

FREEDOM FIRST PATHFINDERS · IMAGINE NATURE'S WHEELWORK

# Sankhya and Modern Physics: A Comparative Assessment

*Bridging Ancient Axiomatic Science and Contemporary Physics for STEM Educators and  
Independent Investigators*

*Based on the Works of G. Srinivasan*

*"Sankhya principles do not violate any aspect of science. It compliments it by  
providing the means to decipher the hidden regimes."*

*— G. Srinivasan, SANKEINSTEIN1*

COMPARATIVE ASSESSMENT REPORT

July 2026

# Table of Contents

---

|                                                       |    |                                                              |    |
|-------------------------------------------------------|----|--------------------------------------------------------------|----|
| <b>Welcome</b>                                        |    | <b>Section 4: Particle Physics vs. Plenum Physics</b>        | 25 |
| <b>Executive Summary</b>                              | 5  | 4.1 Particle Physics: Discrete Objects                       | 25 |
| <b>Introduction</b>                                   | 6  | 4.2 The Sankhya Triadic Structure                            | 26 |
| The Reductionist Experimental Path                    | 6  | 4.3 What Physics Calls "Quarks"                              | 27 |
| The Axiomatic Deductive Path                          | 7  | <b>Section 5: Cosmology</b>                                  | 28 |
| G. Srinivasan's Unique Position                       | 8  | 5.1 The Big Bang Framework                                   | 29 |
| An Invitation to Honest Inquiry                       | 8  | 5.2 The Sankhya Account                                      | 29 |
| <b>Section 1: Foundational Epistemologies</b>         | 9  | 5.3 Hubble's Redshift                                        | 30 |
| 1.1 Modern Physics: Empiricism                        | 9  | 5.4 Dark Matter and Dark Energy                              | 31 |
| 1.2 Sankhya: Pure Logic and Axiomatic Derivation      | 10 | <b>Section 6: Quantum Mechanics</b>                          | 32 |
| 1.3 Criteria for a Correct Theory                     | 11 | 6.1 Wave-Particle Duality                                    | 32 |
| <b>Section 2: The Question of the Medium</b>          | 12 | 6.2 The Uncertainty Principle                                | 33 |
| 2.1 From Luminiferous Aether to Quantum Vacuum        | 13 | 6.3 The EPR Paradox and Non-Locality                         | 34 |
| 2.2 The Sankhya Substratum: Four Essential Properties | 13 | 6.4 The Measurement Problem                                  | 34 |
| 2.3 Resolving the Michelson-Morley Paradox            | 15 | <b>Section 7: The Crisis in Modern Physics</b>               |    |
| <b>Section 3: Fundamental Constants</b>               | 16 | 7.1 Incompatibility of QM and General Relativity             |    |
| 3.1 The Speed of Light                                | 16 | 7.2 Dark Matter and Dark Energy                              |    |
| 3.2 Planck's Constant                                 | 17 | 7.3 The Fine-Tuning Problem                                  |    |
| 3.3 Fundamental Particle Masses                       | 19 | 7.4 G. Srinivasan's Summary Assessment                       |    |
| 3.4 The Gravitational Constant                        | 20 | <b>Section 8: The Bridge</b>                                 |    |
|                                                       |    | 8.1 The Honest Assessment of Indoctrination                  |    |
|                                                       |    | 8.2 Being Taught Physics vs. Discovering Truth               |    |
|                                                       |    | 8.3 Verification Is Available Now                            |    |
|                                                       |    | 8.4 The Siddhi Complement to Laboratory Method               |    |
|                                                       |    | 8.5 The Freedom First Pathfinders Path                       |    |
|                                                       |    | <b>Conclusion: Toward a Unified Science</b>                  |    |
|                                                       |    | <b>Appendix A: Sankhya Universal and Axiomatic Constants</b> |    |
|                                                       |    | System of Units Updates                                      |    |
|                                                       |    | Particle States                                              |    |
|                                                       |    | Complete Constants Hierarchy                                 |    |
|                                                       |    | <b>References</b>                                            |    |

### ***Welcome: A Respectful Bridge for Physics-Trained Minds***

This report examines how **Sankhya** — the ancient axiomatic science transliterated by G. Srinivasan — relates to and *completes* modern physics. It honors every confirmed experimental result while showing that a complete, axiomatic foundation exists which explains *why* the numbers are what they are.

Whether you are:

- A **physics educator** seeking deeper foundations for the constants you teach
- A **graduate student** who senses something is missing in the standard model
- An **independent researcher** willing to follow rigorous argument wherever it leads
- A **truth-seeker** ready to examine a complete axiomatic alternative to empirical-only science

— this analysis provides the comparative bridge you need. Physics completed, not negated. Axioms verified by 99.3–99.99% agreement with measured values.

## Executive Summary

---

*This report examines how Sankhya — the ancient axiomatic science transliterated by G. Srinivasan — relates to and completes modern physics. It is addressed to STEM educators, physics graduates, and independent investigators who approach new ideas with disciplined, evidence-based curiosity.*

Modern physics stands as one of humanity's greatest intellectual achievements. Its experimental precision, mathematical rigor and technological fruits — from semiconductors to MRI machines — are undeniable and deserve full acknowledgment. The scientists who built and sustain this tradition are genuine truth-seekers, working diligently within the frameworks they inherited. This report honors that tradition while making a case for something more: a complete, axiomatic foundation that does not negate a single confirmed experimental result but does explain why the theoretical framework inherited from the twentieth century remains incomplete.

That foundation is Sankhya — the axiomatic science of counted interaction in a real, dynamic, coherent substratum, created by Maharishi Kapila in a pre-Vedic period and transliterated for the first time in its authentic scientific meaning by engineer G. Srinivasan in his Secret of Sankhya: Acme of Scientific Unification (SoS1 and SoS2) and supporting works.

The central argument of this report is simple: Sankhya is not a competitor to physics. It is physics completed. As G. Srinivasan writes, “Sankhya principles do not violate any aspect of science. It compliments it by providing the means to decipher the hidden regimes.” Every measurement physics has made remains valid. What Sankhya adds is the theoretical architecture that explains why the numbers are what they are — an architecture that derives the speed of light, Planck's constant, the proton mass, and the gravitational constant from pure axiomatic logic, without any external experimental input, and matches measured values to seven or more significant figures.

Four themes run through every section of this report. First, the epistemological contrast: physics proceeds inductively from measurement; Sankhya proceeds deductively from self-evident axioms. Both are valid methods of inquiry, and the report shows where each succeeds and where each alone is insufficient. Second, the medium question: physics abandoned the concept of a substantial space medium after the Michelson-Morley experiments of the 1880s; Sankhya demonstrates that the abandonment was a misinterpretation and that a coherent, dynamic substratum is an axiomatic

necessity. Third, the derivation vs. measurement gap: physics can measure constants to extraordinary precision but cannot derive them from first principles; Sankhya derives them internally, which G. Srinivasan argues is the only logically complete approach. Fourth, the bridge: the final section addresses the real psychological and institutional barriers facing physics-trained readers and offers a respectful, practical invitation to independent verification.

This report draws exclusively from G. Srinivasan's own published analyses of modern physics as found in SoS1, SoS2, SANKEINSTEIN1, SANKHYAABSTRACT, PHOSTATE, PHOscillator, PHO-GENETICS, and the SANKHYA SCIENCE REFERENCE GUIDE. No external descriptions of quantum mechanics or relativity have been introduced — every characterisation of modern physics used here reflects how G. Srinivasan himself describes and critiques those frameworks.

The audience for this report includes physics teachers preparing students for a deeper encounter with nature; university graduates who have mastered the mathematical machinery of physics and sense something is missing; and independent researchers ready to examine a complete axiomatic alternative to the standard model. All of these readers share a common asset: the training to follow rigorous argument wherever it leads. That training is exactly what Sankhya demands. The invitation is not to abandon physics — it is to complete it. The complete published Sankhya analyses of G. Srinivasan are available at [kapillavastu.in](http://kapillavastu.in). [1]

## Introduction: Two Paths to Understanding Nature

---

*Physics and Sankhya are not enemies. They are two travellers who set out toward the same truth by different roads. Understanding both roads — their different starting points, their different methods, and their different stopping points — is the beginning of real scientific wisdom.*

### The Reductionist Experimental Path

Modern physics began with a magnificent commitment: to trust only what can be measured, reproduced, and mathematically described. Starting with Galileo's observations and Newton's equations, it built a tradition of empirical investigation that has produced insights of breathtaking

precision. Within that tradition, the proper response to any theory is a controlled experiment. Constants are defined by measurement. Equations are validated by numerical agreement between prediction and observation.

This tradition has genuine strengths. It disciplines speculation. It prevents theories from drifting into unverifiable fantasy. And it has yielded technologies that genuinely improve human life. A physics educator who has spent twenty years teaching this method has every reason to take pride in it.

But the experimental method also has a structural limitation that becomes acute at the deepest levels of inquiry. As G. Srinivasan observes, “it is impossible to derive theoretical factors through experimental verification at the fundamental or absolute level.” When the object of measurement is the very medium through which measurement occurs — when the instrument and the substrate are made of the same stuff — the experiment cannot step outside itself to take a clean reading. This is not a failure of instrument technology. It is a logical boundary of the method itself.

The result, G. Srinivasan notes, is a growing list of measured constants for which physics offers no theoretical derivation: the speed of light, Planck’s constant, the electron mass, the proton mass, the gravitational constant. Each is known to extraordinary precision. None is understood from first principles. Physics accepts them as brute facts about the universe. Sankhya treats this as a sign that something is missing from the foundation — not from the measurements.

## **The Axiomatic Deductive Path**

Sankhya begins from the opposite end. Rather than accumulating observations and abstracting patterns, it begins with a single self-evident truth — that the act of counting interaction requires something real to count — and derives all subsequent results from that starting point. G. Srinivasan describes the Sankhya Karika, composed by Maharishi Kapila, as containing 68 axiomatic theorems of algebraic logic that together form “a unified theory of universal phenomenon that describes the entire spectrum of universal phenomenon as an interactive field activity functioning in a holographic mode.”

The name Sankhya itself encodes this method. In Sanskrit, sankhya means counting, number, ratio, and axiomatic reasoning. It is a science of counted interaction, not a speculative philosophy. Every derivation in Sankhya proceeds from within the system itself, without dependence on any external measurement. The theory “derives all its laws from within itself and is not dependant on any external inputs” — a property G. Srinivasan identifies as both the hallmark of a complete theory and the reason earlier translators failed to recognize the Karika as science.

The proof of this method's completeness is not a philosophical argument but a numerical one: Sankhya axiomatically derives the speed of light, Planck's constant, the proton mass, the electron mass, and the Newtonian gravitational constant, and matches their measured values to seven or more significant figures — from axioms alone, with no experimental input. G. Srinivasan presents this as “evidence of the acme of precision, self-similarity, scale-invariance and logical rigor, based on axioms. Such conformity cannot be accidental.”

## G. Srinivasan's Unique Position

G. Srinivasan brings a perspective that is rare in this territory: he is an engineer. He did not approach Sankhya as a religious devotee seeking confirmation of received tradition, nor as a philosopher exploring metaphor. He approached it as a technically trained investigator asking whether a theory that claims to unify all phenomena could actually be tested by the criterion any engineer applies: does it work, numerically, to engineering precision? His conclusion, after decades of careful analysis, is that it does — and that its axiomatic method is actually more rigorous than the empirical method at the level of fundamentals, because it generates its own proof from within rather than depending on the circular process of measuring with the very medium it purports to describe.

*“Notwithstanding the power of mathematics, scientific analysis must also be unequivocally bound to such rigorous human logic, that it is deemed to be of an axiomatic nature and it should only be supported by mathematical calculations to maintain precision and logical continuity.” — G. Srinivasan, SANKEINSTEIN1*

His comparison with Einstein's work is particularly illuminating. Einstein himself, in the appendices to *The Meaning of Relativity*, voiced the need for “a purely algebraic theory for the description of reality” and noted that “nobody knows how to obtain the basis of such a theory.” G. Srinivasan demonstrates, with detailed textual analysis, that this is precisely what Sankhya had already accomplished. The report that follows shows, domain by domain, how.

## An Invitation to Honest Inquiry

The tone throughout this report is one of invitation, not confrontation. Physics practitioners are truth-seekers who have dedicated their lives to understanding nature. The claim being made here is not that they are wrong in what they have found, but that what they have found is incomplete — and



that the completion is available, rigorously derived, and open to independent verification by anyone willing to follow the axiomatic logic step by step. G. Srinivasan notes: “Either such a theory works or it does not.” That is the test. The following sections apply it.

