SSZ Claim Boundaries: Three Distinct Regimes

BOUNDED REGIME

Today's Superconducting Qubits

Height Δh:	**~mm**
Platform:	**Transmon, Fluxonium**
Signal:	**~10^{-13} rad**
Noise:	**~1 rad**
SNR:	**10^{-12}**

Null Result
= SSZ Consistent

Higher ω
Larger Δh

→

DETECTION REGIME

Optical Atomic Clocks

Height Δh:	**~m**
Platform:	**Sr/Yb Optical Clocks**
Signal:	**~0.6 rad**
Noise:	**~10^{-3} rad**
SNR:	**~600**

Direct Detection
+ Compensation Test

Larger Δh
Longer t

→

FUTURE REGIME

Quantum Networks & Satellites

Height Δh:	**~km**
Platform:	**Satellite QKD, ISS**
Signal:	**~10^{5} rad/s**
Noise:	**N/A**
SNR:	**∞**

Engineering
Constraint

Phase Drift Formula: $\Delta\Phi = \omega \cdot \frac{r_s \cdot \Delta h}{R^2} \cdot t$

Key Insight: Null results in Bounded Regime CONFIRM SSZ predictions (not falsify them)