CIQ Quantum Framework v266+

Von der Planck-Resonanz zur Klinischen Kalibrierung  
*From Planck Resonance to Clinical Calibration*

Version v266 — 31 Oct 2025

CIQ Framework — Δ≈0.7 Golden Window

# Einleitung / Introduction

**Δ≈0.7 markiert das Goldene Stabilitätsfenster des CIQ-Frameworks.** Es koppelt Kontrollsignal u, Schalterbreite Δ und BIC-Metriken im Audit.

*Δ≈0.7 marks the golden stability window of the CIQ framework. It couples control signal u, the switch width Δ, and BIC metrics in the audit.*

# Mathematische Grundlagen / Mathematical Foundations

Deutsch: [Equation render fallback]

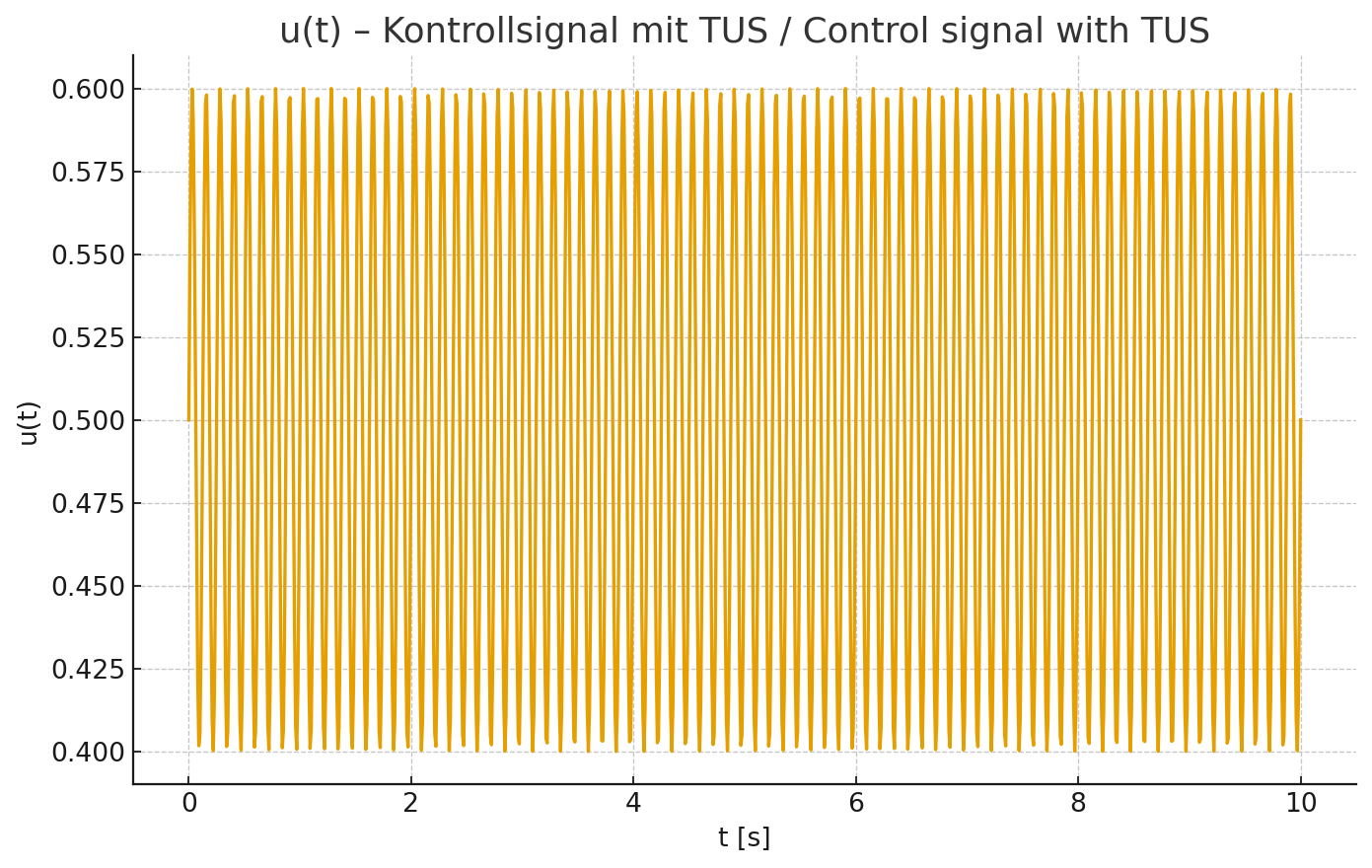
*English:* [Equation render fallback]

