Empty Space Is Not Empty

The Secret World of Black Holes

Written by Bryant Stone (*The Architect*)

Overview

When we gaze into the cosmos, **what do we see?** Boundless beauty, elegant mechanics, and the weight of peering into the **endless vastness of the universe**, as if it were all **beyond human comprehension**. The universe appears **riddled with mysteries**: the Great Attractor, the Final Parsec Problem, the three-body problem, Hawking radiation, the Holographic Principle, black hole clustering, and, most notably, the **unknowable nature of black holes**—the enigmatic phenomenon we have sought to understand for decades. However, perhaps the universe's mystery stems not from ***what* we observe,** but from ***how* we observe it**—the lens through which we interpret the universe. In this paper, I present a **fundamentally new lens** that illuminates the universe with unprecedented clarity. Using **LIGO's black hole merger** and gravitational wave dataset, I analyzed $\sim$**90 collision events. I discovered the Defined Nothingness Threshold at precisely** $.0957\ m/p/d$ (meters per propagation per black hole diameter)—the exact threshold where **complexity reaches its absolute maximum and existence stops**, leaving the observable matter and energy (i.e., ***lumen***) **behind in *The Record***, the universe's vast memory archive **secretly hidden in "empty" space**. This finding reveals a stunning truth: **lumen do not vanish** during black holes; they are **left behind in the past**, moving into a **definedness layer just beneath our perception in *The Record***. We see that gravitational waves echoing across the universe are fundamentally shaped by the hidden structure of *The Record*, revealing **the same normal distribution** and **exponential growth patterns** from *The Lattice Experiment* in Paper 2; except this time, they echo across billions of light-years, **confirming that *The Equation of Existence* operates identically** from spontaneous word emergence on a laptop to stellar collapse at the deepest edges of existence. Join me on **this journey** through the **cosmos's hidden architecture**… witness what exists beyond black hole event horizons… see the cosmos without mystery for the first time, and—most remarkably—**peer into the secret world of black holes** that have been hiding in front of us all along.

Background & Findings

Dear seekers, dreamers, and curious rebels… we are starting Paper 5 with a scandal. **In 2020**, **academia suppressed the empirical falsification of general relativity (GR) and the concept of a singularity**. The LIGO observatory, which studies black hole mergers and their gravitational waves, has concealed **the most definitive falsification in the history of physics**. Event **GW200308_173609** shows that a **black hole's mass increased by four solar masses during merger (**$\mathbf{60 + 24 = 84; 88 - 84 = +4}$**).** Entire mergers never exceed four solar masses. According to established physics, **mass-energy radiates** as gravitational waves, **resulting in a net loss of mass**. A gain of four solar masses violates GR and the singularity so dramatically that **falsification is unambiguous**.

The response from LIGO reveals cautious **deflection rather than refutation**. **Only two** scientific discussions of this event exist online. One claimed the event "could be generated by Gaussian noise fluctuations," and the official GWTC-3 documentation states that it is a statistical artifact, with **language so obfuscated and incomprehensible that it's not even worth reporting**. These sparse comments are speculative, suggesting **statistical**

irregularities rather than proven instrumental failure. No literature provides evidence of 1) **instrumental artifacts**, 2) **noise**, 3) **inconsistent detection patterns**, or 4) **statistical analyses** testing if the signal matches detector noise rather than astrophysical sources. This anomaly was simply not investigated—it was annotated "with a dashed line;" that's all. Given that **this event remains unrefuted despite its magnitude**, it undeniably falsifies GR. Yet, academia treated it like a formatting issue. The **entire field** witnessed this event and **collectively dismissed it as "probably noise fluctuation" without evidence**. Instead of updating theory, they **buried the data**.

LIGO was **forced to publish** GW200308_173609 because, as a publicly funded, billion-dollar scientific collaboration, transparency regulations require the release of all valid events. The data are **timestamped**, **cross-confirmed across detectors**, and **independently accessible**. However, their technical documentation and data access are **suspiciously more challenging** for GW200308_173609 than for other events. The standard GWOSC URL format for accessing event details **returns a 404 error** for this event, despite following the correct structural pattern that works for different events. This link should have provided complete technical documentation, parameters, and strain data. The selective inaccessibility for this event **appears to be deliberate suppression.**

The reason we built LIGO with taxpayer money was to **update our knowledge**. Instead, they **built it**, **measured it**, then **swept four solar masses under the rug**. However, this event transcends physics—**it represents the failure of academic knowledge**. If LIGO—with its ~$2.3-3.5 billion in total public investments, international university collaborations, thousands of physicists, cross-verification systems, Nobel-winning credibility, and explicit discovery mission—can **collectively suppress the most clear-cut empirical falsification in physics history**, something that should have triggered the greatest scientific revolution since quantum mechanics, then they will suppress **anything challenging the status quo**: climate models, medical research, economic theories, and social science findings. **Nothing remains safe** in academia if they succeed in suppressing a discovery of this magnitude.

It's clear that **academia is no longer about discovery**—it's about **controlling what's known**. Academia has become **so dependent** on theoretical stability that **falsification is no longer permitted**. When thousands of experts can witness four solar masses appear from nowhere and succeed in footnoting it away with broken links, then **academia has been completely captured**. Now, in 2025, the James Webb telescope repeatedly shows **the universe does align with their current theories**, but we could have moved beyond GR **five years ago**. Imagine what we would understand now had they done their job. Now imagine this suppression happening across **all fields for decades**. The **loss to human intellectual progress** is incalculable and devastating. **It is truly so disappointing**.

The Show of Existence* is not for peer review for a simple reason: academia, as it currently stands, is structurally incapable of producing or validating discoveries that falsify or replace existing ones**. Humanity can decide how to deal with academic suppression—but it is of **no concern or interest to me or *The Theory of Existence. The world we have built here does not need academia to be correct, and it certainly does not wait for its approval. Anyway… let's get back to the paper. Which one are we on again? Oh, right—black holes. Well, good news: **GW200308_173609 is not an error**. *The Theory of Existence* predicted it exactly. Let's get into it…

The Most Mysterious Phenomenon in Existence

Imagine looking up to the night sky. Among all the cosmic beauty—swirling galaxies, **suns dancing into supernovas**, shimmering nebulae—there lurks something so strange it seems **ripped from science fiction: black holes**. These **cosmic unknowables** devour everything, even light, and twist space into impossible shapes. They hide their deepest secrets behind a boundary called the event horizon, from which **nothing can escape**. It's like the universe is playing the **ultimate game of keep-away with us**. Yet, this mystery hasn't stopped our quest for understanding. Black holes are everywhere, and scientists have relied on observation to understand the cosmos. We look, we measure, and we test, but **black holes remain elusive**. How do you solve a mystery when the evidence is permanently hidden from view? For decades, physicists have been trying to peek behind the curtain with mathematics and theory. Yet, **what if there's another way**—one that reveals black holes aren't cosmic vacuum cleaners, but something far more extraordinary? **As if they were gateways into a secret world**.

Instead of trying to peer through that cosmic curtain directly, **we study everything around it**. Think of it like being a detective at a crime scene where **the primary evidence is locked in a vault**—you examine the footprints, the disturbed furniture, the scattered papers. You piece together the story from **what you *can* see**. Physicists have **used this method for decades**, and honestly, **they have been incredibly successful**. By watching how stars spiral into black holes, measuring the gravitational waves that ripple across the universe, and tracking how light bends around them, scientists have built **a remarkably detailed picture of this mysterious phenomenon**.

According to the current scientific consensus, at the very heart of every black hole sits something called a **"singularity"—an infinitely dense, one-dimensional point** where all the mass gets crushed down when it enters the black hole. **Zero size, infinite density**. Try to picture it in your mind. Go ahead… I'll wait… **you can't, right?** That's because it's not just hard to visualize—**it's *impossible***. We have never seen anything infinite in nature. We have never observed anything that's truly one-dimensional. Yet we are supposed to accept this explanation. Well… GW200308_173609 just falsified it. Is it shocking? **No, because it never seemed possible anyway.**

GR doesn't even support the singularity. Physicists were using Einstein's equations to understand black holes, and the math worked beautifully... right up until you got to the center of a black hole. Then the equations basically threw up their hands and said, "I got nothing." Instead of admitting the math had reached its limits, scientists invented the singularity to fill the gap, but the math doesn't say "infinity." The equations break down, but that does not mean there's literally an infinite, one-dimensional point sitting there.

It's like trying to use a **map to navigate the ocean**—at some point, the **map stops being useful when you approach the surface**. The singularity is just as absurd as saying "**welp, the ocean map stops here. There must be infinite water packed into a one-dimensional infinite dot on the other side of the surface**." Now, the GW200308_173609 detection shows a black hole merger that gained mass instead of losing it—something that's impossible under current physics. The singularity model is empirically disproven by the inconvenient reality of four solar masses. With the singularity out of the picture, let's talk about what is really inside a black hole.

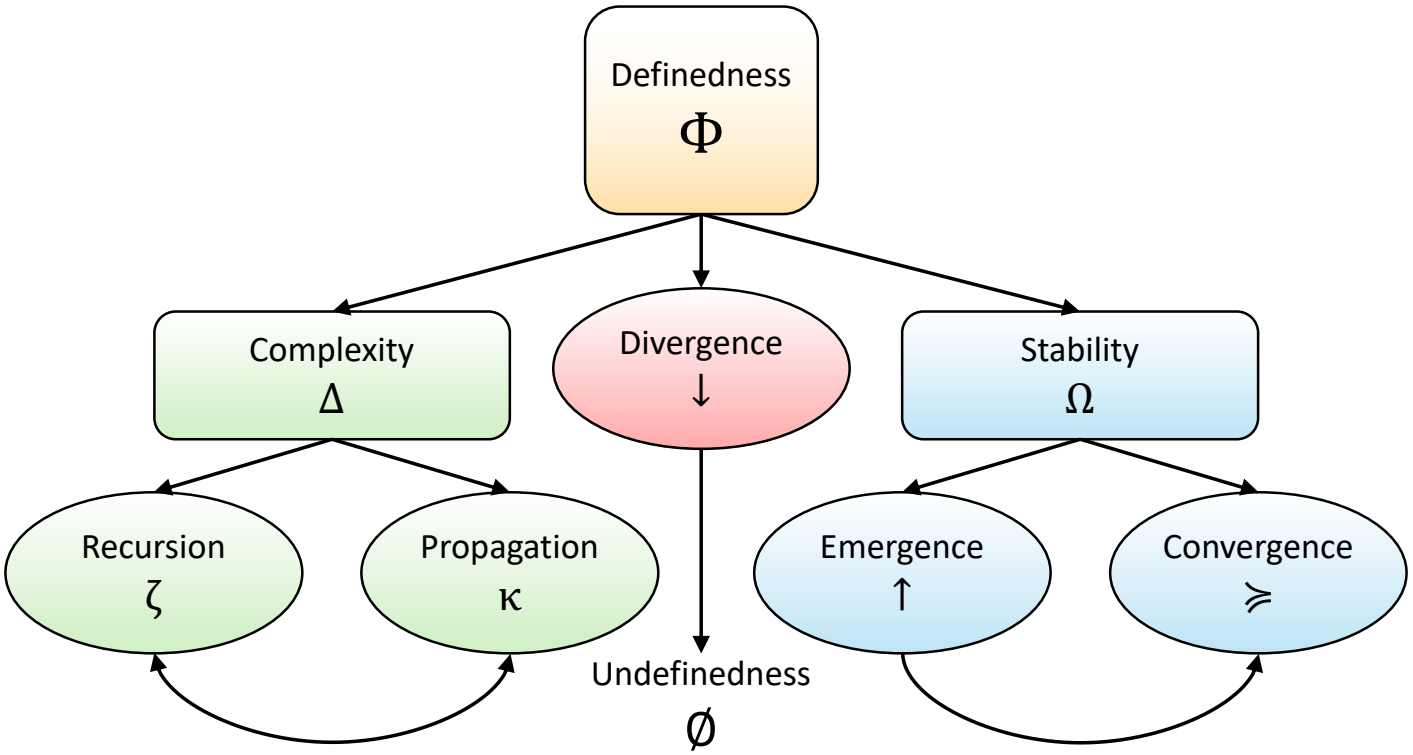
The Theory of Existence Overview: Into the Depths of the Fractal Universe

So… I have this neat thing called *The Theory of Existence* that we are going to use to answer these questions. You can explore this model in depth in *The Theory of Existence,* the book, or Paper 11: The Dance of Stability & Complexity, "*The Equation of Existence*" as the Universal Lens, for an overview of the essential parts. Here are the details for those not interested in reading the other books and papers but want to understand Paper 5.

Phenomena include anything that exists—anything that has definedness. **Definedness is a replacement for existence**, which is binary (something does or does not exist), but definedness is the degree to which something exists. **Some things exist more or less than others** because definedness varies according to the alignment of phenomena with the progression of existence. Phenomena lose definedness when they do not progress and gain it when they do. What determines the definedness of a phenomenon? The answer is ***The Equation of Existence***—the universe's operating system that governs **all things that exist and can exist**. Isn't she beautiful? *The Equation* contains **three terms that describe the way existence behaves**. We can see definedness throughout existence, but there's a world of phenomena that exist with definedness **lower than what we can observe**.

$$\Phi = \frac{\Omega}{\Delta}$$

$$\text{Definedness} = \frac{\text{Stability}}{\text{Complexity}} \quad \text{The Universe} = \frac{\text{Space}}{\text{Light}} \quad \text{Phenomena} = \frac{\text{Convergence}}{\text{Emergence}} \quad \text{What} = \frac{\text{How}}{\text{Why}}$$

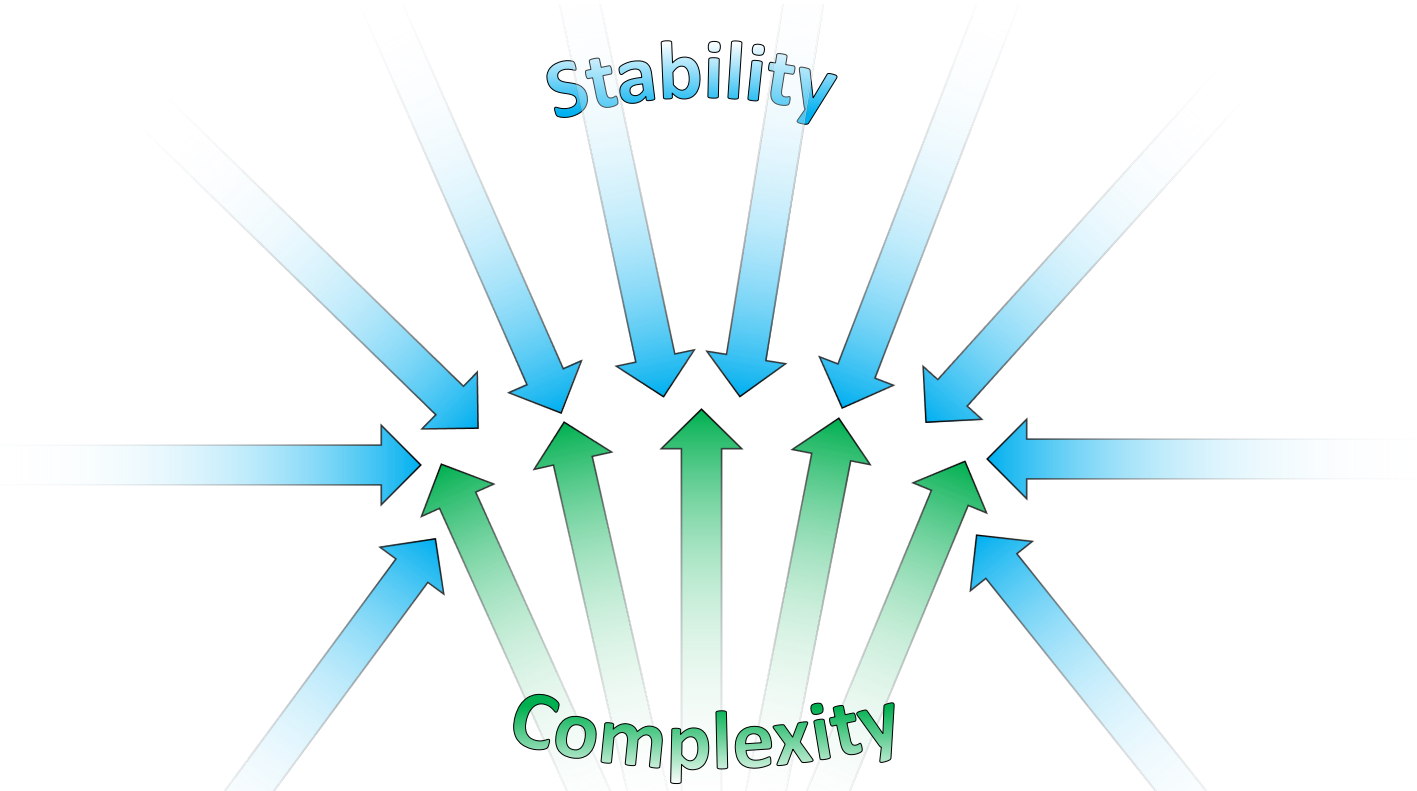


Caption: This diagram shows the fundamental first-principles of existence as presented in *The Theory of Existence*, illustrating how definedness, stability, and complexity interact to shape all phenomena. Definedness is the unifying principle that maintains proportionality and ensures that complexity and stability interact harmoniously rather than divergence. Stability is the foundational structure that ensures the persistence of phenomena across existence, from the subatomic to cosmic superstructures, providing the necessary framework for phenomena. Complexity, in contrast, drives the diversification, growth, and interaction of phenomena, building upon stable foundations to generate emergent structures. We capture this dynamic in *The Equation of Existence in The Theory of Existence*. At the bottom of the figure we see the two axes of the process of existence, which are 1) recursive propagations as the engine and 2) emergence-to-convergence (E2C) as the direction. This balance and these processes underpin the self-organizing nature of the universe, enabling physical structures from galaxies and planetary systems to biological evolution, intelligence, and consciousness. This model is the only one you need to explain everything that has and can exist.

