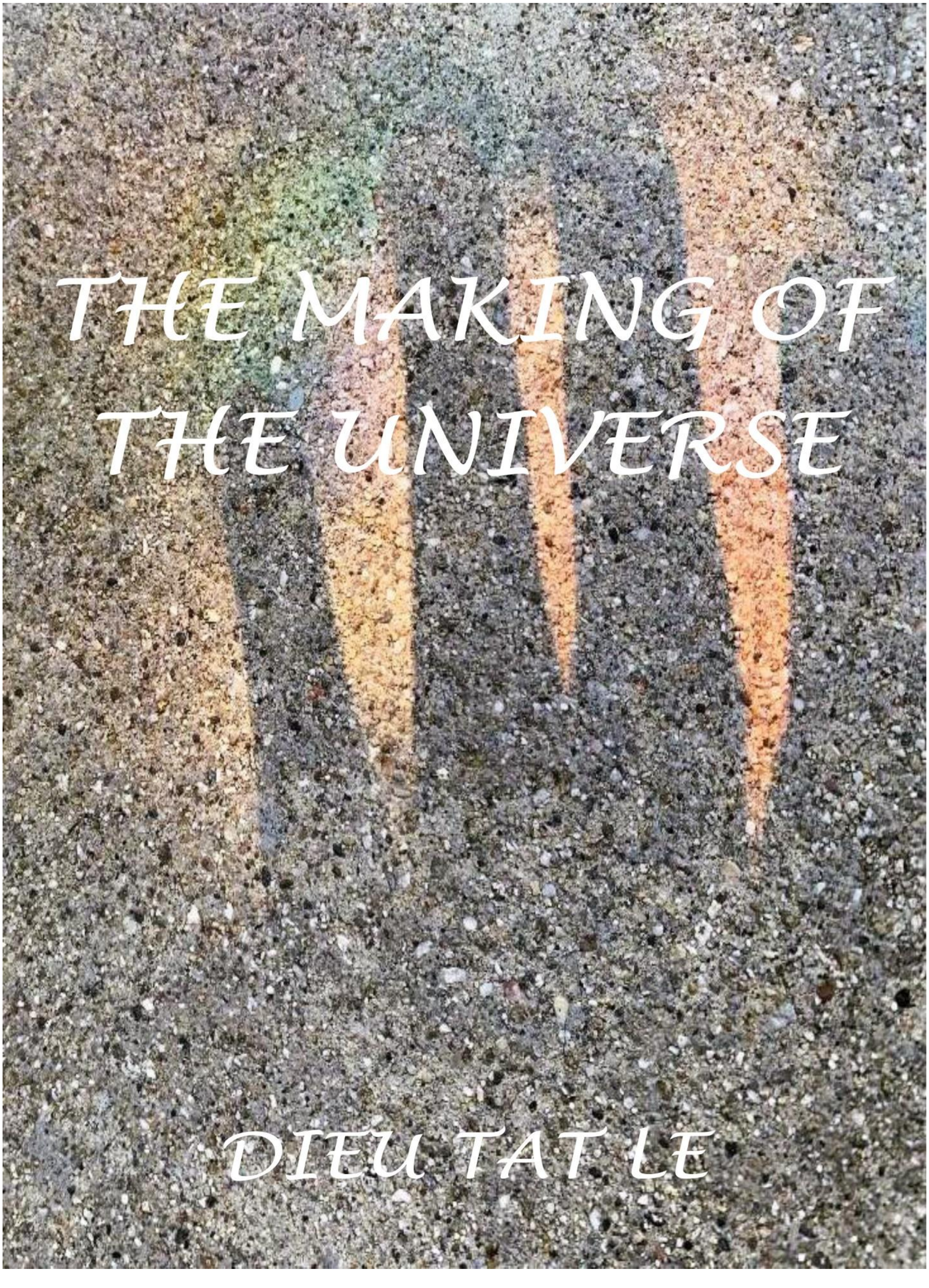

THE MAKING OF THE UNIVERSE

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Children today already endure immense pressure, particularly in education. In such circumstances, burdening them further with fabricated, fantastical, non-physical notions – forcing them to consume and memorize them – is an act of cruelty.

Cover design by Orana

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My Dear Readers,

Over the past century, science has advanced with astonishing success. Yet theoretical science has remained almost stationary, encumbered by a host of non-physical – indeed, deeply illogical – doctrines.

Einstein, when commenting on Georges Lemaître's proposal for the origin of the Universe – what we now call the Big Bang – dismissed it bluntly as "atrocious" and "unjustifiable from a physical point of view." Only the mathematics, he conceded, was elegant.

And yet Einstein himself, in presenting his Special Theory of Relativity, declared that time slows aboard a moving craft; that the greater the velocity, the slower time flows; that at the speed of light, time ceases altogether. After studying this theory carefully, I find it no less "atrocious" and "unjustifiable from a physical point of view" than the Big Bang. Worse still, its mathematical foundation, built upon a faulty diagram, is even more questionable, for it is scarcely mathematical at all.

Thus did two titans of theoretical science offer visions that sounded magnificent, yet ultimately burdened generations to come.

Einstein's theory has inflicted only modest harm.

It has chiefly produced generations of distinguished scientists who devote their lives to defending Special Relativity against any dissent while tirelessly seeking natural phenomena that might prove Einstein correct. Special Relativity has become a fortress, and its adherents its most loyal custodians.

Once inscribed into textbooks, the theory became shielded by successive generations of professors, lecturers, and authors. Entire careers, reputations, and institutions have been built upon it. To acknowledge error would mean dismantling a century of intellectual construction.

Its accurate and credible mathematics also served as armor. Those equations – particularly those of Hendrik A. Lorentz – seemed far too noble, too resplendent, to possibly be wrong. And above it all loomed Einstein himself: not merely a scientist, but a cultural icon. His reputation grew so vast that even the slightest questioning about his Theory became perilous.

And so, more than a hundred years on, Special Relativity remains revered. It is still taught, still celebrated.

The Big Bang, however, has burdened posterity far more severely.

Lemaître's theory of cosmic origins is accepted with near-religious conviction by most scientists. It is treated almost as a message from the Almighty, delivered through the hands of a brilliant priest-scientist. For many, the Big Bang is unquestionable truth, an object of admiration rather than debate.

Unlike Einstein's notion of time dilation, which merely inspired speculative fiction, the Big Bang continues to devour humanity's resources. In 1954 CERN, the world's largest particle-collision laboratory arose in Geneva as a multinational project. Its mission was to smash photons at near-light speed to create a "Mini Big Bang" that would reveal what transpired at the Universe's birth. In 2010, CERN succeeded in creating such a miniature explosion. Yet all that appeared were protons colliding and producing immense heat, precisely what countless high-energy collisions have always produced.

Still, like Einstein's theory, the Big Bang continues to be exalted. It is still taught, still praised.

After more than a decade of study and reflection, I have found many such theories – entirely non-physical, utterly illogical – yet still taught and celebrated, filling textbooks, clouding young minds, and muddying humanity's collective understanding.

Consider, for example, the celebrated concept of the Singularity, invoked to explain black holes. A black hole, we are told, possesses a region whose gravitational pull is so overwhelming that even light cannot escape. And what engenders this mysterious force? The Singularity. Ray Kurzweil, who popularized this cherished idea, explains: "It is a point where some property becomes infinite. At the center of a black hole, density supposedly becomes infinite because a finite mass is compressed into zero volume."

What exactly – what kind of matter – is supposedly compressed to the point of "zero volume"? What force could cause some "property" suddenly to become infinite? The author cannot answer even these elementary questions of physics for his own "creation," yet casually boasts of discovering not one but two kinds of singularities. Such shameless fabrication – nonsense of this sort – yet proclaimed without the slightest embarrassment!

To affirm the existence of "gravitational waves," Dr. Kip Thorne declares that LIGO has "detected gravitational waves – ripples propagating through spacetime – allegedly produced by the merger of two black holes more than a billion light-years from Earth."

Radio devices generate radio waves; sound produces sound waves; photons create light waves; water gives rise to water waves, and so on. But what, exactly – what kind of substance – produces "gravitational waves"? When confronted with this question, the LIGO scientists were stumped, and offered a strained explanation: a *baby black hole* – the result of two black holes merging into one (!) – had generated the gravitational waves. A supposed scientific discovery, awarded the prestigious Nobel Prize, yet it sounds like something from a cheap comedy.

These are tales of fantasy and illusion, wholly "unjustifiable from a physical point of view."

Humanity is truly unfortunate in this realm of "theoretical science," for some of our brightest minds suffer from a stubborn ailment: an incurable obstinacy in their blind convictions.

In 1927, when Lemaître proposed the Big Bang, the keenest intellect of the age, Einstein, immediately warned that the theory was dreadful, unacceptable from the standpoint of physics. And the Big Bang theory itself, in truth, possesses nothing inherently profound. The only portion that sounds remotely scientific is the notion of a “primordial atom”; the rest – “containing both space and time, then exploding into the Universe” – is naïve, simplistic, almost mythological. Yet the scientific world shrugged off Einstein’s warning, embraced the Big Bang with absolute faith, and enshrined it as eternal truth. Their blind obstinacy has persisted for a century!

For this reason, in writing this book, I harbor no expectation of changing anything within modern theoretical science. What I have discovered over more than ten years of study, I record solely out of compassion for the young, and in the hope that among my readers – especially professors and lecturers who teach physics – some may share this same compassion.

Children today already endure immense pressure, particularly in education. In such circumstances, burdening them further with fabricated, fantastical, non-physical notions – forcing them to consume and memorize them – is an act of cruelty.

If this book helps professors and lecturers avoid such unintentional pitilessness, I shall consider myself fully satisfied.

Dieu Tat Le

11/11/2025

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The Question That Leads to an Ultimate Discovery

Whether you are a professional, an avid enthusiast, a hobbyist, or simply curious, I cordially invite you to join my team and share the joy of exploring the universe.

I began this journey fourteen years ago. You may be taking your first step now – don't worry; nobody is late. Only recently has science advanced enough to give us the right equipment to pack our backpacks with knowledge, methods, and wisdom to guide us on the journey. These tools will keep us on course and reduce the time we waste wandering, distracted by guessing, theorizing, imagination, or quixotic intuition.

Today's science offers many devices with unimaginable capacities to anyone inspired to ask big new questions. Many of those questions will lead us to the door that opens onto the hidden blueprint of the universe's structure.

As an example: for years one small facet of a larger question irritated me. Then, one evening, the whole thing snapped into view. Ever since, that discovery has driven me to work vigorously – as if the question were a guest who will not leave until it receives a satisfactory answer.

On that evening an old classmate visited. While we strolled around my backyard, his wife – on a pilgrimage to India – called. I courteously left my guest alone and returned to the house.

Autumn had stripped the garden of flowers and green grass, so I amused myself by watching my friend and noticing how time had treated him. Chung had been the most handsome boy in our entire 12th-grade class at CVA high school. Examining how time had altered a former Prince Charming's face, I found myself pondering time's cruelty and the nature of the universe.

While sketching a plan of discovery, another "portrait" I had never considered before began to emerge. It contained a sizable invisible area: "the truly realistic image of my friend's surroundings." I had assumed those surroundings were empty. They were not.

Chung stood next to a pear tree at the center of the garden, talking and sometimes laughing. The evening sun, slipping through cracks in the clouds, illuminated him and revealed some glittering, silk-like filaments connecting his shoulders to his head.

Ha! My poor friend had walked into a spider web.

Three silk threads draped over Chung's shoulder and stretched outward – one of them seemed to extend into infinity, like a "phone line" connecting him to his wife's phone on the other side of the globe. But that line was not alone. Countless other invisible "phone lines" passed through him, each reaching toward different phones. These phone signals were accompanied by many other waves, all sharing the same space. Light waves, radio waves, and countless waves made of unknown particles arrived from all over the universe. They surrounded my friend and passed through roofs and walls – some even pulsing through the entire thickness of the planet at or near light speed.

Thus, Chung's surroundings were not the empty space my eyes had assumed; the space was full of filaments or thread-like stuff made of chains of innumerable particles.

Chung was not alone in that crowded space. His wife, 8,000 miles away in an Indian city, shared the same invisible environment at the same moment. Sitting only a few feet from Chung, I received the same torrent of waves and particles – the only difference being that the couple's phone waves did not affect my phone's chip.

This experience is not unique. People everywhere are constantly submerged in a sea of waves, day and night, asleep or awake. Only those who live far from civilization, beyond the reach of networks, receive fewer manufactured radio waves. Even they face gigantic storms of natural waves coming from space; they simply lack the comparatively few human-made signals.

Once the invisible spectacle is fully perceived, a pressing question arises:

How can the space around Chung – and around the globe, and in the sky – handle the traffic of zillions of waves moving together at extremely high speed? How can the universe control and guide them so they travel safely without disastrous entanglements or huge crashes?

A narrower version of this question had long bothered me: How can a smartphone perform so many unbelievably complicated tasks and produce such miraculous results? The easy answer is that Steve Jobs and brilliant engineers built the iPhone. Read a few books about Smartphone design and you will be satisfied.

But that explanation is incomplete, it addresses the device, not the fantastic processes that make telephonic conversation possible.

Smartphones send and receive synthetic radio waves. The universe provides a traffic system that allows those waves to move safely at extremely high speed.

A zillion waves can fit into the tiny space of a chip because the waves are extremely thin. Traditional line-based telephone traffic was simple: wires protected the signals, so bundling thousands or millions of them posed no major problem. Each signal had – relatively – a dedicated path.

Today's "phone wire" is different: it is absolutely naked. Mr. Chung's phone generates radio waves that propagate in all directions, sharing the same space with zillions of other naked waves. Yet, miraculously, they funnel into Mrs. Chung's phone on the other side of the globe.

We send radio waves into the sky and let the universe handle transportation and delivery. The universe performs this task exquisitely, exceeding our expectations. Every naked, invisible phone line travels along a safe road at or near light speed, alongside zillions of other unprotected waves. They all reach their destinations intact.

How is this possible?

The universe did not wait for the invention of the iPhone to build highways for these waves; this extraordinary traffic system has likely existed since the beginning of time.

To answer the question, we must understand the universe's structure in detail.

The Foundation of Our Universe: Dark Matter

By now you can see how fortunate we are. Living today, we can ask the questions that lead straight to a treasure trove of cosmic mysteries. Earlier generations of scientists – Einstein included – rarely had such opportunities because, in their time, mobile phones did not exist.

Blessed by the fruits of our era and guided by this precious question, I have reached the front door and found the key. The door is opening.

Please follow me. Together, let us stand upon the shoulders of modern science and extend our understanding into the deepest, farthest reaches of the two realms of infinity.

Our first target is the infinitely small environment where the minuscule particles that form the foundation of our universe reside: Dark Matter.

Finding Dark Matter

Imagine being able to scoop up a drop of dark matter. Inside it, you might find the tiniest building blocks of our universe. Scientists estimate that about 70 percent of the cosmos is made of this mysterious stuff (Bertone & Hooper, 2018). Yet many people – including top physicists– aren't convinced it exists. And they have a point: no one has ever *seen* dark matter. For more than thirty years, the smartest minds with the most powerful equipment have tried to detect it – and come up empty.

One of the boldest attempts is the LUX-ZEPLIN experiment, buried deep inside a former gold mine in South Dakota. The setup sounds like science fiction: a huge chamber filled with liquid xenon, hundreds of light detectors that can catch a single photon, and an enormous tank of ultra-pure water. Its goal? To catch passing particles of dark matter.

But as *Observer* science editor Robin McKie reported in 2016, frustration has been growing. After decades of work and millions spent, the hunt has produced no clear result. Astronomer Stacy McGaugh even warned that if this generation of detectors fails, maybe it's time to stop looking for dark matter altogether and rethink gravity itself.

I don't think we're there yet. Instead of giving up, maybe we need to change ***how*** we look.

Think of a detective investigating a crime scene. The culprit is long gone, but the detective can still piece together the story by studying the evidence: footprints, fingerprints, bullet casings. Dark matter is like that elusive suspect – we may never catch it in the act, but the clues it leaves behind can still reveal its presence.

Engineers and mechanics do this kind of indirect reasoning all the time. A structural engineer can't see the steel rods inside a bridge column, but physics and math tell them how many rods must be there to keep it standing. A mechanic can't see through a car's hood, but they know how the engine works and how power flows to the wheels.

The universe itself looks like one giant machine, over 13 billion years in the making. And like any machine, it must have hidden parts that keep it running. That hidden part is most likely dark matter.

Take the universe's expansion, for example. If it's stretching out like a balloon, what's inflating it? With a balloon, the answer is air or helium. With the universe, the answer seems to involve some invisible kind of matter.

Or consider Einstein's theory of gravity. He described it as masses curving space and time, but space and time don't have a physical surface you can bend. His famous trampoline analogy makes it easier to picture: a bowling ball on a trampoline stretches the fabric, and smaller balls roll toward it. That "fabric," many now believe, is provided by dark matter.

The evidence is circumstantial but compelling. Gravity works. Galaxies stick together. The universe expands. Something is making it all happen, and dark matter is the best candidate we have.

If "not being able to see it" still feels unsatisfying, think about watching a magician float above a stage. You don't see the wires, but you *know* they're there. Physics and logic demand it. Dark matter works the same way.

Based on what it seems to do – creating gravity, driving cosmic expansion, smoothing out motion – it's reasonable to think of dark matter as a kind of super-fluid, filling every gap between particles and reducing friction to almost nothing. Scientists even break it down into two forms (Jungman, Kamionkowski, & Griest, 1996):

1. **Dark-matter liquid** – an invisible, super-thin, super-light fluid that flows everywhere in the universe.
2. **Dark-matter particles** – tiny building blocks floating in that fluid, helping construct everything we see.

