Deterministic Divergence: Unifying Eternal Inflation, Pilot Wave Theory, And MWI

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Abstract- *In this paper, we aim to introduce the Deterministic Multiversal Model as a synthesis of various other theories like Many-Worlds-Interpretation and Eternal Inflation, and others. We would also like to mention how my model solves difficulties like Fermi's Paradox and the measurement problem. (Guth, 1981; Bousso, 2006)*

Keywords- Determinism, Multiverse, Initial Conditions, Eternal Inflation, Many-Worlds Interpretation, Pilot Wave Theory, Causal Isolation, Measurement Problem, Fermi Paradox, Meta-Framework Rejection (Everett, 1957; Wallace, 2012)

I. INTRODUCTION

The following is a short introduction for the Deterministic Multiversal Model. This model is developed by a different process than traditional MWI, which uses Quantum Branching, but gives just a slightly different outcome. This model claims that though the multiverse may be real, if it is, then it cannot exist without this theory. It claims that unlike MWI universes diverge at their own beginnings like Big Bangs.

Theories Used

1. **Many-Worlds-Interpretation (MWI):** A quantum theory suggesting that all possible outcomes of quantum measurements occur in separate, branching universes.
2. **Eternal Inflation Theory:** A cosmological model proposing that inflation is an ongoing process, continually generating new universes within a vast multiverse. (Guth, 1981; Bousso, 2006)
3. **Pilot Wave Theory:** A deterministic interpretation of quantum mechanics where particles have definite trajectories guided by a "pilot wave" (Bohm, 1952)
4. **Theory of determinism:** The philosophical concept that all events, including human actions, are determined entirely by previously existing causes.
5. **Chaos Theory:** A mathematical framework describing how small changes in initial conditions can lead to vastly different outcomes in dynamic systems. Here we use it for systemic dependence on initial conditions. As used in this paper, chaos theory is invoked philosophically to illustrate how tiny variations in initial conditions—much like in classical dynamical systems—can lead to entirely different outcomes. This serves as an analogy for the multiverse in which each universe diverges from the others due to slight differences now of its Big Bang (Lorenz, 1963).

Paradoxes and Problems

i.**Measure Problem:** The first being the Measure Problem, which states that if there are multiple possibilities for an action, why can we observe only one? I believe that I have already answered it in the 3rd para

ii**. Eternal Inflation Randomness Problem:** Next being the Eternal Inflation Randomness Problem which states that the Eternal Inflation produces universes through a stochastic process, making the multiverse appear random and unstructured, but I counter by reminding the reader that my model also combines pilot wave theory as the Theory of determinism, which in my model shows that each universe is structured with distinct paths due to systemic dependence on initial conditions also known as chaos theory. As used in this paper, chaos theory is invoked philosophically to illustrate how tiny variations in initial conditions—much like in classical dynamical systems—can lead to entirely different outcomes. This serves as an analogy for the multiverse in which each universe diverges from the others due to slight differences now of its Big Bang (Lorenz, 1963). (Bohm, 1952)

iii. **Quantum Mechanics and Determinism:** Then the Oxymoron here, Quantum Mechanics and determinism together. Here, Pilot Wave Theory restores order to the conflict between them. (Bohm, 1952)

iv. **Fermi Paradox:** Now for my favorite, the infamous Fermi Paradox, which asks us a simple but difficult question, being that if there our infinite universes, then why have we not been contacted yet. To which my model answers by saying that contact is not possible as there is no wall to cross over. Let me explain, to cross over universes, the said universes must have a point of contact which according to my theory, is at the instance before everything before there were any initial conditions and for reasons I will explain later time travel to

past is impossible in my model. So, as I said earlier there just is not any wall to cross over. (Tegmark, 2003)

v.**Time Travel:** Now for the Time Travel. Let us assume that it's our Universe with conditions 'a' and now your neighbor has successfully built a time machine, how we don't know yet, so if let's say he attempts to go to the past and again for what we don't know yet, tries to make Hitler win the WW2 then your country might have been conquered and due to these situations his ideology might have different and then he wouldn't have created at time machine. Now if he does not go back in time Hitler would not win but then he would go back in time to make him win. Now we notice that he changed the conditions of the war and thus of future and that is chaos theory. Nature itself cannot handle such paradoxes and thus does not allow it. As used in this paper, chaos theory is invoked philosophically to illustrate how tiny variations in initial conditions—much like in classical dynamical systems—can lead to entirely different outcomes. This serves as an analogy for the multiverse in which each universe diverges from the others due to slight differences now of its Big Bang (Lorenz, 1963). (Deutsch, 1997; Carroll, 2010)

CONCLUSION

In this paper,we attempted to introduce the Deterministic Multiversal Model and answer any questions one might have about it though some may have more. This theory gives a unique framework to theories mentioned before and provides a new insight into the Multiverse. I also think that if a Multiverse truly exists then it must follow my Model or it would not follow logic at all.

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