

The Mantra of the Plenum: A Comparative Study of Superfluid Vacuum Mechanics and the Yāska-Etymological Vision of the *Āpo Jyotī* Mantra

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Abstract

This paper presents a comparative analysis between a modern superfluid vacuum theory of celestial mechanics—recently articulated in the *Vedic Science* journal (Vol 27, Issue 4)—and the ancient cosmological vision encoded in the Vedic mantra *om āpo jyotī raso'mṛtaṁ brahma bhūrbhuvah svarom*. Utilising the *Nirukta* methodology of Yāska, which derives meaning through verbal roots and semantic elucidation, the paper demonstrates that the mantra constitutes a precise ontological map of a fluid, self-luminous, and hierarchically layered cosmos. The analysis reveals direct parallels: *āpaḥ* (water/the fluid principle) corresponds to the quantum medium's cohesive property giving rise to inertia; *rasaḥ* (essence) mirrors the concept of effective mass; and the three worlds (*bhūr, bhuvah, svah*) align with the density gradients and time-dilation layers of the plenum. The paper concludes that the mantra provides a symbolic-experiential counterpart to the mathematical-physical model, and that both describe a unified, non-void, and self-sustaining universe.

Key Words

Celestial mechanics; Superfluid Vacuum Theory; Āpo Jyotī Mantra; Yāska-Nirukta; Etymology; Vedic Cosmology; Plenum; Quantum Foam; Cohesion/Adhesion; Inertia/Gravity; Comparative Ontology

1. Introduction

In its October-December 2025 issue, the Vedic Science journal published a paper of remarkable audacity. Entitled “Gravity and Inertia in the Celestial Plenum: A Re-evaluation of Solar System Mechanics via Quantum Foam and Planetary Gearing” by Satinder S. Malik, the article challenges the foundational premise of modern physics: the Newtonian void. The paper argues that the vacuum of space is not an empty stage but a dense, superfluid medium—a Quantum Plenum—within which gravitational and inertial phenomena emerge as fluid-dynamic properties. In this model, gravity is not an action-at-a-distance but an adhesive force; inertia is not an intrinsic property but a cohesive pressure of the medium.

Simultaneously, the Vedic textual tradition offers a cryptic yet profound counterpoint to the materialist void. Among the most evocative of the Vedic mantras is the *Āpo Jyotī* mantra, found in the Taittirīya Aranyaka (10.27), often recited during *prāṇāyāma*:

ॐ आपो ज्योती रसोऽमृतं ब्रह्म भूर्भुवः स्वरोम् ॥

Oṃ āpo jyotī raso'mṛtaṃ brahma bhūrbhuvah svarom

This mantra is traditionally understood as a meditation on the five elements and the three worlds, culminating in the realisation of Brahman. However, when read through the lens of Yāska's etymological methodology, it reveals itself not merely as prayer but as a precise cosmological equation—a description of a universe that is fluid, luminous, essential, deathless, and hierarchically structured.

This paper proposes a comparative analysis between these two frameworks. It argues that the *Āpo Jyotī* mantra encodes a complete symbolic map of the very plenum that the modern physics paper describes mathematically. By applying Yāska's Nirukta principles, we will decode the mantra's terms and demonstrate their structural, functional, and ontological correspondence with the superfluid vacuum model. The paper does not claim that the Vedic sages anticipated modern quantum mechanics, but rather that both traditions—ancient and contemporary—converge on a coherent vision: a cosmos that is living, fluid, and self-organising, in stark contrast to the dead void of classical mechanics.

2. Methodology: The *Nirukta* Lens

The analytical framework for this paper is drawn from Yāska's *Nirukta*, the foundational text of Indian etymology. Yāska's methodology rests on three pillars:

1. Root-Based Derivation (*Dhātu-Vāda*). Yāska posits that all nouns are derived from verbal roots (*dhātu-s*), and that the meaning of a word is uncovered by tracing it to its root-action. As he states: “*All names are derived from actions*” (*Nirukta* 1.1).

