

OFFICIAL CALL FOR EXPERIMENTAL COLLABORATION

Project: The Prime Synchronization Theorem

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GitHub: <https://github.com/icobug/prime-synchronization-theorem>

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1. OBJECTIVE

Following the successful mathematical derivation and numerical simulation of the "**Goldbach Bridge**," the project is now entering the phase of **physical verification**. I am seeking collaboration with researchers, engineers, and laboratories to conduct a physical experiment that validates the predicted synchronization thresholds (κ_c) in a real-world environment.

2. PROPOSED EXPERIMENTAL PATHS

The theorem is designed to be platform-independent and can be verified using various physical systems:

- ELECTRONIC IMPLEMENTATION (Cost-Effective & Precise):

Utilizing a network of coupled RC/LC oscillators. This approach allows for high-precision measurement of the order parameter (r) and the spectral gap effects. Ideal for Electronics and Physics departments.

- CHEMICAL IMPLEMENTATION (Visual & Educational):

Utilizing the Belousov-Zhabotinsky (BZ) reaction. By setting reaction periods proportional to the logarithms of prime numbers, the "Goldbach Bridge" can be visualized through color synchronization. Excellent for Physical Chemistry labs.

- PHOTONIC / QUANTUM SYSTEMS:

For advanced research centers, using laser oscillators or quantum circuits to test the scaling law at larger N values where the "Scaling Barrier" becomes significant.

3. WHAT I PROVIDE

- Mathematical Framework:** Rigorous derivation of the critical coupling formula based on Spectral Graph Theory.
- Technical Parameters:** Calculated spectral values ($\lambda_2, \lambda_{\max}$) for $N=30, 100, 500$.
- Topological Maps:** Exact Goldbach-based coupling matrices for the oscillator networks.
- Open Partnership:** Co-authorship in subsequent scientific publications and full technical support during the experimental setup.

4. TARGET PARTNERS

- **University Professors & Researchers:** Looking for a high-impact, interdisciplinary topic for thesis work or grant-funded research.
 - **Science Educators:** Interested in a world-first demonstration of Number Theory in physical matter.
 - **Independent Labs:** Capable of building small-scale oscillator networks ($N \geq 30$).
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"Mathematics predicts the order; Physics manifests it."

Hristo Nedelchev

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