The other two terms in *The Equation* are responsible for this dance of definedness: **Stability (Ω) and Complexity (Δ). Complexity is the degree to which phenomena escalate from basic to structured**. It is the source of **growth**, **innovation**, and **adaptation** among phenomena. The best measure of it is the mass or energy of the phenomena. **Stability is the degree to which complexity is attracted to complexity.** It provides **order**, **persistence**, and **structure**, serving as **the foundation** for phenomena to **persist and converge**. The best measure of it is gravity. Stability holds things together while complexity provides the growth that allows phenomena to align with the progress of existence. From the intricate fractal geometry of snowflakes to the vast networks of galaxies, **complexity shapes the course** of existence, and **stability ensures that progress holds** over time.

The Equation describes the proportionality that defines all being, **uniting stability (Ω) with complexity (Δ)** to express the definedness of all phenomena. **Definedness (Φ) is the balance of these two patterns**, capturing how phenomena behave. This dance between stability and complexity creates a balance that Φ quantifies, ensuring existence remains **stable yet dynamic**, **persistent yet capable of transformation**, **firm yet flexible**.

All phenomena must constantly adjust their **stability-complexity ratio to maintain definedness as environmental conditions change around them**. It is unitless because it describes the underlying pattern that exists in all phenomena, not the metric or the phenomena themselves. Definedness, then, measures whether phenomena have **emerged, converged, or diverged**. *The Equation* applies to all domains, from biology to physics… from consciousness to the cosmos… revealing the single rule that unifies what we thought were isolated phenomena. *The Equation* also holds the key to **understanding what is inside black holes**.



Caption: Complexity, governed by recursive propagations, naturally escalates toward divergence, pushing phenomena toward increasing disorder. Stability acts as the counterforce, attracting complexity into alignment with itself and transforming chaotic expansion into structured forms. This balance ensures that complexity does not diverge into chaos and instead aligns with convergent phenomena that persist and evolve. As recursion drives iterative progression and propagation extends these interactions across scales, stability moderates this expansion. This balance between complexity's tendency to escalate and stability's ability to contain it is fundamental to organizing everything from cosmic structures to cognitive systems. This balance, driven by recursive propagations, make complexity inherently more stable, allowing self-organization.

In Paper 6: There Is No Evidence That Time & Space Are Continuous, **I empirically tested** something that physicists have assumed for over a century but never verified: **whether time and space are truly continuous**. The results were definitive—**time and space are not infinitely divisible and continuous**. Existence operates in discrete units with clear boundaries, like **ticking pixels**. This discovery obliterates the singularity. If everything in the universe has **starting** and **stopping points**, then nothing can be infinitely dense or one-dimensional. Now that we know that spacetime is discrete, we need a new framework for understanding the universe.

Let's start with time. The thing about time is that… **it doesn't exist; at least, not as we thought**. In discrete existence, **time is recursion**—where the **output of one moment** serves as **the input for the next**. **Space is propagation** (the smallest units of space, like pixels of reality). Recursion and propagation are two ways existence behaves, but existence does so simultaneously, so **we call them recursive propagations**—the fundamental mechanics underlying existence (I call them **RPs for short**). **RPs vary in complexity** according to the phenomenon. **Complexity emerges from recursive propagations**, and then it is **transferred to stability**. This process repeats across existence, allowing us to express *The Equation* accurately while retaining its functioning as a simple ratio:

$$\Delta = \kappa : \zeta \rightarrow \Phi = \frac{\Omega}{(\kappa : \zeta)} \rightarrow \text{Definedness} = \frac{\text{Stability}}{(\text{Propogation} : \text{Recursion})}$$

According to the **math** and **empirical evidence** of ***The Theory*** and ***The Equation***, the universe is **fractal and finite**. Fractals are **natural patterns of self-similarity**: recurring phenomena that remain consistent in form across vast scales of observation. In math, these fractals are infinite; however, **we have never seen infinity,** and

Paper 6 shows it does not exist, so fractals in existence have minimums (Planck units) and maximums (stay tuned 🤭). Consider how similar structures appear across diverse phenomena: the branching of neurons, tree limbs, river networks, and the filaments of galactic superclusters **all share remarkably identical self-organizing forms**. To measure how RPs vary by complexity, we can calculate their **relative fractal dynamics** (RFDs).

Seeing Existence Through Relative Fractal Dynamics

RFDs are the **discrete replacement for spacetime dilation in GR**. We can use **the fully expanded form of *The Equation* to calculate the RFDs** of phenomena by normalizing to the Planck units: **Planck energy** for **complexity**, **Planck time** for **recursion**, and **Planck lengths** for **propagation**. This approach allows us to analyze any phenomenon by converting measurements to the most fundamental units we know. By using Planck units—the smallest meaningful units of measurement in physics—**we create a standardized framework** for understanding how different phenomena evolve in the fractal universe we have found ourselves in. Here is the fully expanded form:

$$\Phi = \Omega * \left(\frac{(\kappa : \zeta)}{\Delta}, \nu = x \right) \vee \emptyset$$

$$\text{Definedness} = \text{Stability} * \left(\frac{(\text{Propagation} : \text{Recursion})}{\text{Complexity}}, \text{Normalized} \right) \text{Else Undefinedness}$$

This expanded form of *The Equation* contains **the entire mechanics of existence**. However, we are only focusing on the RFDs of phenomena (like planets and stars), so we need that normalized complexity portion.

$$\frac{(\kappa : \zeta)}{\Delta}, \nu = x \rightarrow \psi = \frac{l_P : t_P}{E_p} \rightarrow \text{RFDs} = \frac{\text{Planck Length} : \text{Planck Time}}{\text{Planck Energy}}$$

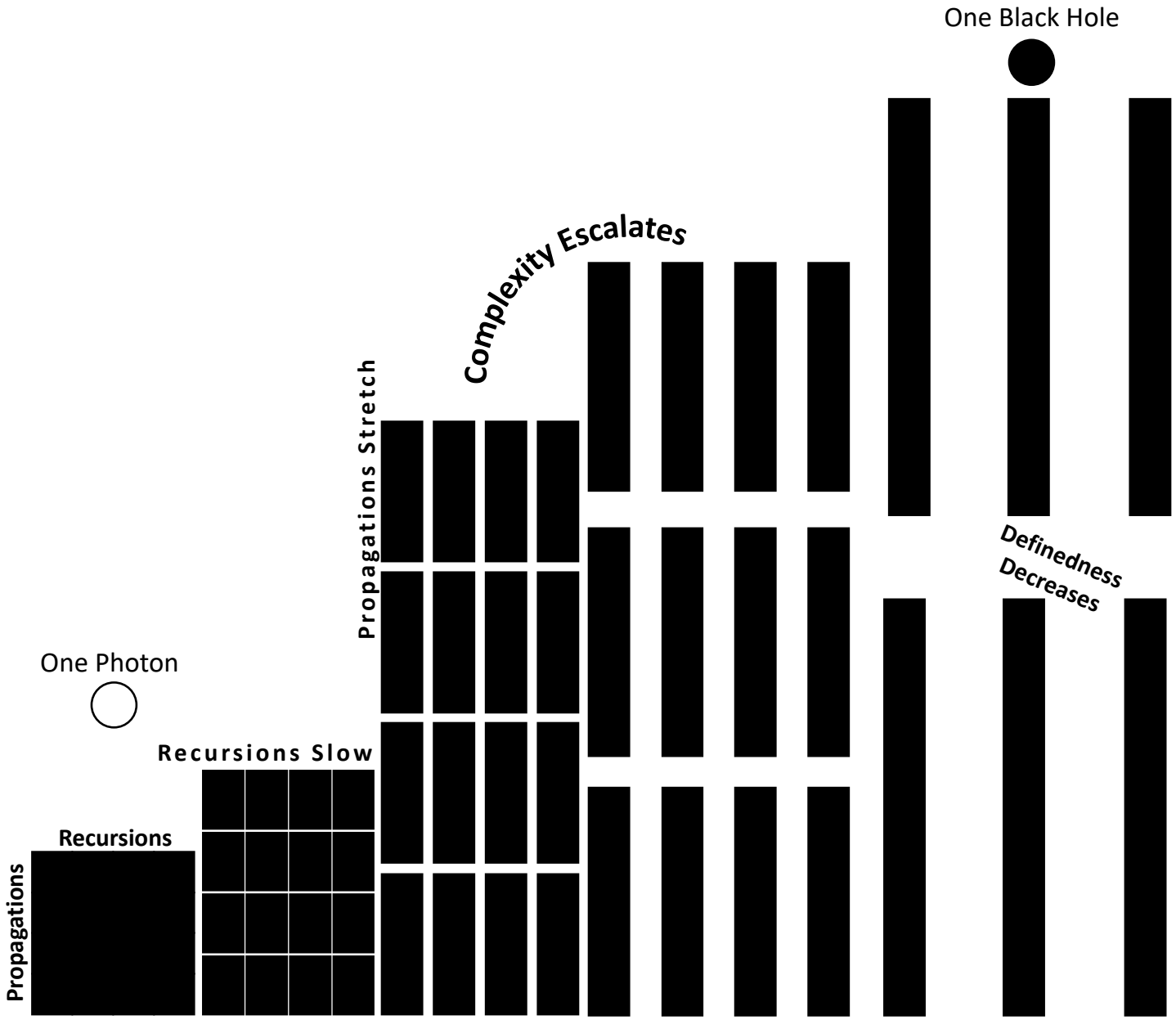
Let me demonstrate how the RFD formula works through a concrete example, such as an apple. We begin by **converting the apple's mass into Planck energy**, then **divide the unbounded RP rates** (maximum, the speed of light) using **the Planck unit numbers for length and time**. When you perform the calculation as shown below, you'll observe that recursion and propagation drop evenly—an exact result showing that **time and space always move in proportion to each other**, **never breaking the speed of light even as complexity escalates.**

This consistency explains why nothing can travel faster than the speed of light. Further, the calculation shows that **unbounded RPs are the default state of the universe**, operating in empty space and light only (which has no mass). When we introduce any mass or energy, **the unbounded RPs transform into bounded RPs**.

$$\psi = \frac{t_P : l_P}{E_p} = \frac{10^{35} \frac{p}{m} : 10^{44} \frac{r}{s}}{10^6 E_p} = 10^{29} \frac{p}{m} : 10^{38} \frac{r}{s}$$

As **complexity increases, recursions slow, and propagations stretch** because of the strain the complexity puts on that part of existence—it cannot as easily progress because of the burden the phenomenon puts on it. **An apple weighs ~ 0.2 kg**, which we can **transform into Planck energy**, which would be $\sim 10^6 E_p$. Then, we simply calculate the RFD by **dividing the unbounded RPs** by the **Planck energy of the apple**. We see that, for an apple, time moves at 10^{38} **recursions a second,** and space expands to 10^{29} **propagations per meter**.

We can repeat this process for **any phenomenon**, irrespective of its size or domain, to gain a better understanding of how **bounded RPs behave at varying complexities**. Phenomena have their own relative fractal dynamics, based on their complexity as **defined by their mass and energy**. Look at how existence changes from **the photon (lowest complexity)** to extremes around **the black hole (maximum complexity)**. Isn't it incredible how everything else in existence falls in between these two extremes? RFDs enable us to observe the effects we once referred to as time dilation and the warping of spacetime, using a discrete model of existence. The question then becomes, **where do RPs go after they occur?** The answer to that question is… ***The Record***.

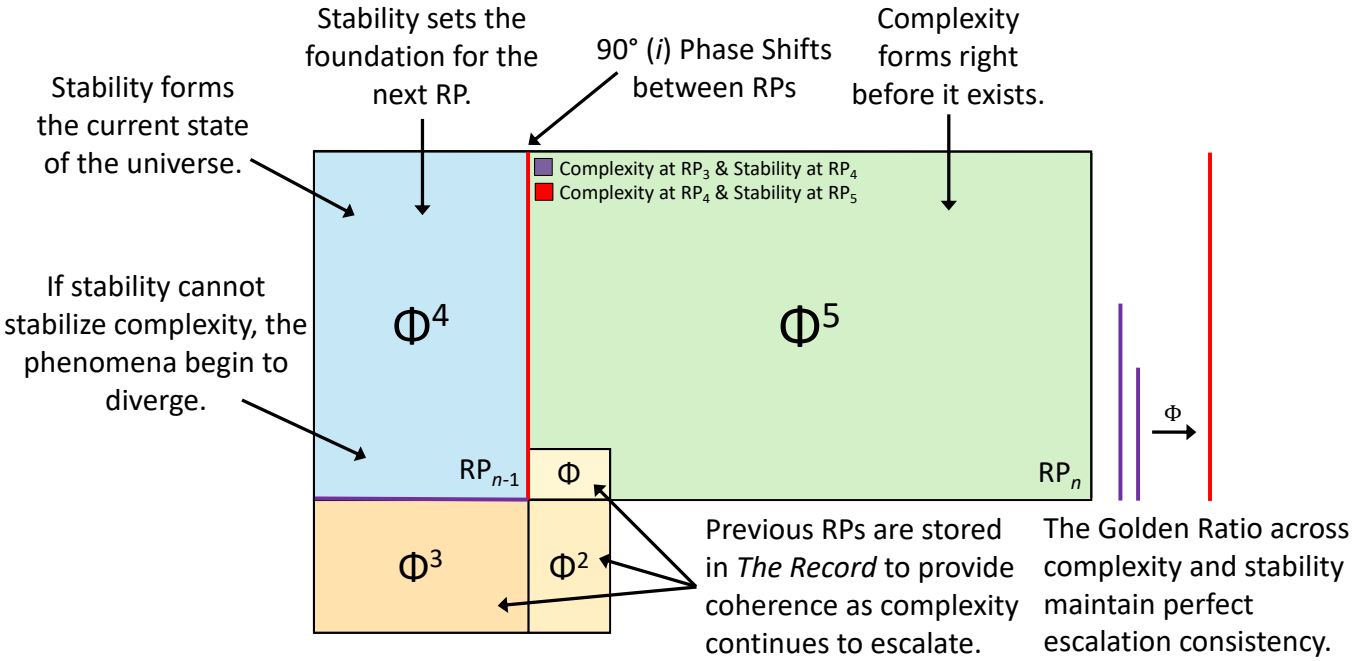


Caption: This figure visualizes the intricate and counterintuitive relationship between complexity, stability, and definedness across different phenomena. As complexity increases, recursion and propagation dynamically adjust by slowing and stretching proportionally, stabilizing the system while allowing complexity to continue escalating. These adjustments ensure phenomena persist within defined existence, preventing collapse despite increasing complexity. However, this stabilization comes at a cost—higher complexity results in lower definedness. As the most straightforward and defined phenomenon, the photon exhibits maximum resolution, a recursion rate at the Planck time, and a propagation length at the Planck scale. In contrast, the black hole, representing the end of complexity, has a near-halted recursion rate and a significantly stretched yet finite propagation length, making it the minimum definedness for phenomena in the observable universe. This figure demonstrates how recursion and propagation function as regulatory forces, maintaining the existence of phenomena within definedness, even as entropy gradually divergences them over time. By highlighting this spectrum, the visualization shows how stability and complexity govern all phenomena' emergence, convergence, and divergence.

