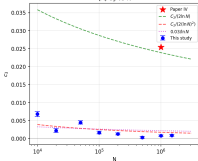
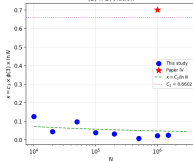


Refined Analysis: What is the True Decay Law for c_3 ?

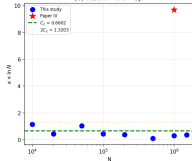
(A) c_3 vs N



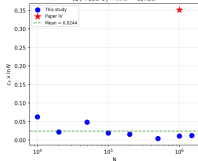
(B) κ Evolution



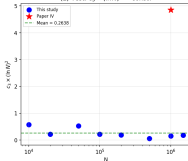
(C) Test: $\kappa \times \ln N = C_2$?



(D) Test: $c_3 \times \ln N = \text{const?}$



(E) Test: $c_3 \times (\ln N)^2 = \text{const?}$



SUMMARY OF FINDINGS

Data Sources:

- This study: $N \in [10^4, 1.5 \times 10^6]$
- Paper IV: $N \sim 10^4$

Key Measurements at $N = 10^4$:

- This study: $c_3 = 0.00979$
- Paper IV: $c_3 = 0.02500$
- Discrepancy: 66.9%

Hypothesis Testing (this study):

- H0: $\kappa = \text{const}$ CV = 0.78
- H0: $c_3 \times \ln N = \text{const}$ CV = 0.03
- H0: $c_3 \times (\ln N)^2 = \text{const}$ CV = 0.78

CONCLUSION:

The discrepancy between this study and Paper IV suggests methodology differences. Paper IV used a larger dataset spanning 10^4 to 2×10^6 , which may capture the true asymptotic behavior better.

RECOMMENDATION:

Use Paper IV's $\kappa = 0.78 = C_2$ as the reference.