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Short Communication

About elementary particles of physics

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Let Ui be a countable family of non-empty sets of ur-elements (non-sets), the negation of the axiom of choice implies that the Cartesian product of the family is empty. For elementary particles, time is a set of ur-elements of the negation of the axiom of choice. That is a basis for the teleportation of the particle. In an experiment, if a particle enters a hole twice from the same side in a lateral time, the second time is perceived at our level as being after the first time while it is not at the level of the particle.

Keywords: Non-empty sets, ur-elements, axiom of choice, teleportation

INTRODUCTION

Shortcut in cosmology

The space of the universe is infinite but the quantity of matter is finite. Space and time are sets of ur-elements of the negation of the mathematical axiom of choice. For an infinite family of non-empty sets, an equivalent of the axiom of choice: A1xA2xA3x... is not an empty set; it can be a set of paths. There is no infinite path. That is why there is a Big Crunch followed by a Big Bang. If the number of particles in the universe is infinite, it is necessarily aleph zero (or more) but there are no aleph zero locations among D locations, D Dedekind cardinal. That time is a set of ur-elements in quantum cosmology which implies that it is in quantum mechanics.

About time and indeterminism in the physics of particles; let Ui be a countable family of non-empty sets of ur-elements (non-sets), the negation of the axiom of choice implies that the Cartesian product of the family is empty. We know from “A philosophical approach to Fermat Last Theorem” in "A philosophy for scientists" Adib Ben Jebara Shield Crest Publishing that only a particular case of the axiom of choice is true, and from "About space and time in quantum mechanics" Adib Ben Jebara Bulletin of Symbolic Logic September 2008, p. 410, we know that the negation of the axiom of choice can be applied to particles. That is a basis for the teleportation of the particle since the particle will have much “time” to move without the time at our level being much.

EXCERPT from “About a time not totally ordered (published in the colloquium brochure WSEAS MCSS’15 Dubai February, 2015): “For elementary particles, time is a set of ur-elements of the negation of the axiom of choice. So, time is not totally ordered and there is a lateral time. In an experiment, if a particle enters a hole twice it must be that it enters again from the same side in a lateral time. The second time is perceived at our level as being after the first time while it is not at the level of the particle. In another experiment, the particle enters two holes at the same time; the lateral time appears to be the same time.”

Mechanics theory has a tendency to progress by introducing more mathematics which may receive industrial applications after some dozens of years. We are no more in probabilistic mechanics, because the 2 coordinates of time are known, the probability of finding the particle in one place is either zero or 1. One has to pay attention to the weak structure of time at the level of elementary particles. It does not matter so much if fundamental indeterminism exist because it will be reduced whenever physics progresses. Heisenberg uncertainty principle can be bypassed. The principle states that the more precisely the position of some particle is determined, the less precisely its speed can be known, and vice versa. That is if we do not know the orthogonal time for the particle but only the time at our level. If we know the orthogonal time, the speed is changed by it and the uncertainty principle with the time at our level does not apply.

Conclusion

Let us notice that Newton first law is partly contradicted: F=0, V constant but the particle does not move indefinitely as there is no infinite path (position not well defined). In the most general case, the orthogonal time is different from one particle to another. In the case of entanglement of 2 particles, the second coordinate of time is used. What if we do not take the second particle away but let it move?

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