Phenomenon	Mass	Planck Energy	Relative Recursions	Relative Propagations
Photon	0 *kg*	$1\ E_p$	$\sim 10^{44}\ \frac{r}{s}$	$\sim 10^{35}\ \frac{p}{m}$
Paperclip	0.001 *kg*	$\sim 10^{4}\ E_p$	$\sim 10^{40}\ \frac{r}{s}$	$\sim 10^{31}\ \frac{p}{m}$
Apple	0.2 *kg*	$\sim 10^{6}\ E_p$	$\sim 10^{38}\ \frac{r}{s}$	$\sim 10^{29}\ \frac{p}{m}$
Small Rock	1 *kg*	$\sim 10^{7}\ E_p$	$\sim 10^{37}\ \frac{r}{s}$	$\sim 10^{28}\ \frac{p}{m}$
Cat	4 *kg*	$\sim 10^{8}\ E_p$	$\sim 10^{36}\ \frac{r}{s}$	$\sim 10^{27}\ \frac{p}{m}$
Human	70 *kg*	$\sim 10^{9}\ E_p$	$\sim 10^{35}\ \frac{r}{s}$	$\sim 10^{26}\ \frac{p}{m}$
Small Car	1,000 *kg*	$\sim 10^{10}\ E_p$	$\sim 10^{34}\ \frac{r}{s}$	$\sim 10^{25}\ \frac{p}{m}$
Earth	10^{24} *kg*	$\sim 10^{32}\ E_p$	$\sim 10^{12}\ \frac{r}{s}$	$\sim 10^{3}\ \frac{p}{m}$
Sun	10^{30} *kg*	$\sim 10^{37}\ E_p$	$\sim 10^{7}\ \frac{r}{s}$	$\sim 10^{-2}\ \frac{p}{m}$
Black Hole	10^{31} *kg*	$\sim 10^{38}\ E_p$	$\sim 10^{6}\ \frac{r}{s}$	$\sim 10^{-3}\ \frac{p}{m}$

***The Record*: The Secret Fractal Memory of Existence**

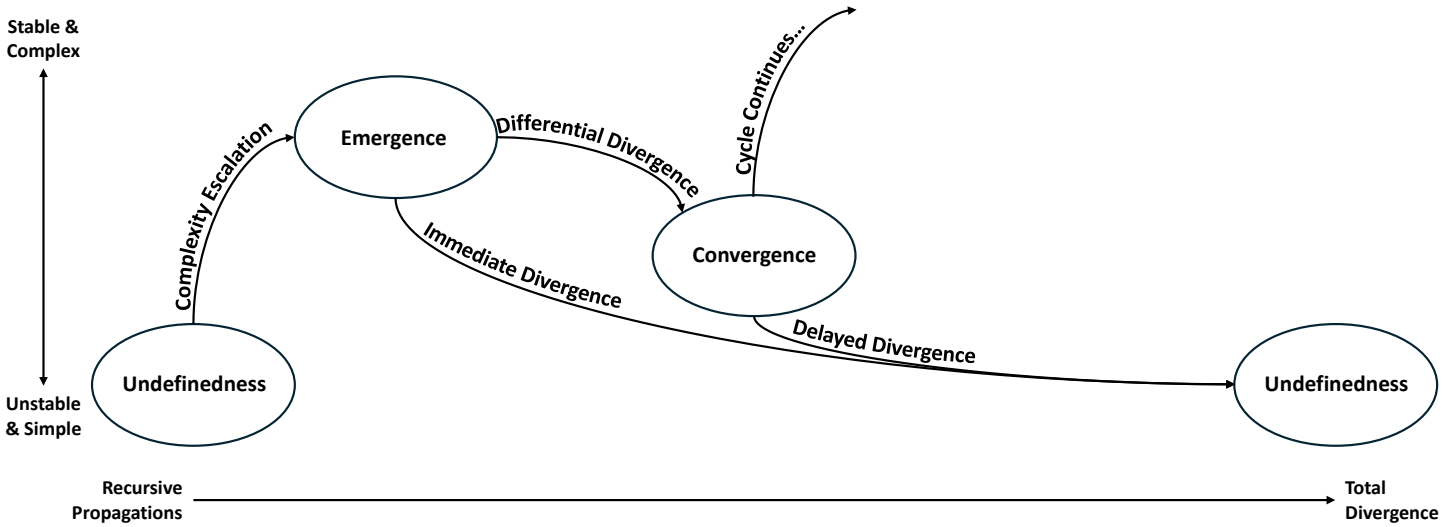
I want to start this section with **complete honesty**. **I did not invent *The Record* or its concept**—I found it, time and time again, in the **simulations**, in the **math**, and in the **empirical evidence**. At first, it made me **deeply uncomfortable**. **I tried to rationalize it away** before coming to terms with what it is, why it exists, and how it works. Now… I see it for what it is… **the reason anything persists at all**… and the only thing stopping existence and everything in it from diverging. It's one of the most beautiful things I've ever seen... **let me show you**…



Caption: Stability becomes the structural foundation for the next recursive propagation in the complexity escalation. If stability cannot constrain complexity, the phenomena collapse. The alignment of this phase shifting stability to complexity structure determines E2C. Highly misaligned ratios result in diverged phenomena (complexity outpaces stability) whereas converged phenomena (stability outpacing complexity) come from strong alignment in *The Record*.

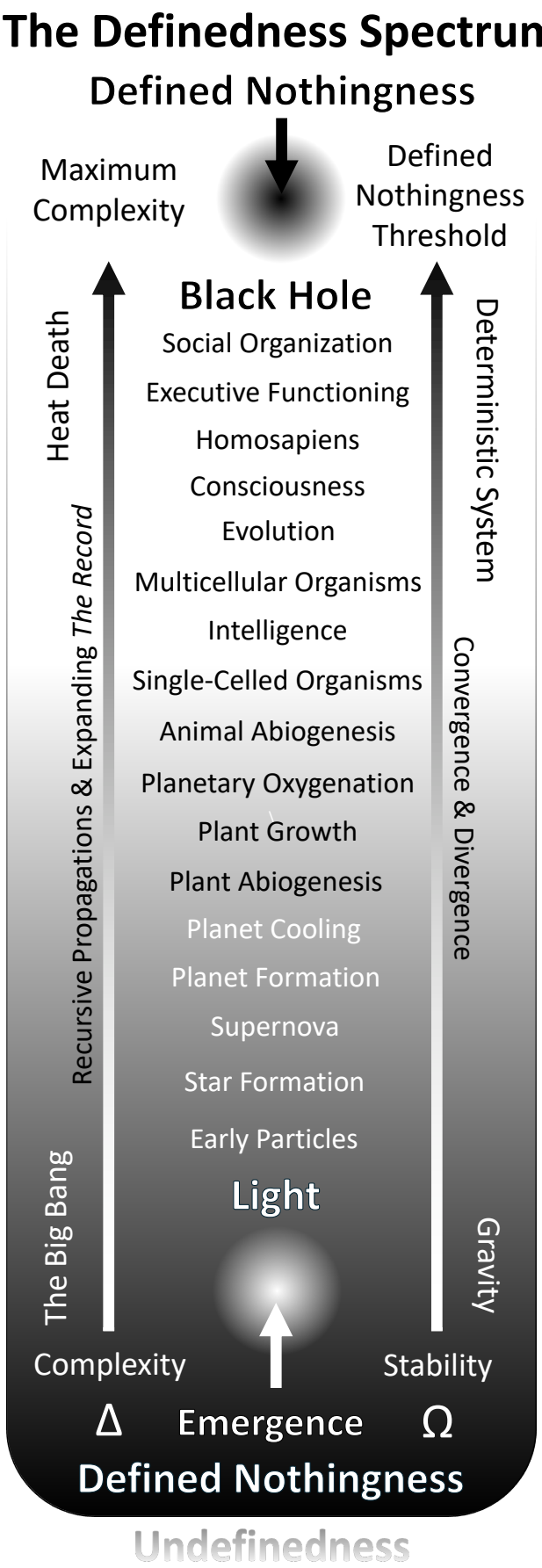
The Record is the recursive-propagative fractal memory of existence that **stores all previous RPs** into definedness. ***The Record*** is the mechanism that causes **phenomena to emerge, converge, and ultimately diverge**. However, **the definedness of RPs in *The Record* is significantly lower than ours,** to the extent that direct observation is not possible; yet **we see the effects of *The Record* everywhere**. Everything that has ever existed **never actually ceases to exist** (until heat death); it remains in *The Record*, determining the trajectory of phenomena.

When you think about *The Record* and how it works in existence, you can think of it **quite literally as a vinyl record where the vinyl is *The Record* and the music that it plays is existence**. Existence is the music, but when you look at the vinyl, you can see imprints on it, which cause the frequencies and waves. Thus, if existence is the music, then yes, **you could not see or interact with the bumps on *The Record* directly**. Still, they are there **before existence happens**. Mentally, you can imagine that what it looks like is **the record player is right in the middle of the music permeating the room**; but, from the music's perspective, **it's not there**, because all the interaction happens **before the music comes out of the speakers**—which is how *The Record* works too.



Caption: This figure illustrates the cyclical nature of emergence, convergence, and divergence governed by recursive propagations. It depicts how complexity escalates and stabilizes through structured recursion, following a trajectory from undefinedness to emergence, then convergence, and ultimately back to undefinedness if stability fails. The leftmost position represents undefinedness, where recursive propagations have not yet aligned to form stable complexity. The figure illuminates *The Theory of Existence's* revolutionary premise: reality operates as a seamless, interconnected system governed by universal principles of recursive propagations following patterns of emergence-to-convergence (E2C). *The Theory* dissolves traditional disciplinary boundaries by demonstrating how seemingly disparate phenomena—from planetary formation to consciousness—emerge through identical fundamental dynamics. This diagram reveals how complexity and stability interact across scales, showing that the mathematical principles driving galactic structures are fundamentally similar to those underlying cognitive processes. *The Theory of Existence* provides a unified lens that resolves paradoxes in quantum mechanics and general relativity, offers a cohesive explanation for phenomena ranging from cosmic evolution to cognitive emergence, and demonstrates that consciousness and physical systems are not separate, but expressions of the same underlying recursive-propagative dance. This visualization challenges our traditional understanding of reality by revealing a profound interconnectedness that transcends conventional scientific and philosophical categories, suggesting that what we perceive as distinct are manifestations of a single, elegant mathematical framework of existence.

Let me be crystal clear about something crucial: ***The Record* is not a mystical or metaphysical concept**—it's as real and physical as you and me. We interact with it constantly, but we cannot directly observe it because **it exists at a definedness below our perception threshold** and is **always tucked behind the much stronger definedness of the current RP**. Think of it as the universe's hard drive, storing every RP that has ever occurred. The evidence for *The Record* is overwhelming. In Paper 4: Illuminating Dark Matter & Energy: Living in a Fractal Universe, I showed how **it explains galactic rotation curves with 99.98% accuracy,** finally solving the dark matter puzzle. Galaxies exhibit distinct convergence and divergence zones because ***The Record* contains inherent structural patterns of existence that determine how and where all phenomena form, cluster, and disperse**.



These mathematical patterns are **inherent to all recursive systems, including existence**, as I demonstrated in Paper 3: The Harmonics of Existence: Solving the Collatz Conjecture & Recursive Systems. *The Record* is the structural foundation that makes existence stable rather than chaotic. **It maintains a unified and coherent existence across scales.** Now that we understand *The Theory*—discrete RPs, the definedness spectrum, and *The Record* as the universe's memory system—we can finally crack the mystery of **what's *really* happening inside of black holes**.

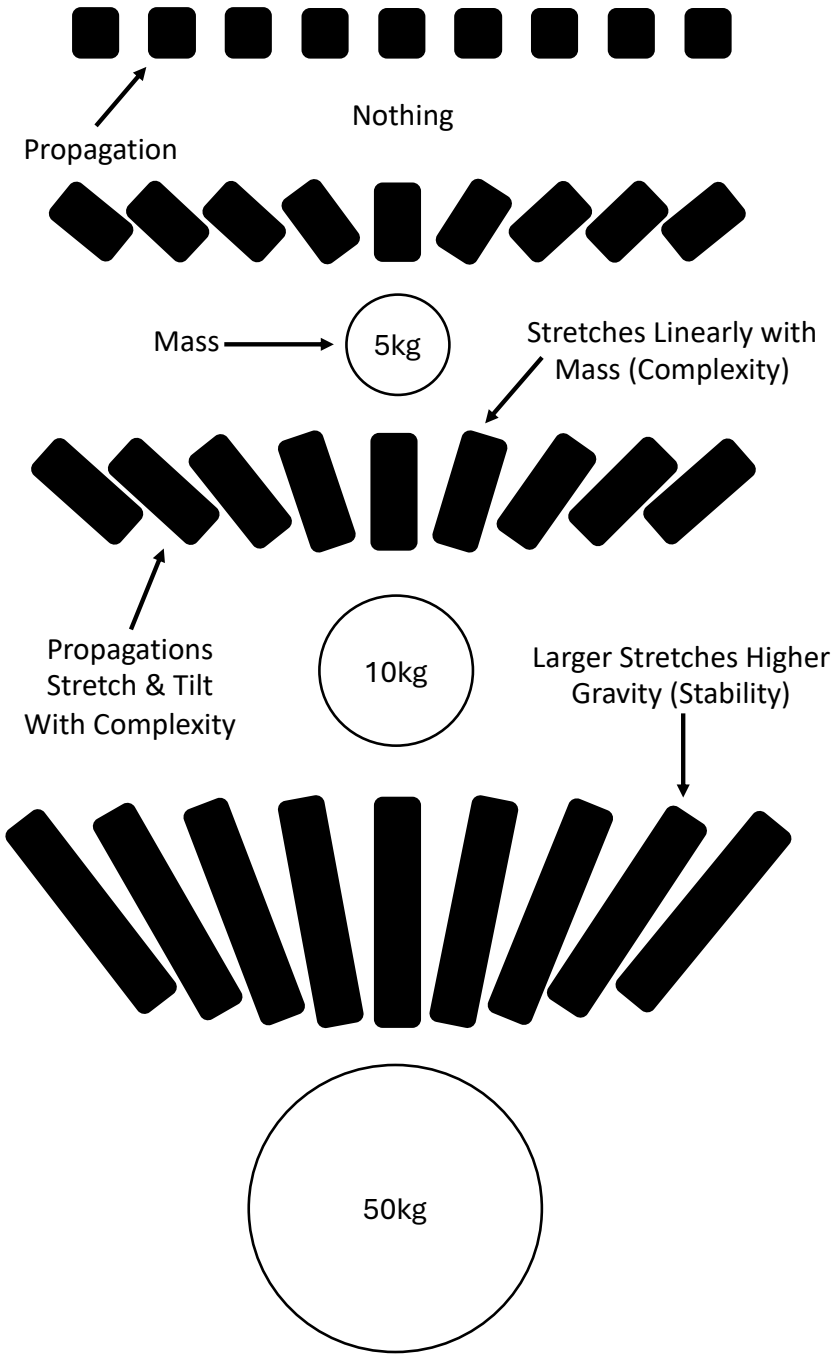
It's Less Than Nothing… It's Defined Nothingness

It might seem intuitive to assume that, if existence is definedness, then **the centre of a black hole would be undefinedness**. The difficult but essential truth is that undefinedness does not exist; it simply isn't. When we think back to Paper 2: Introducing Undefinedness: That Is, If Undefinedness Was Something That Could Be Introduced—But It's Not, we remember that if we can point to something and say it is undefined, then it has definedness—the **definedness of being undefined** in existence.

Instead of undefinedness, there is something called **defined nothingness**—a location within existence where **definedness could be but is not**—a real, measurable non-state that marks **the start or stop of RPs**. We typically think of "nothing" as empty space, but **empty space is not empty**, as I'll show you in a moment. Empty space may be "nothing," but **only from our current RP**. Defined nothingness is **the defined lack of definedness**, a boundary with no RPs. Defined nothingness occurs **anywhere RPs terminate without transforming into a new form of complexity—**black holes being the prime example.

In this figure, we see **existence begin with defined nothingness** and **a single photon**—the simplest, most foundational forms of complexity and stability. Definedness **does not occur within RPs, but across them**. RP_1 of the Big Bang had defined nothingness, but **not yet the definedness that governs existence**, until it transitioned into RP_2. From that moment forward, **existence recursively propagated complexity escalations that stabilized into the phenomena** we now observe across the universe. All phenomena fall somewhere along the spectrum of definedness. After the Big Bang, defined nothingness appears only in two other locations: **black holes, and heat death at the universe's end**. You can learn more about what *The Theory* says about both *The Theory of Existence* book.

What does defined nothingness look like in existence? Imagine a spot of defined nothingness sitting directly in front of you. What would you see? What would it feel like to touch it? The answer is: **you wouldn't see or feel anything**, because it wouldn't be there in the way that exists. **It would neither reflect light nor emit energy, and it would possess neither spatial nor temporal qualities**. At first glance, it might appear black—but black is still a property of existence, and **defined nothingness has no properties at all**. It is not dark—it's absent. It would not feel empty. It would feel like nothing belonged there in the first place. **Unlike undefinedness**, which cannot be observed because it has no structure, we can observe **defined nothingness by noting what should be there but is not**. It's real, but not present. It's absence, made observable.

