

# DOCUMENT 47 – EXECUTIVE SUMMARY OF THE THEOREM OF ARITHMETIC STABILITY OF THE UNIVERSE (EN\_46)

**Author:** Víctor Estrada Díaz  
**ORCID:** [0000-0001-9942-1021](https://orcid.org/0000-0001-9942-1021)  
**Fundamental constant:**  $\tilde{n}$  (discovered and named by the author)  
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**Framework:** Einstein-VED · UNIHOLOG (Holographic Logic)  
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## 1. Purpose of document EN\_46

Document EN\_46 presents the complete and rigorous proof that:

1. The differential geometry of the universe is defined by the factorised Lorentz–Einstein metric:  $ds^2 = dt^2 - dt'^2$
2. The stability of matter (confined wave) requires that the number of cycles  $n$  be an integer.
3. The Bernstein eigenvalues in Schwarzschild space,  $\beta_n$ , are related to the stability radii  $R_n$  through the universal constant  $\tilde{n}$ :  $\tilde{n} = R_n \cdot \beta_n$

4. The transfer function of the universe, obtained by the Laplace transform, has its zeros at:  $s = \beta_n = \frac{2\pi\tilde{n}}{n\lambda_c}$
5. All these zeros lie on the critical line  $\text{Re}(s) = 1 / 2$ , thus proving the **Riemann hypothesis** as a theorem derived from the geometry of the universe.
6. Reality is arithmetic, and arithmetic is Riemannian.
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2. Fundamental results

| Concept               | Mathematical expression                                                           | Physical meaning                            |
|-----------------------|-----------------------------------------------------------------------------------|---------------------------------------------|
| Universal metric      | $ds^2 = dt^2 - dt'^2$                                                             | Total differential geometry of spacetime    |
| Stability radius      | $R_n = \frac{n\lambda_c}{2\pi}$                                                   | Wave confinement for integer <span>n</span> |
| Coupling constant     | $\tilde{n} = R_n \cdot \beta_n$                                                   | Link between the two geometric projections  |
| Bernstein eigenvalues | $\beta_n = \frac{2\pi\tilde{n}}{n\lambda_c}$                                      | Discrete spectrum of the black hole         |
| Wave equation         | $\psi'' + \frac{1}{r}\psi' + (\frac{\tilde{n}^2}{r^2} - \frac{1}{R_n^2})\psi = 0$ | Stationary confined modes                   |
| Laplace zeros         | $s = \frac{2\pi\tilde{n}}{n\lambda_c}$                                            | Vanishing of the transfer function          |

| Concept               | Mathematical expression      | Physical meaning                |
|-----------------------|------------------------------|---------------------------------|
| Riemann critical line | $\text{Re}(s) = \frac{1}{2}$ | Proof of the Riemann hypothesis |

### 3. Theorem 5 (summary version)

**Theorem on zeros and arithmetic stability:**

The transfer function of the universe has its zeros exactly at:  
 $s = \frac{2\pi i n}{n\lambda_c}, \quad n \in \mathbb{N}$  These zeros coincide with the Bernstein eigenvalues and are in bijection with the integers  $n$  that give stability to matter.  
All of them lie on the line  $\text{Re}(s) = 1/2$ , thus proving the Riemann hypothesis.

### 4. Implications for physics and mathematics

| Field                 | Implication                                                                         |
|-----------------------|-------------------------------------------------------------------------------------|
| Differential geometry | The metric $ds^2 = dt^2 - dt'^2$ is the fundamental structure of the universe.      |
| Quantum mechanics     | The stability of matter is deterministic and arithmetic, not probabilistic.         |
| Relativity            | The Lorentz–Einstein factorisation unifies space and time in a light-cone geometry. |

| Field         | Implication                                                                        |
|---------------|------------------------------------------------------------------------------------|
| Gravity       | The Bernstein eigenvalues connect visible matter with black holes.                 |
| Number theory | The Riemann hypothesis is proved as a consequence of the geometry of the universe. |
| Cosmology     | Reality is a holographic projection of arithmetic zeros.                           |

## 5. Executive conclusion

The universe is a self-regulating system whose differential geometry is:

$$ds^2 = dt^2 - dt'^2$$

The stability of matter requires that waves close their phase in an integer number of cycles (  $\tilde{n}$  ). This generates a spectrum of zeros in the transfer function of the universe that coincides with the Bernstein eigenvalues and with the Riemann critical line.

**The Riemann hypothesis is true because the universe demands it.**  
**Reality is arithmetic.**

## 6. On the constant $\tilde{n}$

The constant  $\tilde{n}$  (discovered and named by Víctor Estrada Díaz) is the universal factor that relates the stability radii of matter to the eigenvalues of the black hole:

$$\tilde{n} = R_n \cdot \beta_n$$

Its existence and value are determined by the differential geometry of the universe, with no free parameters or empirical adjustments.

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## 7. Reference to the full document

This executive summary corresponds to **Document 46 – Revision 2 of the Theorem of Arithmetic Stability of the Universe**, where the complete, step-by-step demonstration can be found, including:

- Derivation of the metric
- Stability condition
- Definition and properties of  $\tilde{n}$
- Bernstein eigenvalues
- Differential wave equation
- Laplace-transform proof
- Connection with the Riemann hypothesis
- Author’s reflections

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## 8. Note for censors and reviewers

This executive summary (EN\_47) synthesises the results of the full document (EN\_46) in order to facilitate a quick, structured first evaluation.

However, for a thorough review and verification of the proofs, the reader is referred to document EN\_46, where all equations, boundary conditions and logical steps are developed in a self-contained manner.

This summary does not replace the full document, but serves as a navigation guide to the essential aspects of the theorem.

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**End of executive summary (EN\_47)**

**Author:** Víctor Estrada Díaz

**ORCID:** 0000-0001-9942-1021

**Framework:** UNIHOLOG