2. The Evident vs. Cryptic (*Pratyakṣa* vs. *Parokṣa*). Yāska distinguishes between names whose meaning is self-evident (*pratyakṣa*) and those whose meaning is hidden (*parokṣa*) and requires etymological investigation. The *Āpo Jyotī* mantra falls decisively into the latter category, requiring excavation.

3. Phonetic Connection (*Śabda-Sāmānya*). Yāska explicitly notes that words

connected by similarity of sound are often connected in meaning (*Nirukta* 2.1). This principle allows the establishment of semantic bridges between phonetically related terms, which is crucial for interpreting the dense, poetic language of the Vedic *mantras*.

By applying these principles, we will perform a systematic exegesis of the mantra's eight components, pairing each with its corresponding concept in the superfluid vacuum paper.

3. Synopsis of the Celestial Plenum Model

The *Celestial Plenum* paper rejects the Newtonian vacuum—a space of emptiness filled with isolated masses acting via instantaneous forces—and replaces it with a universe filled with a Superfluid Vacuum (SVT), described as a Bose-Einstein Condensate (BEC). In this fluid paradigm:

1. **Inertia is Cohesion.** Inertia is not an intrinsic property of matter but the cohesive pressure of the quantum foam pushing matter together. The paper explicitly analogises this to surface tension forming a water droplet.
2. **Gravity is Adhesion.** Gravity is the “stickiness” or adhesive force between a planetary body and the quantum medium—its resistance to crossing the medium's streamlines.
3. **Orbits are Laminar Flows.** Planetary motion follows lines of equal pressure in the fluid (isobars), akin to a leaf caught in a whirlpool eddy.
4. **The Solar Gear System.** The paper extends this fluid model to celestial mechanics, proposing that the Solar System functions as a hydrodynamic gear train. The Sun is driven by the shear of the Milky Way's galactic arm, and **Venus's retrograde rotation** is explained as an *idler gear*—a counter-rotating interface that stabilises the shear between the counter-clockwise Sun and the counter-clockwise Earth-Jupiter system.

Time as Refraction. Time dilation is reinterpreted as a refractive index effect: physical processes slow down in denser quantum foam, analogous to light slowing in water.

Vaiśeṣika Foundations. The paper explicitly cites Kaṇāda's *Vaiśeṣika Sūtras* (c. 6th–2nd century BCE), particularly the concepts of *Gurutva* (heaviness) and *Sanskāra* (inertial momentum) as interactions with a medium, thus grounding its radical thesis in an ancient philosophical tradition.

4. Yāska-Etymological Exegesis of the *Āpo Jyotī* Mantra

Applying Yāska's methodology to the mantra reveals the following semantic strata:

4.1. Om (ॐ)

- **Root:** *av* (to protect) or *aṇ* (to sound/resound).
- **Yāska Interpretation:** *Om* is the primordial, self-existent vibration.

It is the sonic equivalent of the unified field—the frequency from which all manifest reality emerges. It is both the beginning and the end, framing the entire mantra.

4.2. Āpaḥ (आपः – Water)

- **Root:** āp (to pervade, to reach).
- **Yāska Interpretation:** Āpaḥ is not merely physical water but the principle of pervasiveness and cohesion. It is the first element, the binding medium that allows matter to cohere and forms to stabilise.

4.3. Jyotiḥ (ज्योतिः – Light/Luminosity)

- **Root:** dyut (to shine, to illuminate).
- **Yāska Interpretation:** Jyotiḥ is the illuminating power of the cosmos. It is the radiant energy that emerges from the fluid medium, making cognition and manifestation possible.

4.4. Rasaḥ (रसः – Essence/Flavour)

- **Root:** ras (to taste, to have flavour).
- **Yāska Interpretation:** Rasaḥ is the subtle, identity-giving principle. It is the “sap” that gives each entity its unique quality and value. The *Taittirīya Upaniṣad* (2.7) declares: “*Raso vai saḥ*”—He (Brahman) is indeed Rasa, the essential flavour of all existence.

4.5. Amṛtam (अमृतम् – Immortality)

- **Root:** mṛ (to die) + *a-* (negative prefix).
- **Yāska Interpretation:** Amṛtam is the eternal. It is the unchanging substrate beneath the flux of phenomena, the non-decaying ground of reality.