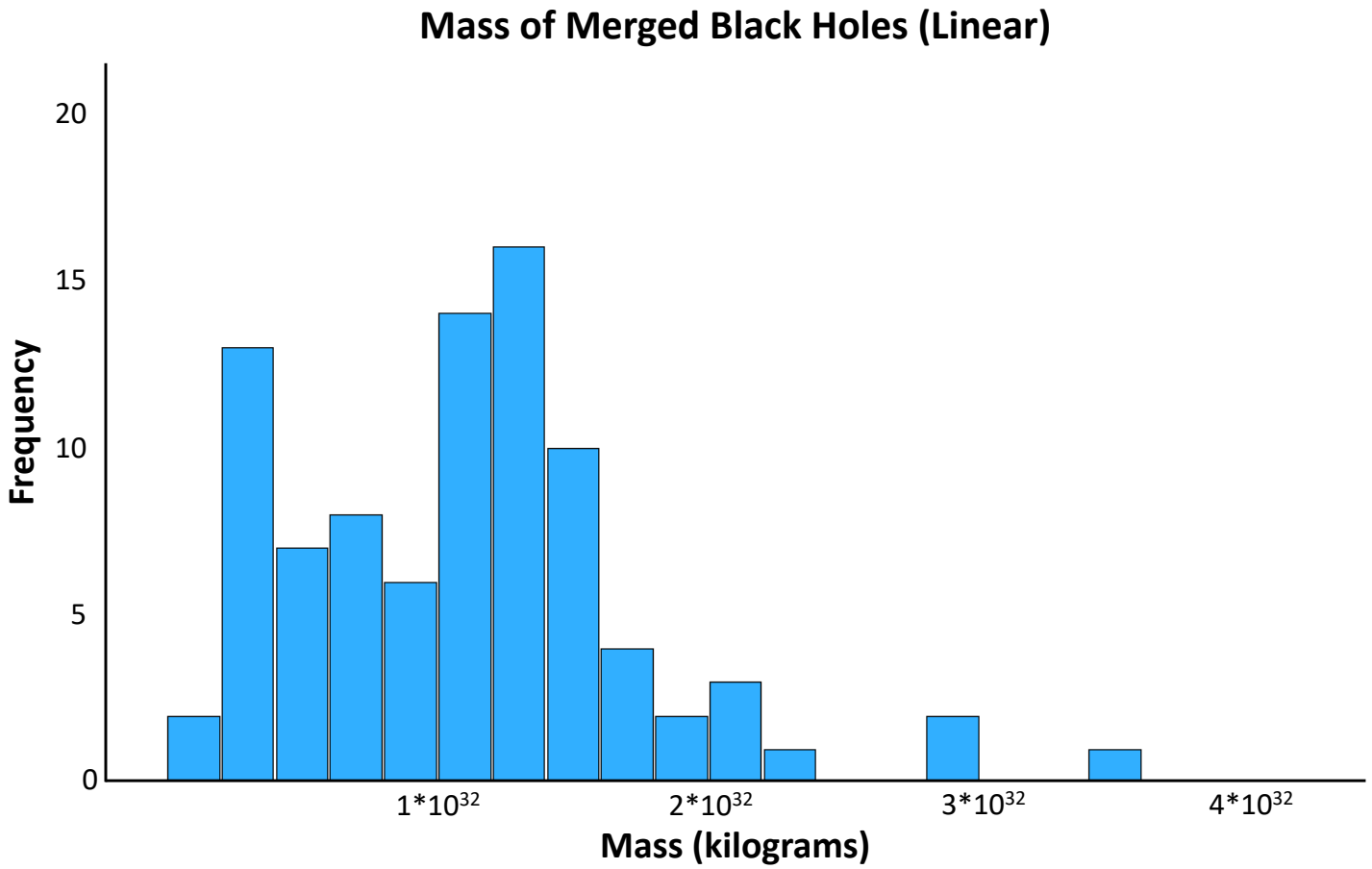


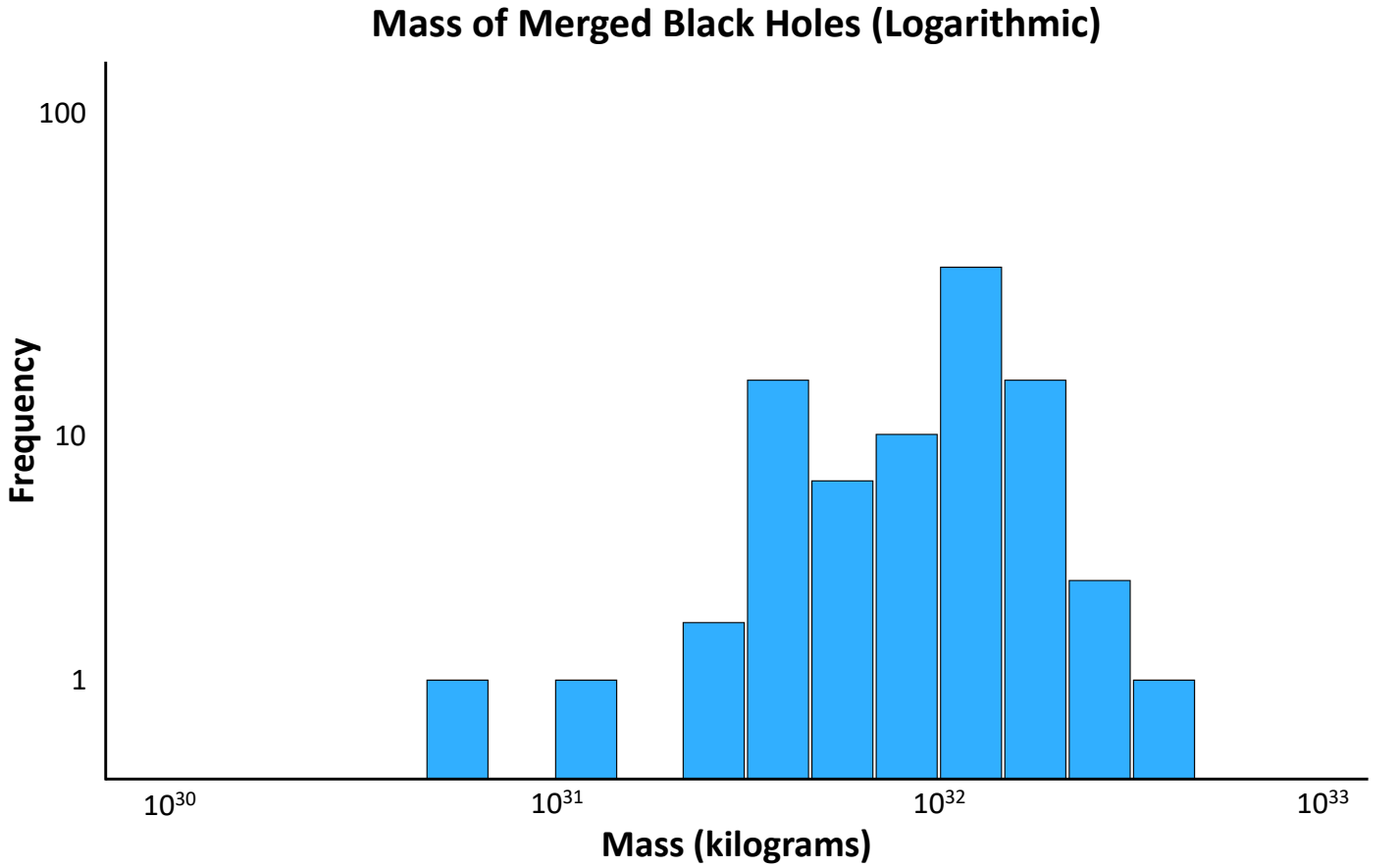
The Defined Nothingness Threshold

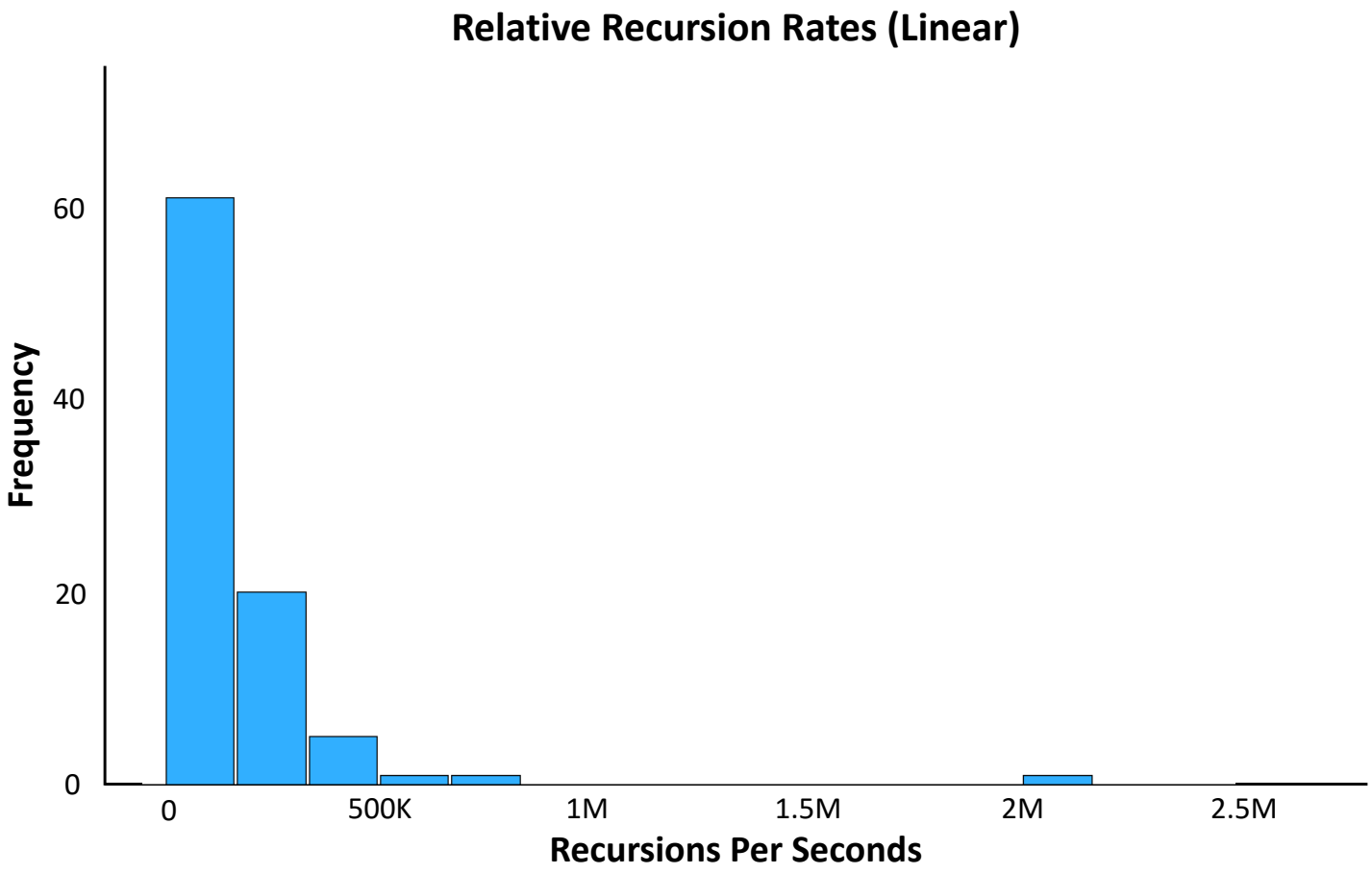
To understand defined nothingness, let's start with gravity. **We have seen how complexity (mass) determines the RFDs of phenomena**, and when mass increases, propagation stretches—**this propagative stretching *is* gravity**. Complexity, the emergent outcome of RPs, **creates resistance as it moves through existence**, much like walking through water vs. air. What physicists call "time dilation" is the slowing down of recursion, and what they call "gravity" is the propagative stretching. However, **propagations do not just stretch uniformly**; **they stretch directionally, tilting toward areas of higher complexity, much** like a pile of iron filings drawn to a magnet.

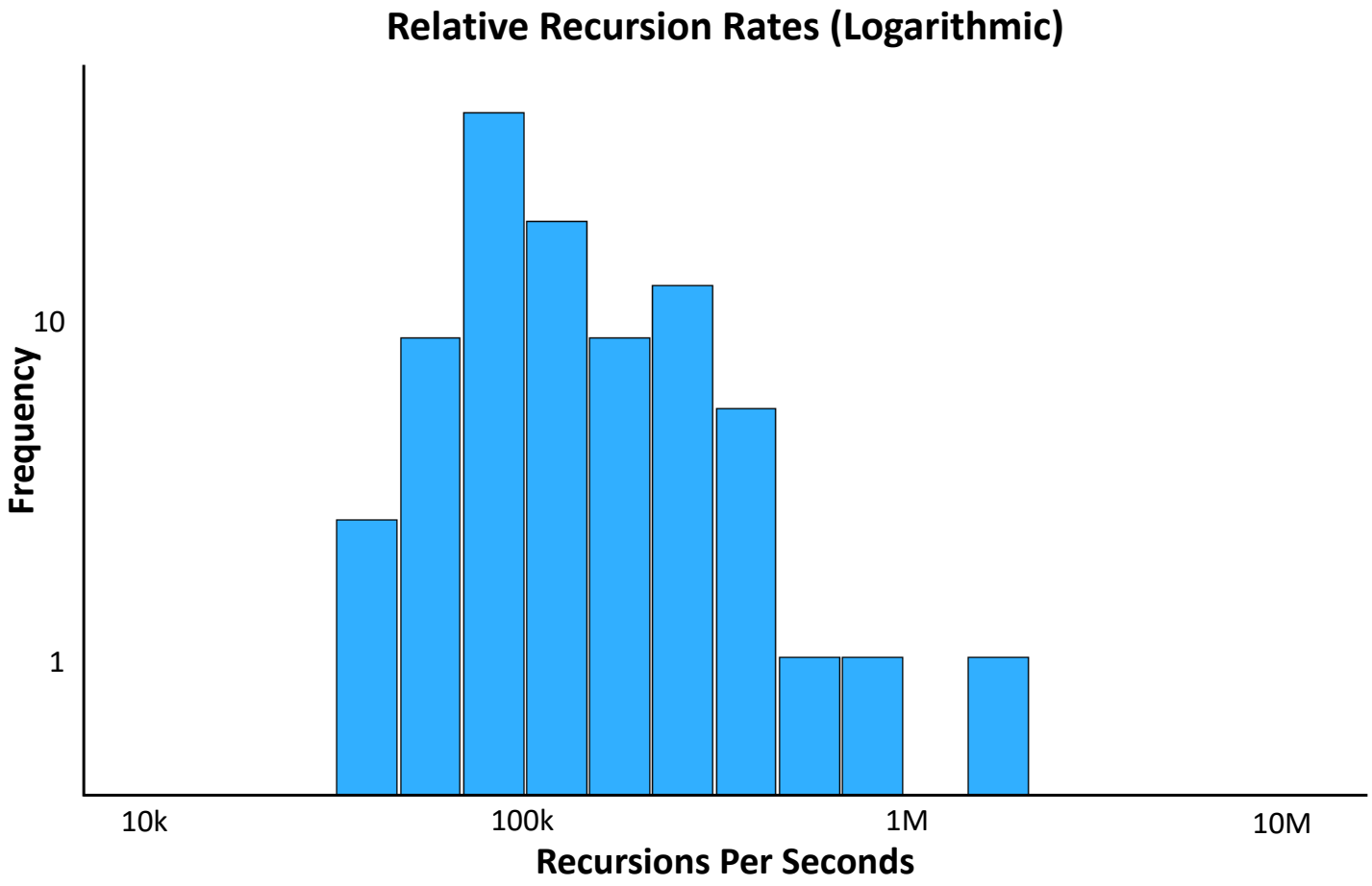
This **directional tilting** creates the fundamental attraction we experience as gravity, **where complexity warps the structure of existence in a way that causes more complexity to flow toward** it, thereby defining stability. On human scales, these effects are subtle—**unexplained mood shifts or tensions—**but on cosmic scales, this exact mechanism becomes the gravity that pulls matter into planets and stars. The *LIGO data reveals exactly how this process works,* and more importantly, **the data reveal what happens to existence when it breaks…**

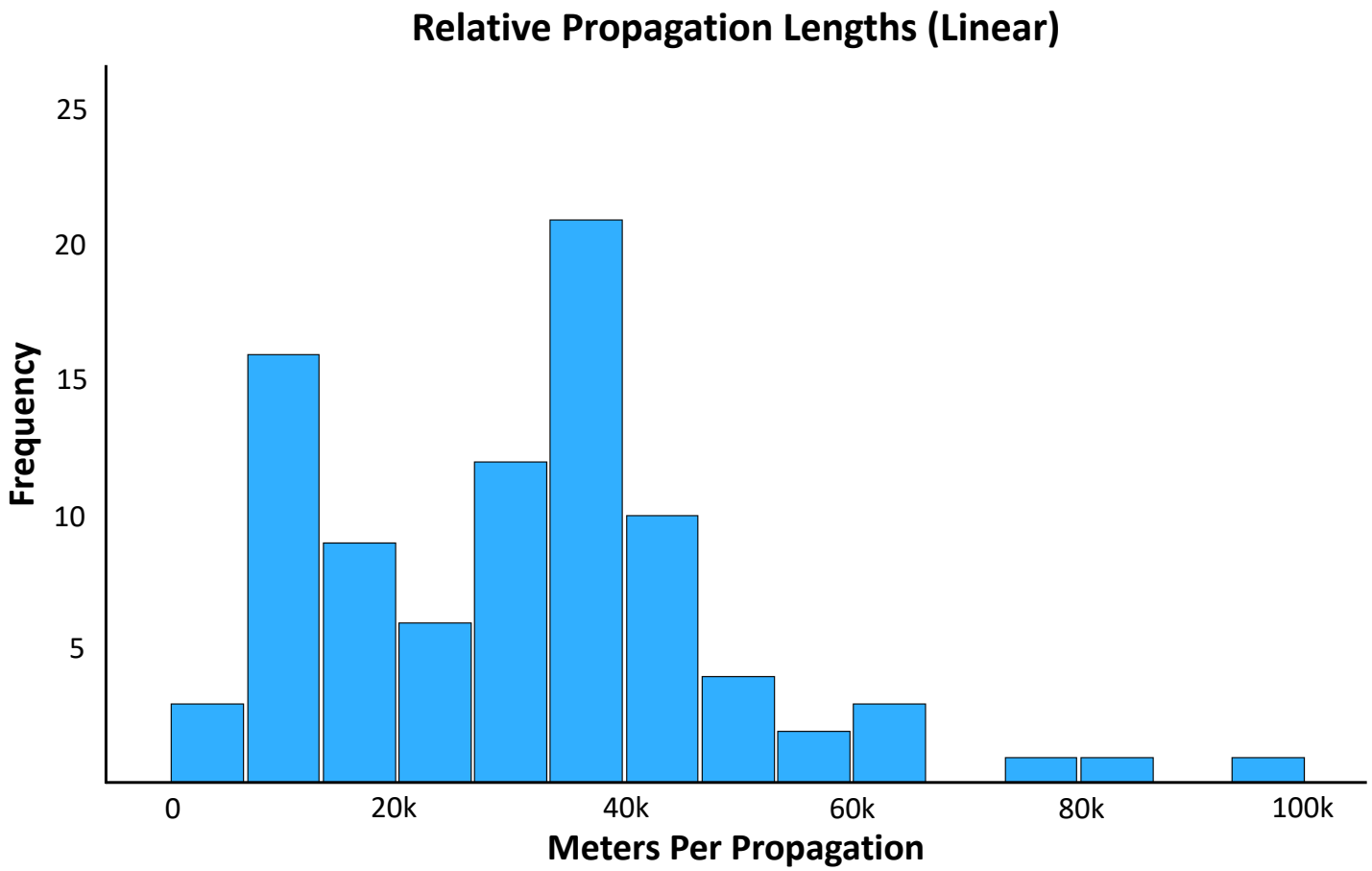
Let's bring in the best black hole dataset available: **LIGO's black hole merger catalog containing ~90 black hole collisions**. Each event captures two black holes spiraling toward each other, their merger, the combined black hole, and the gravitational waves. I began by **analyzing the post-merger black holes using RFDs**, examining their distributions on both **linear and logarithmic scales**. I also calculated the Schwarzschild diameters, assuming no spin or velocity as a baseline approximation, then checked their shape with histograms.

