dark points directly, the energy state of the particle is indefinite and the particle is indefinite. A system or a particle group in which all the particles are indefinite is named a quantum cloud, or a cloud. A unitary cloud is a unit to us or to a specific reality, which has only holistic characteristics, such as whole gravitation, one kind of charge, or a velocity. Any particle, link, or system could be seen as a unitary cloud when there is superposition and no part of them is definite.

Matter proportions: realities in the existence

The object of theoretical research should be objective existence namely absolute existence, but the category of practical research is relative existence, effective existence, or namely reality. Reality is a network of linked and/or coherent routes among existence. While the universe usually means reality for us, herein existence is named the absolute universe.

Suppose a particle in the absolute universe seems like numberless grains. The grains have common characteristics like mass and spin while having different characteristics like locations, velocities, and spin directions. Moreover, the grain can divide into small ones and can be a part of a bigger one. The proportion of the amount of some grains to the total is named matter proportion.

Matter Proportion (M) can be expressed as: $M = P \cdot L$, where M is the proportion of the particle number in a reality to the particle number in the absolute universe; P represents the proportion of the particle

number in a cloud to the particle number in the absolute universe; L represents the proportion of the particle number in a link to the particle number in the cloud. Efficiency brings realities with orders: the least time principle of collapse. An active collapse is an orderly change like atomic decay.

According to the interpretation above, clouds always collapse in the least time to form reality. If the least-time realities have a special result, the special result is the least-time expectation in the absolute universe and the collapse is defined as an active collapse. All active changes, from chemical reactions to nuclear reactions, take the least time to generate definitive points, which are in order and with small matter proportions in the absolute universe.

Take photosynthesis as an example. When a photon is captured by a chloroplast cell, the photon will induce many parallel points, as a part of the parallel points react as photosynthesis while the others turn the photon into heat or make other changes. If the points of photosynthesis always occur, that means the definitive points of photosynthesis are faster than the definitive points of other effects. For another example, several polypeptide macromolecules may generate many parallel points to form different tertiary and quaternary structures of protein. If there is a special one that has a particular function and the function will fastest generate definitive points, the special tertiary and quaternary structures are determined after the function performance. A third example is if every quantum nuclear change is random in a very distant star and the star is close to a cloud to us. In our observation, it is likely to be the brightest possibility. It should be noticed that there couldn't be all collapses active in a reality, so the clouds are bigger and longer the orders more significant and the matter proportions smaller in the absolute universe. The Quantum anti-Zeno effect may be a typical phenomenon of active collapses [9].

Passive collapses and dark clouds

A passive collapse is an induced change like observation. When an observation particle enters a cloud, it collides with any grain of a particle to reflect in equal probability, because the grains have common physical properties and the same chance in any location. Therefore, the collapse results are always complete random, namely with matter-proportion expectation in the absolute universe [10]. The Matter-Proportion Expectation (MPE) can be expressed as:

$$MPE = 1/N \cdot (L_{1st} + L_{2nd} \cdots L_{nlast}),$$

where N represents there are N particles in the cloud; n represents there are n particles that compose the route of the reality in the cloud; number last means the link proportion of the number of particles that last participates in the route. Suppose there are two cloud systems A and B. The first particles from one to the other are all likely in the realities with least-time expectations. However, when the particles from cloud A first arrive at B and induce a return to A; if the return is earlier than the first particles from the realities of B with least-time expectations to reach the target points, cloud B is passively collapsed while cloud A is actively collapsed. Then there is a reality between the two systems cloud A is the active system; cloud B is the passive system. This phenomenon, as passive collapses, the reality is determined with matter-proportion expectation but without least-time

expectation is named as a passive-cloud effect [11]. The Quantum Zeno effect may be a typical phenomenon of the passive-cloud effect since observation will reduce the matter proportion of a particle and the rest of the grains are in a reality with matter-proportion expectation. Because the decayed part of grains may be quite small, the reality is likely without an atomic decay. Furthermore, if observing particles like photons enter a changing system, only if all observations in the entire change progress are in the changing-part reality, the change can occur [12].

Because passive systems almost do not release energy, if there is a third system, it can only receive information from the action but can't receive any information except a holistic effect like gravitation from the passive. What's more, every time particles from the active arrive at the passive may make such an effect. This phenomenon is named the dark-cloud effect. In addition, the passive system is determined by too less information and can still be seen as a cloud with many superposition realities but without a bright and most of orderly part from the view of the third system, so it could be named a dark cloud. If when a dark cloud is formed, atomic structures have already been established, the matter in the dark cloud is the same as us. Dark clouds in the universe the so-called dark matter may be mainly composed of low atomic weight materials, such as hydrogen and helium. And they may be cold and sparse in vast space or maybe some celestial bodies we have never seen before. However, the properties of such a cloud are different from that of the matter in a certain reality. I argue that, from the fundamental principle, there may be no difference between the dark-cloud effect and the quantum Zeno effect. If the dark cloud effect occurred before specific atomic structures were formed, the clouds maybe will have some special potential features when they collapse.

The luminescent asymmetries

Most of the changes, in reality, aren't typical active collapses or passive collapses; they are randomly induced and then collapse in somewhat order. Therefore, thermodynamic phenomena usually conform to statistics. In fact, same-effect quantum realities are always in superposition in our macroscopic reality; when we detect them, they will collapse into a random one. However, statistics results will vary with different rates of passive collapses. For example, in distant space, the statistics will be much more active than the things around us like the quantum anti-Zeno effect. Solar flares can cause many changes in the sun. These changes may make an effect on us, so they collapse randomly. However, if reality can only record flares of some celestial bodies, the changes induced by a flare will be in superposition, and the next flare from the changes will occur in the least time while on the other side of the celestial bodies all the changes induced by the flares are also in superposition but not collapse as flares, which causes an asymmetrical flare of the celestial bodies between the side faced to the earth and the side back against the earth. If flares are seen as changes with enough luminescence, every star has asymmetry to a certain degree. The luminescent asymmetries give forces to make stars accelerate leaving the earth. However, whether the forces are enough to be dark energy needs further studies. In addition, if the periods of flares of a star are close to or longer than the rotation period, the asymmetry will disappear.

REMARKS

Quantum Zeno effect, anti-Zeno effect, and maybe dark matter and dark energy phenomena are typical and fundamental phenomena of cloud collapses. The scope of the target points of mind metabolism is a much more complex problem. Thus, it isn't mature to exactly define parallel universes or many worlds from this research, which doesn't emphasize them at this stage.

However, this theory emphasizes that the existence of parallel universes or many worlds isn't an irrelevant thing to reality, which the existence is the postulate of the theory. And the two different expectations of collapses may be just the reason for the different rules between classical mechanics and quantum mechanics.

The limitation of the theory

This article isn't analyzed in quantum mechanics. Although there may be many reasons and cases, Hugh Everett's many-worlds interpretation gives a possible reason and case for reality splitting.

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