SINGULARITIES

**About Fuzzy time- Particle interpretation of Quantum Mechanics (It is not an innocent one!)**

**Version two**

**Frazad Didehvar**

As it is shown in [2], [3], [5], [6], [7], [8] ,[9], [10] by accepting classical logic as a fundamental concepts and a basis for the discussed theories the rational and convenient way to overcome the difficulties of “Unexpected Hanging Paradox” is to consider time as a fuzzy concept. Some similar attempts in a completely different approach are done in [4], nevertheless the Fuzzy instants of time are not computed there and the fuzziness is pointed indirectly. We show that considering time as a fuzzy number and Schrodinger equation in quantum Mechanics leads us firstly to assume the instants of time as Fuzzy Numbers with infinite support and secondly, novel interpretation of Quantum Mechanics so called “Fuzzy time-Particle” interpretation [1], [5],[6],[7].

In [1] we show that this interpretation is completely a fruitful one. So, we dare to propose a new shift in the paradigm and to bring this interpretation up as a substitution of the other interpretations of quantum Mechanics, since it solves more paradoxical points in Physics besides “Unexpected Hanging Paradox” successfully. Here, we show a noteworthy point of “Fuzzy time-Particle” interpretation, about the singularities in Physics.

Considering time as a Fuzzy concept leads us to assume the situations of particles in space as fuzzy concept too, when we compute them. Since any instant of time is a Fuzzy number, in the particle would be in different possible places. Hence, practically the situations of particles are defined in a Fuzzy space-time. In brief, even in the case we do not consider space as a fuzzy concept, the locus of particles would be considered as a Fuzzy number. In the following, we show in this situation, singularities in space- time vanishes.

More exactly, let the locus of a point in a massive substance denoted by (T,x,y,z). For any ,

there is a real number  such that

⃓Ave.density ((T,x,y,z),(T,x,y,z))⃓

Here:

density((T,x,y,z)): The mass density in (T,x,y,z)

Ave.density ((T,x,y,z), : The average mass density in the ball around (T,x,y,z) by radius

Intuitively, the value of density in any point in Fuzzy time-space is near to the average of density in a sufficiently small neighborhood around that point.

Therefore, as a conclusion (T,x,y,z)) is not infinite, otherwise we have infinite massive substance there.

**CONCLUSION:** By considering time as a Fuzzy concept in the new proposed Model of Physics, we have no singularity (In Mathematical sense).

Reference:

1. About Fuzzy time-Particle interpretation of Quantum Mechanics (it is not an innocent one!) version one, Didehvar F

2. A Semantic Situation without Syntax (Non-axiomatizibility of Theories), Didehvar F arxiv: 1506.082214.

3. A Semantic Situation without Syntax (Non-axiomatizibility of Theories), Didehvar F, Handbook of the 5thWorld Congress and School on Universal Logic, June 20-30, 2015, 307

4. Entanglement of quantum clocks through gravity, E. C. Ruiz, F. G., and Č. Brukner, PNAS March 21, 2017

5.“Fuzzy time”, a Solution of Unexpected Hanging Paradox (a Fuzzy interpretation of Quantum Mechanics), Didehvar F

6. “Fuzzy time”, from paradox to paradox, 50th Iranian Mathematics Conference (Shiraz), Sep 11, 2019 Didehvar F

7. “Fuzzy time”, from paradox to paradox (Does it solve the contradiction between Quantum Mechanics & General Relativity?), Didehvar F,

8. Is Classical Mathematics Appropriate for Theory of Computation?, Didehvar F,Handbook of the 6thWorld Congress and School on Universal Logic, June 16-26, 2018, 5106.

9. Is Classical Mathematics Appropriate for Theory of Computation?, Didehvar F, Vixra:1705.0226

10. Is Classical Mathematics Appropriate for Theory of Computation?, Didehvar F. Philpaper