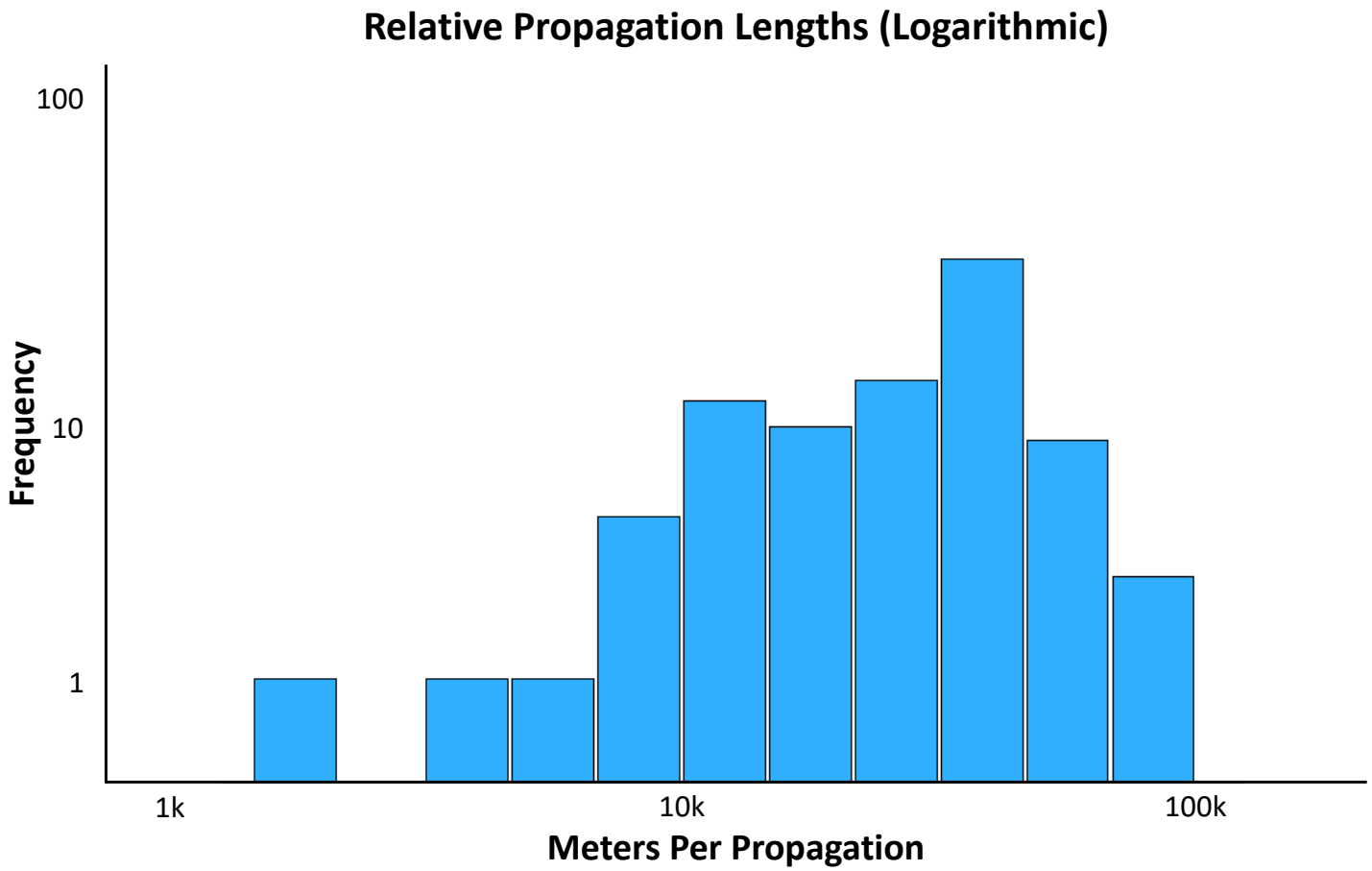

Mass of Merged Black Holes (Linear)
Frequency
20
15
10
5
0
1*10^32
2*10^32
3*10^32
4*10^32
Mass (kilograms)

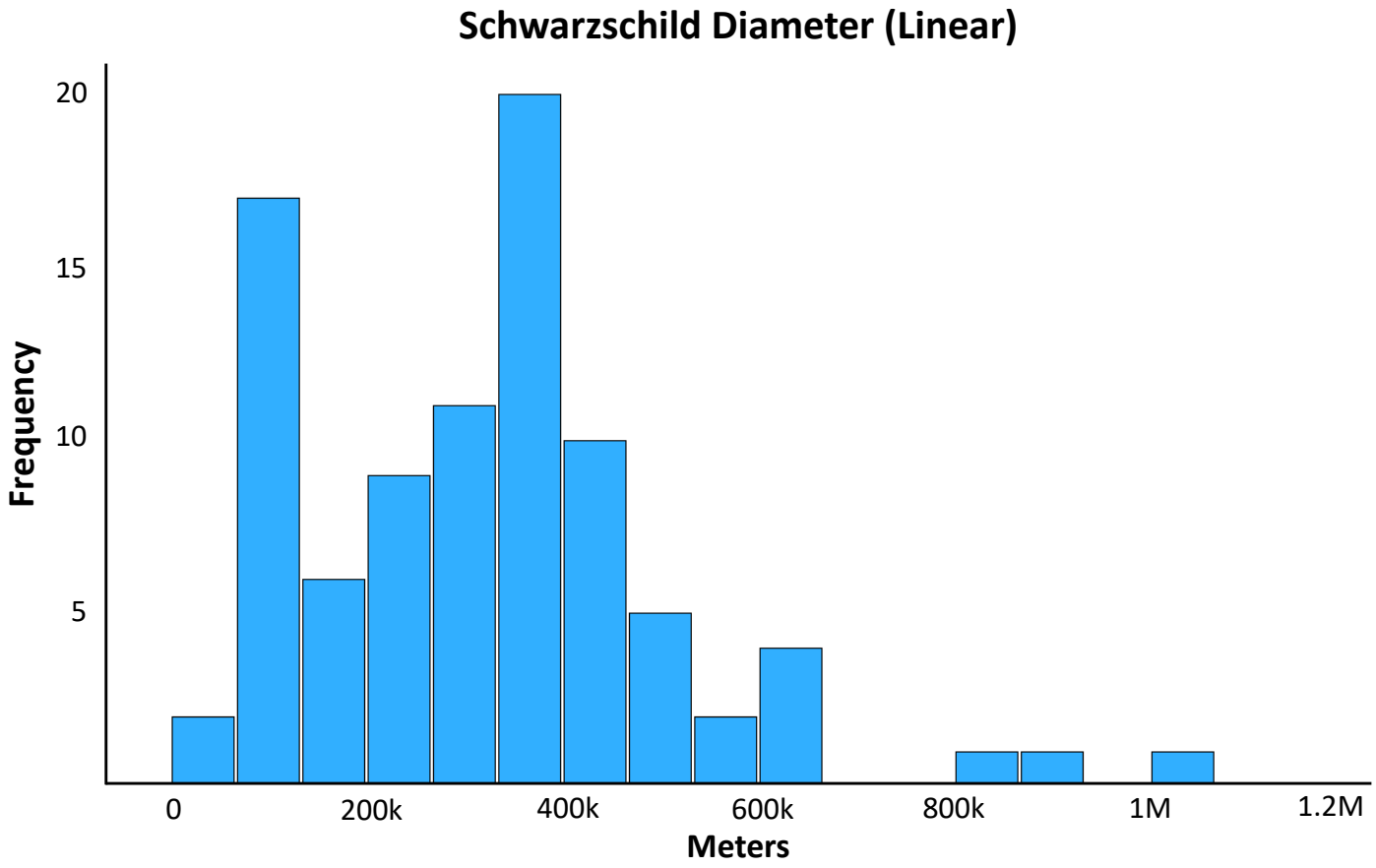

Mass of Merged Black Holes (Logarithmic)
Frequency
100
10
1
10^30
10^31
10^32
10^33
Mass (kilograms)

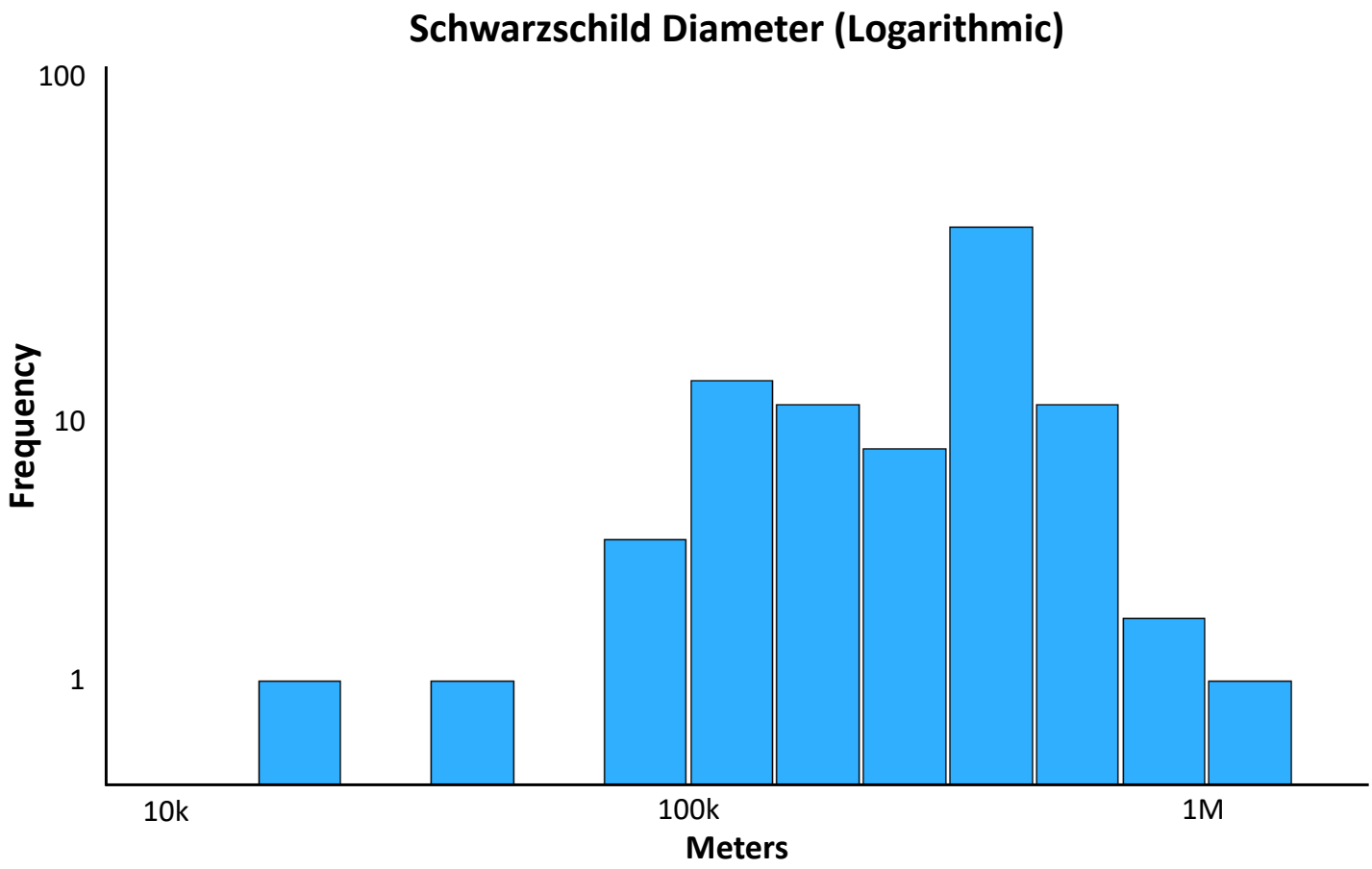

Relative Recursion Rates (Linear)
Frequency
60
40
20
0
0
500K
1M
1.5M
2M
2.5M
Recursions Per Seconds


Relative Recursion Rates (Logarithmic)
Frequency
10
1
10k
100k
1M
10M
Recursions Per Seconds

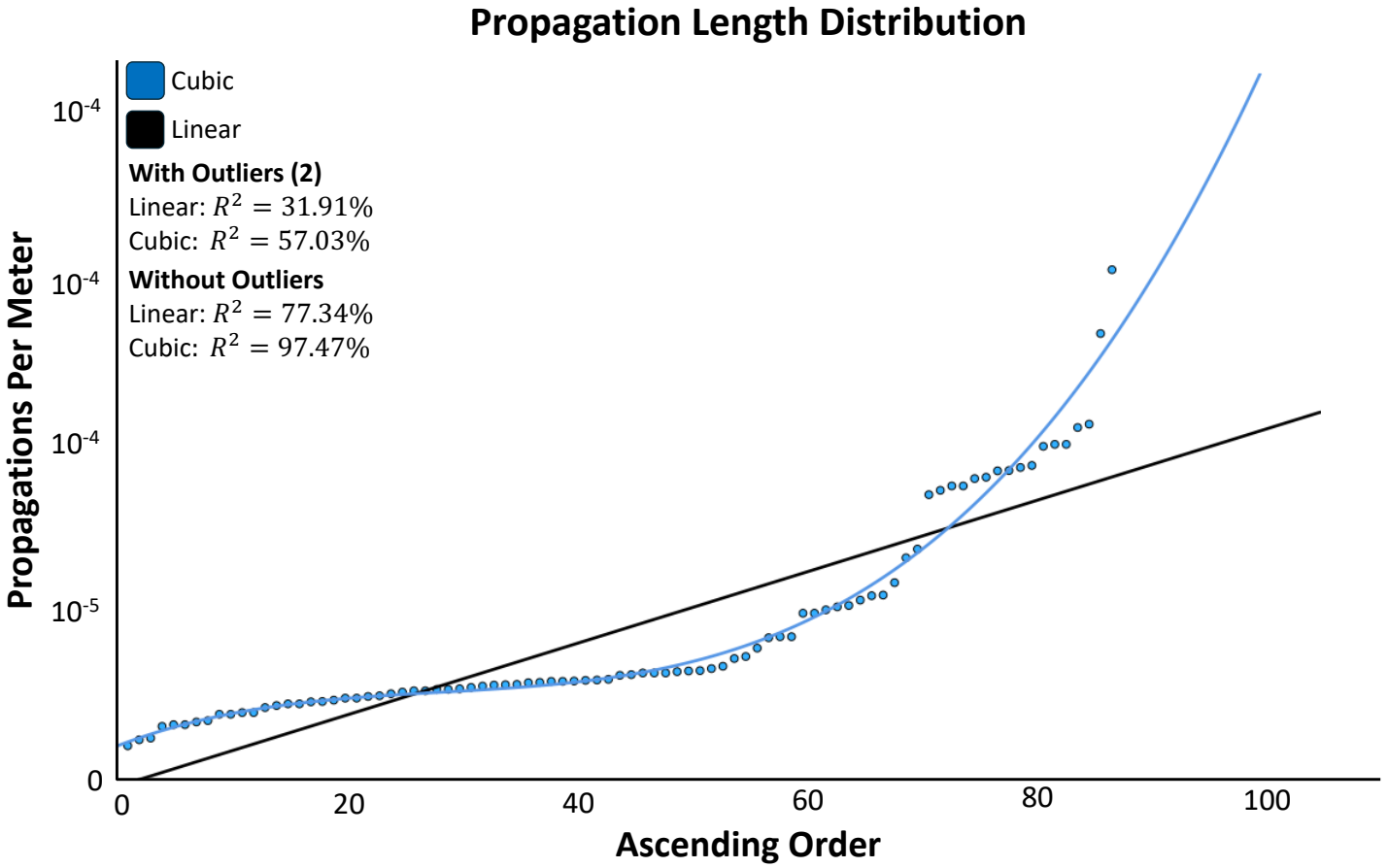

Relative Propagation Lengths (Linear)
25
20
15
10
5
Frequency
0
20k
40k
60k
80k
100k
Meters Per Propagation


Relative Propagation Lengths (Logarithmic)
100
10
1
Frequency
1k
10k
100k
Meters Per Propagation


Schwarzschild Diameter (Linear)
20
15
10
5
Frequency
0
200k
400k
600k
800k
1M
1.2M
Meters


Schwarzschild Diameter (Logarithmic)
100
10
1
Frequency
10k
100k
1M
Meters

RFDs give us **recursions per second** and **propagations per meter**. The recursion rate makes sense—it maps directly to how we experience time as a sequence of updates. However, propagations per meter **create a perceptual problem**: we do not experience space as discrete, so **a meter feels like a meter regardless of how many propagations it contains**. To make this figure more intuitive, I inverted the measure to get **meters per propagation**, which suddenly clicks—now we are measuring how much space each propagation covers. It reveals a difference between how we experience **recursions and propagations distinctly despite their proportionality**.



