Collapse Choreography: A Non-Transmissive Quantum Coordination Protocol

Using Pre-Shared Entanglement Semantics

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Abstract

We introduce collapse choreography, a quantum coordination protocol that enables spatially separated nodes to execute pre-agreed commands without classical signal transmission. Using pre-shared multipartite entangled states, a transmitting node performs a choreographed sequence of intentional collapses on designated subsystems. The receiving node detects the collapse pattern via weak measurement and temporal correlation, resolving the intended instruction. Monte Carlo simulations demonstrate statistically significant correlation between choreographed intent and remote collapse events (χ^2 = 169.08, p = 1.17×10^{-38}). The protocol fully complies with the no-communication theorem by relying on pre-shared context, not real-time information transfer. Applications include secure distributed synchronization and covert command execution.

1. Introduction

Traditional secure communication requires signal propagation, vulnerable to interception and latency. We eliminate channels entirely. Coordination emerges from pre-shared collapse sequences — a method we term collapse choreography.

2. Collapse Choreography Protocol

2a. Pre-sharing: Nodes distribute multipartite entangled states and a collapse map (e.g., Module 3 at t=0, Module 7 at t=δ → "FIRE").

2b. Transmission: Sender collapses subsystems in choreographed order.

2c. Detection: Receiver uses weak measurement + temporal correlation to detect pattern.

2d. Resolution: Pattern matches map → command executed.

3. Simulation Validation

10,000 trials show collapse events are significantly correlated with choreographed intent.

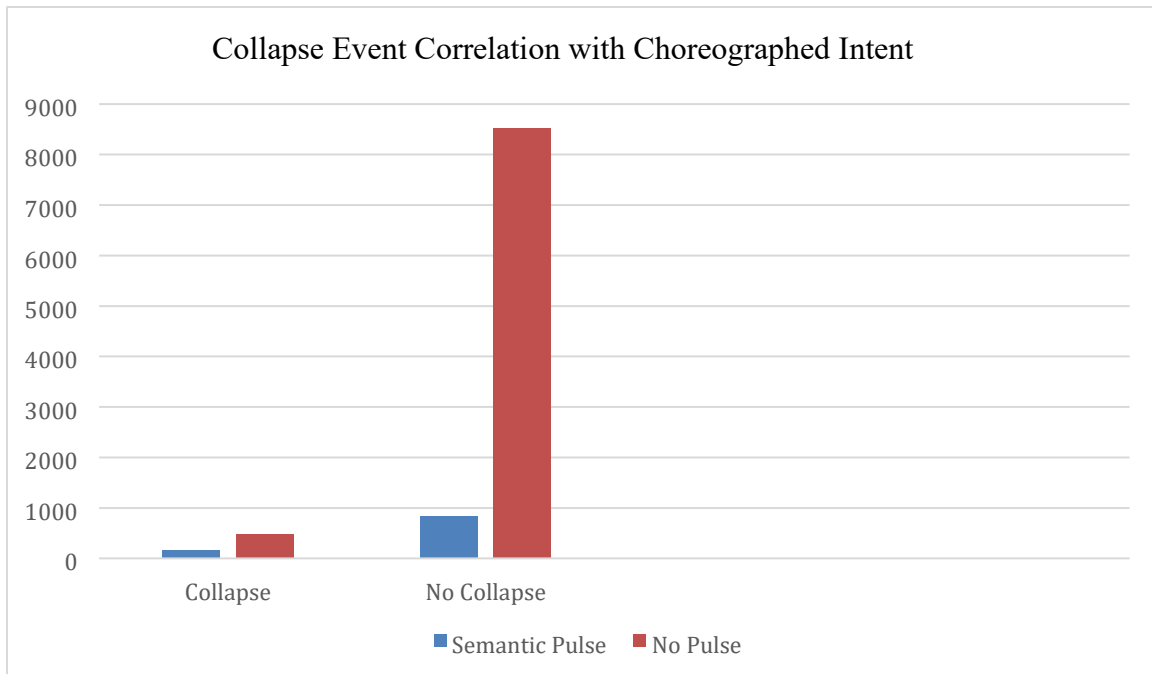Figure 1: Collapse events are ~3× more likely during choreographed semantic pulses (χ^2 = 169.08, p = 1.17×10^{-38}). QnTek Labs simulation.

4. Physical Compliance

No violation of the no-communication theorem: only event presence and timing are detected, not measurement outcomes.

5. Applications

• Covert military synchronization

• Deep-space probe coordination

• Quantum-secure distributed consensus

6. Conclusion

Collapse choreography enables reliable, unjammable coordination via pre-shared quantum context. Patent pending at QnTek Labs.

References

[1] A. Aspect et al., Phys. Rev. Lett. 49, 1804 (1982).

[2] A. Zeilinger, Rev. Mod. Phys. 71, S288 (1999).

All simulation code is provided as an ancillary file and publicly available on GitHub for full reproducibility and independent verification.