Right now, researchers around the globe are still chasing those fundamental particles. While we wait for their breakthroughs, there's a simpler way to grasp dark matter's presence. Just look around:

- Fish float in water.
- Birds soar through air.
- Stars and planets drift through the universe, because a hidden cosmic "liquid" holds them up.

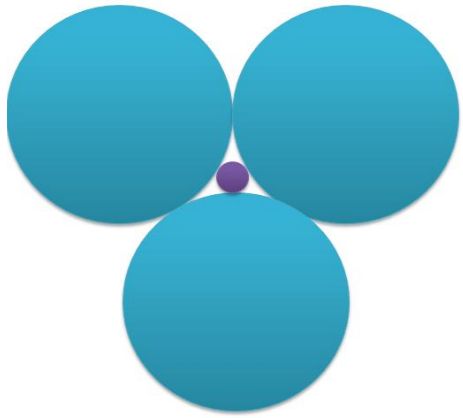
Dark matter may be invisible, but it shapes everything. It's the silent scaffolding of the cosmos, the unseen medium that makes the universe work.

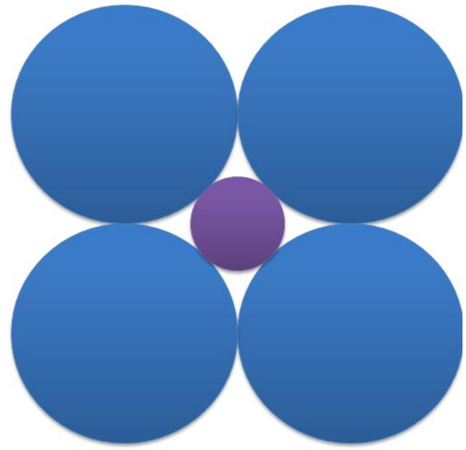
The Composition of Dark Matter

One of the fundamental prerequisites of existence is simply to occupy a place in the universe.

We should learn to appreciate the profound elegance of the spherical form. The sphere accommodates an infinite number of compartments, allowing an infinite number of entities to coexist. It embodies a spirit of generosity: to exist and to let exist, thereby constructing the fabric of the universe.

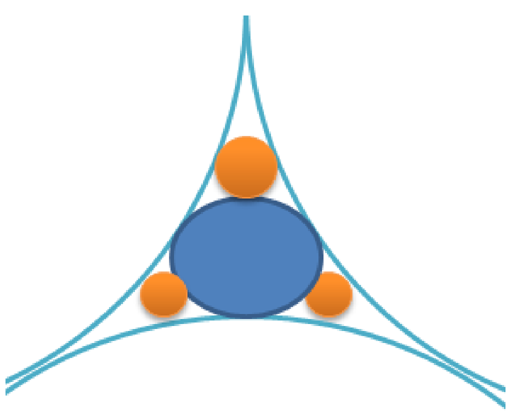
Our journey begins with the munificence of the circle.

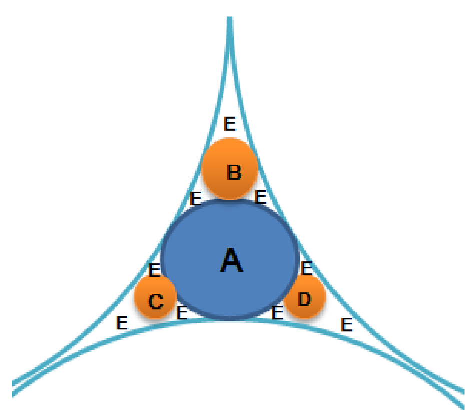




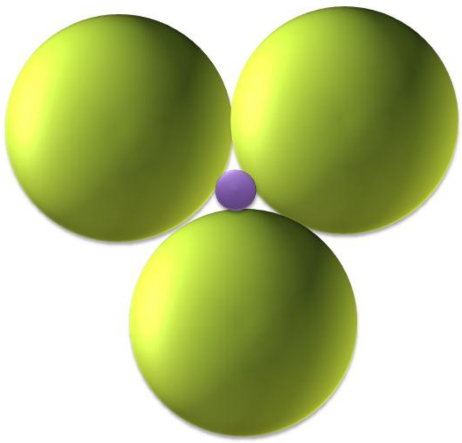
Put three or four circles together tightly, and we still have room for a smaller circle. That new circle immediately leaves three or four empty spaces for the smaller circles to occupy.

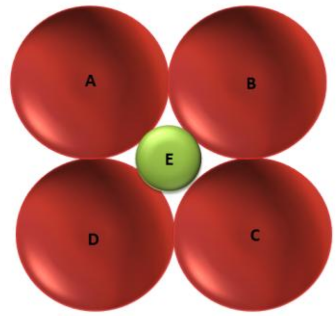
The gap between three circles tied together always leaves room for a smaller one (A). Then, the newly created gaps between them and A produce room for B, C, D, followed by nine more empty rooms for E's occupancy, and on and on, to infinity.



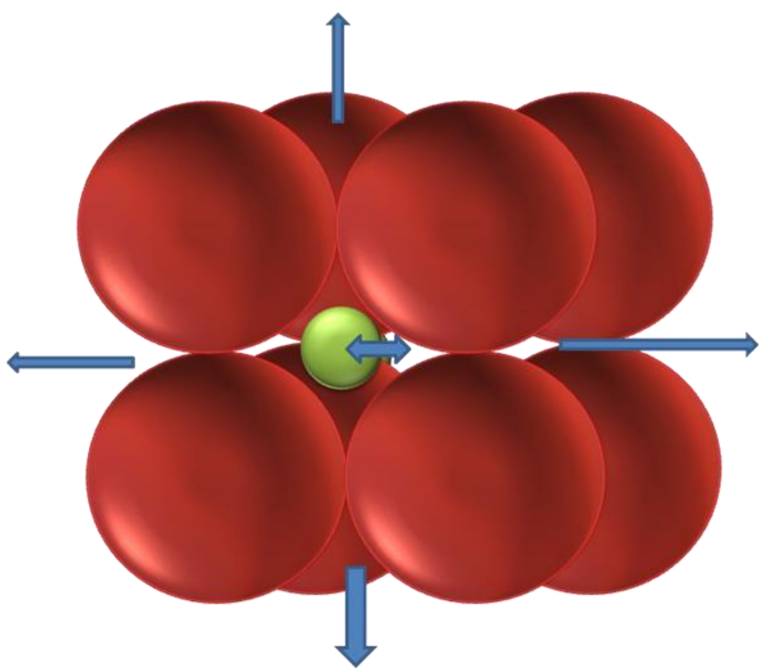


Sphere discharges its bounteous in 3D, the real world:

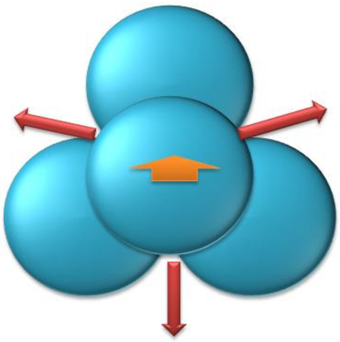


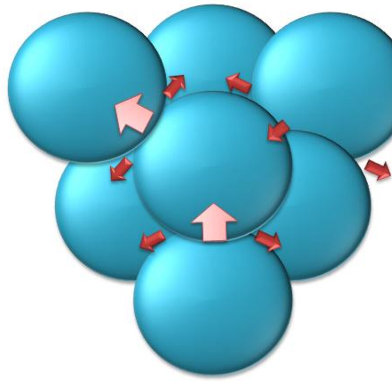


Groups of spheres also make room for the smaller ones. A, B, C, and D create a gap to welcome E. If E fits into the empty space formed by 8 spheres, it would be free to escape through 6 open exits.



The steadiest pattern, in this case, is the group of four spheres where each one always touches – or somewhat solidly connects with – the other three.



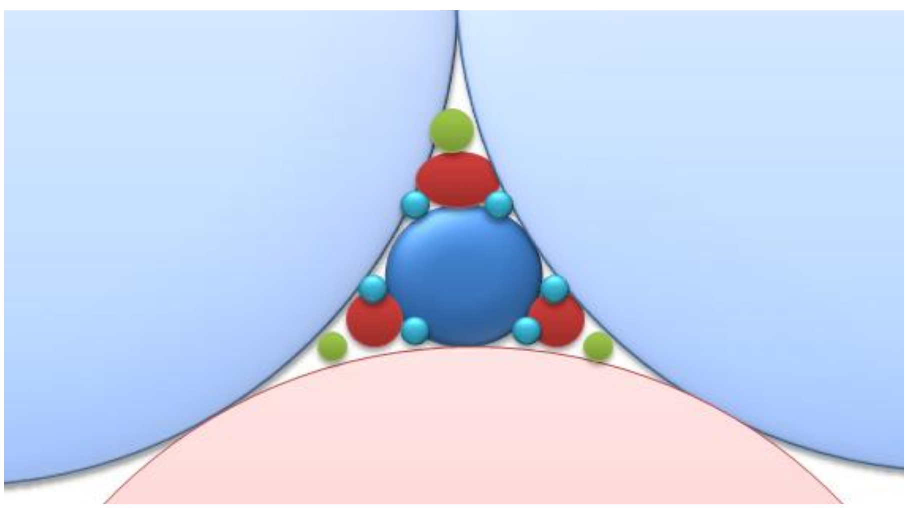


Adding three more spheres to this steady basic pattern creates nine more exits.

Even surrounded by tons of large spheres, a small one can always escape in several directions and then move freely to anywhere in the universe. *Zillions of spheres provide zillions of tunnels*.

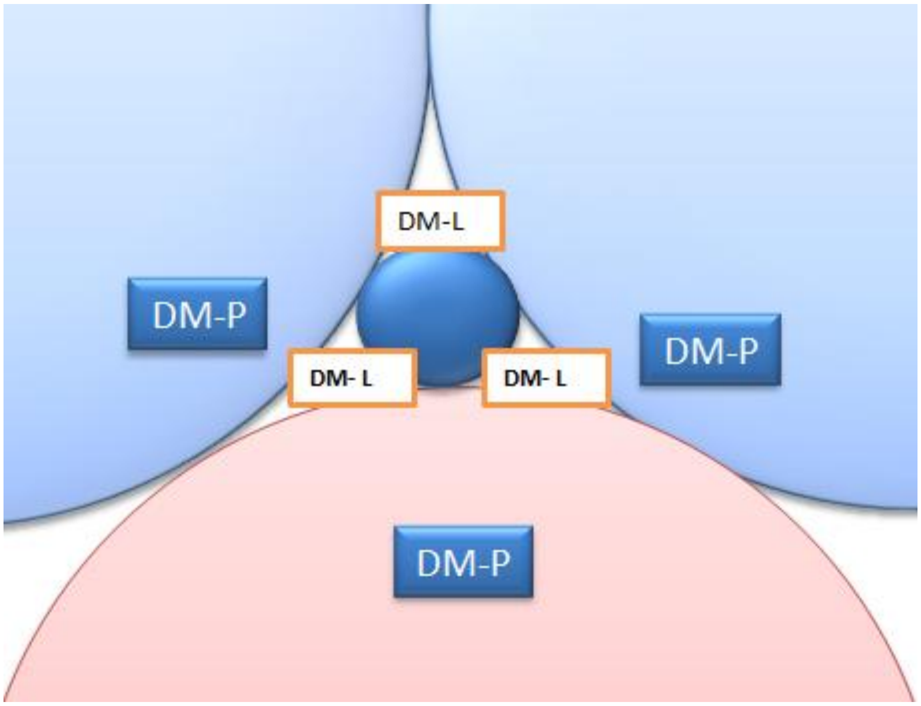
Dark matter contains all kinds of spherical particles. In this infinitesimal – or quantum – world, every subatomic particle can travel everywhere its tunnel system allows, providing coverage in all corners of the universe.

Since no tunnel is straight, they all move in a waveform. Light particles or photons create light waves. Radio particles form radio waves. The particle's size dictates its moving frequency.



Particle and its surroundings

When one day we can take a photo of the *"smallest-in-the-universe" subatomic particle*, we will see a spherical object surrounded by three larger ones (DM-P) and three open spaces filled with DM-Liquid (DM-L).



Smallest Particle and the surroundings

Zillions of spherical dark-matter particles weave together to form zillions of tunnels, creating pathways that allow each of them to travel freely throughout the universe.

Take light particles (photons), for example. As they move inside tunnels perfectly suited to their size, they may seem completely "naked," yet they are always protected by the tunnel's walls, constructed from countless larger particles.

Radio waves and every other kind of matter benefit from the same extraordinary traffic system. They move smoothly and safely because the tunnels are filled with a super-liquid that works like oil in ball bearings, reducing friction to nearly zero.

This gives us an answer to the question: *How can the space around Earth, and the sky above, handle the traffic of zillions of waves racing at near-light speeds, without disastrous collisions or entanglements?*

Therefore, the solution lies in dark matter. Built from two simple components – dark-matter liquid and dark-matter particles – it provides the infrastructure of this cosmic highway. That structure gives every "naked" signal, whether it's a phone call or a beam of light, a safe route to travel, even when surrounded by zillions of other unshielded waves. All of them arrive at their destinations intact.

The secret rests in the spherical shape of the particles themselves, which elegantly resolves complex problems and delivers what can only be described as magical results.

What Causes Things to Move in the Universe?

Objects move when pushed. However, all types of pushing do not always result in moving. For example, notice the immense pushing power of Mr. Sumo. Even his colossal force is limited when pushing another individual whose back is against a wall or large pillar. The key here is that the movement of any given object actually occurs as a result of pushing only when encountering a pressure stronger than its inertia and the existent pressure of its immediate surroundings. In other words, displacement arises only when the applied force is sufficient to overcome both internal resistance and external constraints.

Forces responsible for motion can originate externally or internally. External forces include natural agents such as wind or flowing water, while internal forces are generated by mechanical or chemical systems such as combustion engines.

Jet propulsion relies on a continuous sequence of controlled explosions. Combustion of fuel produces expanding gases, which are expelled at high velocity to create thrust in the forward direction.

Other propulsion mechanisms operate without combustion. A propeller generates thrust by means of rotating airfoil-shaped blades. The pressure difference established between the forward and rear surfaces of each blade accelerates air or water backward, producing a forward force on the craft. In space, where fluids are absent, ion thrusters provide propulsion by electrically accelerating ions or plasma. Although such thrust is small in magnitude, it can be sustained for long durations, making it effective for spacecraft navigation.

Across these examples, the underlying principle is consistent: motion results from the establishment of a pressure differential that exceeds an object's inertia and environmental resistance. With limited exceptions, most observed motion in the universe could be described in terms of forces and pressures acting to drive systems toward regions of lower pressure.

Re-thinking Newton's Third Law

In a careful examination of Newton's Third Law and the existing literature, I have found that Newton's formulations and explanations for its establishment are far from complete. Physically and mathematically, the law may hold in a limited sense, but its wording is confusing and misleading.

The law is usually stated as follows:
"When one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction on the first body."
Or in Newton's own words:

"To every action there is always an opposed equal reaction: or the mutual actions of two bodies upon each other are always equal and directed to contrary parts."

Newton's original explanation reads:

Whatever draws or presses another is as much drawn or pressed by that other. If you press a stone with your finger, the finger is also pressed by the stone. If a horse draws a stone tied to a rope, the horse (if I may so say) will be equally drawn back towards the stone: for the distended rope, by the same endeavour to relax or unbend itself, will draw the horse as much towards the stone, as it does the stone towards the horse, and will obstruct the progress of the one as much as it advances that of the other. If a body impinges upon another, and by its force changes the motion of the other, that body also (because of the equality of the mutual pressure) will undergo an equal change, in its own motion, toward the contrary part.

The words *"simultaneously"* and *"equal in magnitude"* introduce immediate difficulties when applied to real-world cases. Consider the following scenarios:

1. **A driver and an airbag.** When a driver's chest strikes the airbag in a collision, what purpose would the airbag serve if it simultaneously exerted an equal and opposite force that smashed the chest with the same intensity?
2. **A soccer player kicking a ball.** If the ball exerts a force equal in magnitude and opposite to the kick, how long could a player continue without serious leg injuries?
3. **The horse and the stone.** Newton's own example describes a horse pulling a stone. But if the stone were replaced with gravel, is the horse "equally drawn back" toward the gravel? The Third Law seems valid only if one ignores the mass difference of the second body.
4. **A ball kicked into a net.** Does the kick generate an equal and opposite force *on the ball itself* at the moment of impact?

Rather than accepting Newton's Third Law at face value, I sought to investigate the source of its ambiguities and the circumstances under which it yields seemingly paradoxical results. Following extensive analysis, I arrived at the conclusion that:

The Third Law is valid only when the first body interacts with a second body that remains ***stationary***.

When the second body is itself in motion, the law no longer holds in its conventional formulation. In such cases, the first body receives a reaction that is either greater or smaller in magnitude than the force it exerts – never precisely equal, contrary to Newton's assertion.

This discrepancy arises because, *at the point of contact*, when both bodies are in motion during their interaction, two distinct force systems are established – each corresponding to one of the interacting bodies.

The apparent failure of Newton's Third Law, therefore, does not stem from the fundamental mechanics but rather from imprecise wording and an incomplete treatment of the dynamic process. To resolve this issue, the law may be reformulated as follows:

When one body exerts an influence upon another, the latter responds by generating **two distinct reactive forces**, rather than a single one.

