**Fuzzy time and the possible impacts of it on science [11]**

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**Abstract.** This paper is continuation of [1]. In [1], we introduce

. Here, we prove as it was reported in [2], [3]. In [4], [5], [6] the author shows

How fuzzy time is possible in the real Physical world.

**Keywords.**  , , Fuzzy time

**Introduction**

Throughout this paper, we prove To do that, firstly we introduce the definition of . This definition is based on the practical situation of computation in the real world. In the real world and real computational activities, we face finite number of efficient computable functions which work in a limited time. Inspired by this fact and considering time as a fuzzy concept, we have the definition. By employing this definition, we reach to a world of computation, in which our time is non-classical and fuzzy, so we have random generations, but the set of all computations (our computational world) is the same as we have in classical time (). The result will be and Throughout this article, we discuss around the impact of on .

**Section 1 ,**

As we say in above the central concept of the proof is which is inspired by the real computational activities in the real world.

A is a triple in which is a finite set. is a finite set of polynomial Computable Functions. is associated fuzzy function, is a closed interval in real line as the domain of

Chain of s:

For two is a continuation of if

1

2..

For two is a restrict continuation of if

1

2..

of s (is a chain iff for each i, is continuation of and

of s is a restrict chain iff for each i, is restrict continuation of , and

A complete restrict chain, is a restrict chain which all polynomial computable functions contribute in it.

To each , we associate , ,…, ,… as following:

In , we have interval of abstract time , ( and as fuzzy time function associated to

, ,…, is the list of “Polynomial time Computable Functions” associated to .

For any, in the abstract time interval , ( and as fuzzy time function associated to At the time we will have a set of configurations of associated Turing Machines of computing , ,…,in the interval **,** Since time is considered fuzzy, this set varies by computation of the equivalent Turing machines with the same input.Conequenly, we have a set of possible sets of configurations instead of one set. Each of these sets could be considered as a set of possible worlds associated to .By above, we define as

In above, is the set of these possible worlds. If time is classical time, the cardinality of is equal to one.

The point is, at least one of these worlds is the same as when time is classical time. We rename it as .

(It is remarkable, for , if and , it is not essential that ).

More exactly, in any transition from a configuration to configuration by fuzzy time,

There is a positive probability the process of transition acts exactly like classical time case. So, in the finite set of transitions of computational activities in , there is a positive probability the whole process of computation acts as it acts in the classical time case. This provides as our desired element of which acts similar to the classical time case.

Now consider In this world the time is fuzzy by function but the functions act as classical time.

In a specific example, of a complete restrict chain (\*), let

1. ,,
2. For the polynomial time computable functions let the computable functions in be the set

In this example we define as above again and consider is a world which the associated Polynomial Computable functions to it is set , with non-classical Fuzzy time. The fuzziness of time, concludes the existence of random generator[1],[3]. Consequently, this world is equivalent to the classical time world with random generator. Therefore, we have so we have [1].

The first point is: All of the above discussions are true for “restrict chains” and “chains” instead of

Complete restrict chain.

The second point is about PH. Seemingly, independent of the oracle we use, the supposed random generator remains random generator. In this case, analogues to the above argument

repeat in all levels of hierarchy, Consequently, the hierarchy never collapse. .

So,

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In the above conclusion, some are theorems in but we need and existence

of a model for It is noticeable that, our language is not first order. More exactly, we have

The second type of conclusions, needs as premises too,

2.

In above, by we mean theory is consistent and has a model.

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