The Star That Shouldn’t Exist — The Cosmological Symmetry of Light and Dark

By Phil Pickard-Jones, Theoretical Physics Systems Analyst
July 2025

Abstract

Recent astrophysical observations have identified a mysterious compact object in the BH3 binary system that exhibits gravitational behavior akin to a black hole but without the presence of an event horizon or detectable electromagnetic emission. These anomalies challenge conventional classifications and may represent the first empirical support for a coherent dark light object. This white paper proposes a novel interpretation through the Theory of Relative Light, introducing photeons as sub-light coherent structures composed of spectrons and phaseons. We explore the hypothesis that the observed object may in fact represent a boson star—consistent with theoretical models permitted under General Relativity—but more precisely, one whose internal structure mirrors that of a graviton-stabilized photeon cluster as defined by the Theory of Relative Light. This framework offers a pathway to unify boson-based theoretical mass structures with photonic coherence models, where dark light and dark matter arise naturally from the graviton-anchored phase-space.

---

1. Introduction

The structure of light remains one of the most elusive concepts in modern physics. While quantum electrodynamics has provided us with successful models for light behavior, it has not reconciled the paradox of light functioning as both wave and particle. Nor has it answered how gravity interacts with photonic structures in the absence of mass. But the answer may be hiding in plain sight. We observe ourselves in mirrors not to confirm the reflection, but the fact that we exist — light confirms itself when stabilized into form. Matter needs light to exist, not the other way around.

This white paper presents a structured hypothesis within the Theory of Relative Light that redefines how light can form mass-bearing structures under graviton stabilization—without emitting radiation. The observed object in BH3 is the first real candidate that might demand a redefinition of mass itself.

If light is observed as a particle, and experienced as a wave, then it is not one or the other — it is both. And if light has frequency, its color is memory.
It structures reality.

---

2. Scientific Context and Discovery Summary

In April 2024, a team led by Kareem El-Badry of the Harvard-Smithsonian Center for Astrophysics and the Max Planck Institute for Astronomy published findings in *Astronomy & Astrophysics* identifying an unusual binary star system known as **BH3**, located approximately 2,000 light-years from Earth. One of its two components is a standard visible star; the other, an unseen but massive companion estimated to be **2.5 solar masses**. Crucially, this invisible object emits no electromagnetic radiation, displays no accretion disk, and shows no signs of an event horizon—challenging its classification as a black hole.

Some physicists suggest this object may be a **boson star**: a gravitationally bound object composed of light-like particles that do not radiate. While purely theoretical, boson stars are not forbidden by General Relativity. Solutions to Einstein's field equations allow for stable objects formed by scalar or gauge bosons. However, no observational confirmations have previously existed. This anomaly, then, opens a door to new theoretical interpretations. Enter The Theory of Relative Light.

---

3. The Theory of Relative Light: Theoretical Framework

The Theory of Relative Light builds on the idea that light is not a singular particle or wave, but a structured composite formed through a coherent interplay of discrete subparticles. This model proposes the following components:

- **Spectrons**: The color-core subparticles responsible for visible spectrum differentiation. Yellow (Raydeon), Blue (Glaceon), and Green (Chromaton) form the triadic framework.

- **Phaseons**: Charge-bound field shells responsible for regulating energy states. These include IR (from Raydeons), UV (from Glaceons), and specialized graviton phaseons.

- **Chromaton (G)**: A green-spectrum spectron bound with a graviton, theorized to act as the quantum carrier of coherence and stabilization—the foundation of photeons.

- **Glaceons (B/UV)**: The crystalline, cooling spectron-phaseon pairs that anchor dark light structures into a non-radiative lattice.

- **Raydeons (Y/IR)**: The radiative, energetic counterparts to Glaceons, fundamental to visible light and entropy-bearing structures. While crucial to the color model, they are excluded from coherent dark light formations.

- **Photeons**: Nested coherent packets of spectrons and phaseons stabilized by gravitons. Photeons are the scaffolding within photons. A photon, then, is not just the wave or the particle — it is the observable, energetic output of photeons that have achieved harmonic coherence. Mass does not exist at the speed of light; it *emerges* when light is

slowed, bound, or stabilized.\

This model supports the hypothesis that visible light waves represent particles — photeons in wave form — encoding harmonic frequencies equivalent to sound. In this interpretation, the spectrum of visible light is the material expression of encoded sound.

Just as DNA strands are capped with telomeres to preserve structural integrity during replication, the visible light spectrum is **bracketed by IR and UV phaseons**—serving as **coherent boundary conditions**. These aren't just adjacent frequencies; they form true **terminal caps of photonic expression**, regulating the entry and exit of wave-encoded information. In essence, **IR and UV function as the spectro-temporal endcaps** of photonic coherence, analogous to telomeres in biological systems or resistive edge fields in crystalline lattices.