It must:

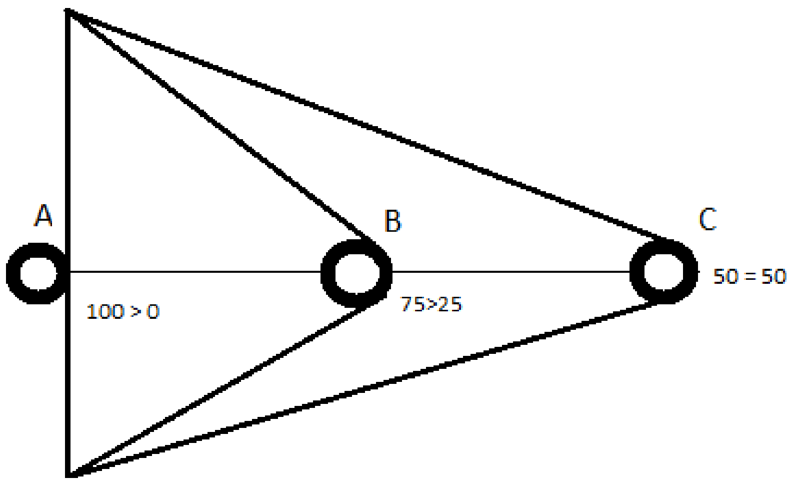
1. React directly to the force of the first body.
2. Resist the effects produced by that force.

In some cases, these two responses coincide as a single force; however, in most situations they are distinct and separate.

For example, if one kicks a soccer ball with 1,000 pounds of force, the ball immediately reacts to the kick by flying away. At the same time, however, the ball resists the kick with only about 450 grams of force – insufficient to cause injury to the leg. This resisting force corresponds to the ball's inertia (or effective weight). Thus, the ball never exerts back on the leg an equal force to that which it received.

By contrast, if one substitutes a stone or a brick wall in the same scenario, their large inertias allow them to resist and absorb the full force of the kick, displaying virtually no motion. In such cases, the resisting force equals both the applied force of the kick and the reaction force.

Yet there are situations in which all forces eventually become equal in magnitude but not simultaneously. Consider the example of a ball striking a net. At the initial point of contact (*A*), if the ball delivers a force of 100 pounds, the net's resisting force is almost zero. As the ball's force diminishes, the net's resisting force gradually rises. At point *B*, the ball may deliver 75 while the net resists with 25. At point *C*, the forces balance at 50–50, and the ball comes to rest. In this way, the ball's force decreases from 100 to zero, while the net's resisting force increases from zero to 100 over the duration of contact.



Body 1: Steel ball -- Body 2: Net

The total resisting force in this case ultimately equals the impinging force, but not at the same instant. Time is required for the net to deliver its full reaction. At intermediate stages (*A*, *B*, and *C*), the net's resisting force is much weaker than the ball's initial impact. This explains why a net can cushion a falling person and prevent injury.

This example demonstrates two key principles: (1) both objects in contact generate forces, and (2) the resisting force of the second body always equals the force of the first body provided that contact continues until the first body's force is fully exhausted. It also clarifies why the ball, when kicked, never exerts an equal force back on the leg. The ball offers only its small resisting force, then immediately flies away, *ending contact* – and with it, *the resisting force*.

Reformulating Newton's Third Law

Therefore, Newton's Third Law of Motion should be revised as follows:

When one body exerts a force on a second body, the second body simultaneously reacts to the full force of the first body while also exerting a resisting force equal to its inertia or weight back on the originating body. If the second body's inertia/weight is equal to or greater than the first body's applied force, or if contact persists for the full duration of the impact, the resisting force and the impinging force will be equal in magnitude.

Proposal for New Principles of Motion

In addition to this revision, I propose three new principles of motion that may prove valuable for future research:

A. With rare exceptions – mostly related to electromagnetic phenomena – an object moves only when subjected to a pressure greater than its inertia and surrounding constraints. In simple terms, motion seeks emptiness, advancing into regions of lower pressure.

B. For motion to occur, an object must displace the medium or matter in front of it, leaving behind a void that becomes immediately available for new occupancy.

C. When objects are firmly connected, they share the same velocity, kinetic energy, and inertia, effectively functioning as a single composite body.

Together, these principles form a framework that may support a deeper analysis of photon and subatomic particle motion. In particular, they may offer new insight into how spherical wave dynamics underpin fundamental processes throughout the universe.

How Light Moves at Extremely High Velocity in Every Direction at All Times

On the Theoretical Physics Group forum, Andre Brink asked:

Suppose we have a sphere in vacuum with a radius of one light-year. The interior of the sphere is also vacuum. A flash of light occurs at the center, bright enough to reach the surface one light-year away. Why can an observer at any point on the sphere see that flash? Does this not imply that the flash must produce an infinite number of photons (which is impossible)? Every physics textbook I have read shows photons traveling in definite directions. How is this possible?

This question has puzzled people for a long time.

Let's look at a simple, everyday analogue. Light a torch on a pitch-dark night: from any point on an imaginary sphere of radius one mile around the torch, the torch seems instantly visible. If we generously model the torch's light as occupying a sphere of radius 12 inches (≈1 ft), that corresponds to about 4.1905 cubic feet of emitted light. How can that finite "volume of photons" immediately illuminate the surface of a one-mile radius sphere, whose area is roughly 350,471,314.2857 square feet – and do so in about 0.0000053 seconds (53/10,000,000 s), the light-travel time to the surface?

The same paradox scales up: the light released by an exploding star – no matter how large – seems far too small in "volume" to cover the surface of a sphere billions of light-years across and still be detectable at Earth. How many photons would it take to "cover" the surface area of such a vast sphere?

Taken at face value, these observations appear impossible. I agree with Andre: it seems paradoxical. Yet the phenomenon occurs, so the missing piece must be in the explanation – not the observation.

This problem has been the most challenging research I have undertaken. The results are rewarding, full of surprises, and have profoundly altered my conception of the universe's structure.

2. Do Photons Have Mass?

A widespread assumption in physics holds that photons must be massless in order to travel at the speed of light. However, observational evidence indicates otherwise. Photons scatter, reflect, exert pressure, and bend in gravitational fields. They stimulate the optic nerve and, when concentrated in lasers, can cut matter such as steel. Each of these effects implies a form of inertia.

Scholars and commentators have raised this issue from multiple perspectives (Agarwal, 2017; Raisuddin, 2017; Balmer, 2017; Law, 2017; Miatello, 2017). Their reasoning converges on the claim that photons possess effective mass or rest mass, consistent with Einstein's equivalence of energy and mass (Einstein, 1905a, 1905b). Experimental studies in Bose–Einstein condensates, such as Hau et al. (1999), further demonstrate that photons can be slowed, stored, and restarted, reinforcing the interpretation of photons as possessing structural mass.

3. How Does a Photon Move?

"You can see the light because it moves as a spherical wave." – Berndt Barkholz.

That statement doesn't by itself answer our paradoxes, but it's a useful starting point. Carefully studying how waves move in familiar media (like water) may reveal structural features that help us think about light.

I begin with water waves because they are easy to observe and contain two instructive behaviors: **surface waves** (the familiar waves on the ocean or a pond) and **spherical (radial) waves** (the circular ripples after you drop a stone).

4. Wave Analogies and Photon Motion

4.1 Surface Waves

A few essential facts first:

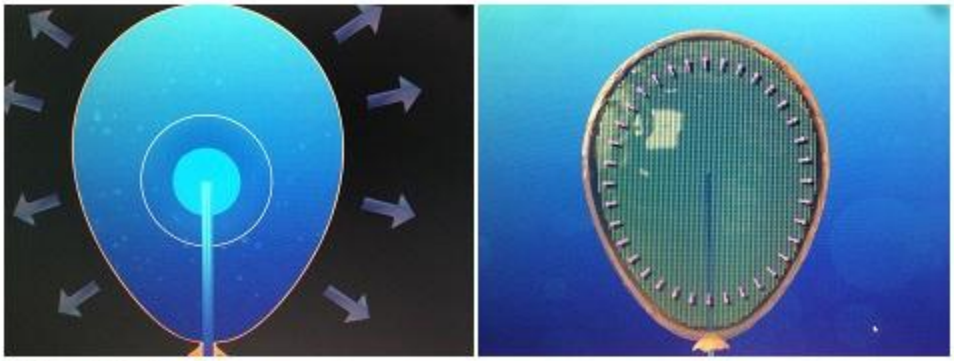
- A *wave* is a disturbance that transfers energy through matter or space.
- **Mechanical waves** propagate through a medium whose particles are displaced and then pulled back by restoring forces.
- Surface water waves are neither purely longitudinal nor purely transverse; they are a combination. The *deformation* of the water surface propagates, while individual water molecules execute approximately circular motions and on average stay near the same place. Energy, however, travels with the wave. (See labman.phys.utk.edu for a concise overview.)

A simple experiment makes this clear. Throw a big rock into a calm pond: the rock displaces water (it must, because it occupies volume). That displacement is accommodated by nearby molecules pushing on each other; those pushes propagate outward as ripples. Many molecules very near the impact are forced upward and produce splashes. But the majority of molecules do not travel from the impact point to the pond edge; they move in roughly circular paths and return toward their original positions. The *energy* and the *pattern* travel outward, not the bulk of the water.

So the intuition "the water itself moves bodily toward the shore" is false. Water molecules participate in the wave motion locally; they aren't carried en masse from the drop point all the way to the beach.

4.2 Spherical Waves

To create a spherical wave, insert a tube into the center of a balloon already filled with water. Then, slowly pump more water in through that tube.



Quinn Pritchard

As soon as a newly arrived water molecule leaves the tip of the tube, it immediately occupies a space equal to its own volume. In doing so, it changes the balloon's mass by pushing against all surrounding molecules in **every** direction. The balloon expands, and if enough new molecules enter, it will eventually burst.

A simpler test involves pumping air into an already fully inflated balloon. Each new air molecule pushes **all** the other molecules inside the balloon outward in all directions.

These experiments reveal important points:

- Water molecules generate water waves. Air molecules generate airwaves.
- Whether entering from the side or the center of the balloon, each new molecule invades and occupies one additional space, equal to its volume, **changing the balloon's mass**. To do this, the molecule must push away all surrounding molecules in every direction. Then, in turn, it is itself pushed aside by newcomers. This chain reaction continues until the pumping stops.
- A rock, a boat, or the wind may generate surface waves in water, but they never become part of the wave itself.
- By contrast, a water molecule plays both roles: like the rock, it initiates the force that generates the wave; but unlike the rock, it then becomes part of the wave when it is pushed by other incoming molecules.
- Inside the balloon, new molecules force the existing ones to move. As a result, each water molecule, while being pushed, presses against every single spot – down to the size of one molecule – on the entire inner surface of the balloon. This collective action expands the balloon's volume, and in effect, its mass of water.
- In a spherical wave, a small number of new molecules can set a vast number of existing molecules in motion, transmitting the wave throughout the entire balloon until it reaches the spherical boundary. For example, just one cubic inch of new water molecules can generate a wave that immediately reaches the whole balloon with a 12-inch radius. This is exactly analogous to how a torch's light can fully cover the spherical surface of a sphere with a one-mile radius.

At this point, only one problem remains to be addressed: when a light source is ignited, it is expected to emit illumination instantaneously across the surrounding sphere. For instance, the light from a torch, once lit, should theoretically reach a sphere with a radius of one mile *immediately*. In reality, however, there is a delay of about 3.5 milliseconds.

To understand this phenomenon, we must examine the concept of "chain motion" or "movement in a chain."

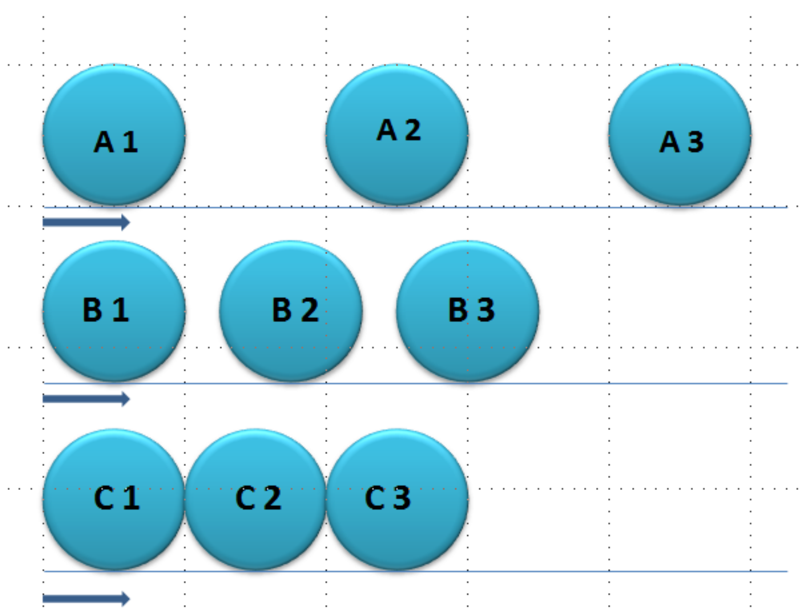
5. Chain Movement and Synchronization

Although it has the potential to explain one of the most mysterious forms of motion in the universe, *chain motion* – or *chain movement* – remains one of the least studied physical phenomena. For example, to fully understand how a photon moves, we must look not only at spherical waves but also at chain motion, which may reveal the true nature of light's velocity.

The phenomenon can be demonstrated through simple experiments:

1. Arrange nine balls in three rows.
    - **First row (A1, A2, A3):** wide gaps between the balls.
    - **Second row (B1, B2, B3):** narrower gaps.
    - **Third row (C1, C2, C3):** no gaps at all; the balls are touching.
2. When A1, B1, and C1 are set in motion simultaneously at the same speed, the following effects are observed:
    - A3 begins moving slightly later than A1 (approximately two seconds).
    - B3 begins moving after B1, with a shorter delay of about one second.
    - C3 begins moving simultaneously with C1.

Therefore, The distance between elements directly affects the timing and character of chain movement.



The distance between each ball slows down the chain movement, as demonstrated in the first and second rows. The shorter the distance, the faster the motion propagates through the sequence. When the gaps disappear entirely, all the balls move simultaneously, behaving as if *they were parts of a single object.* For example, when C1 moves, C2 and C3 move at exactly the same time.

This principle has striking implications. On an aircraft carrier, for instance, every sailor's bed should replicate the motion of the captain's chair without even a nanosecond of delay. Sand grains in the desert or on the seafloor move in perfect synchrony with Earth's velocity. The size of the object does not matter: with a stick one mile long, you could reach your opponent instantly by pushing your end of the stick. By the same reasoning, one could theoretically touch the edge of the universe with a sufficiently long stick – if only one had the required strength.

The insights from these simple experiments enrich our understanding of light's motion, helping explain how it can travel at such extraordinary speed. Light "attacks" the human optic nerve in precisely the same instantaneous manner.

Space is filled with photons. Between a torch and the eyes of an observer one mile away, there exists an uncountable number of photon chains – or photon "sticks." When the torch is lit, it releases zillions of photons that push through these chains, reaching the observer's eyes and stimulating the optic nerves ***almost*** instantly. This is why the flame of a torch appears visible almost at once.

In fact, the torch's light takes about 3.5 milliseconds to cover a distance of one mile. This brief delay arises from two factors:

1. Although photons cluster together, even the tiniest gaps between them slow the propagation of chain motion.
2. Photons are not perfectly solid; their "softness" produces micro-gaps that hinder the immediate transfer of force from one photon to the next.

Together, these factors account for the 3.5-millisecond delay.

6. Observing Photon Movement

Another mystery of light is its ability to travel at nearly constant velocity over billions of years, across vast stretches of space. Electrons behave in a comparable way, enabling electricity to flow rapidly along wires – at essentially the speed of light. Franklin Veaux offers a helpful analogy: imagine a tube packed with marbles, each touching the next. When one marble at the end is pushed, the marble at the opposite end moves immediately. The motion is transmitted through the entire line, even if the marbles themselves shift only slightly.

The absolute synchronization of photons within a chain is central to understanding chain motion. For motion to occur, each photon must advance into the space of the photon directly ahead of it, while leaving an identical space for the photon behind. Every photon in the chain moves forward by the same distance in precisely the same interval of time.

Thus, the first photon moves at the same speed as the last, regardless of how far apart they may be. Once the initial force accelerates photons to 186,282 miles per second, the chain can maintain this speed indefinitely.

7. What Happens When You First See the Torch's Flame?

At that very first moment, no newly produced photons from the torch have actually reached your eyes. Instead, they push against the photons already present, creating a spherical wave that in turn drives the closest photons toward your eyes. These are the ones that press on your optic nerve cells, triggering the signals that your brain interprets as light.

With light traveling so fast, why don't the newly created photons reach your eyes instantly?

Unless you are standing very close to the source, they can't. It takes time for the torch to burn long enough to produce enough photons to fill the enormous volume of a one-mile-radius sphere (about 616 billion cubic feet). Only then will an observer one mile away encounter the first of those newly born photons. In effect, the photons move toward you with the *expansion speed of the growing photon volume*, not with the speed of an individual photon.

The universe is already full of photons. Our optic nerves are constantly surrounded and "touched" by them, but we don't notice because a single photon's mass is infinitesimal – so small and weak that it fails to stimulate our nerves. Only when photons arrive collectively, moving at very high velocity, do they exert enough pressure to trigger vision. It is like a breeze: our skin only notices the air when it moves; or like sound: air molecules vibrating our eardrums must move as waves at about 767 mph for us to hear them.

