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Original Article

Dark Matter and Dark Energy as the Artifacts From Processes that Occur Outside of Our Universe

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Abstract *- Peculiar behavior of astronomical bodies has been observed for a long time. This includes stars circling galaxy centers in non-Newtonian motion, the unusually fast movement of galaxies within their local groups, as well as gravitational lensing by apparent empty space and unusual galaxy distribution, assembling them into a spanning network interconnected by fibrous filaments over vast spaces. All those observed phenomena cannot be understood without ad hoc developed forces of dark matter and dark energy. Here, a speculative axiom is proposed that explains those mysterious behaviors as artifacts of gravitational influence generated by violent processes that occur outside our Universe. Without considering the Universe to be only a small part of a larger space-time continuum, those misunderstood phenomena become impossible to grasp. An alleged theorem of dark matter posits that it gravitationally binds all matter in the Universe, while dark energy counteracts this, trying to tear the fabric of the Universe apart by stretching it in all directions. Presented here, the axiom argues that most of the observed peculiar behavior of astronomical bodies results from the action of strong gravitational blows from exogenous processes that originate from outside our Universe. Over thousands of millions of years, gravitational pulls originating from outside our Universe's membrane; by binding its fabric, inflicting wrinkles. Those undulations, resulting in bending spacetime, create gravitational waves which, after interference within the spacetime fabric membrane, over a giga-year (Gy) lapse, transform the originally uniform distribution of galaxies into a vast, highly porous, filamentary spatial network, as observed today. Further study of the large-scale structure of the Universe using multiple methods, including precise space scanning with high-precision gravitational-wave detectors and gravitational lensing, may reveal more about our Universe's exo-environment.*

Keywords *- Dark Matter, Dark Energy, Exogenous Cosmology, Wrinkles of Spacetime, Shells.*

1. Introduction

Imagine that an ocean beach is one's Universe. One can wander on it for miles or lounge on this beautiful, radiant, and endlessly wide sandy expanse. This beach is one's entire world, created just for him. As one lay there, something struck him. At once, he noticed numerous shells of various mussels that lay on the sand. He had grown accustomed to their presence here, though he had no idea where they had come from. The way the shells were arranged in the sand intrigued him. Almost all shells lie with the convex side up (Figure 1). Who arranged them this way on a beach? The only answer one can hypothesize is that dark forces unknown to him did this job, because he hadn't done it himself and didn't see anyone else nearby.

However, one had a book written by the great German philosopher Georg Wilhelm Friedrich Hegel, who wrote that "Truth is in the whole." To explain the observed shell-arranging phenomenon, one examined the surroundings and discovered the wavy sea nearby. Periodically, waves wash onto the beach, leaving shells arranged in a way that allows retreating water to flow off the beach with the least resistance. The matter was solved, but not entirely. It turned out that, twice a day, the ocean floods that beach. In the meantime, the sea retreated. One called this inexplicable phenomenon tides.

Fig. 1 Typical shells placement on a sandy ocean beach

Although one's Universe expanded to encompass not only the beach strewn with shells but also the ocean from which these shells originated, the phenomenon of tides remained incomprehensible to one. To explain this observed phenomenon, one assumed ad hoc: the existence of some unknown matter that periodically appears somewhere above the ocean and gravitationally attracts masses of seawater, forcing them off the beach and leaving behind shells arranged in a pattern in which convex sides are directed upward. One's called such invisible mass ‘dark matter’. To find the source of these invisible forces, one looked around one's beach-sea universe for a long time, but could see nothing. Pondering over one's problem, one again returned to Kant's reflections. One must assume that some forces acting from outside one's beach-sea Universe attract masses of water, pull the sea away, and cause the phenomenon of tides. The brightness of the atmosphere prevented one from seeing anything, but one wait patiently until the darkness of night, and then one spots the source of this previously invisible source of mysterious force. It was the Moon. The gravity attraction force of this cosmic body caused masses of ocean water to periodically pile up, and flooded one's beach universe, leaving behind shells arranged in such a peculiar way. If one were to accept the Earth as the only and entire Universe, one would have to acknowledge that the gravitational influence of an invisible and elusive ‘dark matter’ is responsible for the clearly observed anomalous behaviour of an ocean tidal phenomenon.

These simple examples, drawn from everyday experience, as shown above, demonstrate how difficult it is to explain observed phenomena without considering their exogenous origins, originating outside the entity being studied. Earth is subject to numerous external influences from the surrounding cosmic environment, which shape the planet's geology. These external factors include: meteorite bombardment, which causes the formation of enormous meteorite craters associated with metal ores, such as those in the Sudbury Basin in Ontario, Canada; earthquakes; climate change; major extinctions; global orogenic effects in the form of mountain ranges rising; and many other factors that have occurred throughout Earth's long history. Without external influences, it would be impossible to explain the genesis of these processes.

