

# Theory of Energy Circulation

## Dirac Sea, energy and mass

By Hidefumi Kubota

### Summary

I propose hypotheses based on the superstring theory, the M-theory<sup>1</sup>, the big bang theory and my theory of the minus world<sup>2</sup> and the mother world<sup>3</sup>. Here I show the existence of Dirac Sea, the circulation of energy and the substance of gravity field by the hypotheses.

### Body

Following two problems exist for the law of energy conservation. The 1st problem is that a naked electric charge has infinite energy. The infinity can be mathematically processed by the renormalization theory. But it is necessary to explain why the infinite energy exists. The 2nd problem is that abandoned heat energy finally goes where. If energy is immortal, abandoned heat energy should have a destination, too, and the destination must be described. I've come to have these questions when studying about the energy of superconductive magnets.

After thinking, I made a hypothesis of the theory of energy circulation. By this hypothesis, above two problems can be explained and a hypothesis about gravitation field is found out. Though I believe that they are rational and right, I cannot explain whole of them in detail. However, I could lead science to their direction and hope to contribute to the development of science.

To solve two problems, the existence of Dirac Sea must be answered yes. At Dirac Sea, they say that "electrons which have negative energy and negative electric charges retrogress in the time". This is supposed to be equal to "electrons which have positive energy and positive electric charges proceeds in the time" according to the interpretation by RP·Feynman and ECG·Stueckelberg. By this interpretation, Dirac Sea is full of positive energy.

Since the sea is full of energy, it is possible to say that infinite energy exists. I think that a negative electric charge at our plus world<sup>2</sup> do the function to put the positive energy of Dirac Sea into our plus world in the form of electric field. As for the energy of electric field, the energy of Dirac Sea is its source. Then, since the energy of Dirac Sea is infinite, the energy of an electric charge at our plus world becomes infinite, too.

Also, a positive electric charge at our plus world does the role to return the energy in the form of electric field into Dirac Sea.

Moreover, I think that the destination of abandoned heat energy at our plus world is Dirac Sea.

However, there are two serious questions about the existence of Dirac Sea. The 1st

question is that time and space might be twisted by the infinite mass of the infinite electrons at Dirac Sea. The 2nd question is that the interaction between electrons at our plus world and countless electrons at Dirac Sea might be caused. That is, that what is denying the infinite negative electric charges of countless electrons.

It is possible to solve the 1st by a hypothesis that Dirac Sea exists at "the mother world"<sup>3</sup>. Our plus world is a membrane of 3 dimensions<sup>1</sup> which exists in the mother world of 5 dimensions.

The membrane at the plus world consists of elementary particles which include Higs particles. Then, it can be thought that Higs particles don't exist at the mother world. Since Higs particles don't exist at the mother world, elementary particles at the mother world don't have mass. Then, electrons at Dirac Sea don't have mass.

The 2nd is solved by a hypothesis that "electrons of negative energy and negative electric charges which retrogress in the time" are almost as many as "electrons of positive energy and positive electric charges which proceeds in the time" at Dirac Sea. It can be thought that these electrons and positive electrons never do pair annihilation like usual matter and antimatter because they have the different character, negative energy vs. positive energy, retrogression of time vs. proceeding of time and have the same meaning of the interpretation. Therefore, the electrons of negative electric charges and the electrons of positive electric charges exist approximately at the same number and become electrically neutral. Then, if the electrons of negative electric charges and the electrons of positive electric charges are being uniformly interspersed, the negative electric charge and the positive electric charge deny each other locally. Moreover, since there is a wall among the worlds, there need not to think about the interaction with electrons at the plus world.

Since electrons at Dirac Sea don't have mass, a following hypothesis about gravity is found out. I think that the sea of electrons with zero mass play a role of gravity field. If the electrons of negative electric charges and the electrons of positive electric charges are supposed to deny their charges each other locally, it can be thought that a positive electron and a negative electron makes a pair and the pairs work as gravity field.

Let's see the process of Big ban according to above hypotheses. By the first phase transition, our plus world and the minus world<sup>2</sup> separate from Dirac Sea (the mother world). Next, the plus world and the minus world are distinguished by the inflation of repulsive force which acts between matter and the antigravity matter ("s"particle).

I hope that verification of these hypotheses by physical theories be done and these hypotheses be more deepened and general theory by verification of experiments.

## **Acknowledgements**

I am grateful to the scientists for their contribution for the development of the physical theory.

## **References and notes**

1. Michio Kaku: PARALLEL WORLDS: A journey through Creation, Higher Dimensions, and the Future of the Cosmos, 2005.
2. Hidefumi Kubota: Road to Star Ocean, <http://se-engine.org/res/p5t1r1.html>
3. Hidefumi Kubota: Theory of Worlds, <http://se-engine.org/res/p5t1s1.html>