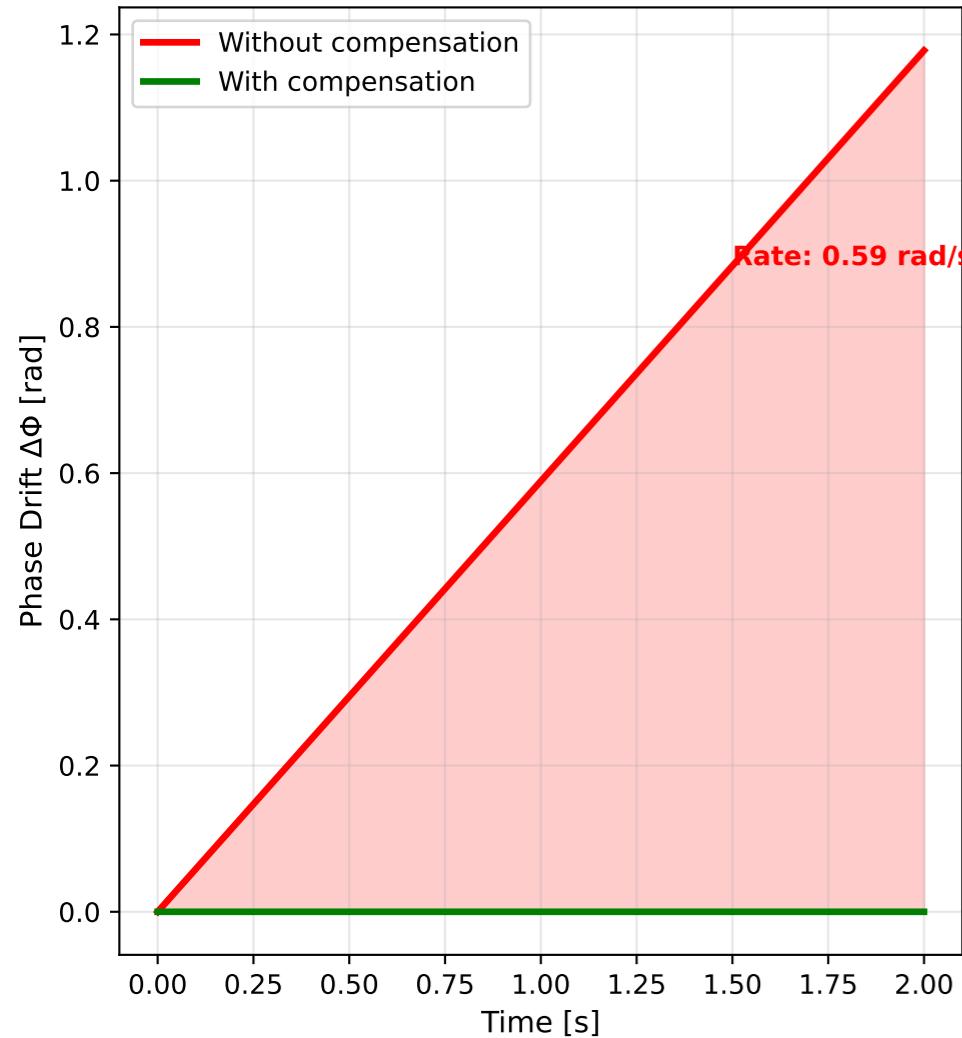
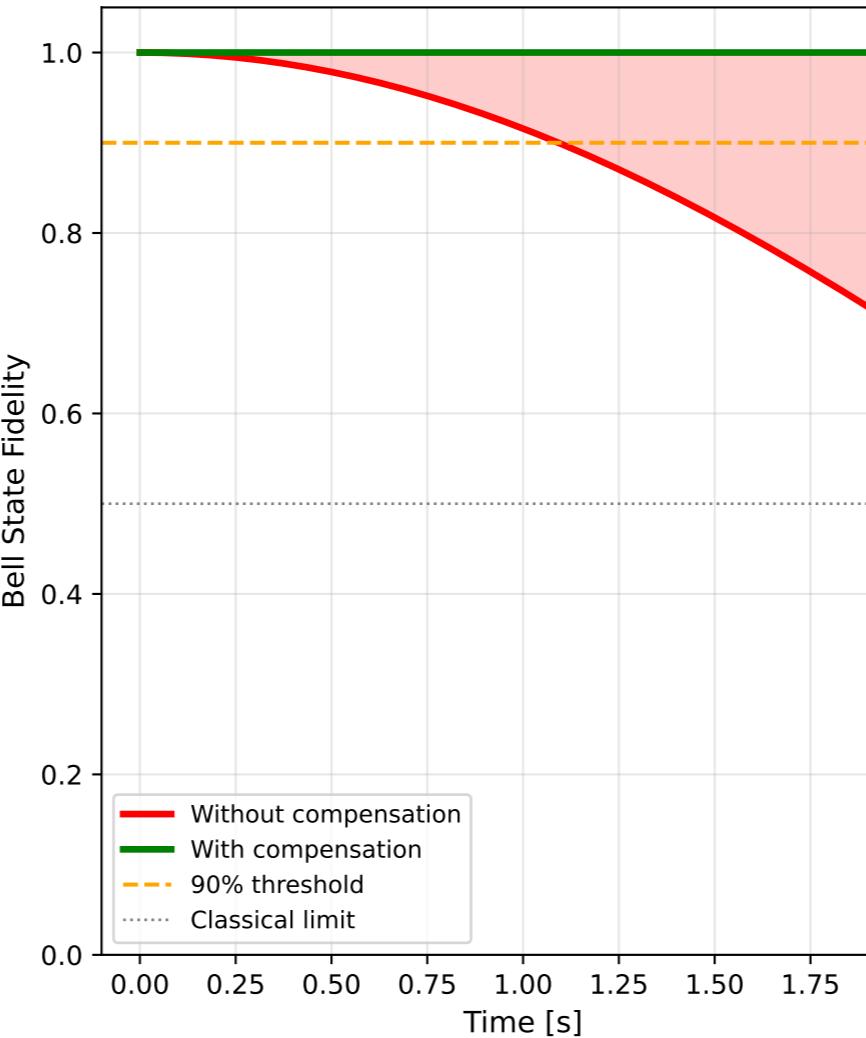