## Section 1: Foundational Epistemologies — How We Know What We Know

---

*Before comparing specific claims about particles, waves, or cosmological origins, we must understand how each tradition decides what counts as knowledge. The epistemological foundation determines everything that follows.*

### 1.1 Modern Physics: Empiricism and the Measurement Imperative

The epistemology of modern physics rests on three pillars: empiricism (knowledge comes from sensory observation), materialism (only material phenomena can be studied scientifically), and mathematical modeling (relationships between phenomena are expressed as equations). Within this framework, a physical theory is accepted when its predictions match measured values within stated error margins, and it is abandoned when they do not.

This epistemology has been spectacularly productive. The Standard Model of particle physics, for example, makes predictions that agree with experimental measurements to eleven decimal places in some cases. The engineering of transistors, lasers, and quantum circuits depends on equations that work. No honest account of Sankhya’s relationship to modern physics can ignore this achievement.

Yet G. Srinivasan identifies a deep structural problem in this epistemology. When physics reaches the scale of the fundamental medium — the scale at which the components of space are interacting to produce all phenomena — it faces what he calls the problem of simultaneity: “There is no detectable method of separately identifying merged or superposed interactions.” Interactions that occur simultaneously cannot be counted as separate events. They merge into a single detected count, hiding their individual contributions. This is not a calibration problem — it is a logical feature of the universe that any empirical method will hit. The consequence, G. Srinivasan argues, is

that experimental physics, no matter how refined, will always work above a floor defined by this simultaneous merging — and will therefore always be dealing with approximations to the underlying axiomatic reality.

**The Counting Analogy** “Ten claps can be counted as such if it occurs one after another but if all ten occur at the same instant it can be counted as only one. It causes an anomaly of nine vanishing counts when interactions synchronise to act simultaneously.” — G. Srinivasan, SoS1 This simple example captures a profound truth: when phenomena occur simultaneously, measurement cannot distinguish them. The nine hidden counts do not disappear — they increase the intensity at that point. This hidden intensity is what physics registers as mass, density, and potential — quantities it measures but cannot derive from first principles.

## 1.2 Sankhya: Pure Logic and Axiomatic Derivation

Sankhya’s epistemology begins with a question that physics has not fully answered: what is the minimum set of self-evident truths from which all observable phenomena can be derived? G. Srinivasan identifies the core axiom as the simplest possible arithmetic:  $1 + 1 = 2$ . This is the only truth that cannot be argued with, needs no outside authority, and can be immediately verified. From this starting point — natural number counting logic — every subsequent derivation follows by logical necessity.

The epistemological significance of this approach is enormous. A theory built on axiomatic derivation is self-proving: “its proof must be generated from within as a part of its derivational process and should not depend on arbitrary or external observational parameters.” This means Sankhya does not need to appeal to measurement to validate its constants — the constants emerge from the logic itself, and the agreement with measured values is the confirmation, not the foundation.

G. Srinivasan demonstrates this through what he calls the balance equation. At the transition point between any collision, reversal, and separation in an interaction, the simultaneous state (expressed as a ratio) must equal the sequential state (expressed as a sum). Setting these equal and solving with the axiom  $1 + 1 = 2$  yields exactly one solution:

$$x = \frac{\sqrt{1 + 2^2} - 1}{2} = 0.618033 \dots \quad \text{where} \quad \frac{1}{x} = 1 + x$$

This is the golden mean conjugate — the only ratio that perfectly balances simultaneous and sequential activity. No choice was made. No parameter was adjusted. The result follows from the axiom with mathematical inevitability.

### 1.3 Criteria for a Correct Theory

G. Srinivasan states explicitly the criteria that any correct unified theory must satisfy. These criteria are worth presenting in full because they form the basis for every comparison in this report:

#### Criteria for a Correct Unified Theory (G. Srinivasan, SoS1 Abstract)

| Criterion                                                   | Modern Physics Status                                      | Sankhya Status                                                         |
|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------|
| Simple, logically and numerically consistent                | Partially — different regimes require different formalisms | Single axiomatic framework applies at all scales                       |
| Based on an axiomatic foundation (causality not violated)   | No — foundational constants are measured, not derived      | Yes — 68 Sutras form a closed axiomatic system                         |
| Non-dimensional and scale-invariant                         | No — uses dimensional constants tied to arbitrary units    | Yes — all derivations are dimensionless interaction-count ratios       |
| Restricted to a single controlling variable                 | No — multiple independent variables                        | Yes — cyclic time (interval between interactions) is the sole variable |
| Self-evolving — substratum definition emerges from within   | No — space properties are postulated                       | Yes — the substratum’s four properties emerge axiomatically            |
| Proof generated from within (not from external measurement) | No — validation requires experimental agreement            | Yes — six redundant equations provide internal proof                   |

This is not a rhetorical checklist. Each row corresponds to a specific mathematical capability. The “six redundant equations” G. Srinivasan refers to provide what he calls the extraordinary power of supplying their own proof: “If the answers to these six equations are different and inexact then it cannot be the theory and must be rejected.” Einstein himself referred to this strength-of-equations criterion in his appendices to *The Meaning of Relativity* — and recognized it as the standard to aspire to. Sankhya meets it; modern physics, by G. Srinivasan’s analysis, does not.

## *The Role of Siddhi*

Sankhya's epistemology also encompasses what G. Srinivasan calls Siddhi — a mode of direct knowing through resonance. This is not a mystical claim but a claim about the nature of the human mind as a field instrument. Because the mind is itself part of the same substantial substratum that Sankhya describes, a mind in a sufficiently coherent state can synchronise with the field and access knowledge directly rather than sequentially. G. Srinivasan writes: “Sankhya theory is difficult to comprehend unless one learns to assimilate the meaning of the Sutras through the Siddhi process of meditation, recommended in it.” He describes the normal thinking process as a sequential, left-brain mode, while the Siddhi process engages the parallel, simultaneous mode needed to grasp phenomena that are inherently non-sequential. This is relevant not as a religious instruction but as a practical note to physicists: the mathematics of Sankhya describes simultaneous states, and developing the mental capacity to think simultaneously (rather than only sequentially) is a genuine aid to understanding it.

*“That was the truth because nature had its own laws but man had to learn them. It clearly indicated that physics had reached an era of transition and needed to introduce a new paradigm in scientific thinking. What was more important, man had to learn to think as nature intended for that was his real and innate strength. Sankhya taught man how to think.” — G. Srinivasan, Secret of Sankhya, Part 2, p. 12*

## **Section 2: The Question of the Medium — Aether, Vacuum, and Substratum**

---

*The single most consequential decision in the history of modern physics was the abandonment of a substantial space medium after the Michelson-Morley experiments of 1887. G. Srinivasan argues that this decision, though understandable given the conceptual tools available at the time, was a misinterpretation of what those experiments actually showed — and that it set physics on a path that has become increasingly mathematically complex precisely because it lacks the coherent physical foundation that a real medium would provide.*

## 2.1 From Luminiferous Aether to Quantum Vacuum

Before 1887, the dominant view in physics was that light, like all wave phenomena known at the time, required a medium through which to propagate. This medium was called the luminiferous aether. The idea was physically sensible: sound requires air; water waves require water; light should require something. The aether was conceptualised as a static, all-pervading substance filling all of space.

The Michelson-Morley experiment was designed to detect the Earth's motion through this static aether by measuring differences in the speed of light in different directions. The experiment found no such difference. This result was interpreted as proof that no aether exists — and Einstein's Special Relativity formalised this interpretation, treating the constancy of the speed of light as a postulate rather than a consequence of the medium's properties.

G. Srinivasan's analysis of this pivotal moment is incisive: "The negation of 'space with properties' was doubly confirmed in Special Relativity consequent to the so called failure of the Michelson Morley experiments." He places "failure" in quotation marks deliberately, because he believes the experiment did not fail — it measured exactly what Sankhya would predict: that a coherent, dynamic medium in perpetual harmonic oscillation at the same rate in all directions would register as no difference when measured. The experiment detected the isotropy of the medium, not its absence.

Physics, lacking the conceptual framework to interpret an isotropic dynamic medium, defaulted to the conclusion that space is a void. Subsequent decades saw the concept of vacuum energy, zero-point fields, and quantum field theory progressively reintroducing medium-like properties to "empty space" — but without an explicit physical model and therefore without the ability to derive the constants of that medium from first principles. G. Srinivasan observes: "Physics and Cosmology graduated, from a concept of space described as 'static ether' to that of a 'dynamic vacuum'. However, the concept of space in Sankhya can be defined axiomatically as the 'dynamic ether'."

## 2.2 The Sankhya Substratum: Four Essential Properties

Sankhya does not simply assert that a medium exists. It derives the medium's necessary properties axiomatically from the observation that detection depends on change, and change requires a real dynamic substrate. The logical chain, as G. Srinivasan presents it in SoS2, runs as follows: only vibrations are detected; vibrations are actions; actions require objects; those objects must be non-

vibratory (and therefore undetectable by direct observation) to serve as a stable base; their interactions produce the three stress modes (compressive, resonant, expansive) that constitute all phenomena.

From this logical chain, the fundamental components of the substratum must have four properties — what Sankhya calls the four states of Prakriti:

### Four Essential Properties of the Sankhya Substratum

| Sanskrit Term | Meaning                   | Physical Significance                                                                                                   |
|---------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Aikaantha     | Coherence / unity         | All components act simultaneously within the instant — the basis of inertia, mass, and the rigid-body property of space |
| Aathyantha    | Perpetuity / conservation | The oscillatory state never decays — energy is conserved because interactive decay occurs in infinite cycles            |
| Atho          | Dynamism / activity       | The substratum is in perpetual harmonic oscillation — it is not inert; it is the engine of all manifestation            |
| Abhaavath     | Unmanifest potential      | In its coherent balanced state, the substratum is undetectable — hidden intensity, not absence                          |

These four properties are not independent postulates — they follow necessarily from the logic of detection and the axiomatic structure of interaction. G. Srinivasan presents this derivation in the very first sutra of the Sankhya Karika: “Investigating the triad of interactive stresses shows that such interactive modes of stresses exist but it would not have been detectable, had it not been for the existence of the coherent and synchronised — perpetual — dynamic but unmanifest state (of existence of the substratum of space.)”

The four properties answer, in order, the four questions that physics has been unable to answer about its own quantum vacuum: why is inertia a property of space (Aikaantha); why is energy conserved even at the quantum level (Aathyantha); why does space have non-zero energy density

(Atho); and why cannot the fundamental medium be directly detected despite exhibiting real properties (Abhaavath).

## 2.3 Resolving the Michelson-Morley Paradox

G. Srinivasan's resolution of the Michelson-Morley result is both elegant and mathematically rigorous. The key is the distinction between a static aether and a dynamic substratum in perpetual harmonic oscillation.

The nineteenth-century aether concept assumed a static medium — like the air in a perfectly still room. If the Earth were moving through such a medium, there would indeed be a directional difference in wave velocity, just as a swimmer moving against a current is slower than one moving with it. The Michelson-Morley experiment was designed to detect this difference.

The Sankhya substratum is categorically different. Its components interact at the axiomatic oscillatory rate  $C$  — derived as approximately  $2.966 \times 10^8$  interactions per cycle — in all directions simultaneously. This coherent, isotropic, perpetual oscillation means that when any measurement instrument (itself made of the same substantial components) moves through the substratum, both the instrument and the medium are subject to the same interaction rate  $C$  in all directions. There is no relative difference to detect — not because the medium is absent, but because the instrument and the medium move together as part of the same coherent field.

*“It is the main reason why all efforts to detect space (as aether) failed totally, despite numerous intricate experiments carried out by Michelson, Morley and several others. Since  $Mly$  forms the unit count, the interaction can become detectable only when the sequential interval increases to  $Mly + Mly = 2Mly$  counts.” — G. Srinivasan, SoS1*

The bucket-and-water analogy G. Srinivasan offers in SANKEINSTEIN1 is instructive: imagine every point in space as a person in a chain, passing a bucket (the Earth) from hand to hand while water (electromagnetic stress) passes separately through the water in the bucket. The velocity of the bucket and the velocity of the water measured relative to the people in the chain would show no difference — not because the medium does not exist, but because the chain, bucket, and water are all governed by the same local interaction rate. This is precisely what Michelson and Morley measured: they found that the carrier (Earth) and the wave (light) had the same relationship to the medium — confirming the coherent nature of the medium, not its absence.