The main problem in understanding the Universe is treating it as an absolute entity, as one once understood shells' arrangement and sea tides on one's own beach-universe. However, if we consider our Universe as a small part of a larger space-time continuum, several misunderstood problems become easier to grasp. External stimuli acting on the Universe are of exogenous nature, and have never been considered in cosmology until now. Such external influences give rise to phenomena impossible to understand in any other way. Without seeing the source of these phenomena, which lies outside our Universe, they were ad hoc named as dark matter, a mysterious medium that neither emits nor reflects electromagnetic radiation. Its existence is revealed only by its gravitational effects. The sources of these influences cannot be observed because they operate from outside our Universe, but they are easily understood once their exogenous nature is accepted.

The Universe and its nature are simply impossible for the human mind, adapted over a long period of evolution to solve everyday problems, to grasp. Terms used in late twentieth-century cosmology, such as singularity, black hole, big bang, cosmic inflation, and the like, are metaphors, adopted to condense abstractions of the Universe that would otherwise be incomprehensible. While these terms should not constitute scientific canons of faith, they can help us understand the incredibly complex nature of our Universe.

2. Development of ideas

The centennial of the separation of cosmology and astrophysics from astronomy recently passed; astronomy had previously focused primarily on the study of the positions and motions of cosmic bodies on the celestial sphere. Since 1918, when Henri Draper [1] prepared the first catalog of starlight spectra, the properties of these distant objects have been studied, and their distances from the Sun determined. These discoveries coincided with Albert Einstein's 1905 establishment of special Relativity, demonstrating the equality of matter and energy. This led to the establishment of general Relativity, published in 1916, demonstrating the intimate relationship between mass, energy, space, and time, laying the foundations for relativistic cosmology. It was like a first glimpse into a world beyond our own planet.

More than a hundred years ago, Russian mathematician-meteorologist Alexander Friedman [2] published a paper based on Einstein's general theory of Relativity [3], in which many possible histories of the Universe were hypothesized. One such possibility describes cosmic expansion starting from a single point, which was suggested earlier by Laplace [4]. Even without taking into account any astronomical evidence, Friedman predicted the now widely accepted, however speculative the Big Bang theorem describing the possible birth and evolution of the Universe. He also introduced the idea of curved space resulting from Einstein's theory. This idea, with various additions, is still considered correct. Since Friedman's ideas, the French clergyman Georges Lemaître [5] independently concluded that if one followed the expansion of the Universe backward in time, the origin of the Universe could be found to originate from an extremely small point. This was probably the beginning of the birth of the cosmological model of the ‘expanding universe’. Hubble's measurements, interpreted using the Doppler Effect, seemed to confirm this hypothesis, Hubble and Tolman [6], Hubble [7]. However, the point-source universe models must have had very high densities and temperatures, which led to developments an idea of singularity within the natural cosmic environment, as discussed in Geroch [8, 9], Geroch, Can-bin, and Wald [10]. The possibility of linking up the generation of the elements with the origin of the Universe has been examined by Gamow and Teller [11], and others, mainly from a nuclear physics point of view. Edwin Hubble showed that the Universe is not as stable as previously thought, but is in constant motion. In addition, based on the Doppler Effect, it appears to be expanding, and farthest away galaxies are placed, the faster they seem to be moving away from us. The Doppler Effect was arbitrarily adopted to interpret observations, which showed that galaxies are moving away from the inert observer.

Based on this theorem, it has been established that the expansion rate of the Universe is increasing by about 74 km/s/Mpc, or 74 km/s for every million parsecs (Hubble's constant). It should be mentioned here that this hypothesis has not yet been confirmed by independent methods of direct measurements of the change in the distance of observed galaxies as a function of time-lapse. Assuming the model of the expanding Universe at the rate determined by Hubble's constant, the diameter of the observable Universe today would be ~92 Gyr and growing. The ad hoc developed idea of *dark energy* became responsible for this expansion.

The dilemma whether the recession of distant galaxies is 'real' has been discussed as early as by Hubble and Tolman [6] and by Hubble [7]. According to Bondi [12], they have taken the view that if the recession is not 'real', its effect on the intensity of light received should be less important than if the recession is 'real'. In general Relativity (authors based on their contemporary works), an 'unreal' recession is impossible, but in other theorems, like kinematic Relativity, or the presented here model, some meaning may be ascribed to this term.