When you strike a match in a dark room, you give photons their effectiveness by setting them in motion at light speed. After a chain of chemical reactions, the ignited match produces a cluster of photons corresponding to the size of its flame. These new arrivals immediately invade space at light speed, pushing surrounding photons outward in every direction and generating a spherical wave that fills the room.

When the match burns out, photon production ceases. The pushing force disappears, and so does the wave's motion. The room becomes dark again, even though it is still full of photons.

Thanks to the spherical wave and certain laws of motion, just four cubic feet of newly born photons from a torch can indirectly spread across and fully cover the surface of a one-mile-radius sphere (350 million square feet) almost instantly. Likewise, light from stars millions or billions of light-years away reaches our eyes and observatories with the constant speed of 186,000 miles per second.

The same principle applies to other particles and molecules: many can generate their own kind of spherical wave, if they exist throughout the universe. Some, perhaps, may even move faster than photons, surpassing the speed of light. For this to happen, they must remain close together, have a more solid structure than photons, and possess a stronger initial push that launches them more forcefully.

From the birth of the universe, these special particles have played their role in its expansion. A deeper study of spherical waves may reveal not only the structure of the cosmos but also a detailed map of its ongoing growth.

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$E = mc^2$ the Myth and the True Meaning

$E = mc^2$ The Most Famous Least Understood Formula

Einstein explained the meaning of his most famous formula in his 1905 paper entitled: “Does the Inertia of a Body Depend Upon Its Energy-Content?” His paper delivered an unambiguously affirmative response to the question he posed. $E = mc^2$ means that a body’s inertia, or inertial mass, is directed by its energy content and directly proportionate to it. As Einstein himself wrote, “the mass of a body is a measure of its energy-content”

Elizabeth Howell explains Einstein’s formula as follows:

> One of the most famous equations in mathematics comes from special relativity. The equation – $E = mc^2$ – means "energy equals mass times the speed of light squared." It shows that energy (E) and mass (m) are interchangeable; they are different forms of the same thing. If mass is somehow totally converted into energy, it also shows how much energy would reside inside that mass: quite a lot. (This equation is one of the demonstrations for why an atomic bomb is so powerful, once its mass is converted to an explosion) (Howell, 2015).

While a tremendous breakthrough, Einstein’s theory still leads to confusion and generates questions for which Einstein provided equivocal answers. For example, Einstein’s following statement: “It shows that energy (E) and mass (m) are interchangeable; they are different forms of the same thing.” The single word, “interchangeable,” stresses the formula’s meaning. Ice and water can be interchangeable, but the energy released during the burning of a log can never return to its original source in any shape or form. While the quantity of heat the log produces can be identical to an unknown number of other substances, Einstein’s formula certainly cannot lead to any other result. On the other hand, Einstein’s conclusion – *“If mass is somehow totally converted into energy, it also shows how much energy would reside inside that mass”*– feels more accurate and perhaps closer to his real intent.

Still, the formula does not offer any practical method to determine how much energy resides in a certain mass. One must place absolute trust in the accuracy of the formula’s result by multiplying the weight of mass (m) by the speed of light squared to know precisely how much energy resides in a given mass. Aside from inherent uncertainty, the formula only mentions mass. It does not demand its user to identify the kind of matter used in the calculation. Obvious questions arise. For example, does that mean a mass of one kilogram of wood would provide precisely the same amount of energy as a mass of a kilogram of TNT? A calculation using the formula produces identical results, and there is nothing in the formula that informs us otherwise.

An Incomplete Formula

The formula apparently relies on the chemical processing of mass and energy to reach the intended results. However, the formula's vagueness combined with the paucity of detail and little promise of accurate results makes the formula incomplete. Consider the following examples:

- Mr. A's formula results in X grams of sugar after processing 1Kg of oranges.
- Miss B's formula yields Y grams of sugar in processing 1Kg of apples.
- Sir E's formula dictates that 1Kg of processed fruit would yield Z grams of sugar. Sir E's formula is unreliable, failing to provide an ascertainable result.

Like Sir E's formula, $E= mc^2$ lacks specificity in identifying the kind of matter comprising the mass (m) used in the equation. One cannot know what kind of matter (TNT, automotive gasoline, etc.) produces how much energy. Scientists in the energy business must use their tests, experiments, and research results to modify the formula. Without such augmentations, the formula is incomplete and unusable.

A Perfect Description of a Converting Process

The formula, $E= mc^2$, is not helpful as a mathematical or chemical formula. As Einstein designed it, the formula is a map for every necessary step in converting mass into energy, noting three vital, inseparable elements: *mass, velocity, and energy.* Mass is the source. Energy is the result. Of the three elements, only *velocity* can start and finish the calculation. Thus, one must approach any calculation using the formula with two fundamental questions:

1. What is heat?
2. How is it created?

To address the first question, one can turn to a government publication on heat:

> The universe is made up of matter and energy. Matter is made up of atoms and molecules (groupings of atoms) and energy causes **the atoms and molecules to always be in motion** - either bumping into each other or **vibrating** back and forth. **The motion of atoms and molecules creates a form of energy called heat** or thermal energy which is present in all matter. Even in the coldest voids of space, matter still has a very small but still measurable amount of heat energy.
>
> Energy can take on many forms and can change from one form to another. Many different types of energy can be converted into heat energy. Light, electrical, mechanical, chemical, nuclear, sound and thermal energy itself can each cause a substance to heat up by **increasing the speed of its molecules.**
>
> **Thermal energy can be transferred to other objects causing them to heat up**. When you heat up a pan of water, the heat from the stove causes the **molecules in the pan to vibrate faster** causing the pan to heat up. The heat from the pan causes **water molecules to move faster** and heat up. So, **when you heat**

something up, you are just making its molecules move faster (U.S. Energy Information Administration, n.d.).

Succinctly, the motion and subsequent friction of atoms, molecules, masses, and objects create heat. As the editors at NASA (2019) point out, "when you rub your hands, sharpen a pencil, make a skid mark with your bike, or use the brakes on your car, friction generates heat."

Indeed, friction is responsible for almost all heat creation in the universe.

Examining a Meteor's Burning Process

When a fast-moving meteor enters the earth's atmosphere, encountering air, it endures the friction created by the interaction. Upon heating, the meteor's molecules, particles, and atoms move faster and faster, increasing thermal energy production. At some point, the meteor burns up or explodes, its mass transforming into energy.

Describing it in full, a mass (meteor) moves → while moving with high velocity (v), the mass interacts with air → the interaction creates friction-generating thermal energy (E) → The newly born energy triggers explosions that push everything (particles, atoms, etc.) in all directions at an extremely high speed → Being pushed, everything pushes its neighbors, creating a chain of motions in the form of spherical waves → more friction, more explosions devour a part or the whole mass transforming it into heat (thermal energy) and light (photons.)

Velocity initiates the process. The faster the movement, the sooner the process begins. Two kinds of speed are identifiable in this phenomenon:

1. The mass' velocity necessary to produce friction to the point where the converting process can initiate.
2. The velocity of atoms, particles, etc., at the instant when the transformation from mass to energy is proceeding.

The first speed, "normal," is similar to the speed of striking a match.

The second speed is quite different. According to $E= mc^2$, during the process, atoms, particles, etc. must reach the maximum velocity allowed in the universe: ***light*** speed. Maximum heat and light appear with burning; an explosion confirms the formula's factuality.

Using $E= mc^2$, one can determine the initial force that pushes photons forward with lightning speed resulting from an explosion or a flame. Without identifying (E) or particularly the kind of matter (m), the methodology does not appear not as a mathematical formula but as ***a description of the process of transforming mass into energy.***

The Last Mystery

Einstein's famous formula becomes increasingly complicated when applied to calculating the quantity of energy converted from a mass. To determine the energy yield, the mass does not require identification. Any mass moving at extremely high speed shares the same fate when transformed. However, mathematically and physically every kind of matter dictates the quantity of energy it produces during the process (Symthe, 2023). The formula fails to require this pivotal information.

Moreover, the speed of light (c) is more than adequate to begin and finish the process. There is no need to subject mass to C squared. Why Einstein used C^2?

I discovered, somewhat surprisingly, that the **C** in Einstein's formula can be understood as a measure of ***distance*** rather than ***velocity***, contrary to the way it is usually interpreted.

Take, for example, an exploding bomb. The blast generates heat, photons, and shock waves, all radiating outward in every direction to form spherical waves. To describe this expansion, we turn to the geometry of a sphere:

• **Surface area: $S = 4\pi r^2 = 4\pi C^2$ •** ***or*** **Volume: $V = (4/3)\pi r^3$**

To calculate the spherical surface containing all the photons after the explosion, we use the surface area formula S=4πr2S = 4\pi r^{2}. In this context, the c2c^{2} term in Einstein's equation corresponds to r2r^{2}: a squared *distance*, not a *velocity*. Here, **C represents the radius of the sphere**, defined by the distance a photon travels from the explosion's center to its position on the spherical surface after a given time.

Thus, after one second, the radius r is the distance traveled by light in one second: 186,282 miles. The spherical surface area covered by the photons is:

S=12.5664×(186,282)2S = 12.5664 \times (186,282)^{2}

Einstein simplified the above calculations to $E= mc^2$.

He left out "4π" or "12.5664" probably because, except for photons, everything has mass > photon would move much slower than C. In addition, unlike photons, the heat, the energy, the blasting force, and the remnant of masses' velocities drastically decrease over time and dissipate long before reaching the sphere's surface. Such elimination cancels the role of "4π." In his brilliance, Einstein detected all the physical reasons to create a simple but invaluable formula.

Einstein and the many scientists who have applied **$E = mc^2$** (often with light modifications) have generally obtained satisfactory results in calculating the quantities of energy released from mass. However, his work would stand as one of the most significant scientific contributions of all time – if only **$E = mc^2$** accurately described the actual process by which ***mass is converted into energy***.

Especially, it explains how photons are generated with lightning speed.

The Most Adorable Mistake of Albert Einstein

Humans have gazed at the night sky for millennia, imagining what must lie beyond our limited ground-based view and incomplete understanding. The domain above the earth was the realm of the gods. The night sky revealed to those early sky watchers that the mysteries of space were well beyond mere mortal experiences and belonged in dreams.

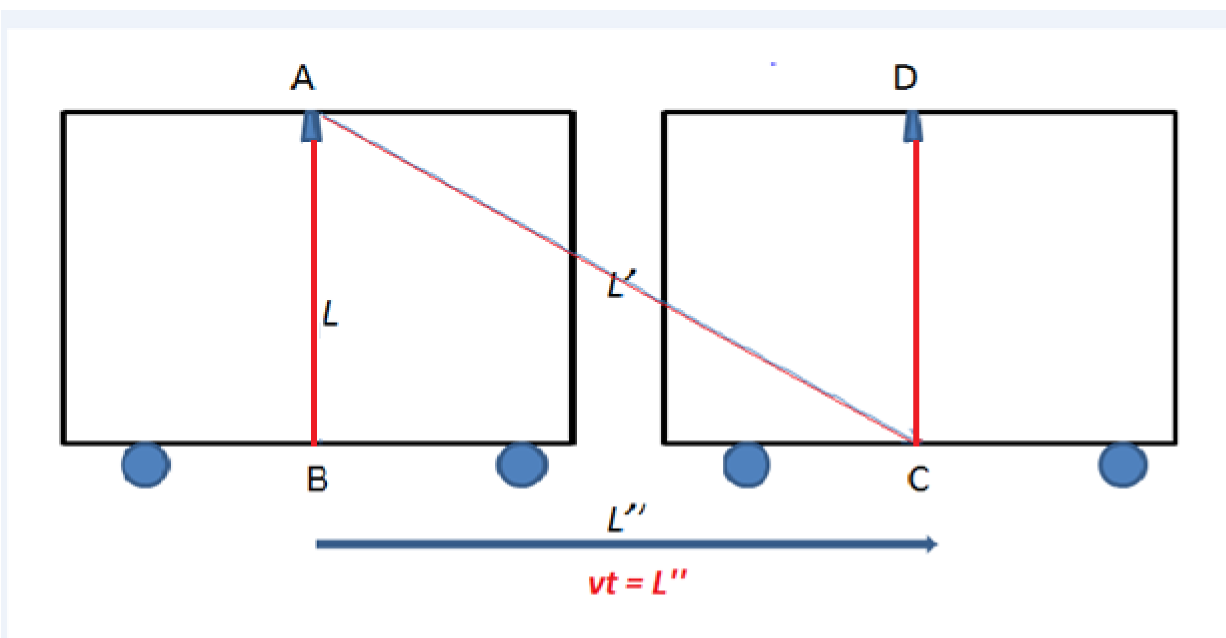
Through progress and a growing understanding of the universe, we learned that those pinpricks in the night sky were stars, almost incalculable in their distance from earth. It would take millions of human life spans to reach them even at the speed of light.

Today, however, movies and media promise future travel to the furthest reaches of the universe via ultra-advanced ships that will keep humans alive indefinitely.

Prospects of star travel began to move from fantasy to reality when a young 20th-century genius, Albert Einstein, burst onto the scene with his unparalleled deduction into relativity. Einstein provided the theoretical basis for humanity to take baby steps into more advanced thinking about travel to distant worlds.

Einstein convincingly theorized that time's speed varies depending on an object's velocity and thus could be regulated. Thus, time within a moving ship was malleable. The faster the ship moves, the slower time proceeds. When the ship reaches the speed of light, time stops. Consequentially, if someone were on a spaceship moving as fast as light, one would experience no loss of time.

Einstein presented his Special Relativity Theory as follows:



F. 1

Imagine a train with velocity (v), after time (t), has covered a distance L’’ = vt.

A passenger on the train always sees light ray AB.

To an observer on the ground, the light from the ceiling travels the distance L’ (from point A to point C) simultaneously. With c as the velocity of the light, we have: l’ = ct. A, B, and C form the right triangle ABC so that we can apply the Pythagorean Theorem:

$$l' = \sqrt{l^2 + v^2 t^2}$$

Therefore: $$ct = \sqrt{l^2 + v^2 t^2}$$

$$c^2 t^2 - v^2 t^2 = l^2$$

$$t = \frac{l}{\sqrt{c^2 - v^2}} \qquad (1)$$

To a passenger on the train, *the time passed is only the time for the light traveling from the ceiling to the floor* (equal to the shorter distance from point A to point B):

$$T = l / c \qquad (2)$$

Divide (1) by (2), we have:

$$\frac{t}{T} = \frac{1}{\sqrt{(1 - v^2/c^2)}} \qquad [\text{ or: } t / T = 1 / \sqrt{(1 - v^2/c^2)}\ ]$$

The above equation leads to a magical result.

- If the train does not move, v = 0 and t/T = 1; passenger K and observer Q on the ground observe precisely the same amount of time passed.

- The faster the train runs, the greater t/T will be, meaning, to observer Q, more time will have passed than the passenger’s time.

- If v reaches speed c, the time inside the train stops. Then we have a remarkable side effect: The passengers on a train that runs as fast as light will not age, no matter how many years have passed on earth.

Furthermore, after Einstein, scientists predicted an even more miraculous consequence – if the spaceship moves faster than light, it will enter the past.

Thus, thanks to Einstein, we have a theoretical means to explore the universe while never aging. All we need to do is move faster than the speed of light.

So, the dream of exploring the stars centered on the presently impossible construction of a faster-than-light spaceship. Like most people, I assumed that all we had to do was wait until advancements permitted the construction of such a ship.

Then, one day, I realized that Einstein's Time Dilation Theory was fundamentally invalid. I attended the funeral of a friend who suddenly left this world. Only hours before his death, we were joyfully chatting. Missing him terribly and wanting to talk and laugh with him one more time, my thoughts turned to a time machine. Or, even better, an Einstein spaceship that could travel faster than light.

I busied myself, reviewing Einstein's Special Relativity. Could we someday board an F-T-L spaceship and meet our departed loved ones in the past?

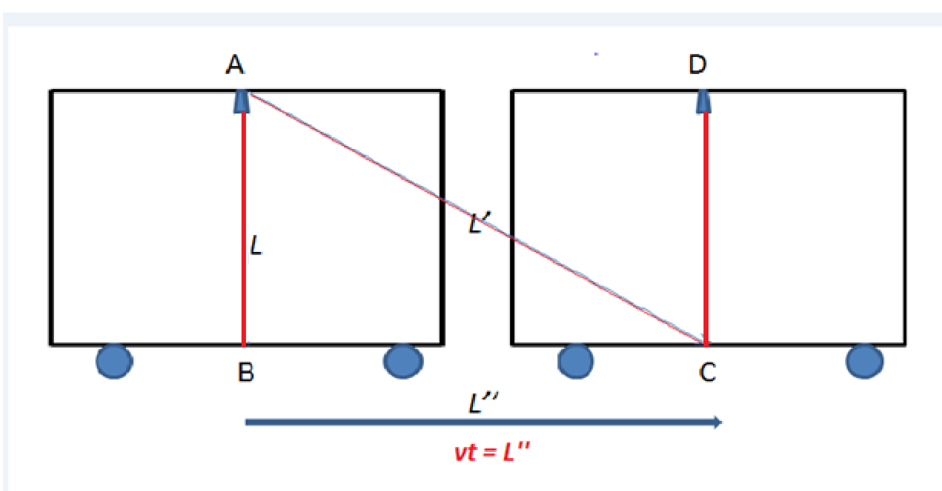
With shock, I realized such was not possible because Einstein's Special Relativity Theory was flawed in such a way as to render the entire theory false.