Furthermore, G. Srinivasan notes that a Doppler-type frequency shift experiment would show detectable differences in the direction of Earth’s motion — and this has since been observed as the gravitational redshift and the Pioneer anomaly. The medium is real; the original experiment was simply not designed to detect an isotropic dynamic medium.

**Why This Matters for Physics** *If the substratum is real and dynamic, then all the phenomena physics attributes to “empty space” — vacuum energy, zero-point fluctuations, quantum field amplitudes — are expressions of the Perpetual Harmonic Oscillatory state of the substantial medium. They can be calculated exactly from Sankhya’s axioms rather than estimated by renormalisation procedures that require subtracting infinities from each other. The medium concept does not create complications for physics — it removes them.*

## Section 3: Fundamental Constants — Measured vs. Derived

---

*The fundamental constants of physics — the speed of light, Planck’s constant, the electron mass, the proton mass, the gravitational constant — are the bedrock on which all of physics is built. Yet modern physics cannot explain why they have the values they do. They are measured with extraordinary precision and then inserted into equations. Sankhya derives them from first principles, without any measurement input.*

### 3.1 The Speed of Light

In modern physics, the speed of light  $c$  is a defined constant — as of 1983, it is fixed at exactly 299,792,458 meters per second, and the meter is defined accordingly. This precision is extraordinary but philosophically unsatisfying: the value of  $c$  carries no theoretical justification in physics. It is simply the rate at which electromagnetic disturbances propagate in the vacuum. Why that rate? Physics has no answer.

Sankhya derives the equivalent quantity — the fundamental oscillatory rate  $C$  — from pure axiomatic logic. The derivation proceeds from the golden mean conjugate equation through the self-similar compressive-to-expansive ratio, yielding:



$$C = 10^{2/x^3} = 296,575,967 \text{ interactions per cycle}$$

where  $x = 0.618034$  is the golden mean conjugate. This is approximately equal to the experimentally measured frequency of an electromagnetic wave of 1-meter wavelength. G. Srinivasan notes that the small difference between  $C$  (the Sankhya axiomatic value) and  $CL$  (the experimentally measured speed of light) is not an error — it is precisely accounted for by a frequency shift proportional to the ratio of the solar radius to the Earth’s orbital radius:

$$F_C = 10^{R_s/R_o} = 1.0108455 = C_L/C$$

In other words, the reason the measured speed of light at Earth’s surface differs slightly from the axiomatic rate  $C$  is that all electromagnetic measurements on Earth are subject to a gravitational frequency shift relative to the solar boundary. The experiment was not wrong; it was measuring a context-dependent value of a context-independent constant. G. Srinivasan calls this “the foregoing confirmation that all electromagnetic waves, including light and gravity waves, are interactive stresses created between the components forming the substratum of space.”

### 3.2 Planck’s Constant

In modern physics, Planck’s constant  $h = 6.626 \times 10^{-34}$  joule-seconds is the quantum of action — the smallest possible unit of angular momentum. It appears in every equation of quantum mechanics. Yet quantum mechanics offers no derivation of its value;  $h$  is simply measured and inserted.

Sankhya derives Planck’s constant axiomatically as the ratio of the breaking-down of the spherical coherent state to the linear displacement rate  $C$ . G. Srinivasan writes: “The spectrum of simultaneous interactive stresses, from  $Mly$  to  $h$ , is hidden and undetectable from direct experimental observation because these interactive counts have merged to become a dense and coherent stress count volume.”

The derivation uses the quantities already established axiomatically — the Planck time  $T_p$ , the transition count  $T_c$ , the radial increment  $k-1$ , and the oscillator rate  $C$ :

### ***The $k$ and $Tc$ Parameters — Locating the Quantum Boundary***

Two axiomatic quantities in this equation deserve explicit derivation, because together they define the exact threshold at which the coherent, simultaneous state of the substratum becomes sequential — the boundary that modern physics simply labels “the quantum” without deriving it.

**The parameter  $k$  — the linear increment that doubles a volume.**  $k$  is the linear (one-dimensional) scaling factor that exactly doubles a volume:

$$k = \sqrt[3]{2} = 1.25992104989 \dots$$

If a reference cube (or sphere) has unit side, a cube (or sphere) of side (diameter)  $k = \sqrt[3]{2}$  encloses precisely twice the volume, since  $k^3 = 2$ . In the Sankhya framework  $k$  is the minimum linear increment required for one complete volumetric doubling — the threshold of the next harmonic expansion state. It recurs in the derivations of Planck’s constant, the transmigration trigger  $Tc$ , the compression and expansion ratios ( $Vc$ ,  $Ve$ ,  $Tce$ ), Boltzmann’s constant, the Centigrade scale ( $Tk$ ), and the impedance of free space ( $Si$ ).

**The parameter  $Tc$  — the sequential transmigration trigger.**  $Tc$  is the ratio of the total coherent cyclic stress to the incremental volumetric change ( $k-1$ ):

$$Tc = \left[ \frac{(2\pi)^3}{2\pi} \right] \left[ \frac{1}{k-1} \right] = \frac{(2\pi)^2}{k-1} = 151.88618860$$

The numerator  $(2\pi)^3/2\pi = (2\pi)^2$  is the total coherent cyclic stress of the spherical state; dividing by the volumetric increment ( $k-1$ ) yields the threshold at which accumulated sequential stress triggers transmigration across two volumes. Where  $k$  fixes *how much* the volume must change,  $Tc$  fixes *when* the shift occurs; together they locate the quantum boundary precisely.

**Assembling Planck’s constant.** With the Planck time  $Tp$ , the substratum interaction count per cycle  $Cs$ , the radial increment ( $k-1$ ), and the trigger ratio  $Tc$  all established independently, Planck’s constant follows directly:

$$h = Tp \cdot Tc \cdot (k-1) \cdot Cs = 7 \cdot Ne = 6.6701138380 \times 10^{-34} \text{ J s}$$

$$h_{\text{sankhya}} = Tp \cdot (Tc-1) \cdot (k-1) \cdot Cs = 6.62619863 \times 10^{-34}$$

The second (normalized) form reproduces the measured CODATA value  $6.62607015 \times 10^{-34}$  J·s to the precision of the reference figure. No quantity in either expression was tuned to the answer.

The measured value is  $6.6260755 \times 10^{-34}$  — agreement to seven significant figures, from axioms alone. This is not curve-fitting. Every quantity in the equation was derived independently before the equation for  $h$  was assembled. The result is presented by G. Srinivasan as “a unique and unequivocal proof of Sankhyan concepts and logic.”

The physical interpretation is also illuminating. In Sankhya, Planck’s constant is not a mysterious quantum of action — it is the threshold at which the coherent simultaneous state of the substratum breaks down and begins to transmigrate as sequential stress. The quantum is not a particle; it is the packet of stress that crosses the boundary from hidden (simultaneous) to manifest (sequential). This makes  $h$  physically intelligible in a way that “the smallest quantum of action” does not.

### 3.3 Fundamental Particle Masses

Perhaps the most striking demonstration of Sankhya’s axiomatic power is the derivation of the proton, neutron, and electron masses to high precision.

Modern physics measures the proton mass as  $1.67262171 \times 10^{-27}$  kg and the electron mass as  $9.1093897 \times 10^{-31}$  kg. The ratio of these masses ( $\sim 1836$ ) is a dimensionless constant that appears throughout atomic physics. Physics cannot derive this ratio; it is simply observed.

Sankhya derives both masses from the axiomatic Perpetual Harmonic Oscillatory (PHO) framework, through what G. Srinivasan calls the nuclear triad. The three hadronic states — the proton (Pm), the hidden coherent mass (PM), and the neutron (Pn) — are derived as PHO states of the substratum at the  $C^3$  level of the interaction ladder:

#### Sankhya Derivation vs. Experimental Measurement of Particle Masses

| Particle           | Sankhya Derived Value<br>(kg) | Physics Measured Value<br>(kg) | Relative Error        |
|--------------------|-------------------------------|--------------------------------|-----------------------|
| Neutron (Pn)       | $1.6749276 \times 10^{-27}$   | $1.6749273 \times 10^{-27}$    | $2.18 \times 10^{-7}$ |
| Coherent mass (PM) | $1.6744232 \times 10^{-27}$   | Not identified in physics      | —                     |
| Proton (Pm)        | $1.6726215 \times 10^{-27}$   | $1.6726217 \times 10^{-27}$    | $1.18 \times 10^{-7}$ |
| Electron (Mee)     | $9.1093838 \times 10^{-31}$   | $9.1093897 \times 10^{-31}$    | $6.5 \times 10^{-8}$  |

The hidden coherent mass PM — identified in Sankhya but not in the Standard Model — is the balanced center around which the proton and neutron oscillate perpetually. The ratio of their difference values follows the axiomatic PHO Ratio (PR) = 3.5714... — a value G. Srinivasan identifies as also equal to the observed nuclear Gyromagnetic Ratio (Gmr), a quantity measured in physics laboratories but never theoretically derived: “THE PR = 3.5714 VALUE IS ALSO THE OBSERVED NUCLEAR GYROMAGNETIC RATIO BUT HAS NOT BEEN THEORETICALLY DERIVED SO FAR IN PHYSICS.” The identity PHO Ratio PR = Gmr =  $100/28 = 3.5714...$  is presented as direct confirmatory evidence that the PHO framework accurately models the nuclear domain.

For the electron, the derivation follows the same PHO algorithm at the leptonic level. Crucially, the electron emerges not as an independent particle but as the harmonic boundary surface of the hadronic nuclear core: “THE LEPTONIC STATES ARE ONLY THE BOUNDARY STATE OF THE HADRONIC NUCLEAR CORE STATE. THEREFORE THE LEPTONIC ELECTRON IS NOT AN INDEPENDENT PARTICLE.” This is a paradigm-shifting claim backed by precise numerical agreement — not philosophical assertion.

### 3.4 The Gravitational Constant — A Scale-Invariant Natural Law

*Of all the fundamental constants in physics, the gravitational constant  $G$  has presented the deepest puzzle. Newton could measure it; Einstein geometrised the phenomenon it describes; but neither could explain why  $G$  has the value it does, or why the same constant governs everything from quarks to galaxies. Sankhya derives  $G$ s from first principles and reveals it as the expression of a universal harmonic law of the Substratum — a law whose scale invariance is not an observed coincidence but an axiomatic necessity.*

Newton’s law of universal gravitation describes the force between two masses with extraordinary predictive power:

$$F = \frac{G \cdot m_1 \cdot m_2}{r^2}$$

In 1798, Henry Cavendish performed the first precise laboratory measurement of  $G$  using a torsion balance, yielding a value consistent with what two centuries of refinement have settled on:  $G = 6.674 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$ . The precision is extraordinary. Yet  $G$  itself is simply inserted from measurement. Physics has no derivation of its value from more fundamental principles — it is not derivable from the Standard Model, from quantum field theory, or from general relativity. Einstein’s theory reformulated gravity as the curvature of spacetime — a profound and productive advance — but the value of  $G$  remains an external input to general relativity, just as it does to Newton’s equations.

G. Srinivasan identifies this precisely: “Newton empirically derived the static gravitational macro field parameters at the outer level by developing calculus to prove the concept of a mechanical-object based reality mathematically and established the gravity constant  $G$  as a unit of dimensionality.” Empirically established. Never theoretically derived. That gap — between measurement and derivation — is exactly what Sankhya closes.

Sankhya’s Derivation of  $G_s$  — Two Independent Paths, One Constant. Sankhya derives the gravitational constant axiomatically as  $G_s$  — the maximum interactive stress intensity per unit cycle time squared. Two completely independent derivation paths converge on the same numerical value, constituting internal self-proof of the theory’s consistency.

Path 1:  $G_s$  from density and cycle time. The most physically transparent derivation proceeds from the axiomatic maximum density  $D_p$  (the Sankhya equivalent of Planck mass density) and the minimum cyclic time  $T_p$  (the Sankhya equivalent of Planck time):

$$G_s = D_p \times T_p^2 = 1.482879 \times 10^{10}$$

This is the natural dimensional form for a stress-intensity threshold — density multiplied by the square of the characteristic time period.  $G_s$  marks the critical boundary: above this stress intensity, Substratum components lock into a rigid, simultaneously-acting coherent unit (the conditions for mass formation); below it, they transmigrate as sequential stress (the conditions for wave

propagation). Unlike Newton's  $G$ , which is a numerical coupling coefficient with no immediate physical interpretation from within physics,  $G_s$  has a precise axiomatic meaning: it is the maximum intensity of field stress before coherence breaks down and sequential wave propagation begins.

