

Understanding of the Universe

PARTH MALHOTRA

11th grade student, Saint Mark's school, New Delhi, India

Date of Submission: 04-05-2022

Date of Acceptance: 19-05-2022

I. Introductions

ENTANGLED WAVE PATTERN MATH (EWPM) is a discovered not invented system. It is a completely new approach, a system which resides in our natural universe. The discovery of this system has solved many unanswered questions. For example, **calculating the wave collapse solving the measurement problem of quantum mechanics.**

WHAT IS THE MEASUREMENT PROBLEM OF QUANTUM MECHANICS?

In quantum mechanics, the measurement problem is the problem of how, or whether, wave function collapse occurs. The inability to observe such a collapse directly has given rise to different interpretations of quantum mechanics and poses a key set of questions that each interpretation must answer.

The wave function in quantum mechanics evolves deterministically according to the Schrödinger equation as a linear superposition of different states. However, actual measurements always find the physical system in a definite state. Any future evolution of the wave function is based on the state the system was discovered to be in when the measurement was made, meaning that the measurement "did something" to the system that is not obviously a consequence of Schrödinger evolution. The measurement problem is describing what that "something" is, how a superposition of many possible values becomes a single measured value.

To express matters differently (paraphrasing Steven Weinberg) the Schrödinger wave equation determines the wave function at any later time. If observers and their measuring apparatus are themselves described by a deterministic wave function, why can we not predict precise results for measurements, but only probabilities? As a general question: **How can one establish a correspondence between quantum reality and classical reality?**

THE WAVE COLLAPSE CREATES A VIRTUAL REALITY

Every single wave contains information and as a group their intelligence is much greater than man. We had not come to the realization that universe is running under a wave. The constant on which universe works is waves.

Just as with a computer system the software is unaware of the main system processes going on in the background. Same is the case with waves and human. Software is what we call the reality. From this energy in the wave collapse the system is able to run all the necessary fundamental processes.

One harmonic wave can have all the information of the universe. Very little of the data is actually stored in the system. Almost all the information used in our universe is dynamic.

This system takes a small frequency and expands or stretches the tiniest frequency to enormous size and at the same time turns the frequency into large palindrome.

The measurement problem of quantum mechanics fails because it cannot measure the waves.

If one truly solves the universe then that person won't need approval of scientific community. That person will possess the knowledge of the universe.

UNIVERSE COULD COLLAPSE

Universe expansion rate has been changed to 9% from 5% but universe's rapid expansion can come to an end due to a dynamic form of dark energy called quintessence. This dark energy pulls galaxies apart by working against gravity.

It is said that rapid expansion could transition to slow contraction in 100 million years or less. This is surprisingly soon as life on earth is not even guaranteed for 1 million years. Supposedly we move to a new planet time would be different and the time of galaxy collapsing would be different.

BIG CRUNCH MIGHT BE WRONG

The Big Crunch is a hypothetical scenario for the ultimate fate of the universe, in which the expansion of the universe eventually reverses and the universe collapses, ultimately causing the cosmic scale factor to reach zero, an event potentially followed by a reformation of the universe starting with another Big Bang.

Paul Davies considered a scenario in which the Big Crunch happens about 100 billion years from the present. In his model, the contracting universe would evolve roughly like the expanding phase in reverse. First, galaxy clusters, and then galaxies, would merge, and the temperature of the cosmic microwave background (CMB) would begin to rise as CMB photons get blue shifted. Stars would eventually become so close together that they begin to collide with each other. Once the CMB becomes hotter than M-type stars (about 500,000 years before the Big Crunch in Davies' model), they would no longer be able to radiate away their heat and would cook themselves until they evaporate; this continues for successively hotter stars until O-type stars boil away about 100,000 years before the Big Crunch. In the last minutes, the temperature of the universe would be so great that atoms and atomic nuclei would break up and get sucked up into already coalescing black holes. At the time of the Big Crunch, all the matter in the universe would be crushed into an infinitely hot, infinitely dense singularity similar to the Big bang. The Big Crunch may be followed by another Big Bang, creating a new universe.

But, the expectation-defying discovery of dark energy showed the universe was very unlikely to collapse in a Big Crunch. Even with all the matter in the universe tugging inward, gravity will never be strong enough to overcome the inflating effect of dark energy.

WE HAVE NOT EXPLORED EVERYTHING

The thing is, experiments like LIGO aren't the only types of gravitational wave detectors we can build, merging black holes aren't the only things we can detect, and more generally, astronomical objects aren't the only things we can use gravitational radiation to learn about. The reason we saw inspiraling black holes first is because LIGO, the cheapest gravitational wave detector we can build that's capable of seeing these waves as the Universe produces them, is sensitive to those types of waves. But in reality, there are all sorts of things to look for, which fall into four different classes.

- 1.) Compact, super-fast-moving objects. This is the class that includes what LIGO saw, where small (less than 1,000 solar mass) black holes merge together. LIGO can detect objects from about 1-to-10,000 Hz, which means objects that emit waves more than once per second.
- 2.) Slower or more massive objects. These won't have fields that are quite as strong as the objects LIGO sees, but there are many more objects like this out there in the Universe for us to examine. At the heart of nearly every galaxy including our own is a supermassive black hole, with millions or more times the mass of the Sun inside. A detector whose arms are far larger than Earth, like a giant space antenna in the form of LISA (or eLISA), can locate these.
- 3.) Ultra-massive black hole orbits and mergers. Ever heard of a quasar, or of an active galactic nucleus? These billion-solar-mass black holes at the cores of active galaxies had to get that big somehow, and it most likely came from gigantic mergers.
- 4.) Relic gravitational wave radiation from the Big Bang. These fluctuations from the birth of the Universe would show up in the polarization of the leftover light from the Big Bang, and are being looked for right now. We'll remember that BICEP2 erroneously announced the discovery of these waves back in 2014, only to discover that the foreground dust from our own galaxy accounted for that polarization signal.

II. Conclusions

- 1) Entangled wave pattern (EWPM) resides in our natural universe.
- 2) Universe runs under a wave which are collectively smarter than the intelligence of a man.
- 3) One harmonic wave has the complete knowledge of the universe.
- 4) Rapid expansion can come to an end due to a dynamic form of dark energy called quintessence.
- 5) Quantum mechanics fails to solve the universe because it cannot measure the waves.
- 6) Under 100 million years universe would have transition of its expansion rate to small contraction rate.
- 7) There is no guarantee that earth can pass more than a million years with these climatic conditions.
- 8) The chances of big crunch are unlikely because of certain evidences.
- 9) Humans have not discovered everything like massive black holes.

Acknowledgement

I would like to thank my parents, **father** - Sunil Malhotra, my **mother** - Angel Malhotra for providing me the right education and **Mark Lance Moody for opening the world of theoretical physics for me.**

References Used

- [1]. moody pilot wave - mark lance moody
- [2]. big crunch - Wikipedia
- [3]. universe is not yet explored - Forbes
- [4]. expansion of the universe - Wikipedia

PARTH MALHOTRA. "Understanding of the Universe." *IOSR Journal of Applied Physics (IOSR-JAP)*, 14(03), 2022, pp. 22-24.