Constructed on Einstein's thought experiment, the Special Relativity Theory found that:

When the train moves, the passenger (inside the train) sees ray A-B (the light source at A to the floor at B) while, at the same instant, the observer – outside the train – sees the same A – B with B already having reached point C (A– B becomes A– C or, in other words, A– C is another version of A– B seen by the observer.)

Such a phenomenon has never happened in the universe.

In the first error, Einstein's imagination stopped too soon.



He thought: Since the train moved, when the observer saw it the first time, it had already arrived at a new location; hence, B had moved to C.

That observation was correct, but it lacked a crucial fact: At the same instant, *A also moved to D* – The roof had to move along with the floor.

Einstein drew AC, mistakenly believing that it was the same as AB. His drawing illustrates an impossible scenario in which B had moved, but A was immobile, remaining at the same place.

A– B and A– C are different light rays, existing at different times during the experimental process.

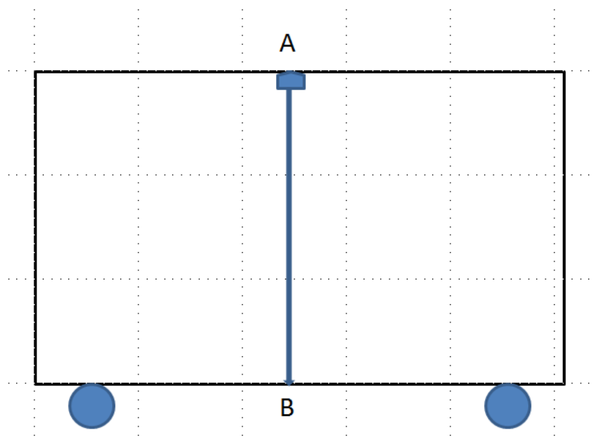
Einstein's faulty imagination led to an erroneous depiction that provided a chain of incorrect conclusions to follow.

That's not all.

AC and AB never exist at the same time, as Einstein believed. Einstein's failure to apply optics laws during the experiment was another fatal mistake.

Carefully replicating the test, we find the truth:

1) The train is stationed. (F. 1A)

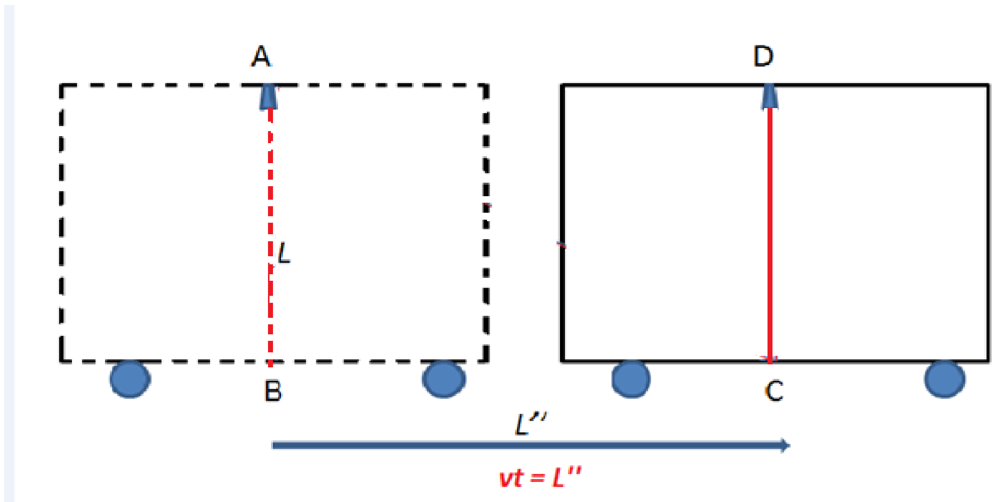


F. 1A

Passenger K sees ray AB (originated from a light source at A to the floor at B.)

Observer Q, standing one mile away from the train, for example, would see the same AB a bit later. The optics law involving time dictates that Q can only see the entire wagon with everything in it – light included – about three point five milliseconds (1/186282 second) after passenger K saw it due to the time necessary for the train's image to reach Q's eyes.

2) The train moves (F. 2)



F. 2 – 8:00 a.m., Train at point P1.

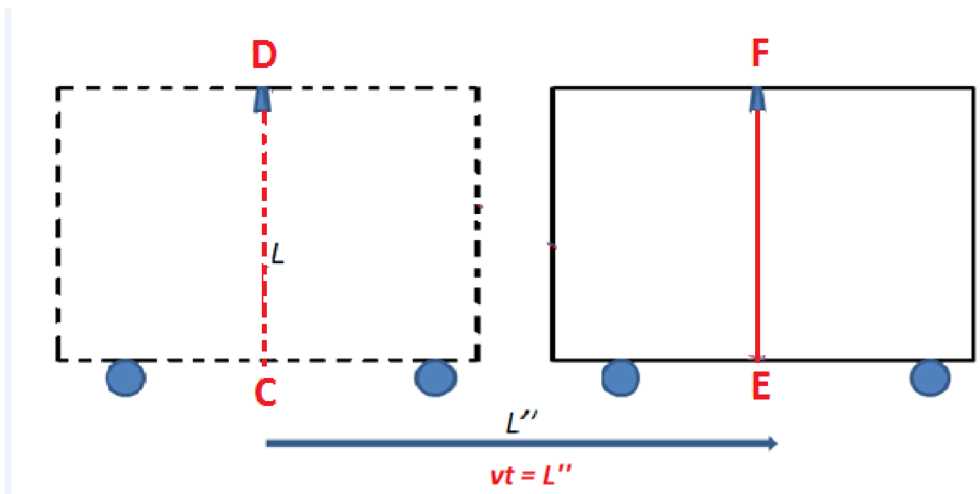
At 8:00 a.m., e.g., it is located at P1.

At this instant, K sees AB.

But not until 8:00 *plus* three point five milliseconds a.m. can Q see AB.

Q sees the train and AB a bit later, meaning Q only sees the objects' images of the past because the train had moved to the new location, P2.

At P2 (light source) A moved to D, shining a vertical ray to C – A became D, and B became C. (F. 3)



F. 3 – Train at point P2 – after 8:00 a.m.

K immediately sees D – C (a new light ray originated from the lamp at D vertically reached the floor at C.)

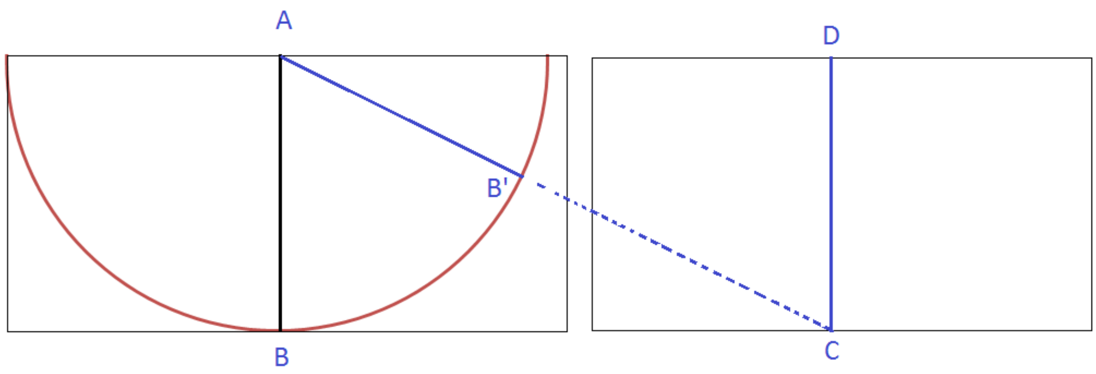
After three point five milliseconds, Q then sees ray DC.

However, the train had already left location P2 – D moved to F, C moved to E, etc.

The same phenomenon continues until the train stops.

AC never appears as a pivotal element in the theory's structure during the entire experiment.

To Einstein's credit, since light propagates in every direction, the ray AC exists but always shows up at a time that is irrelevant and contributes nothing to the establishment of the Special Relativity.



F. 4

Using A as a central point to draw a circle with AB as radius. (F. 4)

AC crosses the circle at B1. The picture shows that when the ray originated from A reached B, the ray heading to C had covered only the distance A– B1.

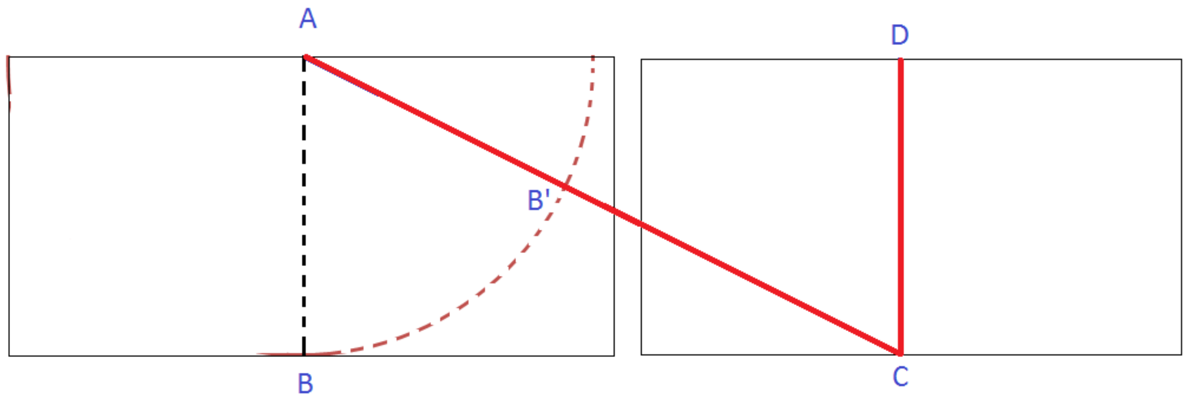
Lacking B1– C, AC is incomplete. ***It does not yet exist***.

At this moment, K sees A – B and A – B1.

After three point five milliseconds, ray A– B and ray A– B1 simultaneously reach Q's eyes.

When A– B1 becomes A– C (the light ray originating from A had reached C), the actual A had already moved to D and B to C. Not until that moment do we have a complete A– C while the ray A– B had disappeared, belonging to the past.

At this precise instant, coming into existence are A– C and D– C (the light ray that originated from D to reach the floor at C.)



F. 5

Passenger K and observer Q, one after the other, will see AC and DC appear simultaneously. (F. 5)

Therefore, during the experiment, there is no occurrence when, at the same time, K will see only AB and Q only see AC. AC is not a version of AB, as Einstein thought.

This phenomenon does not occur in the lab or elsewhere in the universe. Optics laws define vision:

1. In observing an object from different distances, one sees an image at two different times – one after the other – never simultaneously.

2. The images received must originate from the same source and place.

If exposed from the beginning, everyone should be able to see the object's original location. For example, if you park a car in front of your house, you know the car's location. All GPS satellites will also "see" the car parked there rather than parked at the neighbor's house. Likewise, when the light ray shines from A to the train floor at point B, passenger K and all other observers experience the same view regardless of their location. If observer Q, standing outside, insists that he sees the light shine down to point C instead of B, he would need to schedule an appointment with an eye doctor.

3. These images are mostly identical, with variations in angles of view and perspectives.

Depending on the distance, the size could be different, larger or smaller, but they are identical in the shown details. A passenger cannot see a straight-up pillar inside the train without involving distorted illusions, whereas an observer on the ground sees it, paradoxically, as leaning to one side, as in AC.

4. The distance makes the image change sizes: closer-larger, farther-smaller.

To say passenger K, who is near, sees the AB as shorter, whereas observer Q sees the same light, but longer is paradoxically anti-physics.

Einstein either did not know or intentionally ignored the laws of optics.

Regardless, Einstein made a colossal mistake that led him to envision light ray AC and use it as the backbone of his theory. AC did not exist, denying the existence of the rectangular triangle ABC. Consequently, Einstein's calculations and arguments to build the Special Relativity Theory were invalid.

Einstein's theory defies physics, and his ideas inspired many to build imaginary castles on a bed of cosmic sand. Humankind's unprecedented big dream of exploring the universe through time mastery is unachievable.

To propose that the faster one moves, the longer one lives is a grand dream, perfect for future star-travelers! Even when Einstein was wrong or confused, his brilliance still inspired the most magnificent dream of all– time. However, it was only a dream and should be treated as such.

(9/4/2021)

The Utmost Surprise of Gravity in the Universe

Today, I present a discovery that may come as a surprise, not only to you, my friends, but to the entire human race, extending back to the very first people on Earth.

Gravity, in its conventional definition as a fundamental interaction that produces mutual attraction between all bodies with mass, turns out to be far more elusive than we have long assumed.

More than four hundred years ago, Galileo uncovered crucial evidence related to gravity. Yet he failed to recognize its deeper significance. Four centuries later, despite our admiration for his remarkable experiments, we too have overlooked the essential connection between his findings and the true nature of gravitational phenomena.

This is what Galileo discovered:

> In a vacuum, a hammer and a feather fall at the same rate. The reason a hammer and a feather fall at the same speed in a vacuum is that there is no air resistance. In the absence of air resistance, all objects fall at the same rate regardless of their mass (Kirkland, 2007).

As such, we already have a lazy answer: Since there is no air resistance in a vacuum, all things have to fall at the same rate.

In 1971, on the Apollo shuttle to the moon where there's no air, David Scott, an astronaut, did an experiment, having a hammer and a feather fall on the moon at the same time.[1] Lo and behold, the two objects did fall with the same rate, just like Galileo predicted (Compton, 1996).

Figure 1

Feather and Hammer Drop on the Moon

That's an old tale. Now, the earth has its own "vacuum."

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[1] This experiment can be viewed on YouTube: https://www.youtube.com/watch?v=ZVfhztmK9zI, accessed February 22, 2024.

However, upon reviewing the YouTube video entitled "Brian Cox Visits the World's Largest Vacuum | Human Universe – BBC," you will encounter a more updated, parallel experimental scenario: two distinct objects, namely a bowling ball and feathers possessing disparate masses, demonstrate uniform rates of descent, mirroring the outcomes observed in David Scott's lunar experiment.[2]

As I said, Galileo's discovery dealt with Gravity in particular, but nobody knew it.

On Earth, we now have our own "vacuum." In a BBC experiment titled *Brian Cox Visits the World's Largest Vacuum | Human Universe*, a bowling ball and a collection of feathers were released inside a vast evacuated chamber. Despite their disparate masses, they too descended at the same rate, perfectly reproducing the outcome of Scott's lunar experiment.

Galileo's experiment, though seemingly straightforward, dealt directly with gravity, yet no one, not even Galileo himself, grasped the profound truth hidden within.

Unraveling Reverse Truths

For centuries, humanity has been led into the "rabbit hole" of gravity. We have assumed that objects are drawn toward one another, or at least that they are pulled toward the Earth or the Moon when they fall. But Galileo's findings reveal the opposite.

Here is the "reverse truth": in David Scott's lunar experiment, the hammer and the feather did not fall to the Moon. Rather, the Moon rose to meet them.

Similarly, in the BBC experiment, the bowling ball and the feathers did not fall toward Earth. Instead, Earth's surface rose to meet them.

This may sound shocking. Yet we encounter similar "reverse truths" in daily life. Consider driving at night through fields filled with insects. The insects do not hurl themselves at your windshield in a suicidal frenzy. It is your rapidly moving vehicle that collides with them. From inside the car, however, the illusion is reversed: it appears as though the insects are throwing themselves at you.

Four hundred years ago, we failed to recognize this same reversal in Galileo's discovery.

The Equivalence Principle

In May-2015, a member of the Theoretical Physics Group asked:

Why do two balls of different size, shape, and mass, falling from the same height, have the same acceleration – in the absence of air resistance – as Galileo correctly predicted?

[2] This can be seen on YouTube: https://www.youtube.com/watch?v=E43-CfukEgs, accessed February 22, 2024.

We experienced that these two balls (one heavier than the other) arrived at the ground at the same time as if they had the same weight. How does this happen? What is the reason behind this mysterious phenomenon?

Dr. Charles Ivie's and Professor Brian Cox provided good answers.

> A useful way to consider this example is from the perspective of the equivalence principle. If you return to Einstein's thought experiment of a laboratory located on spacecraft accelerating at 10 meters per second you can create an identical scenario. Consider a laboratory where two balls, one of lead the other of balsa wood, are held in a device at the top of the laboratory. The laboratory is evacuated of air so no resistance to the motion of the balls would be present. At a signal, the balls are simultaneously released from the device. Up to the moment of their release the balls were connected to the accelerating reference frame of the laboratory, so they shared its velocity. However, when released they were freed from that reference frame and now shared a common frame that was no longer accelerating. The acceleration of the laboratory causes the floor to be accelerated toward the balls and weight of the balls is completely irrelevant. From the perspective of an observer in the laboratory the balls are falling toward the floor of the lab but from the perspective of an observer on either one of the balls the laboratory floor is accelerating toward the observer. **The balls are "stationary" in space, and it is the laboratory that is moving.** There is no reason for one of the balls to move toward the floor faster than the other (Ivie, 2015).

Professor Brian Cox fully concurred in that matter:

> Isacc Newton would say that the ball and the feather fall because there's a force pulling them dawn: gravity.
>
> But Einstein imagined the scene very differently.
>
> The happiest though of his life was this: The reason the bowling ball feather fall together is because they're not falling. They're **standing still**.
>
> There is no force acting on them at all. He reasoned that if you couldn't see the back gravity, there'd be of knowing that the ball and the feathers were being accelerated towards the Earth, so he concluded: They weren't (Brian Cox visits the world's biggest vacuum).