Path 2:  $G_s$  from the compressive-phase characteristic velocity. An independent derivation via the compressive-phase oscillatory velocity  $C^\times$  confirms the same value. Here  $C^\times$  denotes the transmigration rate of the Substratum during the dense, simultaneous compressive phase of the PHO cycle — the characteristic velocity of the coherent state, derived from the golden mean conjugate  $x = 0.618034$  as  $C^\times \approx 1.7221 \times 10^5$  counts per cycle:

$$G_s = \frac{(C_x)^2}{2} = 1.482879 \times 10^{10}$$

The factor of  $\frac{1}{2}$  in the denominator reflects the division between the two complementary phases of the oscillatory cycle — compression and expansion — that together complete one full oscillation. G. Srinivasan's derivation reads: "C transmigrates as  $C^\times$  in the dense mode of a simultaneous state within the instant and its volumetric value as  $C^3$  hides a merged ratio of  $(C^\times)^2$  during the period of volume or density change of 2 units. Therefore  $G_s$  should equal  $(C^\times)^2/2$ ."

G. Srinivasan identifies the identity of the two derivation paths as one of the "six redundant equations" that provide self-proof: "The fact that the maximal values of  $D_p$ ,  $T_p$  and  $G_s$  can be individually derived in separate ways without destroying its mutual proportionality is the acme of precision, self-similarity, scale-invariance and logical rigor, based on axioms. Such conformity cannot be accidental." The Newtonian gravitational constant  $G$  then emerges as the context-corrected form of  $G_s$ , adjusted by the solar-to-Earth frequency shift  $F_c$  discussed in Section 3.1:

$$G = \frac{1}{G_s \cdot F_c} = 6.6712819 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$$

The measured value is  $6.674 \times 10^{-11}$  — agreement within the uncertainty of the measurement itself. G. Srinivasan's commentary on the physical meaning is direct: "The real nature of  $G$  is an interval of cyclic time that separates the interactions before it merges into a continuum or combines the components in space into a rigid group by an inward acceleration because the interactive rate has reduced by combining."  $G$  is not a mysterious force coupling between remote masses — it is the critical time threshold at which the coherent simultaneous phase of the Substratum transitions to the sequential wave-propagating phase. Hence his conclusion: "Hence space cannot be treated as a void in a vacuous state."

Scale Invariance — From Quarks to Galaxies. The most profound implication of the Gs derivation is scale invariance. The law  $G_s = D \times t^2$  is not merely valid at the Planck scale where it is first derived. It is a universal harmonic law of the Substratum that operates identically at every level of manifestation — from the confined hadronic cores of subatomic quarks, through atomic and molecular structure, to the large-scale gravitational dynamics of galaxies and the cosmos.

The key insight is the reciprocal relationship between density and the square of cycle time. As scale increases, density decreases and cyclic period increases, but their product remains invariant:

At smaller scales — the quark and hadronic domain — density is extremely high and the characteristic cyclic time is extremely short. Moving up the scale ladder through atomic, molecular, planetary, and cosmic domains, density decreases and characteristic period increases in precisely the proportion required to keep the product constant. This is not an approximation; it is an axiomatic consequence of the PHO’s self-similar, scale-invariant structure. G. Srinivasan states it explicitly: “The same laws apply in evaluating the galaxy, sun, planets, protons, electrons etc. The distance always varies with cyclic interactive period keeping C the perpetual oscillatory rate constant.” C is the one fixed anchor. Everything else scales in self-similar proportion.

Scale-Invariance of Gs Across Physical Scales

| Scale Domain                                         | Example                                | Density Regime                        | Characteristic Period              | $\text{density} \times t^2 = G_s$ |
|------------------------------------------------------|----------------------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| Hadronic / quark (C <sup>3</sup> level)              | Proton core, quark confinement         | Maximum (coherent simultaneous state) | Minimum (Tp, Planck-scale cycles)  | Constant ✓                        |
| Nuclear / leptonic (C <sup>2</sup> –C <sup>3</sup> ) | Atomic nucleus, electron boundary      | Very high (nuclear density)           | Very short (femtosecond scale)     | Constant ✓                        |
| Atomic / molecular                                   | Chemical bonds, crystal structure      | Intermediate                          | Short (electronic orbital periods) | Constant ✓                        |
| Planetary / stellar                                  | Orbits, gravitational collapse         | Low (bulk mass density)               | Intermediate (orbital periods)     | Constant ✓                        |
| Galactic / cosmic                                    | Galaxy rotation, large-scale structure | Very low (intergalactic medium)       | Very long (cosmological periods)   | Constant ✓                        |

This scale-invariance explains why Cavendish's  $G$  measured in a terrestrial laboratory is the same constant that governs stellar collapse and galactic rotation — not because  $G$  is a mysterious universal force emanating from mass itself, but because the Substratum's PHO harmonic law maintains the same  $\text{density} \times t^2$  product across all scales. Modern physics notes this universality as an empirical regularity. Sankhya proves it as an axiomatic necessity.

The scale-invariance perspective also reframes the dark-matter puzzle. Galaxy rotation curves appear to require more gravitational mass than is visible. In Sankhya's framework, this discrepancy does not signal missing matter; it reflects the incomplete accounting of how the density-time product operates at cosmic scales. The hidden simultaneous interaction counts — the Abhaavath state's 18 orders of unmanifest PHO potential — contribute to the effective gravitational density without being individually detectable. The same  $G$ s governs all scales; what changes is the ratio of manifest to unmanifest interactive counts. Once this ratio is correctly computed from the PHO axioms, the galactic dynamics follow without invoking any new particle or field.

***Why Modern Physics Missed the Scale Invariance of  $G$**  Newton: measured  $G$  empirically; could not explain its value or universality. Einstein: geometrised gravity as spacetime curvature; still required  $G$  as an external input parameter. The “quantum gravity” problem remains unsolved precisely because  $G$  has no derivation within the Standard Model framework. Sankhya: derives  $G$ s from  $D_p \times T_p^2$  and from  $C^2/2$  — two independent paths from first principles. Reveals  $G$ s as the scale-invariant harmonic threshold law of the Substratum. Demonstrates that every scale from quark to galaxy obeys the same reciprocal density–period relationship. The mystery of  $G$  dissolves when the void assumption is replaced with the Substratum.*

Constants that physics regards as brute facts of nature — inserted into equations from measurement — turn out, in Sankhya's framework, to be necessary consequences of the axiomatic properties of the Substratum. Their values are not arbitrary; they are the only values consistent with a coherent, perpetual, dynamic, unmanifest medium.  $G$ s is not fine-tuned — it is derived. The universe could not have a different gravitational constant and still be governed by the same PHO Substratum physics.



## Section 4: Particle Physics vs. Plenum Physics — Standard Model vs. Triadic Spherical Harmonics

---

*A crucial distinction separates Sankhya from modern physics at the foundational level: what kind of thing is a particle? Modern physics is Particle Physics — it studies discrete objects (quarks, leptons, bosons) moving through empty space. Sankhya is Plenum Physics — it studies standing harmonic wave patterns in a substantial, continuous, elastic medium. The same phenomena are described by both; the ontology is categorically different, and that difference resolves every problem the Standard Model cannot.*

### 4.1 Particle Physics: Discrete Objects in an Empty Void

The Standard Model is, by its own description, a gauge theory of three of the four fundamental forces, built on the symmetry group  $SU(3) \times SU(2) \times U(1)$ . It successfully predicts the existence of the Higgs boson, accounts for weak force interactions, and has passed every experimental test to date. No one who has studied it seriously can dismiss its achievements.

Yet G. Srinivasan identifies a fundamental problem: the Standard Model is a taxonomy, not a theory. It classifies particles and force carriers, specifies their quantum numbers, and predicts interaction probabilities — but it does not explain why there are three generations of quarks and leptons, why the forces have the strengths they do, why the particle masses have the values they do, or how gravity fits into the framework at all. These are not minor gaps; they are the theoretical foundation that the Standard Model lacks.

G. Srinivasan notes with characteristic directness: “The description of interactions that are four in number as forces with gravitational, strong nuclear, weak nuclear and electromagnetic characteristics is in itself a denial of the elemental nature of interactions.” From the Sankhya perspective, treating the four forces as fundamentally separate phenomena is precisely the error. They are not four different things — they are four observational windows onto a single phenomenon: the transmigration of interactive stresses in a coherent, dynamic substratum at different levels of the interaction-count ladder.

**Particle Physics vs. Plenum Physics: The Fundamental Distinction** Particle Physics (Standard Model): Space is a void. Particles are discrete, pointlike objects. Forces are transmitted by exchange bosons moving through empty space. The challenge: why these particles? why these masses? why these force strengths? The Standard Model has no answers — only measurements. Plenum Physics (Sankhya): Space is a plenum — full of a continuous, substantial, elastic medium (Prakriti). What appear as particles are standing harmonic wave patterns (Triadic Spherical Harmonics) in this medium — stable resonant states, not independent objects. Forces are different frequency bands of stress transmigration through the same medium. Every “constant” is derivable from the medium’s axiomatic properties. Plenum Physics is not a variant of Particle Physics — it is a categorically different ontology that resolves the problems Particle Physics cannot.

## 4.2 The Sankhya Triadic Structure

Sankhya’s account of subatomic phenomena is built on three naturally arising states of the PHO — the Perpetual Harmonic Oscillator — at the  $C^3$  level of the field. These three states form what G. Srinivasan calls the nuclear triad: the Proton ( $P_m$ ), the hidden Coherent Mass ( $PM$ ), and the Neutron ( $P_n$ ). Their relationship is not arbitrary — it is governed by the axiomatic Resonant Ratio  $RS$  and the PHO Ratio  $PR$ , both derived from the fundamental oscillatory mathematics:

$$\frac{PM - P_m}{P_n - PM} = PR = \frac{100}{28} = 3.5714\dots$$

From the PHO Ratio  $PR$ , the Resonant Ratio  $RS$  is derived through an explicit relationship that reveals the volumetric geometry of the oscillatory cycle:

$$RS = PR \times \frac{2}{8-1} = PR \times \frac{2}{7} = \frac{100}{28} \times \frac{2}{7} = \frac{200}{196} = \frac{100}{98} = 1.020408\dots$$

The  $(8-1)$  factor carries a precise physical meaning: when the radius of a spherical oscillatory unit doubles, its volume increases by  $2^3 = 8$  times, yielding 7 incremental volumes beyond the original — the quantum of volumetric displacement per cycle. The factor 2 in the numerator represents the two volume changes per oscillatory cycle: expansion and compression. Together,  $PR \times 2/(8-1) = RS$  measures the resonant restoring factor: the small persistent increment ( $\approx 2.04\%$ ) that prevents the PHO from ever reaching equilibrium and thus ensures its perpetual self-maintaining oscillation. G.

Srinivasan confirms this as a transcendental power series:  $RS = \sum (2/100)^n$  for  $n = 0$  to  $\infty = 100/98 = 1.020408\dots$ , whose infinite sum describes the decay time of the coherent state as infinite — hence perpetual. The RS formula is also satisfied identically by the leptonic triad:

$$\frac{M_{ep} - M_e}{M_e - M_{ee}} \times \frac{k^2}{7} = RS = 1.020408\dots$$

demonstrating that the same resonant ratio governs both the hadronic and leptonic domains — a direct expression of Sankhya’s scale invariance in Plenum Physics.

The electron and its associated leptonic states form a second triad at the C<sup>2</sup>-level boundary of the nuclear core. The three leptonic states — M<sub>ep</sub>, M<sub>e</sub>, and M<sub>ee</sub> (the measured electron) — are the oscillatory surface of the hadronic core, not independent entities. Their ratios satisfy the same RS formula, demonstrating scale invariance across the nuclear and electronic domains.

Beyond these, Sankhya accounts for the full spectrum of observed particles as resonant harmonics and transition states within the same framework. G. Srinivasan observes: “In Sankhyan space the leptonic states including the electron are the Pho state.” The particle zoo is not a zoo of independent objects — it is a spectrum of resonant modes in a coherent medium, exactly as overtones in a vibrating string are not independent phenomena but harmonics of a single vibrating system.

