

ASSUMING THE CONCEPT OF A "KLEINBOTTLE" APPLIED TO A FOUR-DIMENSIONAL UNIVERSE WHERE $N+1$ IS ≥ 4 ***Lie Chun Pong**

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Abstract

Considering the concept of a "Klein bottle" applied to a four-dimensional universe or higher, where $N+1$ is at least four (greater than or equal to four), is an important step in examining why our universe continues to expand. In fact, many scientists are trying to understand why the universe expands; some say it is caused by the Big Bang (Big Bang theory), but apparently, none of them can provide clear and satisfying answers. Since a Big Bang is just a once-and-for-all action, which may not persistently provide energy that causes the universe to persistently expand. In this research paper, we aim to interpret the gravitational wave of a conceptual idea, developed from the collision of two neutron stars assumption, which involves two black holes. This creates a wave similar to a micro Big Bang wave, which spreads throughout the universe (at the edge), causing a ripple effect that pushes the universe forward to expand. We believed that these gravitational waves may become and accumulate to form a force, which we believe is part of dark energy.

Keywords: Big Bang, Big Bang theory, two black holes, Klein bottle, tunneling, ripple effect, ripple trap effect, dark energy

INTRODUCTION

Considering the idea of a "Klein bottle" applied to a four-dimensional or higher universe, where $N+1$ is at least four, it is crucial to explore why our universe continues to expand. Many scientists try to figure it out but have not yet provided completely satisfactory answers. In this paper, we aim to interpret a gravitational wave concept generated by a neutron star collision which involving two black holes. This event could produce a wave similar to a micro "Big Bang" wave, spreading throughout the universe. Such gravitational waves would create ripples that eventually get trapped at the universe's different layers of dimensions since they involve the blackhole tunneling event, which may accumulate and transform into a force that we believe is part of dark energy.

In exploring this complicated concept, we need to use new ideas concept to integrate into our new theory as assumptions and predictions. As we know, although technological advancements have dramatically improved today, we still understand very little about our universe. For example, we barely understand about 5% of our universe and cannot even see the complete picture inside. Therefore, in this research paper, we hope to uncover the full mechanism of dark matter and dark energy creation. With our innovative assumptions, we may gain a clue to uncovering the complex mechanisms behind the universe.

In fact, there seems to be a correlation between dark matter formation, which eventually transforms into dark energy. Although there is still little proof of this, the paper suggests that gravitational waves will be trapped in the universe's space indifferent dimensions. These waves will accumulate into a form of energy that ultimately pushes our universe to expand continuously.

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As we may understand, it is impossible to explain these complicated concepts without using the innovative concept involved. Therefore, this paper will use the Klein bottle as a basic concept to explain why energy is trapped and shifted. Most importantly, our discovered assumption may aid in further discovering space events and the mechanisms inside them. We understand that it's impossible to eliminate the singularity of the Klein bottle in three-dimensional space R^3 , regardless of how it is deformed, whether you use one method or another. However, if the surrounding space is four-dimensional space R^4 , or higher than $3+1$ dimensions in the formation assumption, this singularity can be removed through deformation.

In our approach, if we assume the space universe as a bottle, then we can utilize parallel movement to resolve the singularity of the black hole as a kind of singularity point that exists in the universe (Klein bottle) within R^4 . We consider the Klein bottle's existence within the tangent plane of the fourth coordinate $x_4=0$ of the four-dimensional Euclidean space R^4 . In this approach, the singular point of the Klein bottle emerges at the intersection between the hose part and the cross-section of the curved surface, giving rise to a circle as a whole. This circle can derive an infinite number of axis points, which we can interpret as universe expansion. Similarly, a circle of π represents an infinite decimal series, and the sum of this series will eventually exceed 1, making it a plausible explanation. The small twist in the circle is a differential concept that can be applied in the same way to understand the acceleration of matter in the universe. Assuming we need to keep the "hose part" at coordinates x_1 , x_2 , and x_3 , then move it parallel to the x_4 axis until $x_4=1$. At this point, with $x_4=1$, the space R^3 contains no other geometric figures besides the circle after the shift. Only one of the intersecting circles reaches the tangent plane when the fourth coordinate is $x_4=1$. As a result, there are no intersection points on the