Deutsch: [Equation render fallback]

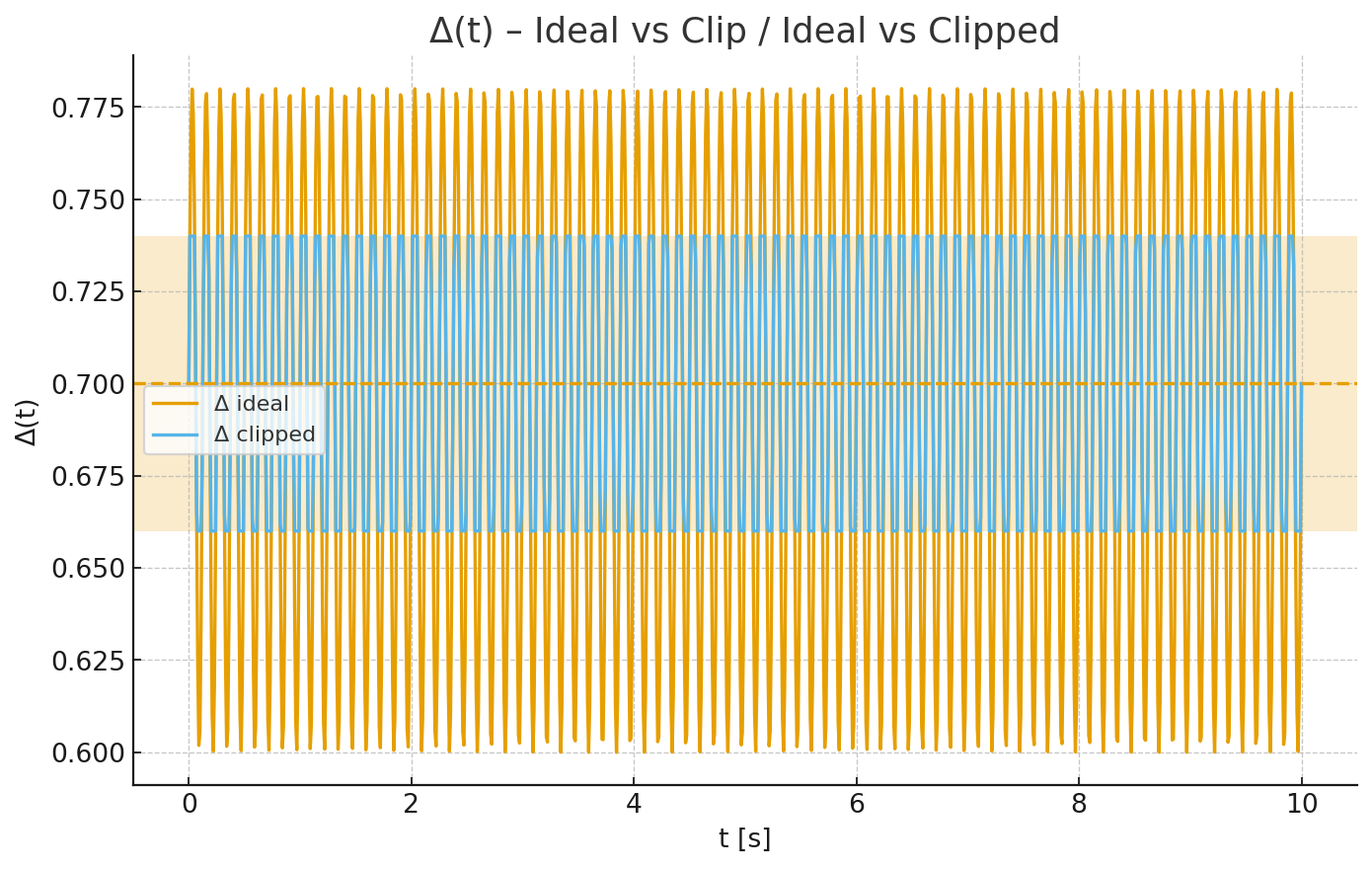
*English:* [Equation render fallback]