Creator of the kinematic relativity theorem, Milne [13, 14] pointed out that the redshift of the spectral lines of distant objects is not due to a velocity of recession but to the fact that the frequency of light decreases in the course of time. In other words, Milne's dynamics showed that in the past, dynamical processes were much faster than they are now.

The new hypothesis, the so-called Big Bang Theory, was a counterweight to the steady-state theory previously proposed by Bondi and Gold [15], kinematic relativity cosmology formulated by Milne [14], and theories of Eddington [16], Dirac [17], and Jordan [18], which believes that it is necessary to introduce a positive curvature of the spacetime (spherical space). The name of the Big Bang theory itself was coined by an ardent critic of this concept, Fred Hoyle, in 1949 [19], based on the earlier results of Einstein, Friedman, Lemaître, and Hubble. The ideas proposed by this hypothesis by Penrose [20] speculated that the Universe was created at the moment of an unimaginably violent event, gravitation collapse to such a point, from which it has continued to expand. As a result of this process, the density of matter and energy decreases, ultimately threatening the thermal death of the Universe.

In the time of the first half of the 20th century, when most cosmological models of the Universe were created, observations were limited to cosmic objects of luminosity as faint as 19th magnitudes, giving galaxies of redshift factor $z = 0.4$, giving a distance of a few hundred million light-years. Most recent observations using modern telescopes allow the observation of the highest redshift for a galaxy, which is: $z = 14.44$ for the MoM-z14 galaxy lied 13.53 thousands of millions of light-years away, a record set by the James Webb Space Telescope. In conjunction with such great progress, it becomes clear that the proportion of the radial velocity to the distant galaxies cannot be straight, and the distant galaxies accelerate much faster than predicted by a function of their distance from an observer. To explain such behaviour, additional energy was needed to be developed.

According to the calculation of the cosmological constant (1.1056 x 10^-52 /m^2), the expansion rate of the Universe seems to be accelerating, and the galaxy escape is to be blamed on the ad hoc assumption of *dark energy* with negative pressure, responsible for 75% of the entire mass of the Universe. This constant was introduced into Einstein's equations, Einstein [2], Wald [21], to obtain a model of a stationary universe, which was later rejected due to the adoption of a model of an expanding universe. Dark Energy, i.e., three-quarters of the mass of the Universe, has never been observed or studied, and its nature is hypothetical.

In the mid-20th century, it turned out that space has energy. This energy, called vacuum energy, was discovered and measured in 1948 by the Dutch researcher Hendrik Casimir [22]. As it turned out, this measured vacuum energy has nothing to do with the Universe's expansion and cannot be identified with dark energy introduced for one purpose: to allow the space between galaxies to accelerate expansion in accordance with calculations based solely on redshift observations.

As shown by the Wilkinson Microwave Anisotropy Probe (WMAP) research carried out by the Planck satellite in 2013, the age of the Universe was determined to be approximately 13.82 thousands of millions years (Gyr) old. It is widely believed, as described by Davis [23], that the size of the radius of the observable Universe dictated by its age is ~13.8 Gyr, which is also assumed to be age 0, the beginning of our Universe.

The theoretical works of Fridman and Einstein, confirmed by observations, advocated that the environment of space-time may be subject to curvature. The issues of the curvature of space-time in the presence of mass and energy are discussed in the General Theory of Relativity and included in Einstein's field equations Bondi, [12]. Gravity, in the logic of the field equations, describes how mass curves space-time and how this curvature forces a mass to adjust its acceleration to match the curved space-time. At the same time, the distribution of mass and energy in space-time determines its curvature. This idea gave the green light to hypothesized spacetime curvature, or wrinkles.

Speculative concept about the environment in which the Universe was born came from Stephen Hawking's [24 - 26] suggestion that the past of the Universe was a *'singularity'* and topologist's theorem that the Universe may assemble a flat two-dimensional membrane [27, 28]. The theorem in which the Universe can assemble a two-dimensional membrane located at the event horizon of the black hole singularity [29, 30]. Such a speculative concept established the new universe model. Accordingly to this model, the Universe may have originated from the interior of a black hole that existed within the time-space of the parental Universe. The physics of black holes is explored in terms of a membrane paradigm, which treats the event horizon as a two-dimensional membrane embedded in three-dimensional space was described in Thorne, Price, and Macdonald [31]. Those ideas were of great importance for establish Universe within a larger entity where it may be subject to action seen from the perspective within our Universe as exogenous interaction, coming from outside the Universe.