surface. Initially, the hose is connected so that in the $x_4=0$ section, the surrounding area of the hose disappears. This setup allows for the existence of a true Klein bottle closed surface in R^4 (which can be embedded there), beneath the universe's curvature. Therefore, we can conclude that the "Klein bottle" concept can be applied to surfaces embedded in R^3 as well as in R^4 . When the singular point part is a one-dimensional curve, you only need to move the surrounding curved surface with the singular point parallel along the direction of the fourth coordinate, as mentioned above. So, a shift will occur. Since these assumptions about the concept may have predictive power, the gravitational wave could be shifted and trapped by some form of multi-layered edge in the universe, which eventually transforms into dark energy. This dark energy then creates a push effect that causes the universe to expand continuously. These wave spread-out and trapped effects will cause a form of energy creation. The trapping of waves leads to an accumulation process, which this paper suggests may transform into a form similar to dark energy. If we assume our universe is a six-dimensional space like a rolling spreadsheet, then our universe might not be as we perceive it. In six-dimensional curvature, trapped energy waves are confined beneath the surface of the universe in a rolling matter pattern. This energy is eventually transformed through pressure, causing a rebound effect that continually pushes our universe to expand.

The phenomenon of gravitational wave spreading and trapping can lead to energy creation. This trapped wave energy causes an accumulation effect, and this paper proposes that it could transform into a form of dark energy. While assuming our universe exists in more than 3+1 dimensions, if we think of our universe like a rolling spreadsheet, we might need to reconsider how we perceive it. In a curved 6-dimensional space, the trapped wave energy could be held beneath the universe and eventually transformed by pressure into a pushing force, which continuously expands our universe. As we may know, there is a collision complex in the neutron star, which causes gravitational waves, but where these waves go is still a mystery. This paper predicts that these kinds of gravitational waves may flow toward the edge of the universe, pushing our universe forward to expand, and some become trapped in a form beneath our spatial realm (due to the two blackhole tunneling), in different layers hidden beneath the backside/subsurface of the universe's space. So, in this paper, we believe that our hypothesis of gravitational wave transformation and accumulation is part of the fundamental structure of dark energy, which is formed and transformed by gravitational waves. This may be somehow confirmed by NASA's photos [1][2][3][4].

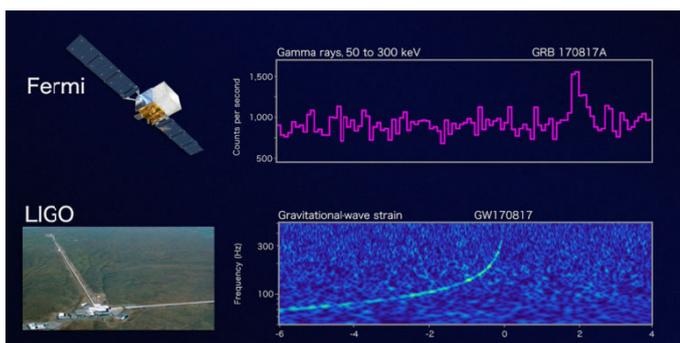


Figure 1. The gravitational wave detected by LIGO, followed by a ding when the gamma-ray burst was observed by Fermi [1]

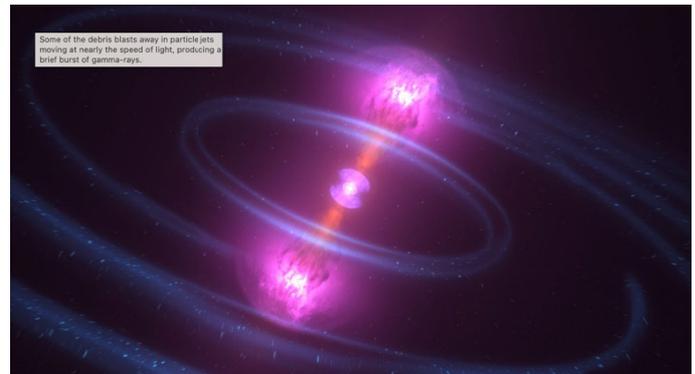


Figure 2. The debris blasts away in particle jets moving at nearly the speed of light, producing a brief burst of gamma-rays [2]



Figure 3. Light bursts from the collision of two neutron stars.