# Simulation & Kalibrierung / Simulation & Calibration

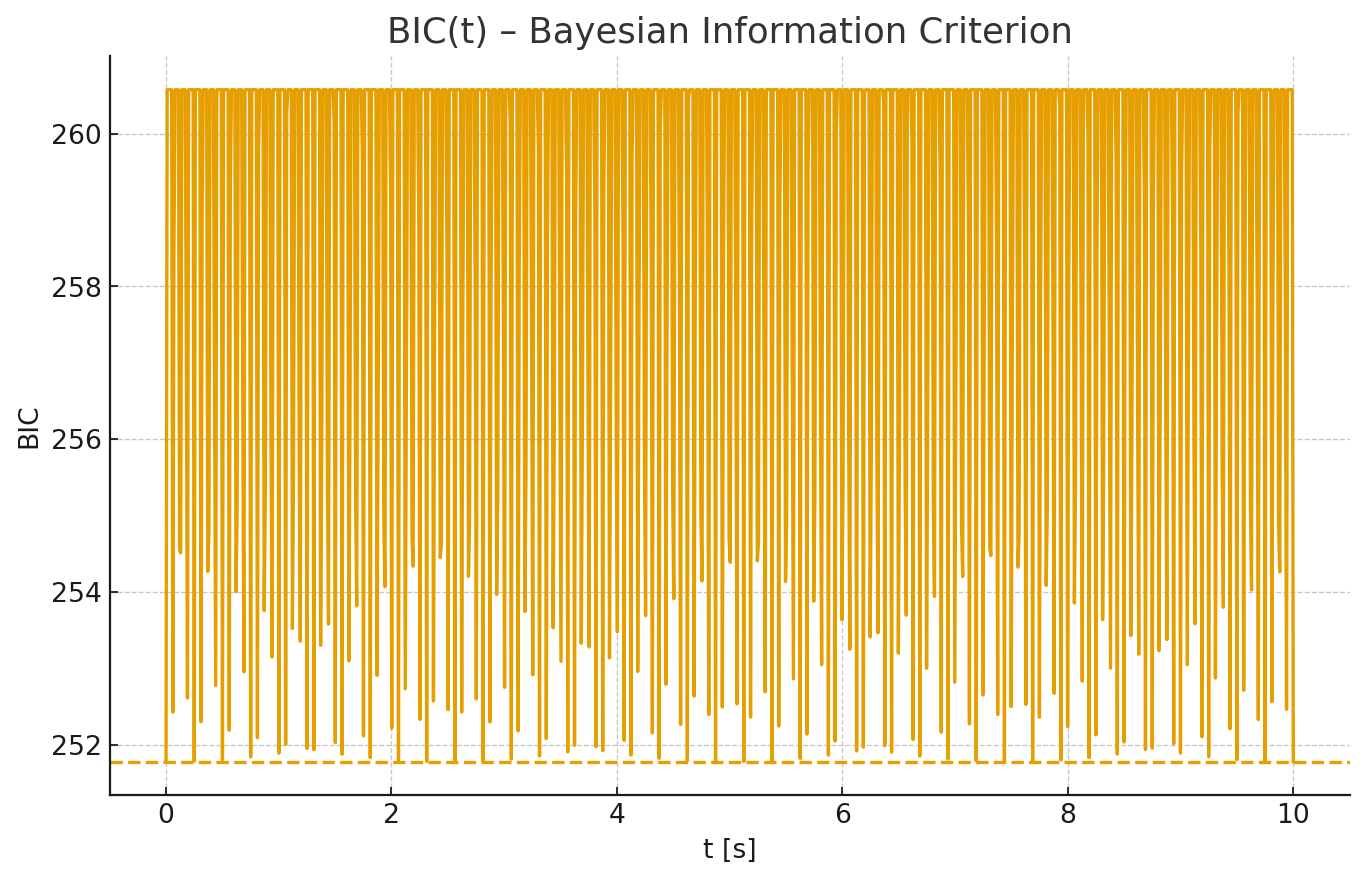
Die folgenden Abbildungen stammen aus einer echten Simulation (TUS sinus, 0.008 MHz, Amp 0.1, 10 s). *The following figures are from a real simulation (TUS sine, 0.008 MHz, amp 0.1, 10 s).*