4.6. Brahma (ब्रह्म – The Supreme Reality)

- **Root:** br̥h (to expand, to be great).
- **Yāska Interpretation:** Brahma is the expansive totality—the unified consciousness-energy that pervades and transcends all manifest planes. It is the ultimate source and container of all the preceding principles.

4.7. Bhūr, Bhuvaḥ, Svaḥ (भूर्भुवः स्वः – The Three Worlds)

- **Roots:** bhū (to become/exist) for bhūḥ; bhū + va (to move) for bhuvaḥ; su (to shine) for svaḥ.
- **Yāska Interpretation:** These are the three density layers of manifest existence: the physical plane (bhūḥ), the vital/atmospheric plane (bhuvaḥ), and the celestial/luminous plane (svaḥ). They represent a hierarchy of refinement, from gross matter to subtle light.

4.8. Om (ॐ – Closing)

- **Root:** av (to protect).
- **Yāska Interpretation:** The closing *Om* signifies the return of all diversity to its unified source, completing the cyclical cosmogonic process.

5. Comparative Analysis: The Mantra as the Map of the Plenum

This section systematically pairs each term from the mantra with its corresponding physical principle in the *Celestial Plenum* paper.

5.1. Āpaḥ and Cohesion: The Primordial Fluid

The paper asserts that *“inertia is the cohesive pressure of the Quantum Foam pushing matter together to minimise surface area.”* In the Vedic framework, *Āpaḥ* is precisely this cohesive principle. It is the universal solvent, the “first creation” that pervades and binds all things. Where the paper describes a physical “stickiness” that gives objects their resistance to change in motion, the mantra names this same principle *Āpaḥ*. The paper’s analogy of a water droplet held together by surface tension is not merely a metaphor; it is a description of the ontological function of *Āpaḥ* itself.

5.2. Jyotiḥ and the Luminous Medium

The paper treats light as a wave phenomenon propagating through the quantum substrate, noting that *“the ‘curvature’ of light near the Sun is a refraction event as the photon wavefront enters the denser fluid layer.”* *Jyotiḥ* in the mantra is the inherent luminosity of the cosmos, the radiant principle that makes manifestation perceivable. The paper’s model of light as emergent from and conditioned by the quantum foam mirrors the mantra’s placement of *jyotiḥ* immediately after *āpaḥ*: light is not independent of the fluid; it is a property and function of it.

5.3. Rasaḥ and Effective Mass

The paper introduces the concept of Effective Mass (m^*)—a principle borrowed from condensed matter physics, where an electron moving through a crystal lattice distorts the lattice, dragging a cloud of phonons with it, thus behaving as if it were heavier. Applied to celestial bodies, the paper argues that planets drag a volume of quantum foam with them, and their mass is a dynamic property of this interaction. *Rasaḥ* is the unique essence that defines the qualitative identity of each entity. In the same way that effective mass gives a celestial body its specific gravitational signature and orbital behaviour, *rasaḥ* gives an entity its unique “flavour” in the cosmic order. The paper’s assertion that an object’s inertial response is determined by its entanglement with the medium finds its symbolic correlate in *rasaḥ*.

5.4. Bhūr, Bhuvaḥ, Svaḥ and the Density Layers of Time

The paper’s most striking relativistic claim is that time is a function of local fluid density, acting as a refractive index. It argues that *“a few seconds near the galactic center equates to hundreds of years in the rarefied foam of the outer spiral arms”* and that *“inner planets move through high-density quantum foam... outer planets float in the rarer, lower-density medium.”* This creates a layered cosmos where each layer possesses a different “temporal tempo.” The mantra’s three worlds—*bhūr* (physical), *bhuvaḥ* (atmospheric), and *svaḥ* (celestial)—are precisely these density gradients. Moving from *bhūr* to *svaḥ* is a movement from gross, high-density existence to subtle, low-density luminosity, which in the paper’s framework would correspond to an acceleration of time and a reduction of gravitational drag. The mantra thus provides a vertical, qualitative map of the paper’s horizontal, quantitative density gradient.

