SINGULARITIES

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

**Version two**

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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 $t\_{0} $is a Fuzzy number, in $t\_{0}$ 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 $\overbar{l}$(T,x,y,z). For any $ε>0$,

there is a real number $r\_{ε,l}$ such that

 ⃓Ave.density ($\overbar{l}$(T,x,y,z),$ r\_{ε,l})-density(\overbar{l}$(T,x,y,z))⃓$<ε$

Here:

density($\overline{l}$(T,x,y,z)): The mass density in $\overline{l}$(T,x,y,z)

Ave.density ($\overbar{l}$(T,x,y,z),$ r\_{ε,l})$ : The average mass density in the ball around $\overbar{l}$(T,x,y,z) by radius $r\_{ε,l} $

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 $density(\overbar{l}$(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).

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