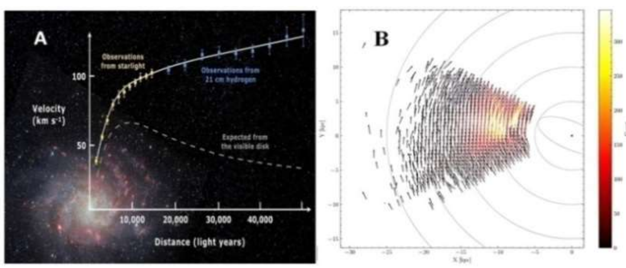

Fig. 2 Graph of the observed velocities of stars and gas moving along the galactic radius around its center. A- The dashed line indicates the expected rotational velocity of stars, consistent with Newton's model of the rotation of cosmic bodies around the system's center of mass. B- Galactocentric angular velocity vectors of 33,335 stars along the galactic radius. Monthly Notices of the Royal Astronomical Society

Fritz Zwicky in 1933 [32] observed that galaxies belonging to the Coma cluster were moving so rapidly that, taking into account the gravitational influence of only visible matter, some galaxies should have been ejected from this galaxy cluster, well-known to astronomers. His calculations indicated that most of the cluster's mass must be concentrated in the form of some invisible, '*dark matter*.' Regarding distances on the order of galaxies, German researcher Vera Rubin, in her 1978 [33] publication, noted an equally strange fact: stars located farther from the galactic center seemed to move somewhat differently than Newton's laws would predict. Studying the velocities of stars as they orbited the centers of brightly luminous spiral galaxies, she observed that stars farther from the galactic center did not move any slower than those closer to the center (Figure 2). Here, too, a mysterious cosmic factor came into play, one that could help matter strengthen the gravitational interactions between stars within galaxies.

The rotation of stars within galaxies turned out to be rather like the rigid spokes of a bicycle. They all move at more or less the same speed. To explain this behaviour of stars, it was necessary to distribute a much larger mass over a considerable space, many times the size of the galaxies. This gave rise to the so-called galaxy rotation problem (as if stars were propelled by the gravitational force of an invisible mass). To overcome the theory's shortcomings, a form of cosmic substance, endowed with mass, invisible, and not interacting with known matter except gravitationally, was proposed and dubbed '*dark matter*'.

3. Pursuit for Dark Forces

Thus began the ongoing pursuit of those mysterious components of the Universe, possessing a massive mass (sometimes ten times greater than the masses of galaxies), which could amplify the weak gravitational pull of the known, albeit very sparsely represented, baryonic matter in the Universe. This ad hoc invention of *dark matter* was used as a binder that could hold stars together tightly enough in their orbital motion, as if in a hard-elastic disk, with very similar angular velocities across the galaxy's radius.

The pursuit of this illusory *'dark matter'*, with properties so different from those of matter we know, continues. Recall that it does not create, absorb, or reflect electromagnetic radiation, despite generating gravity; it does not gravitationally collapse on itself to form cosmic bodies. These hypothetical bodies should not be confused with black holes, because they interact with baryonic matter.

The search continues, however, and attempts to find dark matter are being made both in space and underground. In a Canadian mine, lays deep underground a unique and cold laboratory. In that place, scientists hope to detect *dark matter* by capturing their particles. Their specially designed detectors form the heart of the Super Cryogenic Dark Matter Search using germanium 'SuperCDMS' detectors. Experiments assume to detect potential dark matter interactions, which will only be possible at such extremely low temperatures. The SuperCDMS is located at the SNOLAB research facility, buried 2000m bellow surface, in a nickel mine near Sudbury, Ontario [34]. Scientists are focusing to detect so-called light dark matter. This candidate of dark matter has also not yet been detected. The difference between light and heavy dark matter is based primarily on the mass of the hypothetical particles that make it up, which in turn influences how they move in the early Universe and how they form galactic structures. Those two leading candidates for 'dark matter' are *axons (light)* and *WIMPs (heavy)*. The researchers hope that if they're lucky, capture something new.

Yet another and very promising direction of research is the search for dark matter, where nothing can be seen. If we take a closer look at the interaction of mass with spacetime, we discover that time flows more slowly in the vicinity of a mass than in regions of empty space located further away. Therefore, regions of space where time flows slower than the surrounding vacuum will, by imitating mass, obviously produce the so-called 'Einstein telescope' effect, manifested by the gravitational lensing of distant cosmic objects [35, 36]. Such regions of spacetime, where nothing is visible, but the curvature of spacetime creates a characteristic spatial lens that focuses images of cosmic objects located further away. Such regions could be excellent candidates for the still-sought-after 'dark matter,' which gravitationally influences the curvature of spacetime and its gravitational influence on electromagnetic radiation (Figure 3). It seems that this approach to the search for dark matter could yield interesting results. The observed displacement between the bulk of the baryonic matter and the gravitational potential proves the presence of dark matter for the most general assumptions regarding the behavior of gravity.