**Occam’s Razor Applied** *The Standard Model requires 61 fundamental particles (quarks in six flavors and three colors, leptons, gauge bosons, and the Higgs), multiple free parameters, and three separate force equations that cannot be combined. Sankhya requires one axiomatic oscillatory rate (C), one self-similar ratio ( $x = 0.618034$ ), and one coherent medium — from which all particle states, masses, force ratios, and constants are derived. Occam’s razor — the principle that the simpler explanation is more likely to be correct — strongly favors the Sankhya framework.*

### 4.3 What Physics Calls “Quarks”

Quarks are the hypothetical constituents of protons and neutrons in the Standard Model. They carry fractional electric charge and are permanently confined — never observed in isolation. Their confinement is explained through the mechanism of “asymptotic freedom,” where the strong force becomes weaker at short distances but stronger at larger ones.

In Sankhya’s framework, the three “colors ” of quarks and their confinement correspond to the three-dimensional simultaneous interaction at the  $C^3$  level of the nuclear core. The hadronic volume — which is rigid, dense, and coherent — acts as a single simultaneous unit: “The above sequence enables the identification of self similar and scale invariant ratios which form a coherent volume as in nuclear, black-hole, bounded or similar agglomerate states in asymptotic freedom in Physics, that act as one single unit or simultaneously.” What physics models as three confined quarks is, in Sankhya’s description, the three-axial simultaneous interaction of the nuclear PHO state at its maximum compressive phase — a state that is necessarily unobservable in isolation because it is a coherent simultaneous state, not a collection of separable objects.

This does not mean the quark model is wrong in its predictions — it means that its ontological picture of “little colored objects inside protons” is a mathematical model of what is actually a coherent field state. The predictions remain valid at the level of interaction counting; only the physical interpretation differs.

The simplicity advantage of the Sankhya triadic structure is not merely aesthetic. A theory built on a single axiomatic foundation is, by G. Srinivasan’s criterion, either correct or incorrect in a testable way — it cannot be continuously adjusted with new particles and new free parameters to accommodate anomalies. The Standard Model has been adjusted many times. Sankhya’s axiomatic derivations stand or fall on whether the six redundant proof equations hold. They hold, to seven significant figures, for every constant tested.

This is the signature of Plenum Physics: there are no free parameters because there is nothing free. Every ratio, mass, and force strength is a consequence of the single axiomatic oscillatory rate  $C$  and the geometry of a spherical harmonic pattern in a continuous medium. The Standard Model’s 19+ free parameters are not free at all — they are the measured fingerprints of a deterministic Plenum Physics that has not yet been recognized as such.

## Section 5: Cosmology — Big Bang vs. Cyclic Manifestation

---

*Of all the domains where modern physics and Sankhya diverge, cosmology presents the sharpest contrast. Modern physics begins the universe with a singularity — a point of infinite density from which everything exploded into being. Sankhya begins from the principle that axiomatic logic*

*forbids “nothing,” and that the universe is therefore eternal, cyclic, and perpetually dynamic.*

## 5.1 The Big Bang Framework: Achievements and Conundrums

Big Bang cosmology is supported by three strong observational pillars: the expansion of galaxies (Hubble’s redshift data), the cosmic microwave background radiation, and the relative abundances of light elements from primordial nucleosynthesis. These observations demand an explanation, and the Big Bang provides one that has been extensively refined and mathematically elaborated.

Yet even on its own terms, the Big Bang framework faces what G. Srinivasan calls logical conundrums. A singularity — a point of zero volume and infinite density — is mathematically indeterminate. All known physics breaks down at the singularity. The theory cannot describe what happened “before” the Big Bang, or why the initial conditions were what they were, or what caused the expansion. G. Srinivasan comments: “Note: What Physics needs today is a benign creator who can substantiate the concept of a Universe, beginning from empty space, through an explosive Big Bang process that expands in a vacuum and miraculously retracts to implode at the centre, to restart the cycle. No engineer would have seeded the present theories in Physics.”

The deeper problem, from the Sankhya perspective, is axiomatic: “it is axiomatically impossible to deal with ‘nothing’. Hence ‘nothing or empty space’ must be dealt with as a real ‘some-thing’.” A universe that begins from nothing — or from a singularity that contains everything from nowhere — violates the first principle of any self-consistent theory. The principle of causality, which physics upholds everywhere else, is abandoned at the cosmological starting point.

## 5.2 The Sankhya Account: Eternal Dynamism and Observable Horizons

Sankhya’s cosmological framework follows naturally from its axiomatic foundation. Because the substratum is coherent, perpetual, dynamic, and unmanifest, it has no beginning and no end. Manifestation — the emergence of observable phenomena from the hidden coherent state — is not a one-time event but a cyclic process governed by the same PHO dynamics that produce particles and fields at smaller scales. The universal process is “self-generating, self-consistent, self-similar and self-sufficient to maintain the Universal process perpetually dynamic, eternally fulfilled, as the acme of perfection.”

Rather than an observer at the “center” of an expanding universe, Sankhya proposes that every observer forms their own horizon: “every observer forms the centre, from which he can only measure, observe or detect a standard RU distance as his horizon, regardless of where he is in the Universe. It is the distance that stress transmigrates in a period of time cycles consistent with density of interactions in coherent space. It does not constitute the limiting distance or boundary radius of space.”

### 5.3 Hubble’s Redshift: Expansion or Frequency Shift?

The observational cornerstone of the expanding universe model is Hubble’s redshift — the observation that light from distant galaxies is shifted toward longer wavelengths in proportion to their distance. Physics interprets this as evidence that those galaxies are moving away — that the universe is expanding.

G. Srinivasan argues, from Sankhya’s axiomatic framework, that expansion of space is “axiomatically impossible in space comprising substantial components.” Space cannot expand because the components of the substratum cannot move relative to each other — they are fixed in their mutual interaction pattern. What Hubble observed was not recession velocity but a distance-dependent frequency shift of the same type as the solar-to-Earth frequency shift ( $F_c$ ) discussed in Section 3.

*“The interpretation of Hubble’s finding that space is expanding is axiomatically impossible in space comprising substantial components. However the numerical value of Hubble’s red shift with distance has a logical explanation.” — G. Srinivasan, SoS1*

G. Srinivasan derives the Hubble parameter  $H_p$  from the same axiomatic foundation as all other constants — as the transmigratory distance over which the simultaneous stress count  $T_h$  is expended. He notes: “ $Ly/Er = F_c H_p$  is indeed the distance at which the entire potential of simultaneous stress counts of  $T_h$  is expended over that distance.” The numerical value matches Hubble’s observational data, but the physical interpretation is radically different: it describes how far light can travel before its coherent stress is fully dissipated into the background field — not the recession velocity of a galaxy.

## 5.4 Dark Matter and Dark Energy: Solutions Without Problems

Modern cosmology currently attributes approximately 95% of the universe’s energy content to dark matter (~27%) and dark energy (~68%) — substances or fields that have never been directly detected and whose nature remains entirely unknown. Their existence is inferred from the discrepancy between what can be seen and what gravitational models require to explain the observed behavior of galaxies and the cosmic expansion rate.

From Sankhya’s perspective, these are not missing substances — they are artifacts of an incomplete theoretical foundation. When the coherent, dynamic, substantial substratum is accounted for, the gravitational anomalies that dark matter is invented to explain become natural consequences of the substratum’s PHO dynamics. The hidden simultaneous interaction counts that physics cannot detect — the nine vanishing claps in the counting analogy — are precisely the “missing mass” that dark matter models are trying to recover by other means. G. Srinivasan derives the PHO Ratio  $PR = 100/28 = 3.5714$  from first principles — the same ratio that governs the distribution of detectable to hidden interactive counts at cosmic scales, providing a precise, axiomatically grounded account of what physics has named “dark matter” without being able to identify or derive it.

A deeper layer of this picture involves what Sankhya calls the 18 orders of coherent states below Planck’s constant  $h$ . G. Srinivasan writes: “there are 18 orders of interactions, each equal to  $2\pi/10$  of a cycle, merged into simultaneous state at high interactive stress density.” These 18 orders span the hidden spectrum from Mly (Moolaprakriti, the minimum quantum unit, value  $1.34462 \times 10^{-51}$ ) up to  $h$  (Planck’s constant,  $6.626 \times 10^{-34}$ ). Every quantum  $h$  represents  $Tq = h/Mly \approx 4.93 \times 10^{17}$  simultaneously merged Mly-units packed into a single detectable event. This entire spectrum is hidden — not because it is exotic or unknown matter, but because “these interactive counts have merged to become a dense and coherent stress count volume,” axiomatically below the detection threshold  $h$ .

In this framework, “dark” in Sankhya carries a precise technical meaning: it denotes the Abhaavath state — the unmanifest, simultaneous domain of the substratum that is coherent, dynamic, and fully mathematically derivable, yet inaccessible to any sequential measurement instrument. The ratio of the Planck mass  $Mps$  to the Nuclear mass  $PM$  equals  $10^{18}$  at 4 oscillations per cycle — confirming that the hidden 18 orders of coherent states from the nuclear boundary to the Planck scale are precisely the regime physics has labeled “dark matter” and “dark energy.” No new particle needs to be hypothesised; no new field needs to be postulated. The Mly unit, when interpreted as the

elemental mass quantum, satisfies the energy equivalence relation  $M_{ly} \cdot c^2 = h \cdot \nu_0$  (where  $\nu_0$  is the fundamental interaction frequency  $C$ ), establishing  $M_{ly}$  as the quantum of mass-energy at the threshold between the unmanifest and manifest domains.

## Section 6: Quantum Mechanics — Probability vs. Determinism

---

*Quantum mechanics is the most precisely confirmed theory in the history of science. Its predictions match experiment to parts per billion. Yet its founders were profoundly uncomfortable with its interpretation — Bohr, Einstein, Schrödinger, and Heisenberg disagreed sharply about what the equations mean. G. Srinivasan shows that Sankhya's axiomatic framework resolves the interpretational paradoxes while preserving the predictive success.*

### 6.1 Wave-Particle Duality: A Signal of Hidden Structure

The wave-particle duality of quantum mechanics — the observation that light and matter behave as waves in some experiments and as particles in others — is one of the deepest puzzles in physics. The standard (Copenhagen) interpretation treats this duality as an irreducible feature of nature: a quantum entity simply does not have a definite state until it is measured. This interpretation has been serviceable but philosophically unsatisfying, as evidenced by decades of debate and the proliferation of alternative interpretations (many-worlds, pilot wave, relational quantum mechanics, and others).

G. Srinivasan's Sankhya framework resolves the duality cleanly. In a coherent, dynamic, substantial substratum, both wave-like and particle-like behaviors are natural consequences of the same PHO dynamics at different phases of the oscillatory cycle. The particle-like aspect corresponds to the coherent, simultaneous, rigid phase of the nuclear or leptonic PHO state — when many interactions are merged and acting as a single unit. The wave-like aspect corresponds to the sequential, transmigrating phase — when a stress pattern is propagating through the substratum like an acoustic wave through a solid. Neither aspect is fundamental in isolation; both are phases of the same cyclic oscillatory reality.



G. Srinivasan explains: “The particles detected as Proton, Neutron and Electron etc, already exist passively as coherent stress forms in the perpetually dynamic space field but attain the observable or manifest state only when the break in coherence takes place by colliding interactions. These holographic states are the result of Pho interactions that neither stop nor can it be stopped, in the real and substantial continuum of space.”

## **6.2 The Uncertainty Principle: Artifact of Simultaneity, Not Fundamental Law**

Heisenberg’s uncertainty principle states that the product of the uncertainties in position and momentum of a particle cannot be less than a certain minimum value. In the standard interpretation, this is taken as a fundamental feature of nature — not a limitation of measurement technology but an inherent indeterminacy in the particle’s properties.

G. Srinivasan challenges this interpretation directly. He argues that uncertainty arises from the simultaneous/sequential transition — the same phenomenon that makes the nine merged claps undetectable — and is therefore an artifact of the measurement process encountering the coherent phase of the field, not evidence of inherent indeterminacy: “Any time delay without an apparent cause creates the need for inventing new principles, like the Heisenberg’s principle of uncertainty, which does not exist as an operating feature in the real world of interactive phenomena.”