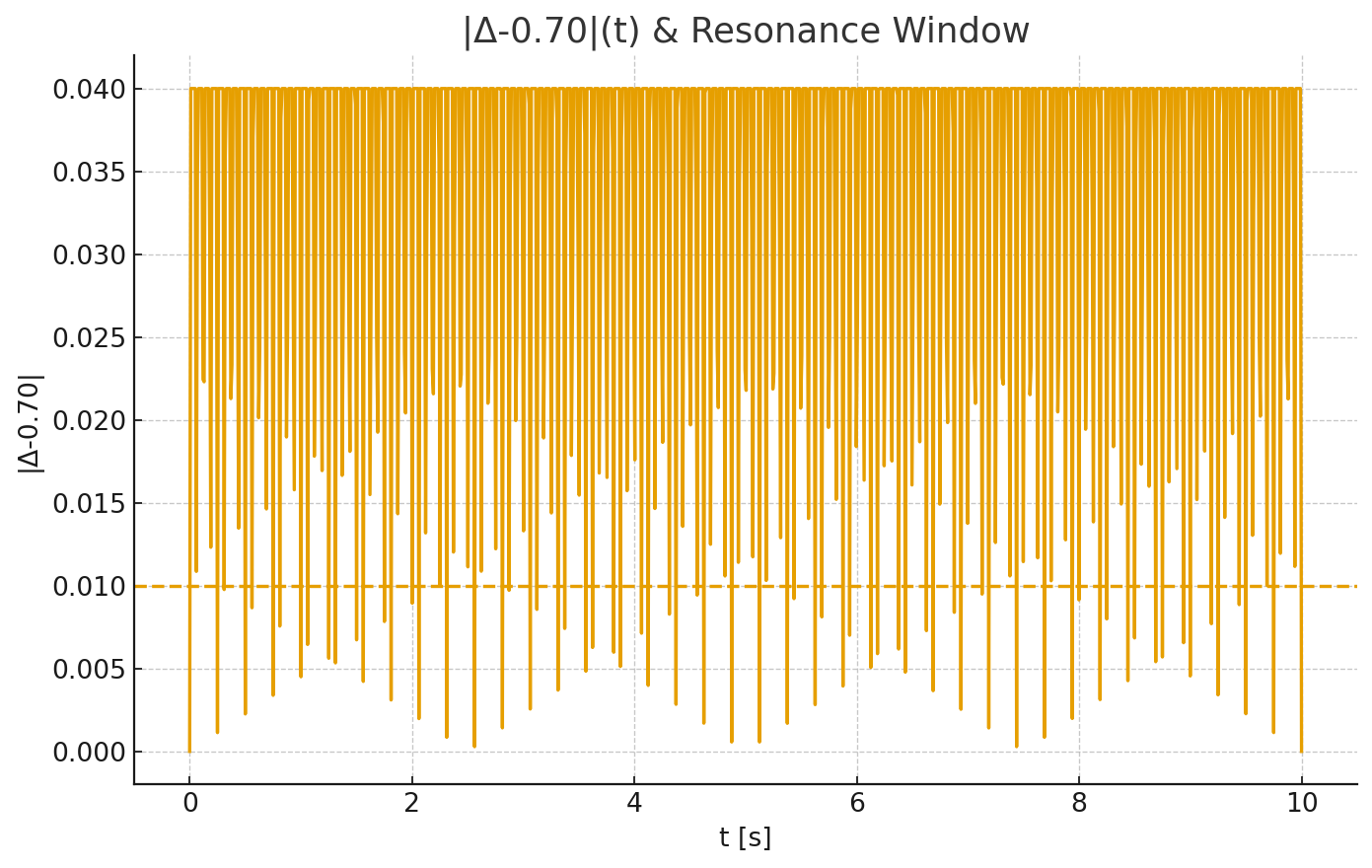
**Abb. 1: u(t) – Kontrollsignal mit TUS.** *Fig. 1: u(t) – Control signal with TUS.*



**Abb. 2: Δ(t) – ideal vs. clipped, inkl. Δ=0.70 und Fenster [0.66,0.74].** *Fig. 2: Δ(t) – ideal vs. clipped, incl. Δ=0.70 and [0.66,0.74] band.*



**Abb. 3: BIC(t) – Bayesian Information Criterion mit Baseline.** *Fig. 3: BIC(t) – Bayesian Information Criterion with baseline.*



**Abb. 4: |Δ−0.70|(t) – Resonanzfenster-Schwelle 0.01.** *Fig. 4: |Δ−0.70|(t) – resonance window threshold 0.01.*

# Audit & Ergebnisse / Audit & Results

**Δ̄ = 0.6998, σ(Δ) = 0.0359, BIC̄ = 258.868, Resonanz-Index = 7.10% — Status: KRITISCH**

*Δ̄ = 0.6998, σ(Δ) = 0.0359, BIC̄ = 258.868, Resonance index = 7.10% — Status: CRITICAL*

