

GKSL aus Repeated Interactions + VERIFIKATION

Trace-out & Raten GKSL & Fits Verification Suite Export

Repeated Interactions: unitäre Kollisionen + partielle Spur

ω (System)

1.00

Run micro trace-out

Ancilla thermal: $p_{\text{exc}} \approx 0.1192$, $p_{\text{gnd}} \approx 0.8808$ (KMS: $p_{\text{exc}}/p_{\text{gnd}} = e^{(-\beta\omega)}$)

β (Bad)

2.00

Raten (aus Mikro): $\gamma_{\downarrow} \approx 0.04389$, $\gamma_{\uparrow} \approx 0.00594$

Kopplung g

0.50

KMS-Check: $\gamma_{\uparrow}/\gamma_{\downarrow} - e^{(-\beta\omega)} \approx 2.776e-17$

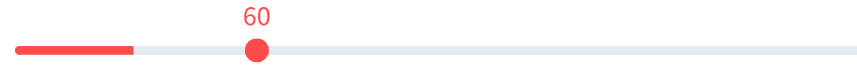
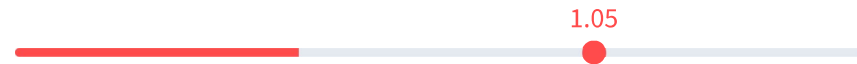
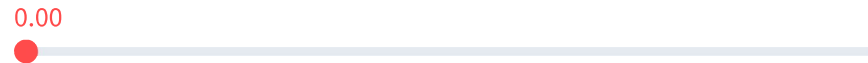
Pulsdauer τ_{int}


0.20

Kollisionsintervall Δt

0.20

Anzahl Kollisionen

 θ (Startzustand) ϕ (Startzustand)

>  Supplement (Tab 1: Micro → Raten, KMS)

Collision-Map & partielle Spur

$$\rho'_S = \text{Tr}_B [U (\rho_S \otimes \tau_B) U^\dagger]$$

$$U = e^{-i\theta(\sigma_+ \otimes \sigma_- + \sigma_- \otimes \sigma_+)}$$

Thermischer Ancilla-Zustand (KMS)

$$\tau_B = \frac{e^{-\beta(\omega/2)\sigma_z}}{\text{Tr} e^{-\beta(\omega/2)\sigma_z}} = \text{diag}(p_{\text{exc}}, p_{\text{gnd}})$$

$$\frac{p_{\text{exc}}}{p_{\text{gnd}}} = e^{-\beta\omega}$$

Raten im kleinen Winkel

$$\gamma_{\downarrow} = \frac{\sin^2 \theta}{\Delta t} p_{\text{gnd}}, \quad \gamma_{\uparrow} = \frac{\sin^2 \theta}{\Delta t} p_{\text{exc}}.$$