|  |
| --- |
|  |
| **Before, During, and After the Quantum Big Bang. Rev. 3** |
|  |

|  |
| --- |
| By: Robert Weber  Date: 1-25-2025  Email: robertjweber@gmail.com |

**Before, During, and After the Quantum Big Bang**

**Author: Robert J. Weber**

**Written on: January 25, 2025**

**Abstract:**

**This paper proposes a new cosmological model, the "Quantum Big Bang" theory, which challenges the conventional understanding of the universe's origins. It suggests a pre-existing state of particles without spacetime or physical laws, followed by a quantum event that established these laws and initiated the formation of structures. This model offers a unique perspective on the expansion of the universe, the cosmic microwave background radiation, and the emergence of mass and gravity. It also eliminates the need for inflation and a singularity, offering a different perspective on the universe's beginnings. This revised version incorporates insights gained from discussions with an advanced AI language model, further refining the concepts and exploring their implications.**

**Introduction:**

**The standard Big Bang model, while successful in explaining many cosmological observations, faces challenges in addressing the singularity at the beginning of the universe and the need for inflation to explain the large-scale uniformity of the cosmos. This paper proposes an alternative model, the "Quantum Big Bang" theory, which offers a different perspective on these issues. This model suggests that the universe was already "spread out" in its initial state, eliminating the need for inflation, and that it did not originate from a singularity, avoiding the problems associated with infinite density and temperature.**

**The Primordial Soup:**

**In this model, the universe began as a "particle soup," a state without spacetime, physical laws, or fundamental forces as we know them. Particles existed in a proto-existence, moving at potentially faster-than-light speeds, unbound by mass or interaction.**

**The Quantum Big Bang Event:**

**A quantum event, the "Quantum Big Bang," occurred within this primordial soup. This event established the laws of physics, including a universal speed limit (the speed of light), and initiated the emergence of spacetime, gravity, and other fundamental forces. This event also established time as we know it.**

**Emergence of Structure:**

**The imposition of a speed limit caused particles, previously moving at unimaginable speeds, to collide and release energy, generating a sea of gravitons. With the emergence of gravity, these gravitons interacted with the remaining particles, causing them to clump together and eventually form the seeds for galaxies and larger structures.**

**Origin of the Cosmic Microwave Background (CMB):**

**The friction and interactions caused by the sudden imposition of physical laws and the release of gravitons generated intense heat, which eventually cooled and stretched to become the cosmic microwave background radiation observed today.**

**Cosmic Expansion:**

**The apparent expansion of the universe is not necessarily due to the expansion of space itself but could be an illusion caused by the phenomenon of "tired light." Photons lose energy and momentum over vast distances due to interactions with the graviton field and the transfer of energy during graviton exchanges with matter.**

**Mass and Gravity:**

* **Initially, particles in the pre-bang universe were massless. The Quantum Big Bang triggered the emergence of mass, potentially through a process related to the Higgs field or another, yet-to-be-discovered mechanism.**
* **Each particle is associated with "spacetime knots" (potentially gravitons), which give it mass and contribute to its gravitational attraction.**
* **Gravitons are not only associated with mass but also exist independently, forming a "graviton field" that permeates spacetime. This field could be responsible for the observed effects attributed to dark matter and dark energy.**

**Gravitons and Quantum Gravity:**

**Gravitons might be quantum gravity forces that are difficult to comprehend directly. We may only be able to understand them through their large-scale effects, like the expansion of spacetime and the formation of galaxies. Recent research by Dr. Richard Lieu suggests that these gravitons could even generate gravity independently of mass, potentially explaining phenomena currently attributed to dark matter.**

**Time:**

**Before the quantum big bang, there was no time as we know it. Time emerged along with spacetime and the laws of physics, with the speed of light acting as a "cosmic clock."**

**Human Perception of Time:**

**Our human perception of time is limited and fleeting compared to the vastness of the cosmos. We are but a small part of a grand symphony that began long before us and will continue long after we are gone.**