5.5. Om and the Harmonic Gear Ratio

The paper proposes that the Solar System functions as a hydrodynamic gear train, where stable orbits correspond to “*resonant orbits where waves in the medium interfere constructively*” and planets occupy “*specific integer harmonics of the vacuum density function*.” *Om* is the primordial vibration, the foundational frequency from which all other frequencies arise. In the mantra, *Om* frames the entire sequence of manifestation, acting as the source (first *Om*) and the culmination (final *Om*). This parallels the paper’s solar gear system, where the galactic shear provides the initial impetus and the resonant orbits provide the stable, harmonic structure. The chant of *Om*, with its three *mātrās* (A-U-M), provides the time-keeping rhythm that sustains the cosmic order (*ṛta*), just as the harmonic ratios of planetary orbits sustain the integrity of the solar vortex.

5.6. Amṛtam and the Non-Dissipative Vacuum

The paper’s superfluid vacuum is frictionless and non-dissipative. It is a perpetual engine, immune to entropy. This aligns directly with *Amṛtam*, the eternity principle. The paper’s universe does not wind down; it is a cyclic, self-sustaining vortex. The mantra names this perpetual quality *Amṛtam*, affirming that the plenum is not subject to decay.

5.7. Brahma and the Unified Field

Finally, the paper concludes that “*gravity and inertia are emergent properties of Adhesion and Cohesion within the superfluid medium*.” This implies a unified field from which all forces emerge. The mantra’s *Brahma* is exactly this: the expansive, all-inclusive reality that is the source and substrate of the fluid, the light, the essence, the deathless nature, and the layered worlds. The paper’s unified field is a physical description; *Brahma* is its conscious, experiential name.

6. Synthesis: Two Languages, One Reality

The comparative analysis reveals that the *Celestial Plenum* paper and the *Āpo Jyoti* mantra are not engaged in separate projects. They are describing the same cosmos from different epistemological poles. The paper provides a **mathematical-physical description**—fluid dynamics, density functions, gear ratios, and refractive indices. The mantra provides a **symbolic-experiential description**—sound, breath, ritual, and meditation—a living map meant to be internalised.

The paper’s claim that there is no void is the physical correlate of the mantra’s assertion that “all this is Brahman.” The paper’s adhesion and cohesion are the functional principles of *Āpaḥ*. The paper’s effective mass and time dilation are the experiential realities of *Rasaḥ* and the hierarchical three worlds. The paper’s harmonic gear train is the cosmic rhythm of *Om*. The paper’s perpetual engine is the *Amṛtam*.

Thus, the Vedic mantra emerges not as a primitive fiction but as a sophisticated phenomenological ontology. It encodes the structure of reality in its phonemes, just as the paper encodes it in its equations. When the practitioner chants the mantra, they are not merely reciting words but resonating with the fundamental frequencies of the

quantum plenum.

7. Conclusion

The “*Gravity and Inertia in the Celestial Plenum*” paper offers a radical, compelling, and internally consistent model of the universe as a fluid, self-organising superfluid. It revitalises the ancient concept of the plenum and aligns it with cutting-edge physics. However, it remains a physical model. The *Āpo Jyotī* mantra, when decoded through Yāska’s *Nirukta*, reveals itself as the complementary symbolic map—a map that includes the observer, the breath, and consciousness within its equations.

This paper has demonstrated seven key parallels: the fluid principle (*Āpaḥ* / Cohesion), the luminous principle (*Jyotiḥ* / Light propagation), the essential identity (*Rasaḥ* / Effective Mass), the eternal substrate (*Amṛtam* / Non-dissipative vacuum), the unified source (*Brahma* / Unified Field), the hierarchical layers (*Bhūr, Bhuvah, Svah* / Density gradients), and the cosmic rhythm (*Om* / Harmonic gear ratio).

We conclude that the ancient and the modern, the experiential and the mathematical, converge on a single, unified vision: a cosmos that is alive, fluid, self-luminous, and eternal—a cosmos that is, in the final analysis, *plenum*, never void.

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