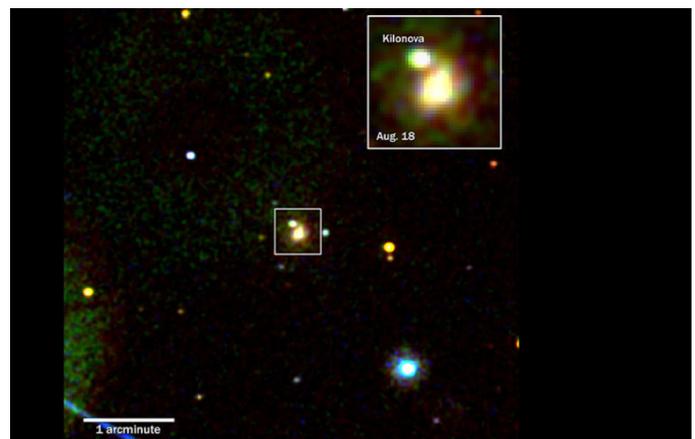


Figure 4. Swift's Ultraviolet/Optical Telescope imaged the kilonova (top left in the inset) on Aug.18, 2017, which occurred in the galaxy NGC 4993[4]

Suggestion

This means that, although the destination of these waves remains a mystery, it is known that collisions in neutron stars generate gravitational waves. In this paper, we propose that such gravitational waves may be confined within a structure located beneath the surface of our universe, within hidden layers on the other side. This paper suggests that the transformation and accumulation of gravitational waves are fundamental components of the basic structure of dark energy. And this black hole vapor (dissipation) of the energy may be tunnelling to the different layers of the universe. This energy will, in turn, transform into a form of dark energy, providing a force that drives the expansion of our universe. Applying the concept of a "Klein bottle" to a four-dimensional universe or higher, where $N+1$ is greater than or equal to four, is a key step in understanding the continued expansion of our universe.

These events generate large-scale gravitational waves, including neutron-star collisions and black hole collisions, which spread throughout the universe, creating a wave-like scattering. We incorporated this idea into the bottle theory and predicted that these gravitational waves could build up at the universe's edge, forming a force that we believe is a component of dark energy. To push and expand our universe. It seems that there is a correlation between dark matter formation and its eventual transformation into dark energy. However, there is currently little evidence to support this. This paper claims that gravitational waves produced by the micro Big Bang, originating from black holes altering some dark matter, create wavelengths that spread throughout the universe and are trapped. These waves then accumulate as a form of special energy, ultimately causing the universe to expand continuously. Such gravitational waves can build up as a unique form of energy, potentially transforming into dark energy in a six-dimensional universe. This trapped wave may convert into a special type of energy believed by this paper to be dark energy that is held beneath the universe in a curved six-dimensional space. It could be transformed into a pushing force, continually driving the expansion of our universe.

Conclusion

In conclusion, our exploration of complex concepts involves integrating theories into our assumptions and predictions. Although we know that gravitational waves were caused by black hole collisions, our understanding of the universe remains limited. In our universal model, it is difficult to prove the existence of dark matter and dark energy. However, in our research paper, we believe and predict that uncovering the origins of gravitational waves and dark matter can provide insight into the universe's intricate mechanisms through innovative assumptions. Our research also predicts that the phenomenon of gravitational waves spreading and trapping can lead to the formation of special energy.

We believe this is part of the makeup of dark energy. Additionally, this trapped wave energy may result in an accumulation effect, possibly transforming into a form of dark energy. Assuming our universe exists in six dimensions, similar to a rolling spreadsheet, in a curved six-dimensional space, the trapped wave energy could be held beneath the universe. We believe that, eventually, this energy could be transformed by pressure into a pushing force, continuously expanding our universe. This paper suggests that gravitational waves will synchronize and align, creating a form of dark energy. Furthermore, we suggest that black hole vapor (dissipation) of the energy may have been tunnelling to different layers of the universe. This energy will, in turn, transform into a form of dark energy, providing a force that drives the universe's expansion. Hope this research article can contribute to society and the world.

REFERENCES

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2. The debris blasts away in particle jets moving at nearly the speed of light, producing a brief burst of gamma-rays. NASA's Goddard Space Flight Center/CI Lab. Optical telescope image of kilonova is courtesy of NASA/Swift. 2018. NASA.
3. NASA's Goddard Space Flight Center/CI Lab. Optical telescope image of kilonova is courtesy of NASA/Swift. 2018. NASA.
4. Swift's Ultraviolet/Optical Telescope imaged the kilonova (top left in the inset) on Aug.18, 2017, which occurred in the galaxy NGC 4993. 2017. NASA.