**Quarks and the Quantum Big Bang:**

**The heavier quarks (charm, strange, top, bottom) might be excited states of up and down quarks. Their decay could be a result of losing energy and returning to their ground state.**

**Black Holes and the Nature of Spacetime:**

**Black holes might be "graviton concentrators," stripping spacetime knots from particles and concentrating them at their center. This could explain the extreme gravity of black holes and potentially resolve the black hole information paradox.**

**Gravitons and Particle Acceleration:**

**The acceleration of particles in particle accelerators could be influenced by their interaction with gravitons. As particles approach the speed of light, they might "pick up" extra gravitons, increasing their mass and gravitational pull. This aligns with the observation that photons, despite being massless, can transfer momentum to objects, as demonstrated by the functionality of light sails.**

**Gravitons and Kinetic Energy:**

**The kinetic energy of particles might be related to their association with gravitons. The more gravitons a particle has, the more kinetic energy it possesses.**

**Gravitons and the Cosmic Microwave Background (CMB):**

**Gravitons released during the quantum big bang could constitute dark energy and dark matter. The CMB could be a result of the friction and interactions caused by the sudden imposition of physical laws on the primordial "particle soup."**

**Redshift and the Speed of Light:**

**The interaction of photons with gravitons could cause them to lose energy and slow down over vast distances, contributing to the observed redshift of light from distant galaxies. This challenges the conventional assumption that the speed of light is constant. However, the success of light sails, which utilize the momentum of photons for propulsion, demonstrates that even massless particles can exert a force. This suggests a complex interplay between photons, gravitons, and momentum, potentially influencing the behavior of light over vast cosmic distances.**

**Gravity Without Mass:**

**Recent research by Dr. Richard Lieu at the University of Alabama in Huntsville suggests that gravity might exist independently of mass. Lieu's work explores the possibility that shell-like structures called topological defects, formed in the early universe, could generate gravitational fields without containing any actual mass. These defects consist of layers of positive and negative mass that cancel each other out, resulting in a net mass of zero, yet still capable of producing gravitational effects. This research aligns with the idea that gravitons, the fundamental particles mediating gravity, could exist independently of mass and contribute to the overall gravitational field of the universe. This could potentially explain phenomena currently attributed to dark matter and dark energy.**

**Discussion and Conclusion:**

**The "Quantum Big Bang" theory offers a new perspective on the origin and evolution of the universe. It challenges conventional wisdom but also provides a framework for understanding fundamental questions about the universe. It eliminates the need for inflation and a singularity, offering a different perspective on the universe's beginnings.**

**This model, incorporating the insights gained from discussions with an advanced AI language model, further refines the concepts and explores their implications. It suggests a dynamic interplay between gravitons, spacetime, and matter, potentially explaining a wide range of phenomena, from gravity and inertia to tired light and dark energy. This aligns with emerging research, such as the work by Dr. Lieu, which suggests that gravity might exist independently of mass, and is consistent with observations related to the momentum of photons, as demonstrated by the functionality of light sails.**

**Future Directions:**

* **Explore the nature of the pre-bang universe and the mechanisms behind the emergence of mass and gravity.**
* **Develop a more rigorous mathematical framework to describe the behavior of gravitons and spacetime knots.**
* **Design experiments to test the predictions of the theory, such as searching for variations in graviton density or observing the effects of graviton interactions on photons.**
* **Explore the connections between this model and other areas of physics, such as quantum gravity and the Standard Model of particle physics.**

**This theory is still in its early stages but has the potential to contribute significantly to our understanding of the universe. It offers a new way of thinking about the origins of existence and the forces that shape our reality.**

**Author's Note**

**Throughout our lives, we are but quarks of a universe created by God.  
The elegance of what came from 6 days of creation made the all. We exist, not as immortals, but as fleeting microbes of what He created. Created with Love for all.**

**Thank you for reading and indulging me**

**Note: No singularity was harmed in the writing of this paper.**