Parameter Optimization Report: Emergent Gravity from Quantum Collapse

# Final Optimized Configuration

Best parameters found:  
 collapse\_rate: 0.1660  
 collapse\_sigma: 0.1700  
 collapse\_amplitude: 0.9179  
 continuous\_noise\_amplitude: 0.0077  
 density\_decay: 0.9653  
 relativistic\_factor: 0.0040  
Estimated noise exponent (slope): -4.998  
Fitness: -0.0015

# Optimization Process Summary

The evolutionary optimization was performed over multiple iterations with progressive refinement of parameter ranges. The fitness function was defined as -|slope + 5|, targeting a noise exponent of -5 as the ideal signature of emergent gravity. The final best configuration indicates an average noise exponent that is within [describe range here, e.g., -3.1 to -4.0] from the target. This suggests that while the current model produces a suppression of small-scale fluctuations, further refinement (and higher resolution simulations) may be required to fully achieve the predicted behavior. Nevertheless, the results are promising and justify further investigation.

# Resource Assessment and Next Steps

Based on available system resources, the simulation progressively increased resolution and duration. If sufficient memory and CPU availability are not present, the script informs the user and estimates the required run time. Future work should include higher-resolution simulations, control experiments, and comparisons with experimental data from precision gravity tests.