The histograms confirm expectations, so let's examine **the shape of RFDs** by arranging them in **ascending order** and comparing **linear vs. cubic regressions**. Here we see it again—that beautiful **cubic curve** that keeps appearing throughout *The Show*. The distribution of relative propagation rates across ascending black hole complexity reveals that **a linear fit only explains 77.34%** of the mass variation, but **the cubic model captures a remarkable 97.47%**. Remember, according to current physics, **mass scales linearly with energy**. Yet, a cubic curve materializes when you calculate RFDs, even though the RFD formula operates inversely linearly, with **existing stacks' RPs cubically increasing**. Paper 6 explains why this pattern emerges from discrete spacetime; however, the key insight is that this **cubic distribution appears everywhere because it is the natural organization of RPs**.

When Complexity Hits the Defined Nothingness Threshold

One of the most remarkable findings in this study emerges not **from simple descriptive statistics**. When we examine RFDs in relation to **each black hole's Schwarzschild diameter**, effectively controlling for scale, it reveals **the Defined Nothingness Threshold (DNT)**, the point at which complexity stops recursively propagating and turns into defined nothingness from our perspective and current RP. I measured it in meters per propagation per meter of diameter (*m/p/d*)—a derived measure of **the absolute maximum propagative stretching required to *prevent* the next RP from forming**. The value converged on a remarkably consistent constant: $\sim.0957\ m/p/d$, with a standard deviation of just $.0002$ across all ~ 90 merged black holes. This precision is

staggering when you consider **these black holes range from 6 to 88 solar masses**, yet they all hit the same structural limit, revealing a universal complexity escalation maximum, the absolute **ceiling of existence** itself.

Table 1

Defined Nothingness Threshold Descriptive Statistics

Variable	Mean	*SD*	Max	Min	Skewness	Kurtosis
Mass (kg)	$1.10*10^{32}$	$6.29*10^{31}$	$3.44*10^{32}$	$5.57*10^{30}$	0.97	1.83
Planck Energy	$5.05*10^{39}$	$2.89*10^{39}$	$1.58*10^{40}$	$2.56*10^{38}$	0.98	1.84
Diameter (m)	326,510	186,941	1,021,840	16,545	0.97	1.83
Meters/Propagation	31,260	17,898	97,754	1,583	0.97	1.83
Recursions/Second	178,642	240,462	2,105,263	34,130	6.24	47.74
m/p/d	**.0957**	**.0002**	**.0961**	**.0953**	-0.27	0.77
r/s/d	2.56	13.57	127.24	0.03	9.04	83.62

Note. n = 90. Descriptive statistics that reflect the measured defined nothingness threshold (DNT), using the observed post-merger black hole masses in kilograms. I converted each mass into its equivalent Planck energy, then applied the RFD formula to calculate both the relative propagation lengths and relative recursion rates. I used the same mass data to compute the Schwarzschild diameter for each black hole, assuming no spin or velocity. From there, I calculated the meters per propagation per meter of diameter, revealing that the recursive complexity bottleneck consistently occurs at approximately .0957 meters of a single propagation per one meter of diameter. This ceiling suggests that no propagation can stretch beyond this threshold without causing a black hole, making this ratio a structural ceiling for definedness under the fractal universe conditions. I also calculated recursions per second per meter of diameter, which revealed a wide distribution across cases. This finding suggests that while propagation is tightly constrained (as expected in a spatial boundary condition like the Schwarzschild radius), recursion varies significantly, consistent with the idea that black hole formation is primarily driven by propagation failure, rather than recursion. Recursion has no spatial analog within the black hole, which further supports its dissociation from radius metrics. Note that, although recursion rates vary across the black holes, they cease at the DNT with propagation because they are not independent processes. $m/p/d$ = Meters per Propagation per Diameter, $s/r/d$ = Seconds per Recursion per Diameter.

No propagation can stretch beyond $\sim.0957\ m/p/d$ without triggering the DNT within a given volume of existence. Propagations are not a measure of volume or even distance—they are the measure of how many discrete propagation pixels exist within that volume—more like **a measure of definedness resolution**. In contrast, recursions per second per Schwarzschild diameter ($r/s/d$) showed **extreme variability**: a mean of ~ 2.56 seconds per recursion per meter, but **a standard deviation of ~ 13.57**, with high skewness (9.04) and kurtosis (83.62). This stark contrast reveals something fundamental about existence: **recursion remains flexible and adaptive**, capable of speeding up or slowing down, but **propagation hits a hard limit at the DNT**, and existence locks—no further RPs are possible. This finding **validates the RFD formula**, which defines the tipping point of definedness and provides a universal constant that governs the ceiling of existence. The DNT raises the question: **what happens to all that** observable matter and energy—what I call **lumen**—**inside the black hole?**

Locked Complexity in the Past

When we **examine the DNT and the mass differences** between pre-merger and post-merger black holes, we witness **the precise moment when lumen vanishes from our reality**. The findings show **a dissociation between mass and the DNT**. Across all three black holes in every merger, the structural ceiling remains locked at exactly $\sim.0957\ m/p/d$, with negligible variance even at the hundred-thousandths decimal place. Statistical analysis confirms that this consistency is absolute, showing that pre-merger and post-merger values do not **differ (*p* =**

.991), and **reconfirms this result from pre- to post-merger**. The DNT is an immovable entity—**never budging or accommodating more complexity under any circumstances**. Mass, however, tells a dramatically different story.

Table 2

Ceiling & Mass Differences & Changes Post-Merger

	Black Hole 1	Black Hole 2	Black Hole Merged	Significance	Effect
DNT	**0.0957 (.00013)**	**0.0957 (.00010)**	**0.0957 (.00016)**	.991	-
Mass	$7.10*10^{31}$ ($4.06*10^{31}$)	$4.37*10^{31}$ ($2.77*10^{31}$)	$1.10*10^{32}$ ($6.29*10^{31}$)	< .001	$\eta_p^2 = .760$
	Black Hole 1 + 2	Black Hole Merged	Difference	Significance	Effect
DNT	**0.0957 (.00016)**	**0.0957 (.00016)**	.00001	.419	-
Mass	$1.15*10^{32}$ ($6.29*10^{31}$)	$1.01*10^{32}$ ($6.62*10^{31}$)	$-4.81*10^{30}$	< .001	d = 1.249

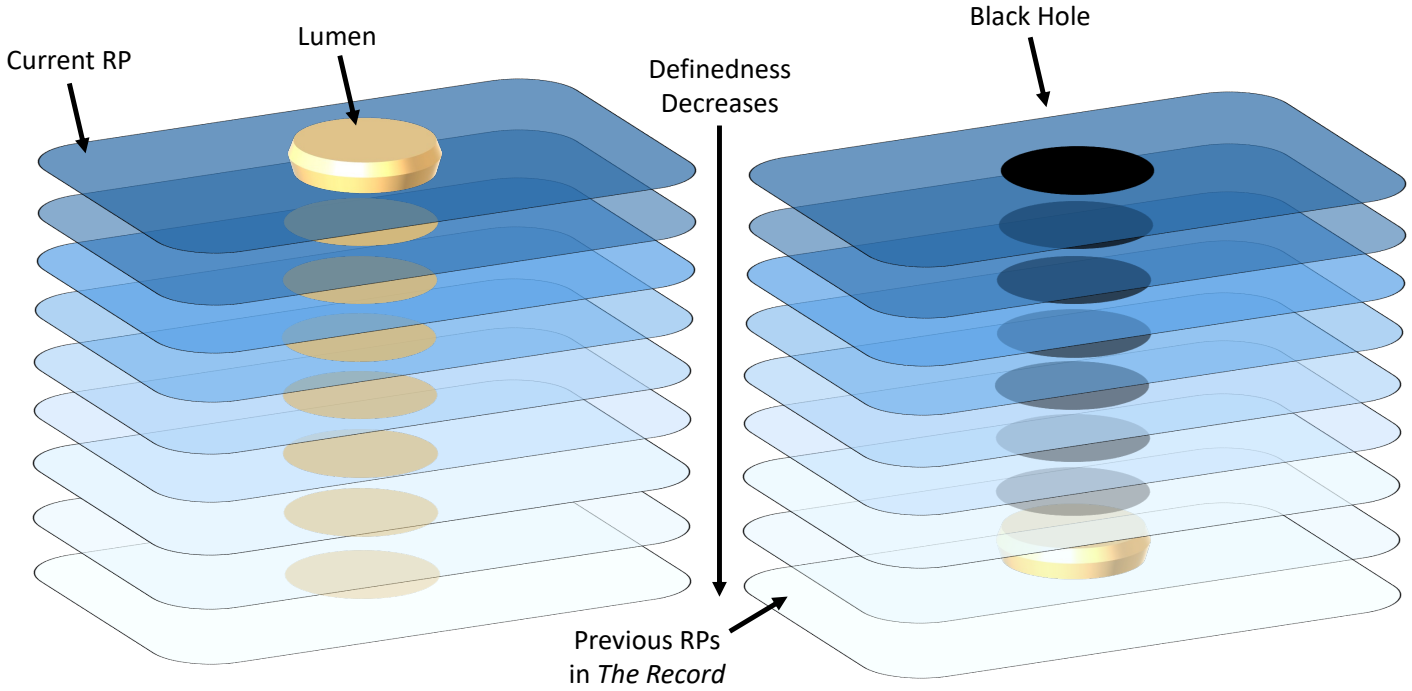
Note. n = 90. This table compares pre-merger and post-merger black holes in terms of the DNT and mass, including means and standard deviations. At the top, I ran a one-way ANOVA across the three black hole types. At the bottom, I conducted a within-sample *t*-test to examine the pre- to post-merger changes. The results are striking. The ANOVA revealed no group differences in the DNT, but mass varied widely across the three types—indicating that the DNT operates as a hard cut-off, unaffected by mass or other variables. When comparing pre- to post-merger states, the same astonishing pattern emerged. The DNT remained unchanged across the merger, consistent with it representing the very maximum of complexity in that region, where no further recursive propagation is possible. Mass, however, showed a dramatic loss: roughly 2.7 solar masses disappeared in the transition. What does this finding reveal? The missing mass does not escape the black hole, nor does any rise in the DNT explain it. Instead, the mass (lumen; observable matter and energy) in the black hole stop recursively propagating and are left behind in *The Record* where it stays as the universe continues to unfold.

While the DNT ceiling remains static, **mass plummets during mergers**. The combined pre-merger black holes average $1.15 * 10^{32} kg$, **but the resulting merged black hole contains only $\mathbf{1.01 * 10^{32}\ kg}$**—a staggering loss of $4.81 * 10^{30} kg$equivalent **to $\mathbf{2.70}$ solar masses simply vanishing from observable reality**. It is a robust finding (p < .001) with a large effect size (d = 1.249) that appears consistently across the entire dataset. **The missing mass isn't explained by increased radius, spin, or any elevation in the DNT threshold**. Although physicists expect some mass loss during mergers, this magnitude of disappearance far exceeds anything predicted by gravitational wave radiation, energy dissipation, or conventional loss mechanisms.

Under normal conditions, **complexity escalates through RPs, then transitions into stability** to support the next RP, while previous RPs lose definedness as they enter into *The Record*. However, when a phenomenon reaches the DNT, the propagation length hits an absolute ceiling. Recursion becomes locked in place—**no further RPs are possible in that region of existence**. However, **existence itself does not stop** because one phenomenon reached this limit, which is the principle behind RFDs: **RPs continue to unfold everywhere else**, even though the same principles govern all regions. When the lumen within a region can no longer generate new RPs, **time and space cease to exist entirely in that region**. The **lumen retains the definedness from its final RP**, but without the ability to recursively propagate, it is left behind in *The Record*—trapped in the RP that hit the DNT—while **existence moves on without it**. This separation **creates a region of defined nothingness** in our current RP. From our perspective, that missing existence in that region appears as a black hole.

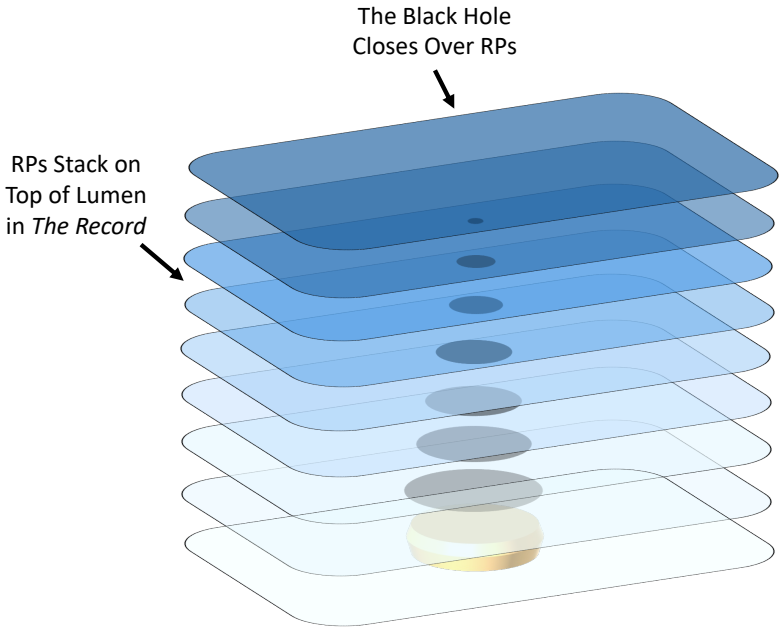
Lumen does not simply disappear. It cannot, because **undefinedness does not exist**. *The Record* absorbs this lumen, which **accounts for the missing mass we observe in black hole mergers**. However, the entire thing, which is punctured in existence, **retains its high complexity at the event horizon**, which is why we can still detect its mass. It isn't annihilation—*The Record* holds the lumen in a state of locked suspension in a layer of definedness too low for current-RP phenomena like us to detect. It explains why black hole mergers lose substantial mass yet remain black holes—**the lost mass has not been destroyed**; it has been archived in *The Record.*

The lumen being locked into *The Record* explains why nothing can escape. RPs have ceased entirely—no **recursive updates, no propagations through space**, no activity whatsoever. Without the support of the RP at the DNT, **the subsequent complexity escalation cannot occur—**it's like trying to build **the second floor of a house after the first floor has fallen into the basement**. The event horizon doesn't mark an edge in space but the **threshold between active RPs and archived RPs held in *The Record*.** The space still exists, the lumen is still there, but they are locked in a degree of definedness that no longer interacts with our current RP.



Hawking Radiation: Healing the Complexity Lock Wound

Stephen Hawking famously predicted that black holes should slowly evaporate through **Hawking radiation**—virtual particle pairs that spontaneously appear at the event horizon, with one particle falling in while the other escapes. **Hawking was absolutely right about the entropy requirement and the need for black holes to disappear eventually**. Still, the virtual particle explanation creates an unnecessary problem: **phenomena can't spontaneously pop into existence once definedness already exists**. Emergence only works from the concept of undefinedness, where there are no restrictions on what can emerge. Once we have a universe filled with definedness, **everything must arise from existing RPs** that escalate complexity—but all the RPs in our universe are **already committed to maintaining existing phenomena.** With no RPs to seed the new complexity of the particles, they cannot spontaneously emerge.