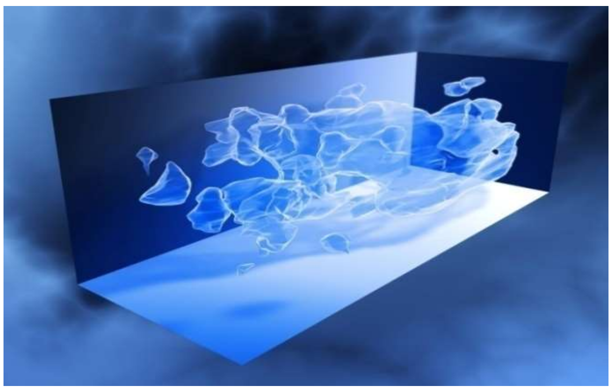

Fig. 3 The 4D image of the distribution of dark matter obtained by the Hubble COSMOS Survey (ESA), NASA, ESA, and R. Massey (California Institute of Technology)

The three-dimensional map in the photograph above (Figure 3), taken from the book "Einstein's Telescope" by Gates [37], offers the first glimpse of the large-scale distribution of dark matter, an invisible form of matter that accounts for most of the Universe's mass. This milestone moved astronomers from inference to direct observation of the influence of 'dark matter' on the Universe. Due to the finite speed of light, the outermost regions are also visible as they existed long ago. The map extends back half the time to the beginning of the Universe.

The map reveals a loose network of dark matter filaments, gradually collapsing under the constant pull of gravity and becoming increasingly stuck together over time. This supports theories about how structures form in our evolving Universe, which transitioned from a relatively smooth distribution of matter at the moment of the Big Bang. Dark matter, as seen on presented model, began to form before stars and galaxies, and provides the basis for the subsequent formation of other cosmic bodies built from ordinary matter. It was suggested that without dark matter, the Universe would not have enough mass for structures to collapse and galaxies to form.

Researchers have taken various paths, observing distant galaxies using the latest tool, the James Webb Space Telescope. The most direct probes for trace dark matter become the weak gravitational lensing. The image (Figure 4), taken by this telescope and using gravitation lensing, shows galaxies very distant and immersed in a barely visible halo of a network of faintly luminous, highly diluted matter. This may be part of the still-sought-after material, but the missing part needed to balance forces Scognamiglio [38]. Matter so diluted that it's barely visible in the filaments connecting galaxies into a kind of spatial network, despite the enormous dilution over millions of light-years, could add a significant amount of mass to the Universe's total mass. However, both underground searches and those in the filaments between distant galaxies involve matter that, though not entirely clear, interacts with baryonic matter and falls far short of the definition of true *'dark matter*.' However, the chosen method seems to be most promising for the future pursuits for dark matter not revealing its nature and origin.

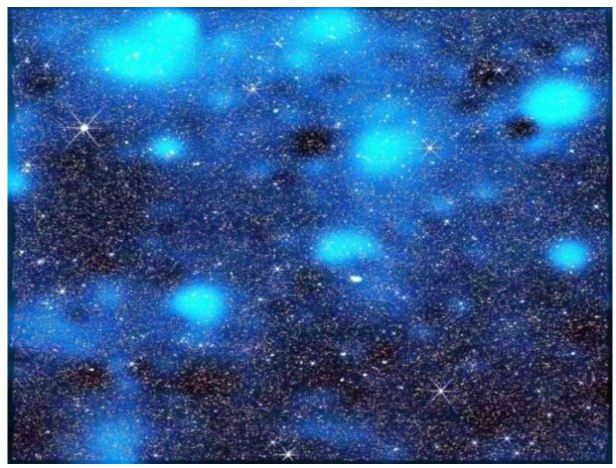

Fig. 4 Highly magnified image of distant galaxies with faint filamentary shells of faint, tenuous plasma baryonic matter connecting these relatively distant galaxies. (Scognamiglio, at all 2026). NASA, ESA, and R. Massey (California Institute of Technology)

Spacetime, as the most primordial fabric of the Universe, can be subject to fluctuations in its many dimensions. Although the nature of this fabric is not yet known, it can be assumed to be a quantum, energy-coherent, multidimensional entity, perceived from our perspective as multidimensional space. Slowing down the time dimension in a certain region of space, viewed as a two-dimensional Brane, could lead to its warping, creating a 'great attractor,' a region capable of causing gravitational lensing of objects further in the background. Scanning the Universe, therefore, seems to be a practical way to detect such gravitational anomalies. But what might be the mechanism behind such a phenomenon?