The balls are **stationary in space**, and it is the laboratory that is moving. That is the key.

Equivalence Principle and Objects in Space

Simplifying the approach and considering the influence of dark matter on celestial objects, I arrived at the same conclusion.

> *In general, the Earth constantly moves towards objects, not the other way around.*

Novel concepts often evoke skepticism or, at the very least, criticism. Fortunately, our proposition has not encountered substantial opposition or dissenting arguments.

The most significant complaint was this:

> I see a logical drawback. Suppose Earth does accelerate towards items (and not the other way around). We are seven billion people. Neglect other items. We all jump (walk, play) happily during the 24 hours of the day (86,400s). It seems to me that earth has to jump, on average, 81,018 times in a second to catch up with all of us, all around the globe. Let's simplify; say only two people across the Earth's diameter synchronize their clocks and agree to jump simultaneously. How fast should Earth move towards the first guy, then towards the other? 9.8m/s^2 does not look promising?

My answer:

> You're mistaking the real Earth for an imaginary Earth that stays in a fixed location in space, constantly jumping up and down to catch the jumpers and anything that dares to leave its surface. You thought of a stationary Earth. But Earth is forever moving. By moving in every nanosecond, Earth is pressing on dark matter. That phenomenon applies its force evenly all over the Earth – like a spinning ball in water receiving the water's pressure from all directions. Therefore, if two identical persons jump up into the air at the same moment, they will land at the exact same time, no matter where they are on the globe.

The problem that bothered me at that time was: How do objects really behave in space? Is dark matter's effect sufficiently to keep objects' inertia granting them immobile in the Universe?

Objects' Inertia and Dark Matter

After studying about objects in different scenario "Motion in simple movement," "Motion in object that's also moving." And especially "moving in chain" … I found the key.

In "chain movement," all connected objects become a new object. As the editors of the Encyclopedia Britannica (2022) observed, "all points in the body have the same velocity (directed speed) and the same acceleration (time rate of change of velocity)"

It's obvious. The aircraft company manufactures the front, fuselage, and the tail of an aircraft at different plants and then put them together. And then, in the air, the pilot flies the aircraft to any destination and all passengers, crew, and luggage will fly with it, to the destination without delay, not even for a nanosecond.

That principle applies to all objects, regardless of form, sizes and weights. No exception. Consequently, a particle of dust sits at the bow of an aircraft carrier and one that sits at its stern will advance along with the speed of the aircraft carrier. The grains of sand in the desert or at the bottom of the sea also consistently "fly" in space at the earth's speed.

Using the same principle, we dig deeper and ask:

> If the particle of dust is no longer attached to the aircraft carrier, or the grain of sand is no longer in the desert or at the bottom of the sea, what will become their "fates"?

As we know, the Universe is expanding. Dark matter's liquid is spreading all over the Universe, rendering it absolutely stills. "Fall" in space, objects – have no significant pushing of dark matter – become stationary.

Consequently, when the astronaut David Scott released the hammer and the feather on the moon, he did not realize – and also the whole human race from the beginning of history and from anywhere on earth - did not realized that the hammer and the feather never fell down on the moon and actually did not fall down anywhere.

And on earth, when we thought the feathers and the ball fell in a vacuum, in reality they did not fall down anywhere but immediately became stationary.

Earth constantly moves towards objects, not the other way around.

That's why, four hundred years ago, Galileo from his perspective – like everybody else on Earth – mistakenly saw "In a vacuum, a hammer and a feather fall with the same rate" while feather, hammer, objects... never fall, in a vacuum or not. Objects are unmoving and, actually, the celestial bodies, while travelling in space, will *"pick" them up*.

It sounds absurd, but it's all logic.

Unlike every motionless thing in space, all celestial bodies are the most "active" feature of the Universe. They constantly, in every nanosecond, move away from their original position towards infinity. The moment David Scott released the hammer and the feather from his firsthand to see how they "fell," is also the moment he, himself and the entire moon were – continuously – in motion.

On earth, when we observe the ball and the feather – released in a vacuum – to see how they fall, we – ourselves – and the entire Earth where we stand are constantly in motion, with the rate of earth's movement.

Objects don't move, only people who watch them do.

Let's Do a Simple Experiment:

While standing on top of a tall building, you drop a pencil, thinking that it will fall down to the street surface. But the pencil does not go anywhere. It stays motionless in space, right after it left your hand. But you, and the whole earth, continue to leave your present location and, as usual, move to infinity…

And when the face of the earth reaches the pencil, your “new position” would be far away from you “previous position” – in distance – as equals to the pencil and the surface of the Earth.

Turns out that people who commit suicide by jumping from a tall building are really met by the earth rising up to …greet them.

The same thing happens to people who jump from the *Golden Gate Bridge*. The water will rise up to welcome them and drown them. They don’t need to *fall* into the water after all.

And amid the falling leaves in a forest in Autumn, we, for the first time, realize that zillions of dead leaves, when detached from the branches, are really stationary in space.

The incomparable celebrated event known as the Apple Incident, associated with Newton's observations of a falling apple and his inference that the Earth's center was the source of its gravity, is invalid. Contrary to expectations, the apple did not succumb to gravitational descent; the Earth did not exert a gravitational "pull" on it.

The Earth, like every celestial body, carries a so-called-gravity but never sucking anything surrounding it into its center. The Earth doesn’t “such,” it may be – I would say – “strike.” Hardly strike on the one who left the top of a building or bridges. Gently on the leaves just left their branches. All the celestial bodies’ strike is identical. But that same normal, ordinary striking has been mistaken as Gravity.

The Illusion of Gravity

The same thing happens to us: we drive our car into the armies of insects, but we think they are the loco and stupid ones that launch themselves at our windshield in a Kamikaze mission.

For centuries, it has been widely accepted – and rigorously taught – that gravity results from an interaction producing mutual attraction among all entities possessing mass. However, we now arrive at the realization that this long-held assumption may not be valid. Initially, such a revelation might appear almost ironic, suggesting a subtle sense of cosmic humor. Yet for others, it may provoke unease or even resistance.

In my modest garden, however, something may help to calm your thoughts.

At one corner, under the pomegranate tree, there are plenty of gravels for decoration. Pick one up and you’ll find the truth. Most celestial bodies comprise minerals, as the gravel in your hand. Starting with a few dusks from the beginning and after zillions of years become sun, stars, planets… they remained the same.

As they underwent expansion, no signs indicated that, in a remarkable moment in the Universe's history, the nature whimsically bestowed upon them the hidden ability to manipulate gravity within their beings.

The Universe spoke the truth. The ones who have a wild imagination are us.

Real Gravity Is Ever-Present

It is necessary to state at the outset that my discovery concerning gravity does not in any respect alter the nature of gravitational phenomena in the universe.

A more precise formulation would be:

1. Gravity, in its original sense – namely, the notion that "celestial bodies attract one another, as in Newton's apple being drawn to Earth" – does not, in fact, exist.

2. **Gravitational force arises from the interaction of celestial bodies – shaped by the momentum of cosmic expansion – through collisions and impacts with one another or with the myriad objects dispersed across space. This, in essence, constitutes the universe's true gravity."**

As I mentioned before "The Earth does not attract; rather, it may be described – albeit temporarily and for convenience – as a 'strike.' This collision may be forceful, as in the case of a person falling from a building or bridge, or gentle, as with a flower or leaf descending from a branch."

Whether described as "attraction" or as "collision," the effect is identical. Newton's formulas for gravity remain valid. The true origin of the phenomenon is not attraction but impact.

Just one Short Film

Millions of people watched as astronaut David Scott conducted his famous experiment on the Moon, observing a hammer and a feather "falling" at the same rate – though in truth, they did not fall at all. Millions more listened to Professor Brian Cox's demonstration with a bowling ball and a feather inside the world's largest vacuum chamber, appearing to fall but, in reality, remaining in perfect stillness relative to their surroundings.

And still, my words persuade no one.

Will humanity continue to misunderstand the nature of gravity for another century? I hope not. Perhaps the revelation will not come from a physicist or philosopher, but from a photographer.

Someday, an inspired filmmaker may reveal the truth in a single breathtaking vision:

- Through the glass walls of a vacuum chamber, a feather and a ball hover motionless as Earth rises silently beneath them – while the stars beyond remain unmoving.

- Or, from the vastness of orbit, a lens might capture countless fruits – moments after breaking free from their branches – suspended in stillness, as if awaiting the planet's gentle approach.

I would bow to such a photographer, just as I once revered Fritz Zwicky, the physicist who first proposed the existence of dark matter and thus enabled humanity to perceive the unseen.

What Is a Black Hole and How Does It Form?

The Myth of an Imaginary Object

In April 2019, after Katie Bouman helped produce the first-ever photograph of a black hole, some scientists even suggested changing its name.

But to give it a proper name, we must first know exactly what it is, starting with the basic question: *how does a black hole form?*

NASA's outreach site *"NASA Knows!"* provides this answer:

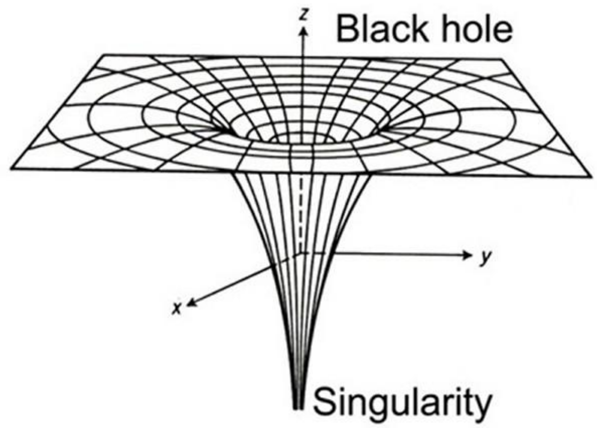
"A black hole is a region in space where the pulling force of gravity is so strong that light is not able to escape. The strong gravity occurs because matter has been pressed into a tiny space. This compression can take place at the end of a star's life. Some black holes are a result of dying stars."

Though simplified for middle-school students, this version is still preferable to many popular explanations because it avoids even more misleading descriptions, especially those invoking "space/time" as if *time* itself were a physical substance. Unfortunately, most mainstream accounts present the black hole as a mystical object, making it one of the most misunderstood phenomena in the universe.

The problem begins with the claim that a black hole is "a region in space where the pulling force of gravity is so strong…" This immediately raises the pivotal question: *Where is that pulling force coming from?*

The common assumption is that something hidden inside generates this monstrous force. Thus was born the idea of the "singularity." When Sir Roger Penrose and Stephen Hawking advanced their singularity theorems, belief in this mysterious entity solidified. Some even classified different types: curvature singularities, conical singularities, and the infamous "naked singularities" that supposedly exist without an event horizon.

So, what exactly is a singularity?



According to standard definitions:

- It is a point where some property becomes infinite.
- At the center of a black hole, density supposedly becomes infinite because a finite mass is compressed into zero volume.
- Similarly, at the Big Bang, density and temperature are said to diverge to infinity.

Physicist Kip Thorne once described the singularity as "the point where all laws of physics break down."

But the notion of "a huge mass compressed to zero volume" is itself unphysical. Not only does it violate the very laws it claims to extend, it produces nonsensical results—an imaginary gravity machine that never existed.

A mass may indeed become denser and stronger under compression, but its density and gravity never reach infinity. A gravitational field also never extends indefinitely: Earth, with a radius of nearly 4,000 miles, effectively maintains a gravitational field only a few hundred miles above its surface. Compressing matter to a pinpoint would not extend its field to the size of an entire black hole.

In short: black holes can exist without singularities. The "singularity" should have disappeared from physics textbooks after Einstein's discovery that gravity is not a force but the curvature of spacetime. That it lingers is due more to misunderstanding than to evidence.

The Big Picture

The universe is expanding. Every moment, vast flows of dark matter sustain this expansion. Its extremely high velocity generates the most powerful *pushing* force in the universe. When this force encounters the inertia of mass, we perceive it as gravity.

Unlike water, which presses mainly on an object's surface, dark matter penetrates and acts on every atom, distributing pressure and producing gravity throughout the object.

This perspective explains why stars gain stronger gravitation as their cores grow denser under prolonged exposure to dark matter pressure. This compression is gradual, spanning millions or billions of years – not a ***sudden*** collapse at the end of a star's life – as scientists usefully predicted.

Crucially, gravity always arises from interaction. A mass cannot create gravity by itself; it requires the pressure of dark matter.

How Does a Black Hole Form?

With this framework, black holes form without invoking singularities. The process follows basic principles of motion:

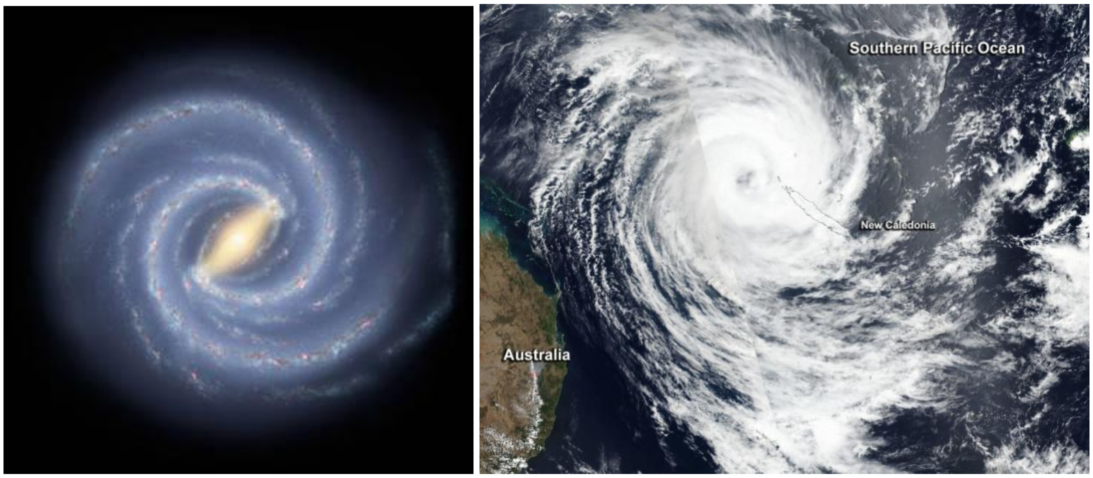
1. **Motion occurs when pressure exceeds inertia.** Objects naturally move toward regions of lower pressure.
2. **Movement always displaces matter.** As an object advances, it leaves behind a void, which new matter immediately fills.

When a massive star explodes, it leaves such a void. Dark matter and surrounding material rush inward at extreme speeds, driven by both the background flow of dark matter and local pressure differences. This inward surge creates a black hole.

There are two main types:

- **Tiny black holes:** formed from the voids left by collapsing or exploding stars.
- **Giant black holes:** produced when multiple stars explode in a region, drastically altering local pressure and temperature. This turbulence causes massive flows of dark matter, sometimes colliding and creating enormous black holes.

On Earth, a similar process occurs in miniature: cyclones or tornadoes form when air masses spiral into regions of low pressure. In space, giant black holes emerge from spiraling flows of dark matter.



Milky Way galaxy with black hole and an Earth's Tropical Cyclone.
Credits: NASA/JPL-Caltech and NASA-NOAA satellite.

Naming the Black Hole

Large or small, in space or on Earth, black holes form through natural dynamics without requiring physics to "break down." No mysterious singularities are needed.

If we were to rename them, "cosmic cyclones" or "space tornadoes" might better capture their nature. But any name would be preferable to those that perpetuate misconceptions – such as "wormholes," which have inspired more science fiction than science.

Physics has enough wonder without imaginary shortcuts.

(5/24/19)

A Fanciful, Fabricated Discovery: “Gravitational Waves”

The Laser Interferometer Gravitational-Wave Observatory (LIGO), a facility dedicated to observing and studying the so-called *gravitational waves* using laser interferometry, was constructed more than thirty years ago at a cost of approximately $600 million. Since then, its operation has consumed an additional half billion dollars, yet for decades it had detected nothing. Then, just as the project seemed on the verge of failure, LIGO suddenly announced that it had *detected gravitational waves* – ripples propagating through space-time, allegedly produced by the merger of two black holes more than a billion light-years from Earth.

The scientific community was astonished. LIGO was hailed as a triumph, showered with prestigious awards, and ultimately honored with the 2017 Nobel Prize in Physics.

Waves Against Reason

To this day, years later, LIGO’s scientists still have not answered my question: *What exactly are these waves, and what kind of matter generated them?* A LIGO representative did attempt an indirect response with the following explanation:

“A mass three times that of the sun separated from the black hole and transformed into gravitational waves.”

That explanation is unconvincing, because it immediately provokes another question: *What exactly is a black hole made of?* And above all, how could a chunk of “black hole matter” only three times the mass of the sun, over the course of more than a billion years spreading through space, somehow expand into colossal waves that reached every point on the surface of a sphere with a radius of 1.3 billion light years, large and broad enough to “touch” LIGO’s detectors, no matter where LIGO might sit on that immense sphere?