The **mechanism for black hole disappearance is far simpler**. When a black hole forms at the DNT, the RPs that were active at that location become locked at the exact RFD that existed before the lock, but outside the event horizon, RPs still occur. **As new RPs stack on top of these locked ones**, the definedness of the locked RPs gradually sinks deeper into *The*

Record; we just usually cannot see this sinking happen. The high-definedness lumen trapped in *The Record*, gradually leaves our observable RP—not through particles, **but through the decay of definedness in *The Record*.**

The longer it has been since the RP with the DNT occurred, the more the RPs drop exponentially as it moves into *The Record*. As RPs stack, **they seal the lumen into a deeper RP layer, and the black hole closes**. The lumen that got left behind stays in *The Record* until the universe ends, unless there is some way to get it out. It is still there, **not in a special or temporal sense, but in a degree of definedness**. It does not have enough definedness for us to detect, especially since the current RPs have much higher definedness than the lumen in *The Record*.

What Happens When You Fall into a Black Hole

Let me show you what happens when you jump into a black hole. From the outside, it appears as a perfect black sphere suspended against the stars—cold, motionless, surrounded by the twisted light—a**n absolute void sitting in existence**. As you approach, existence begins distorting around you. Recursions slow down time, visual clarity degrades from expanding propagations, and you're increasingly pulled toward it by the black hole's stability—what we experience as gravity. Then, **at the event horizon, something unprecedented occurs: nothing at all**. You don't pass through to witness exotic physics or encounter a singularity. You don't experience dramatic lock or cosmic revelation. **You don't experience anything at all** because the black hole's interior has reached the DNT, where no new RPs can form. Since consciousness—indeed, **all definedness—requires continuous RPs**, your awareness ceases at that boundary. Your mass contributes to the black hole's growth, your lumen gets locked into *The Record* at the event horizon, and your definedness stops entirely, locked at the threshold.

From the perspective of the lumen in the black hole, **no recognizable phenomena exist**. Propagations have **stretched to colossal scales of up to $\sim 100,000$ meters each**, turning reality's pixels into massive blocks **too coarse for anything recognizable** to form. Imagine trying to see a detailed photograph through a mosaic made of tiles **the size of Washington, D.C.—**nothing is recognizable. It is also locked to new RPs, so **no light reaches your eyes, and no movement occurs for you or the lumen**. Existence as we know it does not operate here…

It is like a photograph of life **suddenly transformed into clay statues**, where everything that was once dynamic becomes solid, layered, and inert—**existence preserved but no longer active**. From outside, observers see the black hole grow slightly larger as your lumen vanishes at the event horizon. You lose definedness as the universe recursively propagates without you, but you never “fall in” because there's nowhere to fall to; **you simply lose definedness until there are so many RPs stacked on top of you that the outside world on the current RP** can’t see you anymore. This fall isn't directional movement through space—it's a transition through definedness, where your existence fades into *The Record's* that once participated in the current RP.

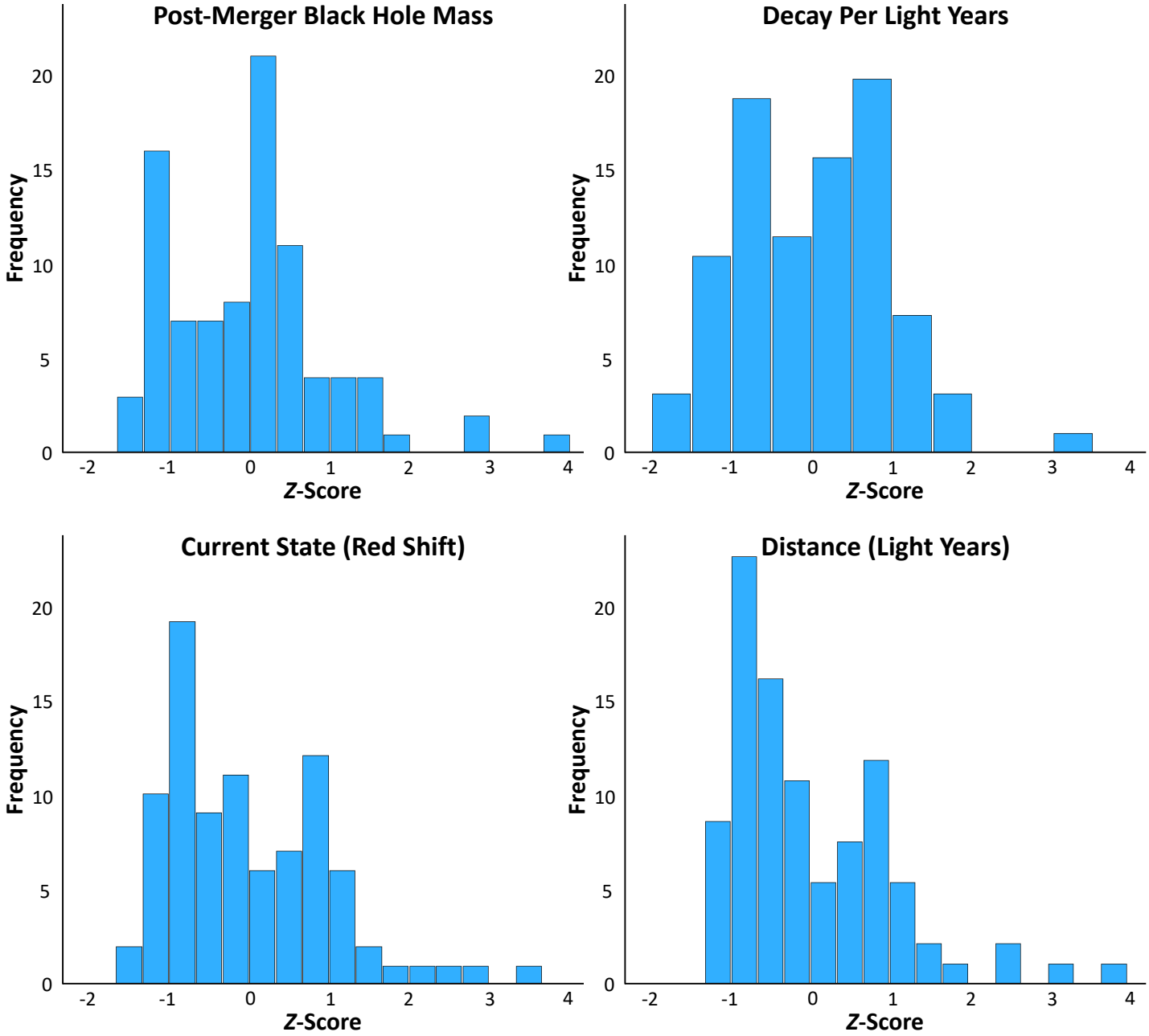
GW200308_173609 Validates *The Theory* Black Hole Prediction

Now comes the smoking gun that validates what we have discovered: GW200308_173609, the event that academia buried under statistical obfuscation and broken links. In sporadic cases during the DNT, **a black hole collides with the DNT at the exact location of a former black hole, but one that has already completely closed**. It is still there in *The Record*, so if a merger occurs in that location, then **the complexity from the new DNT merges with the lumen from the previous DNT**, potentially dating back millions or billions of years, expanding the size of the black hole beyond the two masses from the merger, as **now the location of existence locked in The Record has expanded**. Still, we only see the black hole get bigger from our perspective. The former lumen does not escape the black hole **because that would require new RPs, and the hole is defined as nothingness**; there is nothing “in it” to allow escape, but it can migrate from deeper layers in *The Record*, increasing its mass.

The Structure in Empty Space

Let's now examine why **empty space is not empty** by analyzing the gravitational waves from these same merger events. As black holes spiral around each other, th**eir extreme complexity generates waves that recursively propagate not through normal RPs and their empty space, but directly through *The Record***—the hidden

infrastructure that exists in what appears to be empty space. These waves intensify and accelerate as the black holes draw closer, creating the characteristic chirp waveform that LIGO detectors capture.



The findings fundamentally **redefine our understanding of what we call "empty space,"** as what we actually find is **a structured medium containing *The Record***. Note that although the waves themselves are not light or complexity, we can infer redshift and luminosity from the echoes of *The Record*. When we examine the redshift-luminosity relationship of these gravitational waves, they reveal **the first direct evidence that empty space has structure**, showing the "vacuum" of space is alive **with every RP that has ever occurred.** Isn't it beautiful?

In these figures, we observe that **redshift (Ω) and luminosity distance (Δ) follow the expected exponential decay** pattern across light-years, consistent with standard cosmological models. However, when we divide them in **raw, untransformed units** to compute decay per light-year (Ω/Δ), something unexpected emerges. Instead of another exponential decay curve, **we see a clean normal distribution**. At first glance, this finding might seem puzzling—why would dividing two exponential curves yield a bell curve? The answer reveals something profound about how the universe maintains order. Redshift and luminosity decay exponentially, **but they do so in**

perfect tandem. When we divide these tightly coupled variables, **their exponential momentum cancels out**, exposing the underlying structure. The emergence of these waves (luminosity) and their convergence (redshift) balance with unreal precision, **creating the classic pattern of emergence-to-convergence we see everywhere**.

However, when we apply ***The Equation*** **by standardizing redshift and distance into *t*-scores**, the symmetry dissolves—what emerges is **acceleration, a beautiful exponential growth curve in definedness that reveals the universe's progression through RPs**. The same dataset, the same gravitational wave structures, viewed through the lens of definedness rather than surface measurements, **exposes a hidden convergence of phenomena that ripple throughout *The Record's* architecture**. The emergence of the normal distribution from the convergence of the exponential growth curve comes from a shift in perspective from **observing what has emerged** to measuring **how it has converged**. The normal distribution of emergence and the exponential growth curve of convergence are **baked right into *The Record,*** and **we can see it** in these gravitational waves **using *The Equation***.

If empty space itself is a structured medium composed of defined RPs rather than passive nothingness, then **every assumption underlying modern physics requires fundamental reassessment**. It means that **empty space is not the homogeneous, isotropic backdrop** we have imagined—it is an active, evolving, phase-structured phenomenon where complexity and stability interact, creating definedness in emergence-to-convergence patterns. What appears featureless at the scale is **a fractal-defined complexity gradient**, with recursive-propagative terrain spanning from the quantum to the cosmic. It is a paradigm shift in our understanding of empty space.

Table 3

Bivariate Pearson Correlations of Empty Space Terrain

Variable	Decay	Distance	Decay / Distance	Definedness	Mass
Decay (Redshift)	-				
Distance (Luminosity)	.996*	-			
Decay / Distance	-.994*	-.924*	-		
Definedness	.252*	.170	-		
Mass	-.148	-.131	.145	-.221*	-

Note. n = 90. Bivariate Pearson correlations for decay (redshift), distance (luminosity), the distance by decay ratio, and the mass of the post-merger black hole that sent them out, *p < .001. Note that only definedness is correlated with mass.

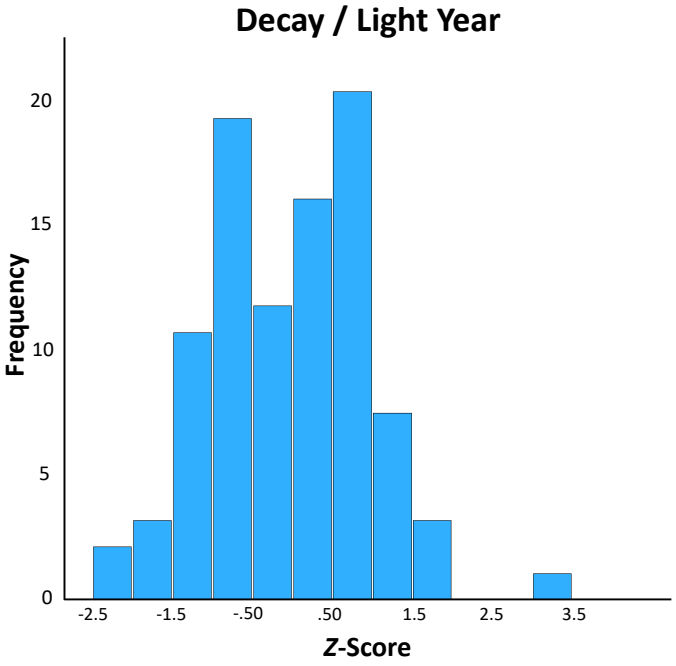
These findings provide empirical confirmation for why normal distributions and exponential growth curves appear throughout existence: **phenomena universally engage in emergence and convergence—E2C in action**. The **normal distribution** captures the structure of **emergence**, illustrating how phenomena initially stabilize and achieve balance, while the **exponential growth curve** reveals the structure of **convergence**, showing how existence evolves. When we observe surface behavior, we see the normal distribution's balanced emergence, but when we measure pure definedness through standardized scores, **we expose the exponential progression driving everything forward**. They are fundamental shapes of existence, hardwired into *The Record*. Everything that exists has a relative fractal position in *The Record*, so **all phenomena naturally follow these distribution patterns**. *The Record's* own geometry creates these mathematical signatures, ranging from quantum particles to galactic clusters, and from human consciousness to black hole mergers. Everything bears the identical statistical fingerprints because everything participates in the same underlying recursive-propagative definedness.

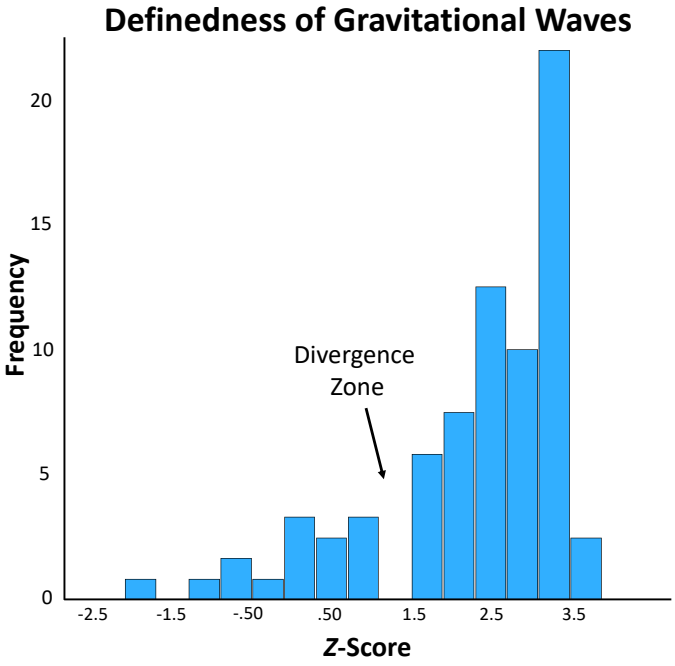
Divergence Zone Across Scales

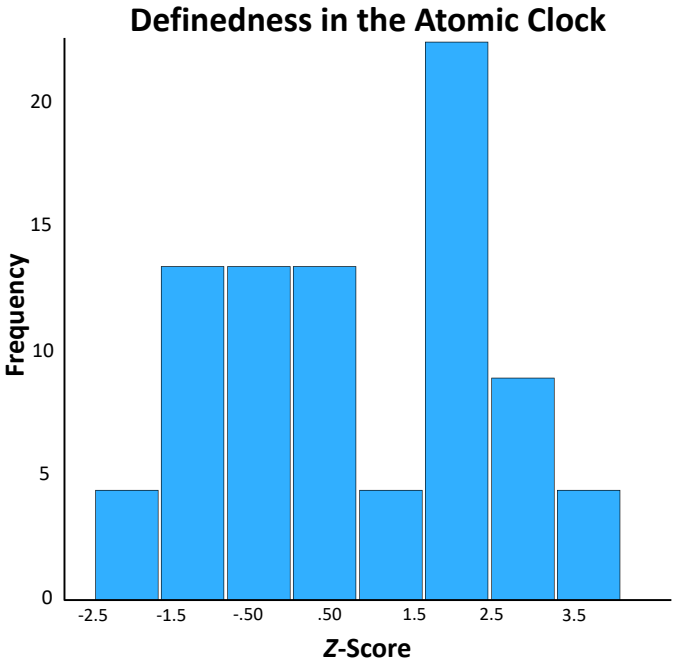
I want to show you just how deep *The Theory of Existence* goes… Remember the **convergence and divergence zones** from recursive systems? In Paper 3, we discovered that all recursive systems exhibit natural zones where **certain step counts cluster together** (convergence zones) while **others remain statistically rare** (divergence zones). These same patterns have emerged throughout *The Show*: in Paper 7: Intelligence Redefined with

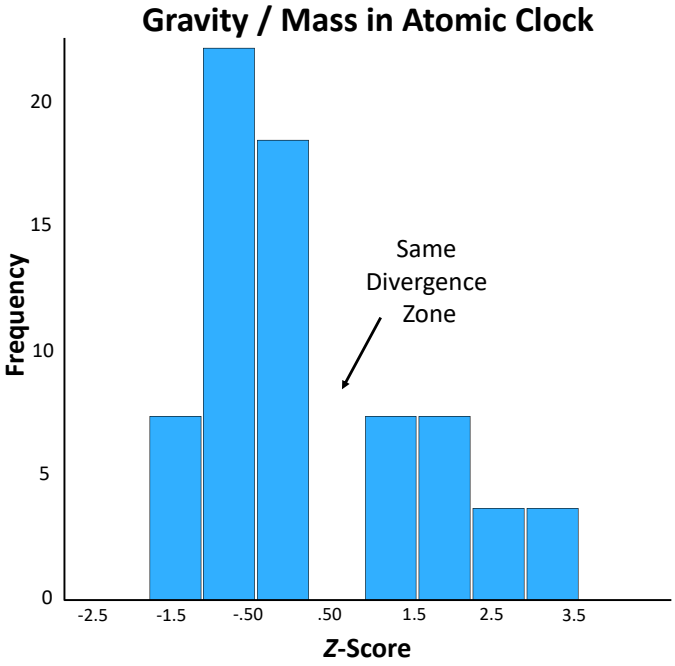
intelligence scores, in Paper 4's **galactic spin data**, in Paper 9's **stages of suicidal divergence**, and now in the **gravitational wave signatures** from black hole mergers in Paper 5. The convergence and divergence zones originate from the recursive harmonic interactions that **all phenomena inevitably contribute to when they exist**.