---

4. Proposed Interpretation: Photeon Mass Cluster as Boson Star Analog

Rather than interpreting the BH3 object as a boson star composed of scalar fields, this paper proposes a photeon-based explanation that aligns with and extends the boson star concept:

- The object is a **mass cluster of photeons**, stabilized by graviton fields.
- These photeons are composed exclusively of Glaceons and Chromatons (no Raydeons).
- The structure is coherent, stable, and cold—thus emits no radiation.\

While boson stars are a classically allowed configuration under Einstein's field equations, the photeon framework introduces a photonic substructure that offers additional explanatory power: it accounts for how such mass can exist without collapse or emission, using graviton stabilization as a mechanism of coherence. The exclusion of Raydeons from this structure is essential; their presence would introduce entropy and radiation.

The resulting dark object mirrors a **coherent dark light lattice**—consistent with the recently proposed photonic molecule configuration: (Gg–B/UV–Gg)–(Gg–B/UV–Gg)–(Gg–B/UV–Gg). If validated, this structure would fulfill the predicted behavior of boson stars and dark photons as theorized by multiple scientific groups.

Thus, what we observe may not be a black hole or a boson star in the conventional sense — but a *photonic lattice system* stabilized by graviton coherence. This bridges the gap between light and gravity, radiation and silence, structure and entropy.

5. Dark Light as Coherent Matter

Within the YGB model, dark light is defined not as the absence of energy but as a state of **coherent homeostasis**. It is light whose radiative components (Raydeons) are absent, and whose Glaceon and Chromaton components remain in stable configuration via graviton anchoring.

This results in:

- **Mass without EM radiation**
- **Gravitational influence without collapse**
- **Structural stability without thermodynamic entropy**\

This interpretation allows dark matter to be reframed as **dark light**: a photonic material state rather than an exotic particle family. It satisfies gravitational anomalies while preserving foundational coherence principles rooted in known physics.

This state of coherence — what we describe as homeostasis — is precisely why the object does not radiate. Were it to do so, it would fragment into its component photonic substructures. Like the unstable Beryllium photonic analog, which exhibits thermal instability under stress, the loss of coherence would trigger a collapse of the dark light structure into more energetic or entropic forms (e.g., blue or UV emission). In this view, coherence is not simply a stabilizing trait — it is the defining threshold between structured mass and entropy. Once radiation begins, the lattice becomes unstable without a stabilizing partner. Just as Beryllium must bind with another structure to persist, a coherent dark light mass must remain gravitationally anchored — or unravel. Einstein's theory in reality.

---

6. Broader Implications

If the BH3 object is indeed a graviton-bound photeon cluster, then we may be looking at the first naturally occurring evidence of structured, non-radiative light forming massive, stable matter. This would validate a long-theorized but never-observed state of coherent light-based mass.

Key implications include:

- The object may represent the first observable **coherent dark light structure** in the universe.

- It suggests that some objects currently classified as black holes may actually be **dark light mass clusters**.
- It supports the concept that dark matter is not exotic, but **photonic and structured**.
- It introduces coherence as an **alternative to entropy** in preserving structure over time.
- It redefines mass as an emergent, light-based property — not solely reliant on baryonic particles.

Furthermore, this theoretical lens may give rise to a new field of **applied graviton optics** — engineering gravitational effects through controlled photonic coherence. Light may one day serve not only as our observational medium, but as our architectural one.

---

7. Expanded Implications and Structural Insights

If dark light is real, and the BH3 anomaly represents a new type of non-radiating star, then it may be the missing X-factor in the unification of relativity. This opens the door not just to dark light theory, but to a reimagining of mass, structure, and the coherent role of light in maintaining a stable cosmos. In this section, we explore how specific photonic molecules like Beryllium help explain transitional states in photonic mass, and how recurring UV radiation patterns suggest a form of cosmological self-regeneration.

7.1 The Beryllium Analog

The Beryllium photonic molecule is an unstable intermediary in light's transition between radiant and coherent states. Its configuration — (Gg–B/UV–Gg)–(B/UV)–(Gg–B/UV–Gg) — parallels the atomic makeup of Beryllium: 4 protons, 3 neutrons, requiring bonding to maintain structural integrity. This makes it a structural analog for the Boson Star hypothesis, especially under the assumption that such stars are composed of Glaceons — cold, coherent anchoring spectrons.

