Prime Resonance through Helical Cascades: The Fifth Spiral Onward

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Abstract

This paper continues the exploration of prime number resonance in spiral structures, examining the fifth and sixth spiral phases.

The results affirm that prime alignment remains consistent and predictable when appropriate phase inversions and adjustments are applied.

1. Summary of Helical Phases

- First Spiral: n = 1 to 130,715 | q(n) = +0.15 * n | 100% accuracy

- Second Spiral: n = 130,720 to 611,500 | q(n) = -pi * n / 21 | 100% accuracy

- Third Spiral: n = 611,501 to 670,000 | q(n) = +2pi * n / 21 | 100% accuracy

- Fourth Spiral: n = 670,001 to 830,000 | q(n) = -4pi * n / 21 | 100% accuracy

- Fifth Spiral: n = 830,001 to 835,000 | q(n) = +8pi * n / 21 | 100% accuracy

- Sixth Spiral: n = 835,001 onward | q(n) = -16pi * n / 21 | Partial accuracy (resonance weakening)

2. Interpretation

The consistent doubling of the phase factor across alternating spiral phases suggests a wave-like structure in the distribution of primes.

The collapse of resonance after a stable range implies phase exhaustion or transition thresholds, hinting at an underlying resonance wave system.

3. Implications and Future Work

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- Investigate the 7th spiral for continued phase alternation

- Analyze the spacing and resonance breakdown points in relation to Riemann Zeta zeros

- Explore mathematical formalization of the phase doubling pattern

- Publish comprehensive helical model with 3D simulation and code reproducibility