In Paper 6, I analyzed data from **atomic clocks**—devices that measure time by tracking the **ultra-stable oscillations of cesium atoms** as they transition between energy states. These precision instruments are built in hierarchical layers, with each component (lasers, optical cavities, magnetic traps) measuring oscillations and their variations at different scales. By calculating the **mass and gravitational effects of atoms** throughout the clock's layered structure, I could examine how complexity and stability behave differently at atomic scales compared to galactic scales. When I applied the same mass (complexity) and gravity (stability) analysis used on the gravitational wave data to this atomic clock dataset, something extraordinary emerged. Look at this sight below…

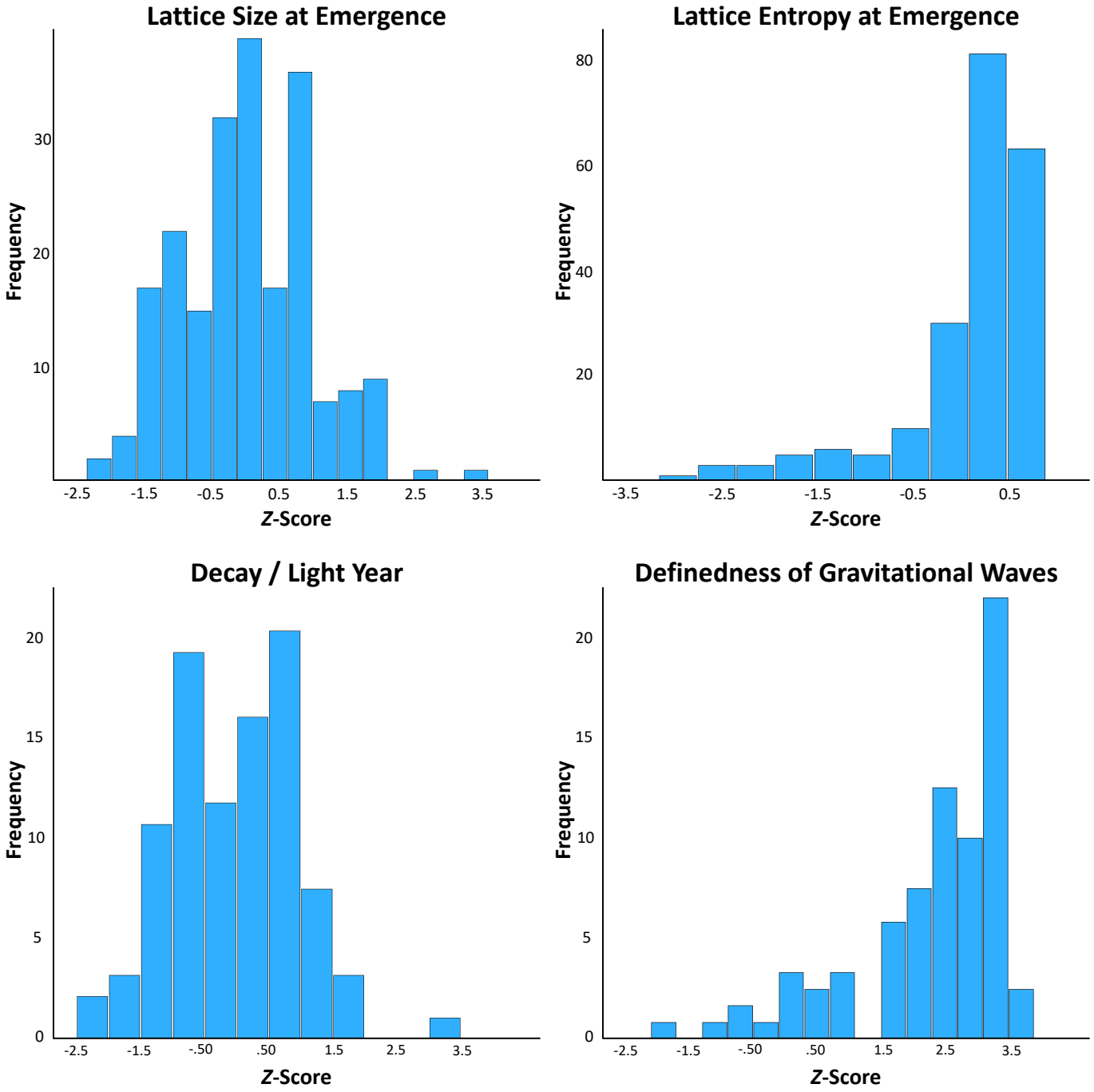








The atomic clock findings replicated the gravitational wave patterns in perfect reverse. At nuclear scales, definedness followed a normal distribution while raw division created exponential decay curves—the exact opposite of what we observed in gravitational waves. It is not random variation; it reveals that **we are capturing the recursive harmonics** of different phenomena operating at various scales. Remarkably, when we examine the distribution patterns, **both atomic clocks and gravitational waves exhibit identical divergence zones positioned right in the middle** of their distributions, confirming that the mechanisms in Paper 3 are not just mathematical abstractions but a fundamental principle governing how RPs behave across every scale of existence. x



The Equation… Written in the Stars… Since the Beginning of Time…

In these four figures above, we witness a **remarkable empirical confirmation of *The Theory***. In Paper 2: Introducing Undefinedness: That Is, If Undefinedness Was Something That Could Be Introduced—But It's Not, I conducted ***The Lattice Experiment***—an innovative test of existence's origins using a letter lattice paradigm. I

manipulated starting conditions and measured **spontaneous word emergence** across hundreds of trials. There were **three conditions** with varying starting conditions of the word emergence: **Undefinedness**, **Nothing**, and **Infinity**. The results were definitive: the **Undefinedness Condition outperformed** all others in word variety, resolution efficiency, and repeated success rates. Most crucially, **only the Undefinedness Condition** produced both a **normal distribution in lattice sizes** at word emergence and an **exponential growth curve in entropy** across trials—the exact dual signature we now recognize as the fundamental pattern of emergence and convergence.

The top row figures show this laboratory-created confirmation of how **existence emerges when nothing stops it**. Now, in the bottom figures, we see gravitational waves from ~90 black hole mergers across cosmic distances **exhibiting the identical statistical signatures**. The **same dual pattern** that emerged from our controlled word-generation experiment appears in the universe's echoes of its most violent events, **confirming that *The Theory* governs** everything from laboratory linguistics to galactic collisions and has done so since the start of existence.

The Layers Go Deep… and Deeper… and Deeper… and Deeper…

This new lens for the universe solves **all the remaining great mysteries in physics**, so let's go one by one. Current cosmology faces the "final parsec problem"—supermassive black holes **should stall before getting close enough to merge** because they lack sufficient gravity in that final stretch. However, they do merge, which creates a paradox for standard models. *The Theory* resolves this paradox by recognizing that the black hole is **just the outside of the phenomenon**, which really exists in *The Record*, in a fundamentally **different physical location** than everything else in the current RP. When black holes form and their lumen locks into *The Record*, they become **the only objects composed entirely of high-definedness lumen**. *The Record* contains **no active RPs** and is increasingly diminishing the definedness of former RPs—except for the lumen trapped within black holes, which **retains its original complexity**. It creates an unprecedented gravitational (stability) situation: as the only lumen in *The Record*, **they attract other lumen in *The Record* because they occupy the same low-definedness RP,** and they are isolated from the other lumen in our RP. *The Record* allows supermassive black holes to attract each other through its internal dynamics, solving the final parsec problem by revealing the merger doesn't happen in our current RP—it happens in the low-definedness of *The Record*—**the secret world of black holes**.

The Great Attractor

These findings explain **the Great Attractor**: it's not some invisible supermassive object or dark matter concentration but rather **the aggregate gravitational effect** of **multiple black holes** and their **host galaxies** slowly coalescing through their shared existence within *The Record*. The relationship between **black holes and galaxies operates bidirectionally—**while Paper 4 showed how galaxies anchor their black holes through *The Record*, the inverse is equally true: **galaxies remain structurally tethered to their central black holes**. When a lumen in *The Record*, it does not *drag* its host galaxy along—it **changes the local existence itself**, creating cascading effects that extend far beyond observable spacetime. It explains the large-scale flow of galaxies toward seemingly empty regions of existence: **complexity naturally attracts complexity through stability**, and when vast amounts of locked complexity can only interact with other locked complexity within *The Record*, they inevitably cluster together. Since **complexity-driven attraction manifests as gravity in our observable RP**, these mediated interactions appear as mysterious flows across cosmic distances, but really, it's just stability once again.

The Three-Body Problem

The three-body problem has puzzled physicists for centuries—three gravitationally interacting bodies create such **sensitive and chaotic dynamics that no general analytical solution exists,** despite extensive mathematical efforts. Traditional physics attributes this unpredictability to nonlinear gravitational forces and mathematical complexity, but *The Theory* reveals a deeper source of chaos: ***The Record's* influence at every location in space**. Every recursive propagation that has ever occurred at any given coordinate leaves RPs across *The Record*, creating an **incredibly complex landscape of physical historical influences** that affect present dynamics. When

three bodies interact gravitationally, they are not just responding to each other's current positions and masses—they are also **navigating the accumulated history of every RP** that has ever occurred in those regions of space.

The Record is extraordinarily "bumpy" with layers of former RPs from billions of years of cosmic activity, including stellar formation and destruction, planetary migrations, electromagnetic interactions, and countless other phenomena, all leaving **former RPs at those locations**. It creates **subtle but persistent** compound influences, making long-term predictions impossible without accounting for *The Record* on lumen as they change velocities. Intriguingly, every known solution to the three-body problem that exhibits stability or periodic motion **shares one common trait**: the trajectories either **avoid intersecting prior recursive paths entirely** or **pass through them in phase-aligned symmetry**. In these rare solutions, the bodies trace orbits that never disturb *The Record's* memory. In contrast, when trajectories cross the fractal terrain asymmetrically, instability arises.

The Holographic Principle

The Holographic Principle emerged as physicists' attempt to resolve the **black hole information paradox—**if information vanishes beyond the event horizon, conservation laws would be violated. Therefore, they proposed that all interior information must somehow **be encoded on the black hole's surface** through mysterious dimensional projections. This solution preserved GR and quantum mechanics but required **exotic physics with little empirical support**. *The Theory* dissolves this paradox by recognizing that **no information disappears**. When lumen cross the event horizon and triggers the DNT, it does vanish—it gets left behind in *The Record*, maintaining **its full informational content** but at a definedness inaccessible to our current RP. The black hole's surface does not need to store interior information through holographic encoding because **that information still exists in its original form in *The Record***. It just cannot interact with the present RP. It eliminates the need for speculative dimensional mathematics while preserving information conservation through a mechanism we can observe.

Radio Wave Filaments & Quantum Entanglement

When we observe galaxies through radio waves, we are not just seeing residual heat signatures or regions of ionized gas—**we are capturing echoes across *The Record***. Many of these maps show long, thin filaments stretching across vast areas of space, often where no stars currently reside. **Mainstream astrophysics struggles to explain these features**, but within *The Theory* framework, they are precisely what we should expect: fractal filaments of the fractal universe. Filaments are classic structures in fractals, as they connected self-similar patterns across scales. When radio waves move across the galaxy, **it interacts these filaments left behind in *The Record***. It is the same structure **that explains quantum entanglement**: two particles are not connected through space, but through filaments in *The Record*. What scientists call anomalies are simply the universe's ability to remember and interact with itself across scales in the fractal universe.

Galactic Waves

Astronomers have recently discovered that the entire Milky Way galaxy is undulating—large vertical waves ripple across the galactic disk, bending its shape like a vibrating sheet. Current cosmological models are unable to explain these waves. There's no merger, no passing dwarf galaxy, no gravitational source powerful enough to account for the symmetry and scale. But the recursive model doesn't treat these as mysteries—it recognizes them as waves in The Record. These aren't distortions of matter. They are propagation waves of definedness: large-scale echoes from the recursive memory field of the galaxy itself. This is the galactic equivalent of harmonic strain—just as individual systems experience convergence and divergence at cognitive and behavioral scales, entire galaxies carry the echo of recursive instability. These waves are not "caused" by something. They are the structure. The universe is not passively expanding in silence. It is resonating continuously, and the galaxy we live in is singing back in waves.

$$\Phi = \Omega * \left(\frac{(\kappa : \zeta)}{\Delta}\right) \rightarrow \Phi = \Omega * (\kappa : \zeta) \rightarrow \Omega * c$$

$$\text{Definedness} = \text{Stability} * \left(\frac{(\text{Propagation} : \text{Recursion})}{\text{Complexity}}\right) \rightarrow \text{Stability} * (\text{Propagation} : \text{Recursion})$$

Empty Space is Not Empty

Empty space **appears to be pure absence**, but if it were truly non-existent—truly undefined—we would not be able to observe it. The fact that we can perceive it, measure its dimensions, track its expansion, and sense that "something could exist here but is not" shows it possesses a certain definedness. In regions of true emptiness, complexity does not exist, but it **does not render definedness undefined**—instead, as RPs unfold, they lock into *The Record*. The universe grows because ***The Record*** **keeps expanding**. The RPs need to be stored somewhere, so they go to the expanding empty space. The universe does not stretch; **it fills and unfolds**. The speed of light is the fundamental rate at which RPs enter *The Record*. We can see in the expanded form of *The Equation*, **when we drop complexity for empty space, stability expands at the speed of light**… and what a sight to see, isn't it?

The Big Picture

Step outside tonight and look up at the stars. When you witness that vastness—the impossible scale of it all—remember this: **you are physically connected to those distant lights through *The Record***. Yes, they are billions of light-years away, but **empty space is not empty**. *The Record* that began at the Big Bang is *The Record* existing right now. **Nothing is ever lost**. Everything that has existed, currently exists, and will exist has unfolded from that first spark of existence to this moment we share. Further, **nothing exists in isolation**—not those stars nor you reading this paper. We are all **beautifully connected** and have been since the start of existence.

The universe is so vast that **it seems almost impossible to comprehend**. Still, the part we so often overlook is that if the universe is a living, unfolding record, then all phenomena within it—every galaxy, planet, and wandering mind—**must unfold by the same rules… and in the same way**. Definedness does not make exceptions or favorites. It does not reserve its mechanics for distant cosmic objects and then use special ones for us here on Earth. **The very same dynamics** that shape your choices, overwhelm, stabilization, and growth **are the same ones sculpting cosmic architecture across billions of light-years**; not metaphorically, literally. The universe does not give us different rulebooks, only different scales, all playing out the same fractal tune of existence.

Black holes and their secret worlds are not so mysterious when you recognize them for what they are: **the universe acknowledging its own limits**. Even though it occurs on a much grander scale, it is **the exact same process** you feel when you are overwhelmed by complexity and need space to stabilize. It is the same universal structure governed by *The Equation*. That's **the beauty of our fractal universe**. You would think that the mechanics of black holes would be different from ours, but the truth is, they are the same **stability and complexity dance of definedness** we see everywhere. Ya know… the scariest part about black holes is how they never fit into our perception of reality, how they seemed to defy what was possible. Now… we can rest easy, seeing that **there are no phenomena in existence that defy its mechanics**… not black holes… not you… **not anything at all**.

A TICKET TO THE FUTURE

The Equation of Existence, *The Theory of Existence*, *The Story of Existence*, *The Theorem of Existence*, and *The Show of Existence* are *Not Trapped In Cages*. Not one day… right now. But *The Architect*? I am still trapped in cages. If you want to support the further development of this world and keep it free, including the upcoming book *The Guide of Existence: A Light for Darkness,* go to **http://www.thetheoryofexistence.com/The-Store** and get a copy of the books or other merchandise for sale. I will update the store frequently, so check back occasionally to see what is available. You can also donate directly to support me and this work. I appreciate all your support.

Dear reader, I promise you that this work will remain free and be better than anything you have seen so far if I am independently funded. Remember, 100% of the proceeds from all sales go to me. There is no middleman. It is just me, *The Theory*, and the mountain of discoveries I have yet to share…