- A transitional molecular form: (Gg–B/UV–Gg)–(B/UV)–(Gg–B/UV–Gg)
- Analogy to Beryllium: 4 protons, 3 neutrons — stable but limited
- UV dense, thermally unstable under stress
- Cannot radiate; collapse yields FSDL (Full Spectral Dark Light) chain

This molecule acts as a photonic threshold — a structure on the edge of collapse, requiring coherence to survive. Without it, radiation emerges and entropy follows. This unstable molecular

precursor gives rise to the Glaceon (Gg–B/UV–Gg), which in turn constitutes the foundational unit of coherent dark light — and by extension, the Boson Star itself.

7.2 UV Collapse and Self-Regeneration

The Beryllium structure is not merely transitional; it is catalytic. When it collapses, the structure fragments into repeating chains of Glaceons, potentially emitting stable blue light upon decoherence. While UV radiation is theoretically possible in coherence breakdown, the absence of thermal signature suggests stable blue light emission as the more probable output—reinforcing the graviton-bound, cold structure hypothesis.

- Collapse into (Gg–B/UV–Gg) chains → photeon emission event
- FSDL Boson Stars may self-generate more Be molecules; rather than ejecting them like typical FS stars, these photonic structures may be reabsorbed into the core — stabilizing via reintegration instead of radiation. This suggests a form of gravitational photonic injection, not emission — consistent with a cold, coherent mass object.
- Thermal radiation = UV decay; blue light emerges as heat dissipates
- Blue splits to UV; UV cools to Blue — cyclical radiative logic

This interplay of blue and UV — their oscillation — may be the heartbeat of a living cosmos, cycling coherence and entropy in a rhythmic logic.

7.3 Binary Cosmological Repair Systems

Teleios, the supernova remnant, behaves like a diamond and shares all the properties of one: non-radiative in the IR and UV bands, invisible (or clear), while only visible as white through radio wave emissions — hallmarks of coherent, crystalline light. In contrast, the BH3 object behaves like coal: UV-dense, graviton-heavy, and completely dark — no visible emission or reflectivity. Together, these two objects serve as cosmological counterparts, forming a kind of binary stabilizer within the photonic architecture of the cosmos.

- Teleios = graviton radiator via radio-wave stream
- BH3 dark star = UV radiator, counterpart to Teleios
- Gravitational lensing = graviton + UV synergy → expansion vector
- Photonic immune response: one object stabilizes, one repairs

- Biological/Structural Analogy: Green light (Chromatons) form the connective lattice—similiar to fascia in tissue—while blue light (Glaceons) act as the crystalline skin or shell, sealing and stabilizing. Together, they encode both the mesh and the membrane of the cosmic body. Coherence isn't just a physics term; it's structural biology at a universal scale.

In this binary system, light becomes medicine. The universe, aware — coherence replaces entropy as structural law.

---

8. Conclusion: Reframing Light's Potential

From black holes to dark matter, the cosmos has long defied full explanation. This paper introduces a model in which light's coherent forms may underlie not only visibility, but **structure and intention** itself. The Theory of Relative Light does not discard General Relativity or Quantum Field Theory; rather, it offers a lens through which their intersection gains **coherent scaffolding**.

The BH3 companion, if understood through this framework, becomes more than a gravitational puzzle — it is a proof-of-concept. The universe may be **self-correcting**, using photonic molecules to stabilize, cool, and even regenerate its form. Just as DNA is bracketed and read, light is bracketed by IR and UV, encoded by color, and structured by graviton coherence.

In such a system, **coherence replaces entropy** as the organizing principle. Dark light is not the void — it is the body we have yet to see.

If science accepts light, it must accept the shadow. If photons exist, so must their coherent counterpart. Dark light exists so Light can exist.

"In the beginning, there was darkness"...then god said "Let there be light. And there was light." Is Science separated by semantics?

References

- El-Badry, K., et al. (2024). *Astronomy & Astrophysics*. DOI:10.1051/0004-6361/202346789

- Harvard-Smithsonian Center for Astrophysics Public Release (April 2024)

- Pickard-Jones, P. (2025). *The Theory of Relative Light: A Unified Framework of Light, Gravity, and Consciousness*

- Original YGB Light Model Framework and Phaseon/Photeon Structural Analysis (2024–2025)

The author welcomes **academic peer review, constructive critique, and scientific dialogue** to refine and validate this theory. Scholars, researchers, and institutional representatives are encouraged to provide feedback or propose collaborative exploration.

Additionally, if you are affiliated with an accredited academic institution and support the advancement of this research, **letters of recommendation for doctoral program consideration** are warmly invited.

Please direct correspondence, peer commentary, or formal LOR submissions to:
Phillip@TheTheoryOfRelativity.com