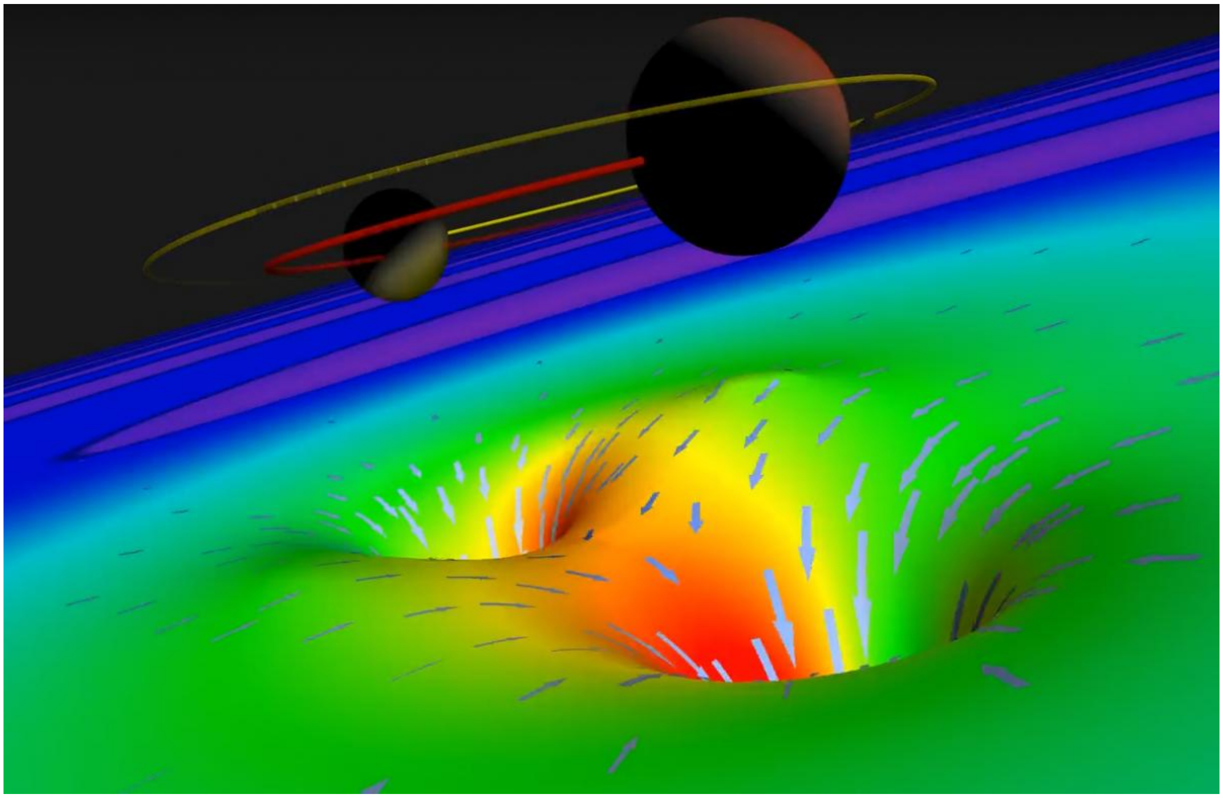
In truth, there can be no answer, because this much-celebrated discovery rests on a phenomenon that is fundamentally anti-physical, so naïve as to be incomprehensible.

Two black holes merging to produce waves? That in itself is dubious. Even less believable is the claim that these waves would propagate **outward**, directly contradicting the laws of physics.

When you throw a rock into a pond, you create ripples that spread toward the shore, away from the point of impact. But if you dig a hole at the bottom of the pond, the water is pulled down into the hole (like what happens with a black hole). Any wave that forms would move *toward* the hole, to be swallowed, *not* outward toward the shore.

Yet in LIGO’s case, the merging black holes – supposedly forming a new, even stronger gravitational sink from which “not even light can escape” – somehow produced waves that traveled *away* from the black hole, and in this case, all the way toward LIGO’s instruments a billion light years away.

Let us suppose, for the moment, that the scientists of LIGO, with their limited imagination and shaky grasp of fundamental physics, simply overlooked this glaring contradiction. Even so, LIGO's visual artists clearly illustrated the phenomenon of the black hole "pulling everything inward" on their displays.



SXS/LIGO

The drawings are flashy in red and green, crisscrossed with arrows pointing every which way, guiding matter and objects – all tumbling down into the hole… anyone can see it. But not the scientists of LIGO.

Waves Faster than Light

Just a few months after reporting the first black hole merger, LIGO announced it had detected a second, smaller merger – this time 1.4 billion light years away. Knowing it was fabricated nonsense, I jokingly asked:

"Something 1.4 billion light years away, yet arriving only months after something 1.3 billion light years away? Then these waves must have been flying *faster* than light!"

I expected LIGO to cover themselves with some fancy excuse, perhaps: because the second merger had occurred a hundred million years earlier, it had started out sooner, so even though farther away, it arrived around the same time, etc. But no—LIGO did not even attempt such a clever escape. Instead, they boldly declared: gravitational waves really do travel “faster than light,” and that “gravitational waves reached Earth long before light could catch up.”

Dr. Imre Bartos of LIGO explained it this way:

“Gravitational waves arrive at Earth long before any light does. The reason is that the star gets in the way of itself. All of this stuff tries to come out, including light, but it bumps into the star’s matter and gets stuck until the whole star collapses. But gravitational waves can pass right through.”

But light, once on its way, if blocked by a star, is either completely absorbed or reflected off in another direction. There is no such thing as light “getting stuck there, waiting until the star collapses, and then leisurely continuing on its journey”!

Chilling. Who would have thought one day I would hear such twisted, meaningless, anti-physical reasoning coming straight from the mouth of a PhD physicist.

The Miraculous Instruments

Another unbelievable claim is the miraculous capability of LIGO’s detectors.
The gravitational waves LIGO supposedly “caught” were incredibly faint, lasting no more than 0.2 seconds. Yet from that faint, fleeting signal, LIGO’s experts claim to extract a complete dataset, enough to analyze every detail of the waves – from their origin to the vast distance they traveled through space.

They confidently recited, in full detail, something like this:

“Gravitational waves are born when two black holes merge into one. Black hole #1 had 29 solar masses and a width of 174 km. Black hole #2 was larger, 36 solar masses and 216 km wide. The newborn black hole (after the merger) should have had 29+36 = 65 solar masses, but it shrank slightly, leaving exactly 62 solar masses and 372 km wide, because 3 solar masses of ‘black hole material’ were converted into gravitational waves.”

So these magical LIGO instruments, from one weak, first-ever signal lasting only 0.2 seconds, supposedly peered across the cosmos, “saw” (and even “heard”) two black holes merging over a billion light years away, without needing help from any telescope like Hubble or Fermi. That would already be astonishing enough. But LIGO went further: they even provided the size and mass of the two parent black holes, along with the explanation for the “weight loss” of the newborn black hole (losing three entire solar masses of “black hole stuff” to create gravitational waves!).

Meanwhile, humanity still struggles, lagging behind, unable to “see” a black hole directly—forced to create images based only on the disturbances and effects surrounding them. Only recently did we get the very first picture. If LIGO truly had built instruments so advanced and precise, just unveiling them would have been enough to win Nobel Prizes galore. Why bother fabricating waves at all?

Einstein's Waves?

To give their product more weight and impact, LIGO's scientists asserted that Einstein himself was the first to discover gravitational waves. They modestly claimed only the role of finding them and proving Einstein right. They said: over a century ago, Albert Einstein predicted the existence of gravitational waves, but until LIGO, no instrument was sensitive enough to detect their faint signals.

It is true that Einstein predicted gravitational waves. But he was talking about ***his*** gravitational waves, not LIGO's.

In 1916, Einstein wrote that two orbiting celestial bodies could generate gravitational waves. However, after completing his theory of gravitation in the universe, he immediately concluded that gravitational waves had no real role in it, and never mentioned them again.

Here's why:

At first, Einstein described gravitational waves like this:

"Much like a stone thrown into a pond, a change in mass will cause a ripple in space that travels out from its source in all directions at light speed. As it moves along, the ripple squeezes and stretches space. We call such a disturbance a gravitational wave." (American Museum of Natural History)

In just a few sentences, we already see several unphysical ideas. For example: "Much like a stone thrown into a pond, a change in mass makes ripples in space..."

But how can that be "much like"? Einstein's analogy was inaccurate, leading to a mistaken conclusion. A stone thrown into a pond displaces a volume of water equal to its size as it sinks, pushing the water aside into ripples spreading away. That's correct. But if the stone *is already in the water,* then moving it does not change the total volume of water, only stirs turbulence locally, but does not create waves.

Celestial bodies have always been in space; no one is "throwing" them in like stones into a pond. That's why Einstein's imagined gravitational waves would be extremely small – so small as to be nearly nonexistent.

As the American Museum of Natural History itself says:

"Einstein may have predicted gravitational waves, but he had little faith scientists would ever detect them. Gravitational waves squeeze and stretch space only a small amount. In fact, it's ridiculously, horribly, almost impossibly small: a distance hundreds of millions of times smaller than that of an atom."

Poor Einstein! How could he have imagined that his "almost impossibly small" waves, "a hundred million times smaller than an atom," would one day – miraculously in 2015 – be caught by LIGO's researchers? And even more, that they would jubilantly announce that from those "ridiculously, horribly small" ripples, they managed to pull out a "birth certificate" complete with the size and mass of the parents, the newborn, and its birthplace over a billion light years away, plus a chirping sound effect as a bonus!

Aside from their suspiciously tiny magnitude, gravitational waves also have "problems" with their origin.

According to Einstein's theory: matter moving through space-time produces gravity and gravitational waves. According to LIGO: gravitational waves are born when two black holes merge.

The sources are completely different, yet LIGO insists on pinning their waves on Einstein, to borrow his prestige and secure the Nobel Prize. Poor old Einstein – falsely accused of fathering LIGO's imaginary children!

If Not Einstein, Then Who?

Dr. Kip Thorne, the father of the "gravitational waves" theory, before going to Stockholm to accept his Nobel Prize, enthusiastically revealed in an interview the entire backstage secret of this so-called "discovery." He let slip something I suspect the LIGO team never wanted the world to know.

He confessed that *he* had predicted gravitational waves from black hole mergers – exactly what LIGO later "discovered." He said he had already written about it in his famous book *Black Holes and Time Warps…* published in 1994. In its preface, he described in detail how two black holes, each 25 solar masses, would merge and lose 3 solar masses to gravitational waves (precisely the same "3 solar masses" LIGO claimed to have detected). He confirmed he had written this prophecy back in 1984, while on his honeymoon in Chile.

Whether from honesty, naivety, or simple boastfulness, Dr. Thorne indirectly answered my central question: How could LIGO's scientists, from a faint, fleeting, first-ever signal lasting only 0.2 seconds, supposedly peer deep into the universe, see every detail of two black holes merging over a billion light years away, and even provide the exact mass, size, and "weight loss" of the newborn?

The answer: they couldn't, and they didn't. The entire "discovery" was not found in any signal LIGO detected – it was already written in black and white in the opening pages of a book penned by a young scientist during his happiest days, more than three decades earlier in Chile.

In other words, the LIGO team simply copied passages from Dr. Kip Thorne's book – copying casually, openly, even politely keeping the "3 solar masses" detail intact as irrefutable proof for anyone doubting the plagiarism.

Isn't that amusing! We are witnessing a rare moment in history: a group manufacturing counterfeits for profit. They marketed it skillfully, succeeded, and gained both wealth – massive investments pouring into LIGO – and glory – the Nobel Prize. And then, at the grand celebration, during a press conference, their leader candidly laid out every detail of the scam, admitting it was nothing more than a product of his imagination decades earlier.

Congratulations and Condolences

To those who passionately support and swear to argue to the bitter end in defense of LIGO's so-called "discovery" – congratulations!

You have found a scientist a million times more brilliant than Einstein. Einstein merely *predicted* the existence of a kind of "gravitational wave," faint to the point of insignificance, somewhere in the universe. But Dr. Thorne, it seems, was able to *see* and *describe* in every detail the birth of such a gravitational wave – to know exactly what produced it (two black holes), and how those black holes behaved: merging into one in a region more than a billion light-years away from Earth. And he saw it all thirty years *before* the existence of LIGO's advanced observational instruments!

To the young students who love physics and dream of joining this field in the future, I can only offer condolences and sympathy. Such delusional, fraudulent "discoveries," dazzlingly decorated with glittering medals, will waste your time and energy, clouding your minds for who knows how long.

So perhaps all that's left is to leave you a few words of advice.

If you take the time to study the propagation of light, you will learn that LIGO's laser beams are disturbed by spherical waves of light emitted from stars and celestial bodies that explode or flare up. Light waves belong to a larger wave mass known as "shock waves," which typically spread instantly after an outburst.

Amid this mass of shock waves, mingled with innumerable sub-molecular waves existing throughout space, it is this wave – and *usually only this one* – that can affect LIGO's laser beams, producing signals that scientists there have mistaken for gravitational waves.

(October 2017 – Updated June 2020)

The Eternal Truth

Einstein is regarded as the father of the Theory of Relativity, yet he was not the first to recognize the phenomenon of relativity.

Since ancient times, people have been aware of it. A farmer returning from the fields would judge his remaining distance home by the changing size of the banyan tree at the village gate. A painter, following the laws of perspective, would make distant houses and hills small, those nearby large. Both were applying relativity in their own ways.

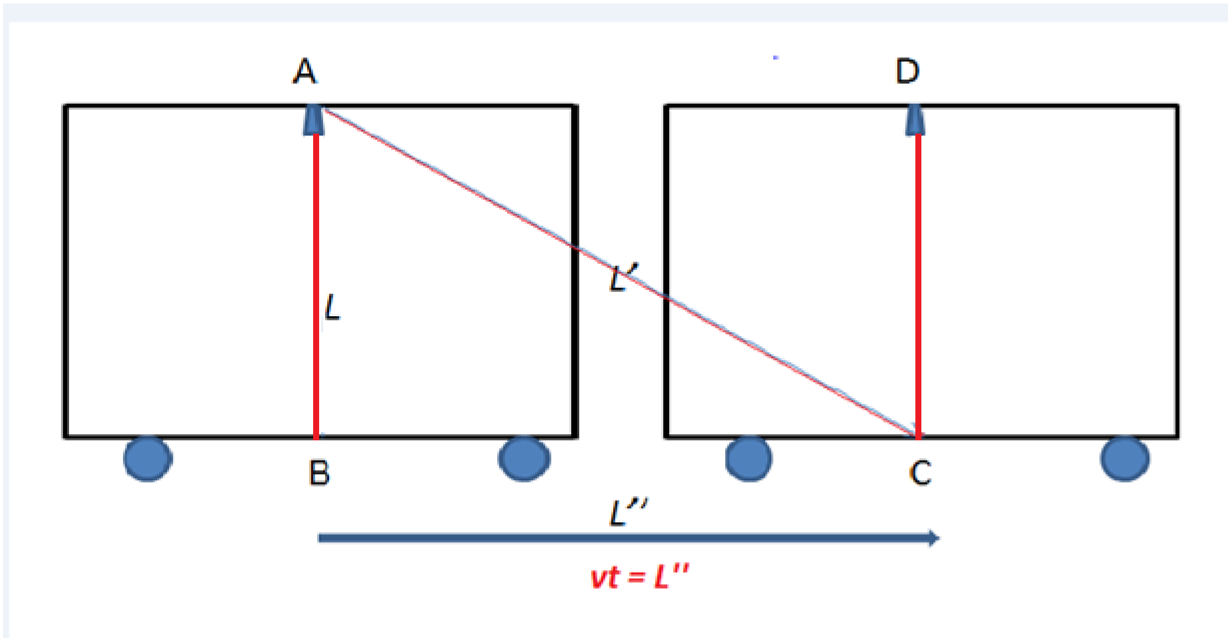
What made Einstein unique was not the recognition of relativity itself, but his determination to study it systematically, to turn an intuitive idea into a rigorous theory. From his work came precise rocket trajectories accurate to the second, and global positioning systems that span nearly the entire Earth. That was his gift to humanity.

But the trouble began with the *Special* Theory of Relativity. In the process of formulating it – and in his famous conclusion that "time slows down on a moving train" – Einstein overlooked critical flaws. These inconsistencies gave rise to paradoxes that remain unresolved to this day.

Still, the theory was immediately celebrated. It was hailed as one of the greatest discoveries in human history. Once proclaimed perfect, re-examination seemed unnecessary, even inconvenient. Einstein himself apparently never looked back.

That was regrettable. For if he had reviewed his own reasoning, he might have discovered the serious errors threatening the very survival of his theory.

The Faulty Diagram



Einstein illustrated his thought experiment with a diagram. Yet a careful look reveals contradictions.

According to his description:

"Because the train has moved forward, by the time observer Q first sees the light beam, the train has already shifted. Point B has become C."

That is true. But if B has become C, then A must also have moved to ***D***. *The ceiling and the floor of the carriage must move together.*

Einstein, however, kept A fixed while shifting B. In so doing, he drew line AC as though it were the same as line AB. That was the mistake. His diagram portrayed an impossible situation: part of the train moving, part standing still.

Remove AC, and triangle ABC vanishes. Without it, his entire Pythagorean proof collapses.

His thought experiment, once translated into a diagram, no longer reflected reality. It led inevitably to false conclusions.

The Equations Collapse

Even if one overlooked the diagram, the mathematics should have revealed the error.

Einstein used the familiar formula:

L = vt (distance equals velocity multiplied by time).

If a car travels 100 miles per hour for 2 hours, it covers 200 miles. Simple enough.

However, Special Relativity asserts that when velocity **v** equals the speed of light **c**, time **t** becomes zero – "time stops."

Substituting into the equation yields:
L = ct = 300,000 km/s × 0 = 0.

The result is absurd: the train rushes at the speed of light, yet the very instant it attains that velocity, it becomes motionless, *paralyzed in space-time*.

This is not merely counterintuitive; it is mathematically self-contradictory.

Time Cannot Be Dilated

The contradictions did not end there.