Despite the great effort and long investigation, there is no clear answer to the question of the nature and origin of observed phenomena taken under the common name, *dark matter* and *dark energy*.

4. Discussion

Beyond the assumption that regions of spacetime that attract matter can be assumed to be *dark matter*, or that expel all matter, *dark energy* can arise spontaneously in the infinity of the Universe, which is common within the quantum scale. Such behavior of spacetime within a macroscopic universe can only be understood by assuming the *exogenous origin* of such an action means acting onto our Universe from outside. This speculative theorem is introduced here for the first time based on the specific model of the Universe as an approximate spherical membrane encapsulating the black hole within [29, 30]. To introduce such an assumption, the Universe has to be look from the outside. There is no theoretical or experimental knowledge about the physics of singularity, and the physics of black holes is in its infancy. However, if assumed that the Universe assembles a two-dimensional membrane (Brane), stretched around the event horizon of a black hole, and placed within the 'parental universe,' it can be presumable with high probability that extremely strong turbulence occurs within the black hole, or from the cosmic environment outside it. Such eruptions, as well as highly potent bubbling activity, can be observed on the surface of the Sun. Dynamics of processes within black holes are unknown but presumably may be extremely energetic and produce a potent gravity disturbance that may affect the event horizon environment by banding and wrinkling its membrane and our Universe. Most recently, subluminous jets produced by a black hole were observed and analyzed. The source of that turbulence may be invisible to an inside observer because it occurs outside the Universe, but it will gravitationally animate the membrane to vibrate, and cause its long-scale undulation and wrinkles. Such undulations of space-time fabric will cause it to bend, which will inflict the long to ultra-long gravitational waves, waving the spacetime matrix when travelling through it, producing interference that may locally strengthen or weaken these warps.

In other words, undulating the Brane's surface causes *'spacetime ripples*' inflicted by gravitational pulls from outside the Universe, generating long gravitational waves within the membrane of the spacetime that bends spacetime across vast distances in the Universe. Those undulations, when translated into the curvature of certain regions of spacetime, will mimic the existence of mass and the lensing of light from more distant galaxies placed behind it. However, nothing can be observed within that area but empty space. This *'invisible mass'*, called '*dark matter*', is merely a simulation of matter; space at the trough of a wave becomes a *'great attractor*' that will assemble completely transparent space. The cause of such a space deformation cannot be observed because its source lies outside the spacetime of the Universe. At the crest of the great gravity wave is a *'great repeller',* tacit as a synonym of '*dark* energy' from that volume; as a result of the 'timescape effect' [39], galaxies will move away towards the *'great attractor*', an empty space, assumed to harbor '*dark matter*' (Figure 5).

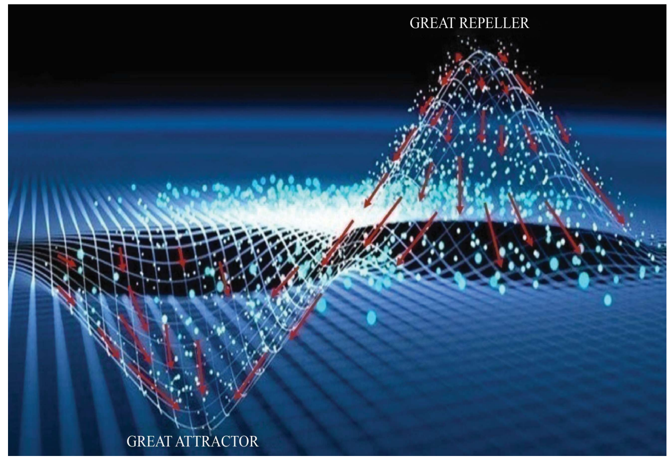

Fig. 5 The undulating fragment of the Universe's Brane shows the 'great attractor' regions where galaxies gather, pulled in by the gravity of the spacetime areas where time slows down, and the 'great repeller' regions of spacetime where time accelerates and from which galaxies diverge towards the 'great attractor'. The gravitational acceleration vectors imparted to galaxies as a result of gravitational fluctuations on the Brane's surface are shown by red arrows

Gravitational waves can be caused by both (exogenous) processes acting outside our Universe and by (endogenous) processes resulting from mutual gravitational interference caused by the motion of material bodies in the spacetime of the Universe.