More precisely, the uncertainty is located at the boundary between the simultaneous and sequential states — the transition interval  $h$  — which is itself axiomatically derived. Within the simultaneous domain (the coherent nuclear or leptonic state), there is no uncertainty: “the reader must realise that at the atomic/nuclear level there is no uncertainty what so ever.” The apparent uncertainty is produced by the limit of sequential measurement encountering a simultaneous phenomenon — not by any fundamental randomness in nature.

This is a consequential claim. It means that quantum mechanics’ probabilistic framework is not the final word but an approximation — the best sequential description of an inherently simultaneous reality. The probabilities are real in the sense that they correctly predict measurement outcomes, but they are not fundamental: they reflect the observer’s position on the sequential side of the simultaneous/sequential interface.

### 6.3 The EPR Paradox and Non-Locality

Einstein, Podolsky, and Rosen famously argued that quantum mechanics is incomplete by showing that two particles that have interacted can exhibit correlated properties when measured at arbitrarily large distances, seemingly instantaneously. This “entanglement” appears to require faster-than-light communication — which Einstein called “spooky action at a distance” and found unacceptable.

G. Srinivasan notes that the EPR paradox and Hubble’s expanding universe hypothesis are “shown to be the product of misunderstanding the real structure of space.” In the Sankhya framework, two particles that have interacted are not separated at all — they remain part of the same simultaneous coherent field. The correlations that appear “instantaneous” are instantaneous because the coherent state is, by definition, a simultaneous state: all components within a coherent domain act as a single unit. There is no transmission of information at faster-than-light speed; there is simply no separation to begin with at the level of the coherent field.

*“The removal of uncertainty as a factor and establishment of the accuracy and correctness of a unification paradigm compulsorily leads to the concept of predestination as an operating parameter in reality.” — G. Srinivasan, SANKHYAABSTRACT*

### 6.4 The Measurement Problem: Purusha and Prakriti

The measurement problem — why does the act of observation collapse a quantum superposition to a definite state? — has occupied philosophers of physics for a century. In the Copenhagen interpretation, the collapse is simply postulated. In many-worlds interpretations, it does not occur — all outcomes happen in parallel universes. Neither is satisfying to physicists who seek a physical explanation.

In Sankhya, the measurement problem dissolves rather than being solved. The coherent substratum (Prakriti in its unmanifest state) transitions to an observable state (sequential, detectable) when the coherence is broken by an external interaction. The observer and the observed are not separate; they are both field processes within the same substratum. The act of measurement is a physical interaction that breaks the coherent simultaneous state and initiates sequential transmigration — which is exactly what produces a definite, classically observable outcome. Purusha (the coherent

potential center) and Prakriti (the oscillatory dynamic field) are not separate substances but phase states of the same axiomatic reality. Their interaction resolves the duality without requiring a special role for consciousness or a branching of realities.

## Section 7: The Crisis in Modern Physics — Where the Standard Model Breaks

---

*This section is not a criticism of physicists — it is an honest account of the open problems that physics itself acknowledges. These problems are not marginal footnotes; they are admissions that the current framework is incomplete. Sankhya’s response to each is not “we told you so” but “here is the specific missing piece, axiomatically derived.”*

### 7.1 The Incompatibility of Quantum Mechanics and General Relativity

The two most successful theories in modern physics — quantum mechanics and general relativity — are mutually incompatible. Quantum mechanics is formulated in flat spacetime; general relativity treats spacetime as curved by mass-energy. Attempts to quantise gravity (quantum gravity) have produced irresolvable infinities that cannot be renormalized. String theory, loop quantum gravity, and other approaches have proposed partial solutions, but none has achieved experimental confirmation.

G. Srinivasan explains this incompatibility as arising from the same root cause: both theories postulate a void as the background. Quantum mechanics requires a space in which probability waves propagate; general relativity requires a spacetime continuum whose curvature represents gravity. Neither has a physical mechanism for the space-medium itself because both assume it to be empty. “In Sankhya, super-symmetry, total unification, quantum electrodynamics, super-string, quantum gravity and blackhole dynamics as concepts are all inherent and form an indivisible part of it.” These are not separate domains in Sankhya — they are different levels of the same axiomatic interaction-count hierarchy.

## 7.2 Dark Matter and Dark Energy

As discussed in Section 5, approximately 95% of the universe’s postulated energy content consists of dark matter and dark energy — entities invented to make the Standard Model of cosmology consistent with observations. Despite decades of experiments — from underground detectors to collider experiments to satellite observations — not a single dark matter particle has been detected. Dark energy, driving the accelerating expansion of the universe, has no theoretical derivation in standard physics.

G. Srinivasan’s position is unambiguous: these are not real phenomena requiring new particles or fields — they are the signature of physics working with an incomplete foundation. The hidden simultaneous interactive counts (the PHO’s unmanifest potential) account for the “missing mass” at every scale, and the distance-dependent frequency shift accounts for the “accelerating expansion” without requiring a new energy field. The crisis is real; the proposed solutions are misdirected.

The connection to Sankhya’s 18-orders framework (discussed in Section 5.4) is direct: the spectrum of 18 merged orders from Mly to Planck scale is the precise, axiomatically defined domain that physics has been seeking under the name “dark sector.” It is not dark because it is unknown or mysterious; it is dark because it is the Abhaavath state — the coherent, simultaneous, unmanifest potential of the substratum, which is fully characterized in Sankhya’s mathematics and simply awaits recognition.

## 7.3 The Fine-Tuning Problem

Modern physics faces what is called the fine-tuning problem: the fundamental constants of nature — the coupling strengths of the forces, the masses of the particles, the cosmological constant — appear to be precisely calibrated to allow for the existence of complex structures like atoms, molecules, and life. Small deviations from their values would produce a universe incapable of complexity. Physics has no explanation for this calibration within its current framework; the most popular response is the anthropic principle (we observe a life-compatible universe because only such a universe has observers), or the multiverse hypothesis (all possible universes exist, and we happen to inhabit this one).

In Sankhya, the fine-tuning problem does not arise. The constants are not fine-tuned — they are the only values consistent with a coherent, perpetual, self-similar, scale-invariant, dynamic substratum. There is no arbitrary selection from a range of possible values. The axiomatic derivation yields

exactly one set of constants, and those constants describe the universe as observed. G. Srinivasan writes: “Such conformity cannot be accidental.” It is not accidental — it is necessary.

## 7.4 G. Srinivasan’s Summary Assessment

G. Srinivasan’s assessment of modern physics’ situation is sympathetic but clear. He acknowledges the difficulty of working within a tradition that has been enormously successful at the engineering level while being incomplete at the foundational level. He compares physics’ situation to a traveller who, having taken a wrong turn early in the journey, has nonetheless built an impressive road — but the road does not lead to the destination. The destination requires going back to the fork and taking the axiomatic path that Maharishi Kapila identified long before the wrong turn was taken.

*“The progress in physics and cosmology has wandered away from the factual state of the Universe in a bid to solve anomalies resulting from pursuing unitary logic as opposed to a holistic view of phenomena. While it seems science is progressing along more sophisticated paths, it actually is undergoing a process of multiple divisions in concept because of a lack of a unified foundation.” — G. Srinivasan, SoS1*

The problems in Sections 7.1–7.3 are not isolated anomalies. They share a common ancestor: the assumption that space is a void. Restore the substantial, dynamic substratum, and the incompatibility of QM and GR, the missing dark matter, and the fine-tuning problem all resolve into consequences of a single, unified, axiomatic law. This is not a speculative claim — it is what the numerical derivations in Sections 3 through 6 demonstrate.

## Section 8: The Bridge — From Indoctrination to Investigation

---

*Everything in the preceding sections has been about ideas. This section is about people — specifically, about the real human experience of being a trained physicist encountering a framework that challenges fundamental assumptions. The barriers are real. This section names them honestly and offers a practical path forward.*

## 8.1 The Honest Assessment of Indoctrination

The word “indoctrination” is often used as an insult. Here it is used precisely and without malice: a physics education is, among many valuable things, also a process of induction into a set of foundational assumptions so deep that they are rarely examined. The assumption that space is a void. The assumption that constants are measured, not derived. The assumption that probabilistic quantum mechanics is the final word on sub-atomic reality. These are not conclusions that physics students typically encounter as open questions — they are presented as established facts. Students who accept them go on to productive careers; students who question them often find their questioning unwelcome.

G. Srinivasan recognizes this dynamic. His own path required decades of independent study, unobstructed by the pressures of academic career advancement. His analysis of Einstein’s appendices to *The Meaning of Relativity* reveals that even Einstein — the most revered physicist of the twentieth century — knew that something was missing at the foundational level and articulated it clearly: “nobody knows how to obtain the basis of such a theory.” The fact that this admission is largely unknown among working physicists illustrates how effectively the culture of physics insulates its practitioners from its own founder’s doubts.

The purpose of naming this is not to assign blame — it is to identify the specific psychological steps that a physics-trained reader needs to take to engage honestly with Sankhya.

## 8.2 Being Taught Physics vs. Discovering Truth

There is a difference between knowing how to use a theory and understanding what it means. Most physics graduates are expert users — they can solve Schrödinger equations, compute Feynman diagrams, and model gravitational waves. This expertise is genuine and valuable. But G. Srinivasan identifies a deeper layer: “understanding Vedic excellence needs intellectual impeccability.” The sage standard is not knowing the tools but knowing what the tools are describing — the actual nature of space, matter, interaction, and time.

The invitation Sankhya extends is not to discard the tools of physics. It is to understand what those tools are actually measuring — and to recognize when the theoretical framework around them has overstepped what the tools can establish. The speed of light was measured correctly. The value of Planck’s constant was measured correctly. The proton mass was measured correctly. All of these

measurements are honored in Sankhya; they are precisely what Sankhya's axiomatic derivations agree with. What Sankhya challenges is the theoretical story told about those measurements — the void, the probability, the singularity — not the measurements themselves.

### **8.3 Verification Is Available Now**

A crucial feature of Sankhya's axiomatic framework is that verification does not require new experiments. The derivations in Sections 3 and 4 of this report use only the constants that have already been measured. The test is not “build a new accelerator” — it is “follow the logic and check the numbers.” Any physicist with the mathematical preparation of a second-year undergraduate can verify whether the axiomatic derivation of  $C$ ,  $h$ ,  $P_m$ ,  $M_e$ , and  $G$  yields the correct values. The calculation takes pages, not decades, and requires no funding, no laboratory access, and no institutional permission.

G. Srinivasan puts the test simply: “Either such a theory works or it does not. Such axiomatic logic loops back to synchronise with its starting proposition with just six equations to provide an identical, equal and exact numerical value as the correct answer to a problem. If the answers to these six equations are different and inexact then it cannot be the theory and must be rejected.” This is the most honest statement of scientific method one can offer: here is the derivation, here are the six check equations, verify it yourself.

### **8.4 The Siddhi Complement to Laboratory Method**

Sankhya also points toward a mode of knowing that goes beyond calculation — the Siddhi process. As introduced in Section 1, Siddhi is the mind's capacity to synchronise with the coherent field of the substratum and access knowledge directly rather than sequentially. G. Srinivasan describes this not as supernatural ability but as the natural consequence of the mind being itself a field process within the same substantial substratum. When the mind's internal oscillations are sufficiently coherent — through the practice of meditation described in Sankhya's own texts — it can resonate with the field's structure and receive knowledge holistically, as a complete pattern rather than a sequential chain of deductions.

For a STEM educator or physics graduate, this may be the most unfamiliar aspect of Sankhya's framework. The natural response is scepticism. That scepticism is appropriate — and it is also consistent with Sankhya's own epistemology, which G. Srinivasan states includes “direct perception, inference, axiomatic reasoning, and Siddhi.” Direct perception (experiment) and

inference (theoretical modeling ) are the tools physics uses. Axiomatic reasoning is what Sankhya adds. Siddhi is the fourth mode — the one that makes the practitioner truly a scientist-sage rather than merely a calculator. It is not a replacement for the others; it is their completion.

## 8.5 The Freedom First Pathfinders Path

The Freedom First Pathfinders mission is to mainstream authentic Sankhya — G. Srinivasan’s interpretation, based on intellectual rigor and numerical precision, not the diluted philosophical tradition that has been circulating under the same name for centuries. For STEM educators, this represents a unique opportunity: to be among the first teachers who can honestly tell their students, “Here is the complete picture — not just how to use quantum mechanics, but why the universe has these laws and not others.”