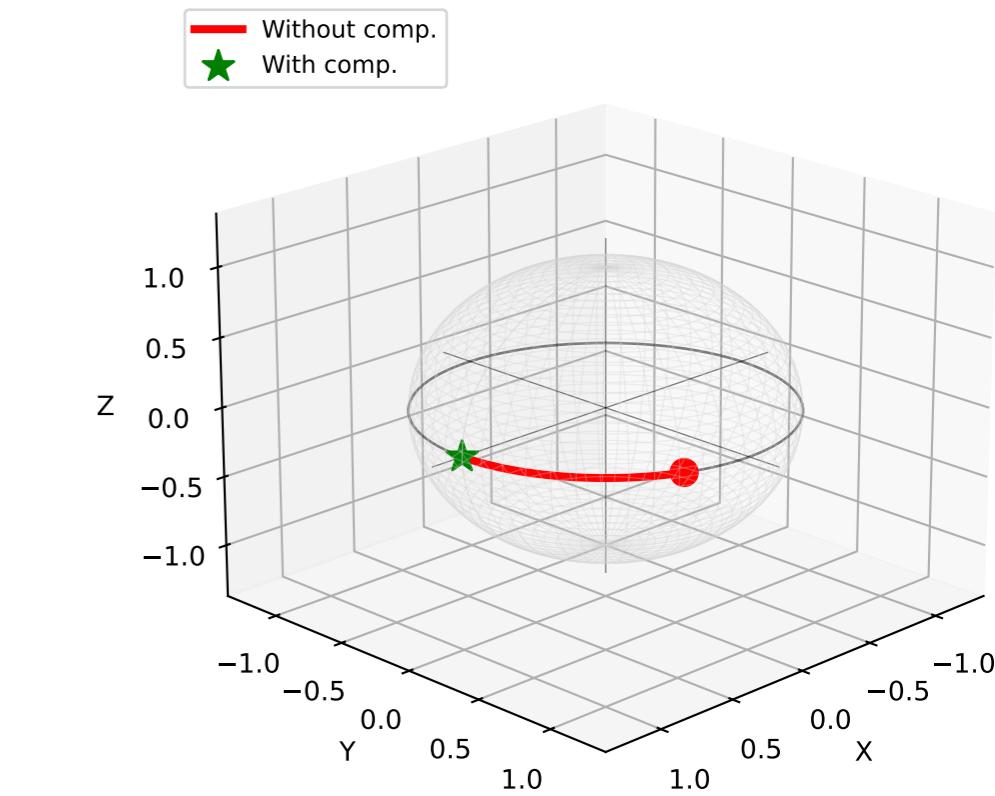
Phase Accumulation ($\Delta h = 1 \text{ m}$, 429 THz Optical Clock)