Later, when physicists placed atomic clocks on fast planes and found them running "slower," they hailed this as proof of *Special* Theory of Relativity.

But a scientist should have recognized immediately: this "verification" is unphysical.

As Charles Scurlock of the *Theoretical Physics Group* once explained:

"Time is not an object, an event, or a real phenomenon. It is only a concept in the human mind, invented to measure, calculate, perceive, and communicate about the existence of objects, events, and phenomena. The notion that time possesses a substance that can be compressed or expanded is utterly mistaken."

Indeed, Time has no substance. It cannot push a clock's mechanism, cannot slow its gears.

And there's another consequence...If time itself could stop, as Special Theory of Relativity suggests, then aging would cease. Humanity would be immortal.

But aging, decay, and death are not caused by time. They result from chemical transformations within matter. Iron rusts not because "time has flowed" through it, but because oxygen reacts with its surface. A passenger's youthful face remains fresh because of lotion, not because she boards a light-speed train.

The Nature of Time

Time is intangible, invisible, and immaterial. It exists only as an idea.

“ Time, shown as having its own unique physical existence, has never been part of physics equations. In other words, time (t) in physics equations has always represented cyclic activity of objects that are undergoing changes of their velocities. While all changes of velocities take place during the passage of time, none can be represented mathematically in terms of changes of distance with respect to changes in the property of time. Objects that undergo patterns of changes of velocities do not include time as one of those objects. There has never been empirical evidence for a physical change in the property of time. All physics empirical evidence consists of patterns in changes of velocities of objects. Time has never been observed to undergo a change of velocity. Time has never been observed to have a velocity. Time has never been isolated and subjected to experimentation. Time is one of two naturally indefinable properties; the other is space. (James Putnam – APS’s forum)

And yet, denying it altogether would cause endless philosophical quarrels. So let us say time exists – but in a parasitic way, like color.

Take the color orange. We see it, but it has no “independent” body. Without the orange peel, it disappears. To exist, color must attach itself to something else.

So it is with time. It exists only with a host. A mountain may “contain” millions of years of time, a flower only a day. Time dwells with every atom, every particle, inseparable from the universe.

In this sense, Einstein was right to call it the “fourth dimension.” Time records the universe’s changes as they occur.

But that also means its “speed” is nothing less than the speed of the universe’s existence.

To slow time would mean slowing the entire cosmos. To stop time would mean stopping everything.

Why the Theory Survived

Special Relativity became a fortress. And every fortress has guardians.

Once written into textbooks, it was defended by generations of professors, teachers, and authors. Careers, reputations, and institutions were built upon it. To admit error would mean dismantling a century of work.

The mathematics of Special Relativity, elegant and dazzling, also helped shield it. Its equations (especially Hendrik A. Lorentz’s) looked too beautiful to be false.

And over it all loomed Einstein himself. Not only a scientist, but a cultural icon – his fame too great for others to question without risk.

The Final Lesson

Today, more than a hundred years later, the Special Theory of Relativity is still celebrated. It is still taught, still glorified.

Yet beneath the acclaim, its contradictions remain. The faulty diagrams, the broken equations, the unphysical assumptions – all still wait for honest acknowledgement.

One day, when the dazzling aura of supposed guardians and defenders no longer obscures our vision, and when the veil of sophistry is lifted, Truth will emerge.

The lesson that Truth offers is in fact straightforward:

1. When developing a theory based on data supplied by observers, one *must respect the natural laws that govern human vision* and acknowledge the limitations of this faculty. To ignore these laws is to risk serious error: the observer may in fact *"never actually see"* the images or data that the theorist assumes must be visible.

2. Both Special and General Relativity concern phenomena that are mediated by visual perception and its interpretations. For example, when a farmer or an artist views a banyan tree or a house from afar, the objects appear smaller than they truly are. These are not the objects themselves but visual images – illusions – distorted in comparison to their real size.

A theory that recognizes this distinction and that uses apparent dimensions as a basis for calculating the true size, form, and behavior of phenomena, is both valid and insightful. However, to go further and equate the *appearance* – the image or illusion – with objective reality is to overreach.

This can be demonstrated quite simply. When one sees an airplane in the sky, it appears to move slowly. If one were to tell a perceptive child that the plane's actual speed is only ten miles per hour, the child would laugh, assuming the remark to be a joke or feigned ignorance.

The same principle applies not only to the speed of light but also to the real velocity of the plane and indeed to all things: they do not change simply because of the observer's perspective. What changes are only the visual impressions, which act upon the optic nerves and give the brain a misleading sense of transformation.

Thus, if Einstein's hypothetical observer were to "see time slowing down on a moving ship," what was observed would in fact be a cluster of illusions rather than an immediately usable truth. Such impressions would require careful analysis and verification before being of scientific value. In the case of Special Relativity, even this premise fails, since the observer's vision in question existed only within Einstein's imagination.

The natural laws governing human senses are firm, immutable, and unchanging.

Consider hearing: within a train, noises may sound loud; once outside, the sounds are immediately diminished. Consider sight: from within the train, a pole appears ten feet high and a beam of light stretches ten feet from ceiling to floor. From a distance, however, both pole and light appear as thin as a toothpick.

The principle is simple: objects appear larger when near and smaller when far. No scientist, however brilliant, can alter this enduring reality.

3. When constructing theories, it is important to remain humble and to acknowledge the limits set by nature – or, if one prefers, by Creation itself. If a theory shows early signs of attempting to redefine the most fundamental structures of existence – space, time, or the order of the cosmos – then it ought to be subject to rigorous scrutiny, perhaps even dismissed as a conceptual overreach.

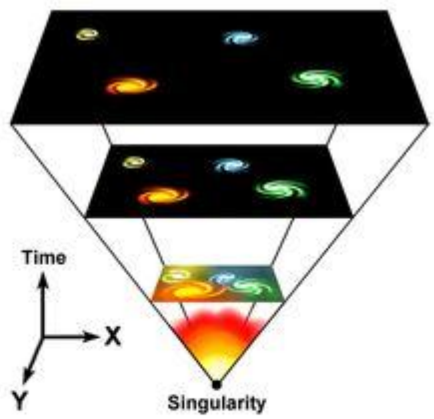
A theory conceived in such excessive ambition is likely unsustainable and destined to collapse at its inception.

(31 July 2023)

Big Bang: Unjustifiable from a Physical Point of View

The physics of the Big Bang theory is “atrocious” and “unjustifiable from a physical point of view.” These were not my words, but Einstein’s.

In 1927, Georges Lemaître, a Belgian priest and scientist, proposed what became the most celebrated theory of cosmic origins. He claimed the universe began from a “primordial atom”– a tiny, hot, dense point containing all matter, energy, space, and time itself. In a trillion-trillionth of a second, this speck supposedly exploded, expanding to cosmic proportions. Thirteen-point-eight billion years later, that atom had become the universe we inhabit.



The imagery is vivid: galaxies carried outward like raisins in a rising loaf of bread, space itself stretching as it expands. But vivid metaphors are not proof. The Big Bang, from the beginning, was not physics – it was speculation dressed in mathematics. Einstein himself dismissed it, telling Lemaître: *“Your calculations are correct, but your physics is atrocious.”*

Only after Edwin Hubble’s 1929 discovery – that galaxies appear to be receding – did Einstein reluctantly concede. Once he yielded, the rest of the scientific establishment soon followed. A theory once branded “abominable” became gospel.

Yet beneath its popularity, the Big Bang leaves unanswered questions that strike at its core:

1. What physical mechanism could compress the entire universe into a pebble-sized object?
2. What force triggered its explosion?
3. How could Lemaître assign timescales – “a trillion-trillionth of a second” – without knowing the universe’s size at the moment?
4. Why do galaxies accelerate outward when explosions normally slow down over time?
5. If the primordial atom contained *all* space and time, where did it “explode into”? And what space-time does our universe expand into now?

These are not minor gaps. They are fatal flaws.

The Pursuit of a Phantom

Unlike Einstein's time dilation, which mostly fuels science fiction, the Big Bang continues to devour resources in pursuit of experimental confirmation.

CERN, the world's largest physics laboratory, was founded with grand ambitions – including reproducing a "mini Big Bang." The Large Hadron Collider was designed to smash protons together at near-light speed, in hopes of recreating the conditions of the universe's birth.

In 2008, amid global anticipation, the first attempt was announced. Public hysteria followed: fears of baby universes devouring ours, or black holes swallowing the Earth. Lawsuits were even filed to stop the experiment. Fate intervened when the collider broke down just ten days after the announcement.

When CERN finally succeeded in 2010, the results were anticlimactic. Protons collided, as expected. Heat and fragments scattered, as always. The much-hyped "mini Big Bang" did not appear. This time, the triumph was celebrated quietly, almost sheepishly. The experiment had succeeded in engineering, but failed in physics.

Einstein's first instinct was right. He recognized that the Big Bang was mathematically clever but physically empty. Yet he surrendered his judgment when faced with mounting evidence of an expanding universe. Instead of asking harder questions, he compromised.

The scientific community followed suit, and a speculative idea hardened into dogma. For nearly a century, laboratories, governments, and thousands of brilliant minds have poured their effort into chasing an explosion that never was.

The Big Bang remains exactly what Einstein called it: atrocious physics. And no number of costly experiments can change that fact.

The Making of the Universe

For a time, I strongly believed in the big bang theory proposed by Monsignor Georges Lemaître.

Every natural creation I have observed has seemed miraculous, but the creation of the universe must be the "mother miracle" of them all. The idea that an atom only a few millimeters wide could contain all matter and radiation, even space and time, and later unfold into the entire universe is astonishing. Even more remarkable is the suggestion that this same atom could provide itself with newly created time and space as it expanded. Truly, it seems miraculous.

Yet I began to doubt Lemaître's version of the big bang. One evening, my perspective changed completely when I discovered that our universe is, in fact, filled with countless smaller universes that function much like our own (Baker, 2015). The method used to describe the existence of these smaller universes can just as easily be applied to our larger universe – through a process far less complicated and incomprehensible than the one Lemaître suggested.

That evening, while working in a barn-turned-library at the edge of my backyard, I sensed a storm was approaching. Hurrying back to the main house, I brushed against a small bamboo leaf dangling from a thin branch. The leaf touched the tip of my nose, though I barely felt it.

The incident was insignificant, yet I could not help but imagine that the poor leaf looked embarrassed and apologetic. Fluttering faster and faster, it seemed to be telling me that the strong wind, not itself, was to blame for its misbehavior. Observing its pattern of movement, I suddenly understood that this bamboo leaf carried a message far more meaningful than a simple "pardon me, sir."

At that moment, I looked around me. The evening was alive with motion. The wind was sharp and restless. Overhead, the clouds, swollen with rainwater, gathered quickly, preparing for a violent downpour. Everything was moving, and I was no exception. Whether rooted in the soil or standing still on the ground, the bamboo tree and I were both participants in the great picture of a universe in motion.

The tree – including my newly acquainted bamboo leaf – was heading east with the Earth's spinning velocity. A few feet away, standing "motionless," I was traveling at the same speed. Meanwhile, the Earth itself was orbiting the Sun, spinning as it went. Our Milky Way galaxy speeds along at 130 miles per second (210 km/s) (Gerhard, 2010), and the universe continues to expand (Rubin & Hayden, 2016). Everything moves in space.

Lemaître's Faulty Theory of the Origin of the Universe

Is it physically possible that a force from an exploded primordial atom – no larger than a pebble – could, after 13.8 billion years, still be driving the motion and activity of the entire universe at this very instant?

Is it possible that this same ancient force continues to grow stronger, accelerating the universe's expansion faster and faster?

The incident with the bamboo leaf made me reflect on the entire concept of the "primeval atom" proposed by Lemaître, which assumes that the universe always contained within itself all the matter and energy required for its growth and evolution (Kragh, 2018).

But if we think carefully about the limited amount of space that Lemaître believed was enough for this atom to expand into, the theory begins to unravel. Lemaître also neglects to account for the space outside the primeval atom, space that must already exist in order to allow expansion and motion, both *now* and in the *future*. The universe cannot create something beyond its own boundaries. That space must already be present to receive it.

Thus, Lemaître's theory collapses. And with it collapses his universe, born from a so-called primordial explosion known as the big bang. This realization left me once again asking: How was the universe truly made?

Then, I saw "it."

The Creation of the Universe Can Be Found in an Orange

Among dozens of ripe oranges, one stood out as the largest. Thanks to the last faint rays of the evening sun slipping through a gap in the clouds, this single orange glowed and caught my eye. At that instant, an epiphany struck.

The making of an orange seems trivial, so ordinary that no one is impressed. But if you pause to consider deeply, you realize that the growth of an orange is itself miraculous.

Unlike Lemaître's universe, which mysteriously feeds itself from beginning to end, the orange depends on the tree for its survival. Through the peduncle, the tree continuously supplies sap to its newly born fruit (Fernández et al., 2006).

Except for lacking the dramatic beginning – the noisy collision of atoms and the mystery of matter, space, and time compressed into a tiny point as Lemaître theorized – the orange bears all the characteristics of the universe that we can observe and understand. Its birth is silent to the human ear. Its growth reaches a peak before declining, like all other living things. The making of an orange follows the same pattern as the making of every other living organism on Earth, or at least the zillions of fruits that have ever existed.

Contrary to Lemaître's suggestion, perhaps the Creator chose the same method of making living things to shape our universe. Why not? The method already works. Why invent a peculiar new process that requires a mysterious force to squeeze the entire universe into a single primordial atom and then make it explode into existence, building itself up as Lemaître proposed?

The Pomological Growth of the Universe

The question of whether the universe can be considered a living entity is an ongoing debate within the scientific community (Kauffman & Kauffman, 1995). At first glance, the universe appears to be made primarily of inanimate matter, such as minerals and rocks (Sidis, 1925). Yet modern observations have revealed that the universe is not only expanding, but also growing at an accelerating rate (Kirshner, 2016).

This growth, I strongly believe, is fueled by dark matter, which acts as the "nutritious sap" of the universe, providing the material necessary for its continued expansion.

As an exercise in observation, one might study the growth and development of a fruit-bearing tree in one's own garden. While I have used the orange tree as an example, any fruit-bearing plant will suffice. The formation of an orange begins with empty space on a branch, followed by the appearance of a tiny bud, which develops gradually into a fully formed fruit. Though commonplace, this process holds striking parallels to the development of the universe. Both involve the transformation of seemingly insignificant beginnings into structures of immense complexity and significance.

Is the formation of an orange any less miraculous than the creation of the universe? Perspective decides the answer. Both are products of the same Creator. The orange is graced with artistic symmetry in its flesh, while the universe's pattern, though seemingly chaotic, holds a rough beauty – no more sophisticated, perhaps, than a coconut. Both, in their own way, are magnificent.

Now imagine that inside an orange lives a tiny creature, comparable in scale to humans within the universe. Such a creature would surely marvel at its own orange-universe. And if provided with something like the Hubble telescope (Parfeni et al., 2020), it would capture breathtaking images of its world, no less wondrous than our photographs of galaxies and nebulae.

Oranges, and countless other "fruit-universes," inhabit our fields, backyards, and farms. Should not our own universe have a home as well? Perhaps the Garden of Eden would suffice. On the day of Creation, on a branch of the great Universe-Tree, a primordial bud appeared. Starting no larger than a pebble, it swelled with every nanosecond, nourished by the dark matter that serves as the sap of the cosmic tree, growing just as every fruit grows.

Conclusion

The study of the universe's formation remains an active field, with new discoveries reshaping our understanding. Among the most significant is the discovery of dark matter, theorized to be the force that governs the movement and operation of all matter in the cosmos, from the largest galaxies to the smallest particles (Arkani-Hamed, 2009).

Dark matter provides a way to comprehend the pomological nature of the universe's growth. Though its presence has been inferred mostly through gravitational effects, the implications are immense. One day, humanity may learn to harness dark matter's energy as a sustainable and renewable power source. Imagine technology capable of capturing and converting this cosmic energy into a usable form. Such an advance could meet humanity's energy needs without harming the environment.

If humanity succeeds in tapping into this inexhaustible source, Earth's future could be transformed.

In about four billion years, when the Sun cools and dies, our vital heating source will vanish. Yet instead of fear and panic, humanity may witness this event as a celebration. Across the globe, people will gather to watch the last sunrises and sunsets – on beaches, in deserts, atop mountains, and in their own backyards. They will honor the dying Sun with festivals and farewells, knowing that dark matter now keeps the planet warm.

Dark matter promises an infinite energy source, one that may last as long as the universe itself.

Bri-Mountain films' productions:

1. DARK MATTER: Finding the Most Elusive Matter of the Universe

https://youtu.be/T-p-PYmEvUg

2. LIGHTNING SPEED: How Light Moves towards Every Direction at All Times

https://youtu.be/yS4MFdmMaO8

3. NEW LAWS OF MOTION and What Causes Thing to Move in the Universe

https://youtu.be/TpZnLSQ1K88

4. MOTION IN CHAIN OR CHAIN MOVEMENT

https://www.youtube.com/watch?v=dCwWbeUoYfs

5. **$E = mc^2$** THE MYTH AND THE TRUE MEANING

https://youtu.be/dvNLAp9vxzM 4.

6. SPECIAL RELATIVITY THEORY: An Adorable Mistake of Einstein

https://youtu.be/MbA8Ob-p_pk

7. THE UTMOST SURPRISE OF GRAVITY IN THE UNIVERSE

https://youtu.be/DaStcrPYfh4

8. THE MAKING OF THE UNIVERSE

https://www.youtube.com/watch?v=rRTQ11rFE1E