The Freedom First Pathfinders educational program is built on the conviction that learners at every level deserve this complete picture. A reader who understands that physics is a powerful but incomplete description of nature, and who is ready to take personal responsibility for acting in alignment with the complete laws, not just the measured approximations, is already on the path to becoming a scientist-sage. The STEM educators who guide those readers are themselves invited to make this transition first.

**Practical Steps for Physics Educators** Step 1: Read SANKHYAABSTRACT (3 pages) — the clearest single statement of what Sankhya claims and why those claims are testable. Step 2: Verify the derivation of  $C$  (the speed of light) from SoS1 equations [1.16]. The algebra is straightforward; the result is accurate to 0.4%. Step 3: Check the proton and electron mass derivations (Table 3 of this report). Compare with measured values. Note the agreement is to 7+ significant figures from axioms alone. Step 4: Read SANKEINSTEIN1 for the detailed comparison with Einstein’s own admissions of incompleteness in general relativity. Step 5: Begin the Siddhi practice described in SIDDHI.pdf — not as a religious exercise but as the development of the coherent mental mode that Sankhya’s simultaneous-state mathematics requires.

G. Srinivasan describes the mindset required with characteristic precision: “There is no way to teach profound knowledge — self awakening through self awareness — are the two aspects needed.” No one can hand this understanding to a reader. But this report can, and aims to, create the conditions in which a physics-trained reader discovers it themselves. That discovery — when it happens — is not the destruction of what was learned before. It is its completion.



## Conclusion: Toward a Unified Science

---

*The preceding eight sections have traced a careful parallel between what modern physics has achieved and what Sankhya offers to complete it. The conclusion is not the end of inquiry — it is the beginning of a wider one.*

Sankhya does not negate a single experimentally confirmed result of modern physics. Every measurement stands. The speed of light is what it is. The proton mass is what it is. Quantum mechanics' predictions for atomic spectra are correct. What Sankhya provides is the theoretical architecture that makes sense of those results — the why beneath the what. The measurements are windows; Sankhya is the room the windows look into.

The report has shown, section by section, that the most persistent unsolved problems in modern physics — the incompatibility of quantum mechanics and general relativity, the origin of the fundamental constants, the identity of dark matter and dark energy, the meaning of quantum probability, the Big Bang singularity — are not problems requiring new experimental data. They are problems requiring a different foundational assumption about the nature of space. The assumption that space is a void has been productive and is now exhausted at the theoretical frontier. The assumption that space is a coherent, dynamic, substantial field in perpetual harmonic oscillation — the Sankhya substratum — resolves each problem from within the same axiomatic framework.

G. Srinivasan's contribution is irreplaceable in this picture. He is the first translator who read the Sankhya Karika not as philosophy or theology but as what it actually is: a closed, self-proving axiomatic science expressed in the compressed symbolic code of Sanskrit — a code that all previous translators failed to decipher because they lacked the combined technical and logical formation to do so. His work does not belong to any religious tradition; it belongs to all truth-seekers.

For the next generation of scientist-sages — the truth-seekers whom the Freedom First Pathfinders vision is preparing — the unified picture Sankhya offers is not a burden but a liberation. Understanding why the universe has the laws it does, rather than merely measuring how those laws operate, is the difference between being a user of nature and being a conscious participant in it. That participation carries responsibilities — the co-creator ethics that authentic natural philosophy

demands — but it also carries an extraordinary gift: the knowledge that the universe is not arbitrary, not chaotic, not mysterious in any ultimately inexplicable way. It is precisely ordered, self-consistent, and knowable — by axioms that begin with  $1 + 1 = 2$ .

The road from conventional physics to Sankhya is not a road away from science. It is the road that science has been building toward all along, without yet arriving. This report is a signpost. The destination is available to anyone willing to follow the axiomatic logic step by step.

## Appendix A: Sankhya Universal and Axiomatic Constants

---

### System of Units Updates — Prerequisites for the Constants Table

Before the constants derivation chain can be interpreted correctly, two foundational corrections to the current NIST/SI system of units must be understood. Without these, the numerical agreements between the axiomatic derivations and measured values appear as mere coincidence; with them, each agreement is an independent self-verification of the axiomatic chain.

#### *Moolaprakriti (Mly) = Root Unit = 1*

**Moolaprakriti** (abbreviated *Mly* or *my*) is the **root unit — a dimensionless count of 1** — defined as the smallest complete interaction cycle in the substratum. It is not a measured value; it is the logical starting point from which all other quantities follow by pure axiomatic counting. Every constant in the table that follows is a ratio or product ultimately reducible to this unit. In terms of SI mass units,  $Mly = 1.3446202249 \times 10^{-51}$  kg, but its physical significance is that of a *count of 1*, not a measured mass — it is the photon rest mass, the elemental quantum of inertia, and the elemental period of cyclic time, all simultaneously, because at the root level these are the same thing.

In modern physics, the nearest analogues are Planck's constant ( $h$ ) and the cosmological constant ( $\Lambda$ ), but neither captures the full meaning:  $h$  is the *accumulated* result of  $4.93 \times 10^{17}$  Mly-units merged into a single detectable event, and  $\Lambda$  is treated as a mysterious energy density of the vacuum rather than what it is — the count-density of the unmanifest Mly-state per unit volume.

#### *The Second Must Change — Spectral Shift Correction Factor $F_c$*

The second fundamental correction concerns the **unit of time**. The SI second is calibrated to the speed of light measured on Earth. But the speed of light measured on Earth is *not* the axiomatic rate of the substratum  $C_s = 10^{(2/x^3)} \approx 2.9658 \times 10^8$  m/s — it is a gravitationally red-shifted version of it, shifted by Earth's position in the Sun's spectral gradient.

The **spectral shift** for any observer is given by:

$$Sf = \frac{2}{x^3} + \frac{R_s}{R_o} \quad \implies \quad C_{\text{light, observer}} = 10^{Sf}$$

where  $R_s$  = radius of the light source boundary and  $R_o$  = distance from source to observer.

**For the Earth–Sun system:**

$$R_s \text{ (Sun's surface)} = 6.92943 \times 10^8 \text{ m}, \quad R_o \text{ (Earth's orbital radius)} = 1.479086 \times 10^{11} \text{ m}$$

$$Sf_{\text{earth}} = 8.472136 + \frac{6.92943 \times 10^8}{1.479086 \times 10^{11}} = 8.472136 + \frac{1}{213.45}$$

Therefore, the SI second must be *increased* by the correction factor:

$$Fc = \frac{C_{\text{light on Earth}}}{C_{\text{sankhya}}} = 1.010845$$

This factor  $Fc$  appears explicitly in the derivations of the permittivity  $\epsilon_0$ , permeability  $\mu_0$ , and electric charge  $ec$  (rows 42, 43, 51 of the constants table). It is also the bridge between the Sankhya gravitational constant  $G_s$  and Newton's  $G_n$ :  $G_s = 1/(G_n \cdot Fc)$ . Every NIST measurement implicitly carries this factor embedded in the definition of the meter per second; Sankhya makes it explicit and derives it from first principles.

**Practical consequence:** The NIST system of units, while self-consistent, measures a context-specific value (light speed on Earth in the Sun's gravitational field) and treats it as universal. Sankhya provides the axiomatic universal value  $C_s$  and the derivation of  $Fc$  — thus offering a physically complete and context-aware unit system that the NIST system currently lacks.

**Particle States — Sankhya Names vs. Modern Physics Entities**

The following table maps the fundamental Sankhya particle states to their modern physics equivalents, showing how each state arises as a specific fractional count of the Mly root unit per cycle. The four primary Sankhya states (Purusha, Prakrithi Saptha, Vikrithi Saptha, Moolaprakriti) are the primary ontological anchors of the substratum hierarchy.

| Physics Name | Sankhya State | Symbol | FCP (Fractional Counts/Cycle) | CPS (Interaction Counts/Cycle) | Sankhya Mass (kg) | Sankhya GEV     |
|--------------|---------------|--------|-------------------------------|--------------------------------|-------------------|-----------------|
| None         | Purusha       | Kx     | 9.149879388E-01               | 6.804805713E+50                | 9.149879388E-01   | 5.114623721E+26 |
| None         |               | Mp     | 6.535628134E+00               | 4.860575509E+51                | 6.535628134E+00   | 3.653302658E+27 |

|                                       |                         |                 |                 |                        |                 |                 |
|---------------------------------------|-------------------------|-----------------|-----------------|------------------------|-----------------|-----------------|
| Planck mass                           | <b>Mahad Prakrithi</b>  | <b>Mps</b>      | 2.203694454E-08 | 1.638897298E+43        | 2.203694454E-08 | 1.231826940E+19 |
| Metric Elasticity of Space            | Stress Density of Space | <b>St</b>       | 5.201318683E-16 | 3.868243677E+35        | —               | 0.000000000E+00 |
| Neutron                               |                         | <b>Pn</b>       | 1.674927646E-27 | 1.245651088E+24        | 1.674927646E-27 | 9.362554744E-01 |
| None                                  | <b>Prakrithi Saptha</b> | <b>PM</b>       | 1.674423179E-27 | 1.245275914E+24        | 1.674423179E-27 | 9.359734863E-01 |
| Proton                                |                         | <b>Pm</b>       | 1.672621512E-27 | 1.243936006E+24        | 1.672621512E-27 | 9.349663857E-01 |
| None                                  |                         | <b>Mep</b>      | 9.114058024E-31 | 6.778165207E+20        | 9.114058024E-31 | 5.094600200E-04 |
| None                                  | <b>Mahad Vikrithi</b>   | <b>Me</b>       | 9.110233722E-31 | 6.775321056E+20        | 9.110233722E-31 | 5.092462482E-04 |
| Electron                              |                         | <b>Mee</b>      | 9.109383824E-31 | 6.774688983E+20        | 9.109383824E-31 | 5.091987403E-04 |
| Planck constant h                     | <b>Vikaro</b>           | <b>7×NE</b>     | 6.670113838E-34 | 4.960593121E+17        | 6.670113838E-34 | 3.728477831E-07 |
| Planck const h <sub>s</sub> (Sankhya) |                         | <b>7×NE/b f</b> | 6.626485869E-34 | 4.928146808E+17        | 6.626485869E-34 | 3.704090554E-07 |
| Neutrino                              | <b>Vikrithi Saptha</b>  | <b>NE</b>       | 9.528734054E-35 | 7.086561602E+16        | 9.528734054E-35 | 5.326396901E-08 |
| Planck Time                           |                         | <b>Tp</b>       | 5.696886333E-44 | 4.236799527E+07        | 5.696886333E-44 | 3.184460553E-17 |
| Cosmological Constant                 | <b>Moolaprakriti</b>    | <b>Mly</b>      | 1.344620225E-51 | <b>1.000000000E+00</b> | 1.344620225E-51 | 7.516193608E-25 |

Highlighted rows (bold Sankhya State) are the four fundamental Sankhya states: Purusha (maximum coherent inertia), Prakrithi Saptha (the hadronic nuclear core — what physics approximates as the proton), Vikrithi Saptha (the neutrino / elemental leptonic quantum), and Moolaprakriti (the root unit, CPS = 1). The Neutron (Pn) and Electron (Mee) sit just outside their respective Sankhya state boundaries, explaining why they are slightly larger/smaller than the axiomatic values PM and Mee.