Entanglement Fidelity



Bloch Sphere (State Evolution)



Protocol Steps

PREPARE

- 1 Bell state $|\Phi^+\rangle = (|00\rangle + |11\rangle)/\sqrt{2}$ at heights h and $h + \Delta h$

EVOLVE (A)

- 2 WITHOUT compensation
Measure phase drift $\Delta\Phi_{\text{measured}}$

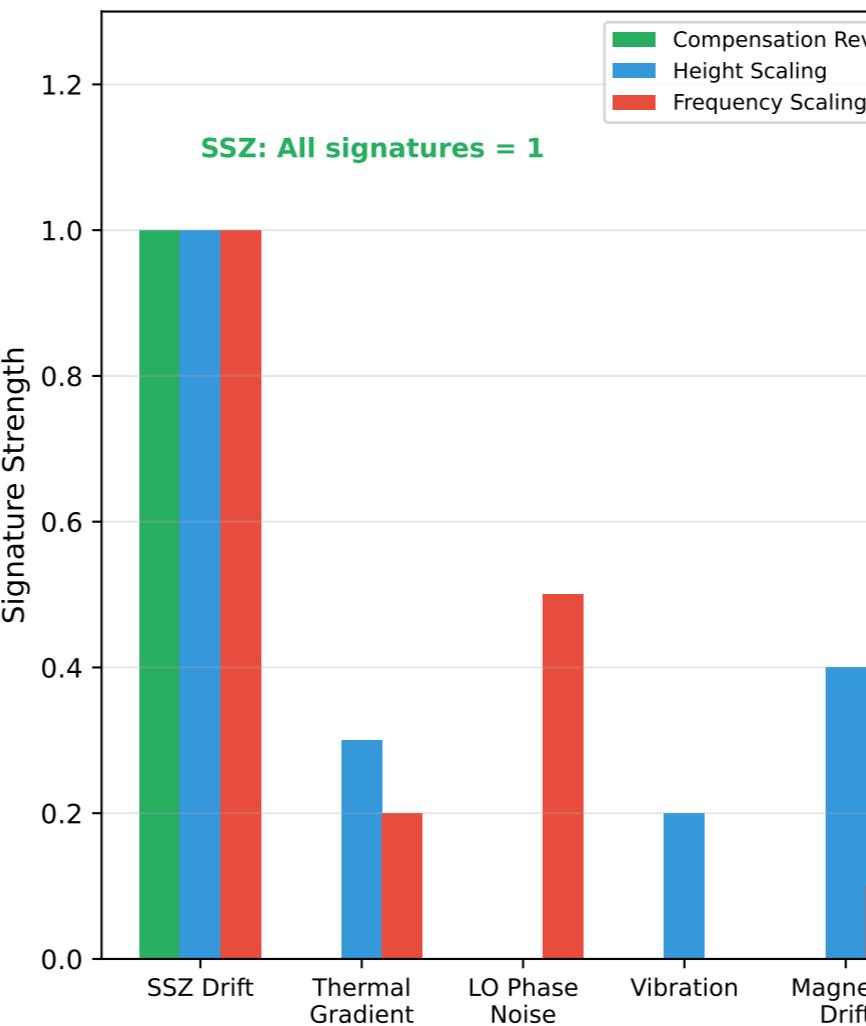
EVOLVE (B)

- 3 WITH compensation Φ_{corr}
Expect $\Delta\Phi \approx 0$

COMPARE

- 4 If SSZ: $\Delta(A)$ matches prediction,
 $\Delta(B) \approx 0$

Discrimination Signatures (SSZ vs Confounds)



Why Compensation Matters

KEY DISCRIMINATOR

Compensation Reversal:

- SSZ: Apply $\Phi_{\text{corr}} \rightarrow$ drift cancels
- Confounds: Apply $\Phi_{\text{corr}} \rightarrow$ no effect

If drift cancels exactly with SSZ formula, THEN gravitational coupling is confirmed.

If drift persists, THEN confound dominates.