The question arises whether it is possible to predict the observable effects of an interaction between gravitational waves caused by an exogenous pull on the distribution of matter in the Universe?

It seems possible.

The motion of galaxies, forced by gravitational ripples in spacetime, could be responsible for the observed frothy structure of the Universe. The wave crest regions will contain regions of space poor in matter, where time flows faster, and galaxies appear sporadically, and where galaxies will cluster, drawn by the 'great attractor,' where time flows more slowly. Could this be the sought-after genesis of the as-yet-undiscovered *dark matter* and *dark energy*?

As evidence of such interaction between our Universe and outer space behind, may be recently observed the great structure of the Universe. Over thousands of millions of years, the undulations of the Universe's spacetime may create the typical wavy pattern. Observed a highly porous, filamentary interconnected spatial network, revealing galaxy-poor regions, presumable of wave crests, where time flows faster (great repellers) and galaxy-rich regions of wave troughs where time slows down (great attractors). All of these regions are likely to be interconnected by the electromagnetic forces of tenuous plasma, forming filamentary connections between galaxies, as characteristic of electrostatic interactions and revealed in [38].

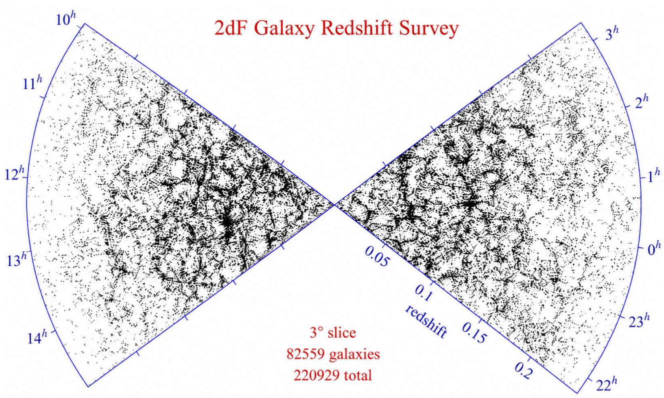

Fig. 6 The evolution of the grand structure of the Universe shows the merging of galaxies into cellular structures. (Gott III et al., 2005)

An example of such structures is the results of a spatial map of the Universe published in 2005, a section of which is presented in the illustration below (Figure 6). Because the farther into space one looks, the older objects become visible, this map maps the Universe not so much in terms of space, but rather in terms of spacetime. A slice of this map, seen by John Richard Gott III and his collaborators at Princeton University, revealed the contemporary image of the Universe, thus revealing a previously unknown image, in which galaxies and groups of galaxies are connected by filaments, whose chains, like spiderwebs, encircle vast areas of empty space, creating unknown before, vast three-dimensional cellular structures of unknown origin.

The four-dimensional fragment of the Universe shown in the figure below (Figure 7) reveals a similar, previously unknown image, in which galaxies and groups of galaxies, connected in filaments and chains, somewhat like a spiderweb, form large three-dimensional cellular structures, clearly visible in the Mollview projection. The emerging large-scale image reveals, for the first time, all baryonic matter (observed galaxies) as a cohesive and highly porous cosmic entity, held together by invisible forces, with unknown function and purpose.

Mathematical simulations confirmed the hypothesis of the influence of unknown dark matter, which satisfied most scientists, leaving a question mark regarding its mysterious, unobservable nature. Could it be that a time-dimensional fluctuation initiated by processes occurring outside our Universe is causing the formation of 'ripples in spacetime' and could be responsible for the distribution of galaxies we observe?

The latest results from the recently completed high-resolution three-dimensional map of the Universe may confirm this hypothesis. The study encompassed over 47 million galaxies and other massive objects, revealing a distinctly frothy structure in the distribution of matter (galaxies) (Figure 7A). Images obtained from data obtained from the James Webb Telescope [39] clearly revealed filamentary network structures, stretched to their limits and containing vast amounts of matter, both luminous (plasma) and non-luminous. Between the matter-rich chains that build the cell-like network, there exist regions several hundred million light-years in size, which are empty. The mechanisms building this spatial structure appear to be activated by invisible forces.

Scientists speculate that '*dark energy*' is a ubiquitous phenomenon that drives the accelerating expansion of the Universe. However, redshift measured in the light spectra from distant galaxies interpreted as curvature of the spacetime but not by the Doppler Effect, shows apparent accelerated expansion as increasing curvature of the spacetime membrane that encapsulates a black hole. Despite its ubiquity and the magnitude of dark energy's large-scale effects, no one yet knows what it actually is.

