Why Fuzzy Time-Particle interpretation but not Fuzzy (Space,Time)-Particle?

Why Time is Asymmetrical?

("Computing Fuzzy Time Function's" Results)

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Abstract In [1] the fuzzy function associated to the instants of time is computed, as it is introduced in Fuzzy Time-Particle interpretation of Quantum Mechanics. Here, we show this computation concludes time is asymmetrical. Also, some other results of [1] are discussed.

Keywords Arrow of Time, Schrodinger Equation, Dirac Equation, linear system, Fuzzy time, Quantum Mechanics

Introduction

In [1], from considering time as a fuzzy concept we reach to the following equation

$$X(t,x,y,z) = \int_{t'=-\infty}^{t'=\infty}\int_{z'=-\infty}^{z'=\infty}\int_{y'=-\infty}^{y'=\infty}\int_{x'=-\infty}^{x'=\infty} X(t'-t,x'-x,y'-y,z' - z)\, f(t',x',y',z')\, dt'dx'dy'dz'$$

$X(t,x,y,z)$

Is the distribution which is derived from the wave function either in Dirac equation or Schrodinger equation.

In our argument, we considered

$$f(t',x',y',z')$$

As fuzzy time. But Mathematically, all of the above formulas are symmetric respect to time (t) and space dimensions (x,y,z). So, why we don't consider Function f in above, associate to dimension x and evolution in this direction, instead of time. More generally speaking, why don't we consider function f as Fuzzy Time-Space function and not simply Fuzzy Time function. In below, we explain the reason.

In [1], we reach a linear system of equations as the central and much important result. This linear system consists of sixteen variables and sixteen equations. These variables are

$\alpha, \beta, \gamma, \Theta \in \{0,1\}$

$$f\left((-1)^{\alpha}ct, (-1)^{\beta}cx, (-1)^{\gamma}cy, (-1)^{\theta}cz\right)$$

Fuzzy Time and the impacts of it on Science [5]

If fuzzy time function be symmetric respect to abstract time, we have at most 8 variables in 16 equations, since

$$f\left(c,(-1)^{\beta}cx,(-1)^{\gamma}cy,(-1)^{\theta}cz\right)$$

$$=f\left(-ct,(-1)^{\beta}cx,(-1)^{\gamma}cy,(-1)^{\theta}cz\right)$$

So, f is asymmetric respect to t, hence time (Real Time) is asymmetric, as we expect in Physics.

Not only this, but also f is asymmetric respect to x,y,z. Here, the question which arise is:

Why don't we consider the dimension x (or any other space dimensions) instead of t?

The answer is: if we consider f as a function related x instead of t, since the Physical laws are symmetrical respect to the direction of x, f should be symmetric to x, which is not true.

So, although all the functions seem symmetrical respect to time and three direction of space, nevertheless f is a function associated to time. This is the first point.

As we see in [2], we are able to find the fuzzy time function experimentally, if our theoretical result from one side and experimental one from the other side, support each other, since the experiment is about time f would be a function associated to time (An experimental proof). It concludes, as we see in above time is asymmetric. If the experiments confirm the results are valid, this provides a solution to arrow of time based on an interpretation of Quantum Mechanics. (The second point)

The third one, is about Real time. "Real Time" associate to any particle, is related to the system we consider for that Particle. So, in any two systems which in them the particle takes parts, we have two different real time. In the first glance, this seems strange, but we have strange and contra intuitive experiments in Quantum Mechanics which support it, like "Young's double Slit Experiments". We have two experiments here, with two different results, being wave or particle, when the beam of light is in two different situations. In Fuzzy time-Particle interpretation of Quantum Mechanics, we describe it as two different "Real Time's" associated to two different systems.

Conclusion. As we see in above, time is necessarily a fuzzy concept but fuzziness of space dimensions remains as a possibility. We had a similar situation in [3]. In brief, f(t,x,y,z) is about fuzziness of time.

Refrences

1.F.Didehvar, Computing Fuzzy Time Function, 2022, Philpaper

2. F.Didehvar, Does accepting Fuzzy Time-Particle interpretation of Quantum Mechanics, refute the other interpretations? (Is fuzziness of time checkable experimentally?), 2021, Philpaper

3. F.Didehvar, Fuzzy Space?, 2021, Philpaper

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