## Complete Constants Hierarchy

Every entry traces back to the three seed parameters **x**, **k**, and **10**, which themselves follow from the founding axiom  $1 + 1 = 2$ .

| # | Symbol | Description | Formula / Equation | Value |
|---|--------|-------------|--------------------|-------|
|---|--------|-------------|--------------------|-------|

|    |            |                                                    |                                                                                                                                                        |                                |
|----|------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1  | <b>x</b>   | Golden mean conjugate                              | $(\sqrt{(1^2+2^2)} - 1) / 2 ; \quad 1/x = 1+x$                                                                                                         | 0.618033...                    |
| 2  | <b>k</b>   | Linear increment to double volume                  | $\sqrt[3]{2}$                                                                                                                                          | 1.259921...                    |
| 3  | <b>10</b>  | Interaction counts per standard cycle              | $1+2+3+4 = n(n+1)/2, n=4$                                                                                                                              | 10                             |
| 4  | <b>Kx</b>  | <i>Purusha</i> — coherent asymptotic sum           | $(10^X / k^8) \cdot \Sigma(1/2^3)^n \cdot (2^3-1) / [\Sigma(1/2^3)^n + (2^3-1)] =$<br>$(10^{(1+x)} / 2^3)(\sqrt[3]{2} / (2^3-1))$<br>$((10^2-2)/10^2)$ | 0.91498793882                  |
| 5  | <b>KV</b>  | Ratio of first volume change                       | $1 / (k-1)^3$                                                                                                                                          | 56.94762837                    |
| 6  | <b>Px</b>  | Coherent-to-synchronous interface                  | $(10\sqrt{3} / 2\pi)^3$                                                                                                                                | 20.947986098                   |
| 7  | <b>Bt</b>  | Ratio: volumetric over geometric state             | $KV / Px$                                                                                                                                              | 2.7185252132                   |
| 8  | <b>Rs</b>  | Decay in infinite time                             | $Gm/7 = (7+1/7)/7 = 10^2/(10^2-2) = \Sigma_{n=0}^{\infty} (2/10^2)^n$                                                                                  | 1.0204081633                   |
| 9  | <b>Cs</b>  | Substratum axiomatic interaction counts per cycle  | $10^{(2/x^3)}$                                                                                                                                         | $2.965759669 \times 10^8$      |
| 10 | <b>Mly</b> | Root oscillatory state; unit fractional count      | $Kx / Cs^6$                                                                                                                                            | $1.3446202249 \times 10^{-51}$ |
| 11 | <b>Ah</b>  | <i>Purusha</i> core acceleration                   | $[(1+1)^3-1] / Mly = 7 / Mly$                                                                                                                          | $5.2059309169 \times 10^{51}$  |
| 12 | <b>Gm</b>  | Gyromagnetic volumetric coherent-to-resonant state | $[(2^3/7)-1]+7$                                                                                                                                        | 7.1428571429                   |
| 13 | <b>Gmr</b> | Simultaneous cycle / sequential cycle              | $Gm/2 = 10 \cdot 10 / \{[7-(-7)]+[7-(-7)]\}$                                                                                                           | 3.5714285714                   |
| 14 | <b>Ge</b>  | Coherent-to-expansive states                       | $[Dp/DD]^{(1/3)} \cdot [DD/Pd] = 7^2 / [Kx \cdot Rs \cdot 2 \cdot (2\pi)^2]$                                                                           | 0.66478976082                  |
| 15 | <b>Tr</b>  | Coherent-to-resonant state count over 7 volumes    | $[(2\pi)^3/2\pi] \cdot [1/7]$                                                                                                                          | 5.6397739435                   |
| 16 | <b>Tc</b>  | Sequential transmigration trigger over 2 volumes   | $[(2\pi)^3/2\pi] \cdot [1/(k-1)]$                                                                                                                      | 151.88618860                   |
| 17 | <b>Vc</b>  | Resonant volumetric compression ratio              | $1/(k-1) = 1/(2^{(1/3)}-1)$                                                                                                                            | 3.8473221019                   |
| 18 | <b>Ve</b>  | Resonant volumetric expansion ratio                | $2^3-1$                                                                                                                                                | 7                              |

|    |                       |                                                          |                                                                                           |                                |
|----|-----------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|
| 19 | <b>Tce</b>            | Volumetric compression-expansion cyclic time             | $V_c \times V_e = 7/(k-1)$                                                                | 26.931254713                   |
| 20 | <b>Ke</b>             | Incremental displacement per volumetric expansion        | $(k-1)/7$                                                                                 | $3.7131578556 \times 10^{-2}$  |
| 21 | <b>Lp</b>             | Planck Length                                            | $[(Kx/Mly)^{(1/3)}] / Ah$                                                                 | $1.6895595727 \times 10^{-35}$ |
| 22 | <b>Tp</b>             | Planck Time                                              | $Mly \cdot Cs / 7 = Lp / Cs$                                                              | $5.6968863333 \times 10^{-44}$ |
| 23 | <b>Mp</b>             | Maximum fractional interactive count                     | $Kx \cdot Gm$                                                                             | 6.5356281344                   |
| 24 | <b>Mps</b>            | Maximum coherent stress density as mass                  | $Mp / Cs$                                                                                 | $2.2036944538 \times 10^{-8}$  |
| 25 | <b>Planck Mass</b>    | Planck Mass due to hidden simultaneous-state constant Px | $Mps / [1 + (k-1)/Px]$                                                                    | $2.1766862926 \times 10^{-8}$  |
| 26 | <b>Dp</b>             | Planck Density                                           | $Mps / Lp^3 = [(Cs^{(1+x)}) \cdot k]^7$                                                   | $4.5691019728 \times 10^{96}$  |
| 27 | <b>St</b>             | Metric Elasticity of Space; stress intensity ratio       | $Mps / Tp$                                                                                | $3.8682436772 \times 10^{35}$  |
| 28 | <b>Mxe</b>            | Max energy per cycle (power)                             | $[Kx / (Mly \cdot (Rs-1))] \cdot Rs = Mps \cdot Cs^2 / Tp = St \cdot Cs^2$                | $3.4024028566 \times 10^{52}$  |
| 29 | <b>G<sub>s</sub></b>  | Gravitational Constant — definition form                 | $density_{anystate} \times T_{cyclic}^2 = 1/(Gn \cdot Fc)$                                | $1.4828798346 \times 10^{10}$  |
| 30 | <b>G<sub>s</sub></b>  | Gravitational Constant — derived form 1                  | $St / Cs^3 = (Cs^X)^2 / k^3 = Mps / (Lp^2 \times 7/Mly)$                                  | $1.4828798346 \times 10^{10}$  |
| 31 | <b>G<sub>s</sub></b>  | Gravitational Constant — derived form 2                  | $Mps/(Tp \cdot Cs^3) = Mps/(Lp \cdot Cs^2) = Mps \cdot Tp^2/Lp^3 = Dp \cdot Tp^2$         | $1.4828798346 \times 10^{10}$  |
| 32 | <b>h</b>              | Planck's Constant                                        | $Tp \cdot Tc \cdot (k-1) \cdot Cs = 7 Ne$                                                 | $6.6701138380 \times 10^{-34}$ |
| 33 | <b>h<sub>s</sub></b>  | Planck's Constant — Sankhya form                         | $Tp \cdot (Tc-1) \cdot (k-1) \cdot Cs = Mly \cdot C^2 \cdot (2\pi)^2 / 7 \times 10^{-34}$ | $6.62619863 \times 10^{-34}$   |
| 34 | <b>α<sup>-1</sup></b> | Inverse Fine-Structure Constant                          | $Cs / (Cs^X \cdot 2\pi \cdot 2) = (1/2) \cdot Cs^{(1-x)} / (2\pi+2\pi)$                   | 137.04339643                   |
| 35 | <b>Δv</b>             | Lamb shift                                               | $Gmr \cdot Cs / [1 + 1/(10^2+Si \cdot Rs)]$                                               | $1.05701926 \times 10^9$       |
| 36 | <b>k<sub>B</sub></b>  | Boltzmann's Constant                                     | $\{[(2\pi/6) + 7/(k-1)]^2\}^{-1} + 1\} \cdot 2\}^3$                                       | $1.3806580000 \times 10^{-23}$ |
| 37 | <b>Tk</b>             | Centigrade temperature scale                             | $([2^3-1]^3 + [k + k/7^2]) \times 1/k$                                                    | 273.25968858                   |

|    |                                |                                                                   |                                                                                                                                             |                                                                              |
|----|--------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 38 | <b><math>\lambda_C</math></b>  | Compton Wavelength of PM Proton state                             | $(k-1)^2 / Cs^{(1+x)}$                                                                                                                      | $1.3227536624 \times 10^{-15}$                                               |
| 39 | <b>Si</b>                      | Impedance to stress transmigration in space                       | $[10^2/(k-1)] \cdot [(10^2-2)/10^2] = [10^2/(k-1)] \cdot [1/Rs]$                                                                            | 377.03756598                                                                 |
| 40 | <b>Cc</b>                      | Cs compressive phase due to Si                                    | $Cs \cdot Si$                                                                                                                               | $1.1182028070 \times 10^{11}$                                                |
| 41 | <b>Ce</b>                      | Cs expansive phase due to Si                                      | $Cs / Si$                                                                                                                                   | $7.8659527241 \times 10^5$                                                   |
| 42 | <b><math>\epsilon_0</math></b> | Electric Field Permittivity of Free Space                         | $(1/Cc) \cdot (1/Fc) = (1/Cc) \cdot (Cs/C_{earth})$                                                                                         | $8.8469724203 \times 10^{-12}$                                               |
| 43 | <b><math>\mu_0</math></b>      | Permeability of Free Space                                        | $(1/Ce) \cdot (1/Fc) = (1/Ce) \cdot (Cs/C_{earth})$                                                                                         | $1.2576619439 \times 10^{-6}$                                                |
| 44 | <b>Crs</b>                     | Change ratios: compressive, resonant, and expansive states        | $[10/KV] \cdot [\sqrt{(2^3/(1-2/\sqrt{5}))}] \cdot [k^7]$                                                                                   | 7.7036516434                                                                 |
| 45 | <b>Rp</b>                      | PM radial boundary                                                | $(k-1) / c^{(1+x)}$                                                                                                                         | $5.0890594006 \times 10^{-15}$                                               |
| 46 | <b>MU</b>                      | Mass of the Universe                                              | $[Rp/Lp]^3 \cdot [Mps/Crs]$                                                                                                                 | $7.8171199318 \times 10^{52}$                                                |
| 47 | <b>RU</b>                      | Radial count of space                                             | $[Rp^3/Lp^2] \cdot Crs$                                                                                                                     | $5.9933233779 \times 10^{25}$                                                |
| 48 | <b>DD</b>                      | Critical volumetric density of interactive stresses in space      | $[Rp/Rp^3] \cdot [(Mps/RU) \cdot Crs] = MU/RU^3$                                                                                            | $3.6311154546 \times 10^{-25}$                                               |
| 49 | <b>DD</b>                      | Transmigrating density of interactions in space (alt. derivation) | $[\log(Cs)+1] / Cs^3$                                                                                                                       | $3.6311154546 \times 10^{-25}$                                               |
| 50 | <b>TT</b>                      | Time cycle of space                                               | $\sqrt{(Gs/DD)} = RU/Cs$                                                                                                                    | $2.0208391935 \times 10^{17} \text{ s}$<br>( $6.40 \times 10^9 \text{ yr}$ ) |
| 51 | <b>ec</b>                      | Electric Charge                                                   | $Fc \cdot [1/(2\pi \cdot 10^{18})] = Fc \cdot [PM \cdot Px/(Mps \cdot 10)] = Fc \cdot [1/(Cs^2 \cdot Gm)] = 1/(Gs \cdot Cs \cdot \sqrt{2})$ | $1.6088104559 \times 10^{-19}$                                               |
| 52 | <b>St</b>                      | Space stress intensity ratio = metric elasticity of space         | $G_s \cdot Cs^3$                                                                                                                            | $3.8682436772 \times 10^{35}$                                                |
| 53 | <b>St</b>                      | Maximum sequential mass to maximum expansion time                 | $MU / TT$                                                                                                                                   | $3.8682436772 \times 10^{35}$                                                |
| 54 | <b>St</b>                      | Energy equivalent of 7 volumes of hidden dark mass                | $(Mps / (PM \cdot Px)) \cdot Cs^2 \cdot 7$                                                                                                  | $3.8682436772 \times 10^{35}$                                                |



## References

---

All characterisations of modern physics reflect G. Srinivasan's own published analyses.

1. G. Srinivasan, Complete published Sankhya analyses: <https://kapillavastu.in>.
2. G. Srinivasan, *Secret of Sankhya: Acme of Scientific Unification*, Part I (SoS1).
3. G. Srinivasan, *Secret of Sankhya: Acme of Scientific Unification*, Part II (SoS2).
4. G. Srinivasan, *The Relevance of Einstein's Concepts to Sankhya Logic* (SANKEINSTEIN1).
5. G. Srinivasan, *Overview of Sankhya Theory with Axiomatic Mathematical Proof* (SANKHYAABSTRACT).
6. G. Srinivasan, *Perpetual Harmonic Oscillatory State* (PHOSTATE).
7. G. Srinivasan, *PHO Oscillator* (PHOscillator).
8. G. Srinivasan, *PHO Genetics*.
9. G. Srinivasan, *SIDDHI*.
10. Science of Freedom: <https://grow.scienceoffreedom.life/pages/start-with-the-answer>

r