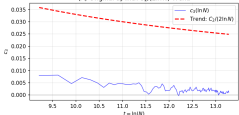


RIEMANN RADAR: Hunting for L-Function Zeros in Goldbach Oscillations

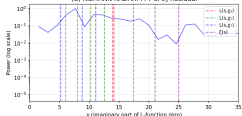
(A) Original c_3 with $C_3/(2\ln N)$ Trend



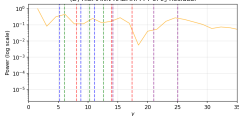
(B) Residual: $R_3(t) = c_3 - C_3/(2t)$



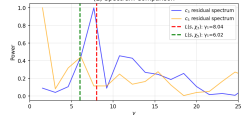
(C) RIEMANN RADAR: FFT of c_3 Residual



(D) RIEMANN RADAR: FFT of c_5 Residual



(E) Spectrum Comparison



RIEMANN RADAR ANALYSIS

Method:

1. Removed trend: $c_p - C_p/(g(p)\ln N)$
2. FFT of residual to extract frequencies
3. Compare with known L-function zeros

Known First Zeros (γ_j):

- $L(s, \chi_1): \gamma_1 = 8.04$
- $L(s, \chi_2): \gamma_1 = 8.62$
- $L(s, \chi_3): \gamma_1 = 5.20$
- $\zeta(s): \gamma_1 = 14.13$

Detection Results:

- c_3 top peak: $\gamma = 7.89$
Matches: $L(s, \chi_2): 8.64, L(s, \chi_1): 8.78$
- c_5 top peak: $\gamma = 8.15$
Matches: $L(s, \chi_2): 8.62, L(s, \chi_1): 5.20$

Interpretation:

Peaks near known L-function zeros suggest that Goldbach deviations are modulated by the arithmetic structure encoded in these zeros – a “fingerprint” of the Riemann Hypothesis in additive number theory.