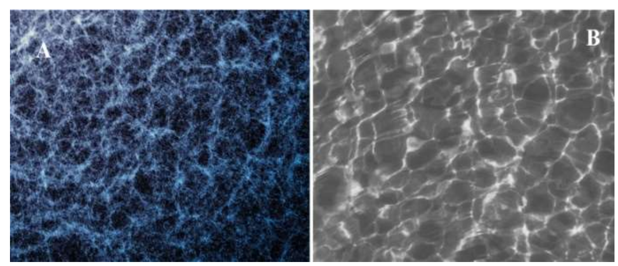

Fig. 7 (A) Represents the highly porous structure of a fragment of the Universe, showing large voids surrounded by filaments woven from galaxies. Each dot in this image represents a galaxy. (B) Represents the pattern produced by ocean wave interference, similar to that observed in a large map of the Universe

At this point, we encounter the problem of distinguishing the concepts of '*dark matter*' and '*dark energy*'. Dark matter, discussed i in the article, is supposed to bind all baryonic matter in the Universe. However, '*dark energy*' counteracts this, trying to tear the Universe apart by stretching it in all directions. Hence, the characteristic pattern is a filamentary network of galaxies stretched to its limits (Figure 7A). It appears to be a competition between two opposing dark forces. One holds the Universe together, while the other tears it apart.

Wouldn't it be simpler to explain the observed phenomenon as resulting from the 13.8 thousands of millions-years-long interaction of long-wave gravitational waves of exogenous origin with the Brane (spacetime) of our Universe, thus drawing a pattern similar to that drawn by the wind-waving surface of the ocean on the sandy floor (Figure 7B).

5. Conclusion

The main problem in establishing the nature of the mysterious phenomena of *dark matter* and *dark energy*, which are observed but not understood, arises from treating the Universe as an absolute entity. However, if we consider the Universe to be only a small part of a larger space-time continuum, several misunderstood phenomena become easier to grasp. In many ways, we encounter the problem of distinguishing the concepts of 'dark matter' and 'dark energy.' Dark matter, discussed in the article, is supposed to gravitationally bind all baryonic matter within the Universe, while dark energy is responsible for the alleged expansion of the timespace fabric, stretching the Universe's framework and trying to tear it apart. Presented for the first time in this presentation, the axiom predicts how gravity polls from outside the Universe generate waves shaping a characteristic pattern of a highly porous, spanning network. Such a pattern can be caused by both (exogenous) turbulent processes acting from outside our Universe (presumable within a black hole) and by (endogenous) processes resulting from mutual gravitational interference caused by the motion of material bodies within the spacetime of the Universe. Over thousands of millions of years, gravity pools originating from outside the Universe's timespace membrane bind its fabric and inflict wrinkles. Those undulations, by bending spacetime, act as the long-distance gravity waves shaping, over Giga years of observed activity, a vast and highly porous, filamentary spatial network of galaxies, as seen in deep space observations. Those observations reveal a wavy pattern of galaxy-poor voids on the wave crests, where time lapse is faster than within galaxy-rich regions in wave troughs, where time lapse slows. All space regions seem to be interconnected by the electromagnetic forces of tenuous electrically charged plasma, forming those filaments between galaxies, characteristic of electrostatic interactions as observed by the James Webb Space Telescope.

The idea presented here for the first time predicts that the Brane of the Universe's spacetime indicates strong rippling, which increases its 'surface area' (a wrinkled Brane has a larger surface area than a smooth one). Increasing the surface area of this membrane (our Universe's spacetime), as might be expected from the Bekenstein-Hawking black hole entropy equation [40], may lead to increasing its entropy and consequently, speed up Hawking's radiation, which leads to bring nearer the thermal death of the Universe. But actually, it acts oppositely by causing our Universe's black hole to radiate more slowly by lowering the temperature of the event horizon. The Hawking radiation temperature is inversely proportional to the mass, but not to the black hole surface area. This, in turn, means that increasing the surface area (wrinkling) of the heavily rippled event horizon will lower the temperature of this system and slow the radiation of our Universe's vacuum energy, significantly extending its lifetime. However, despite this longevity, there will come a time when the multidimensionality of our Universe's spacetime will abruptly transform its coordinate system into the ancestral universe coordinates. Therefore, the reality we perceive will change into that which can be perceived in the multidimensional spacetime of the ancestral Universe, which is now invisible to us.

Further study of the great structure of the Universe is recommended using multiple methods, including precise space scanning with high-precision gravitational-wave detectors and gravitational lensing methods. Such studies may give us a better understanding of the environment beyond our Universe's borders, in which it is embedded.

Conflicts of Interest

There is no conflict of interest in this work.

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