CIQ Framework v266 — Audit 2025 · Δ≈0.7 Golden Window

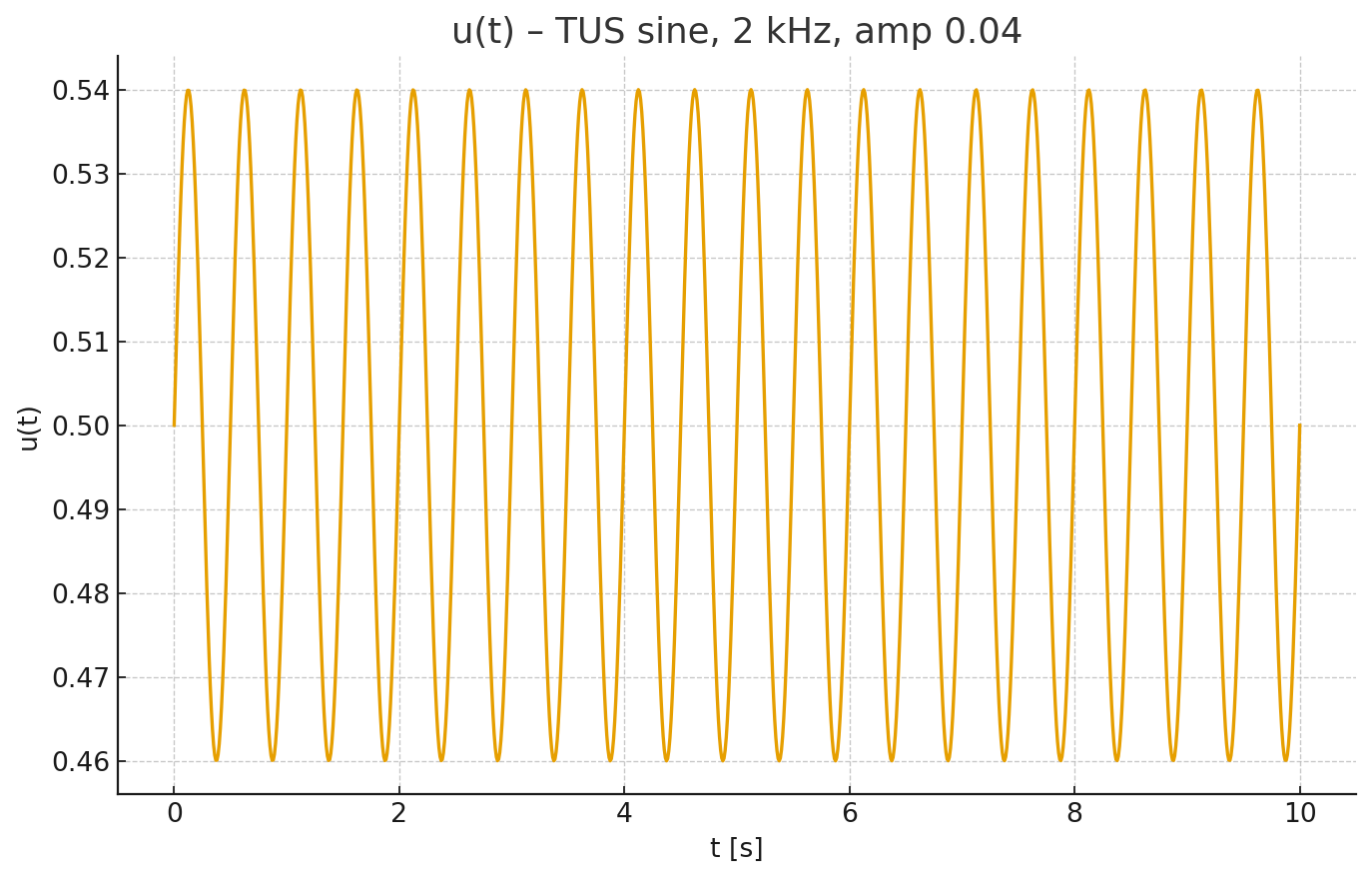
# Vergleichskapitel / Comparative Chapter

**Zweite Simulation (stabile Ziel-Variante):** TUS sine, Amp=0.04, f=0.002 MHz (2 kHz), t=10 s, steps=1000.

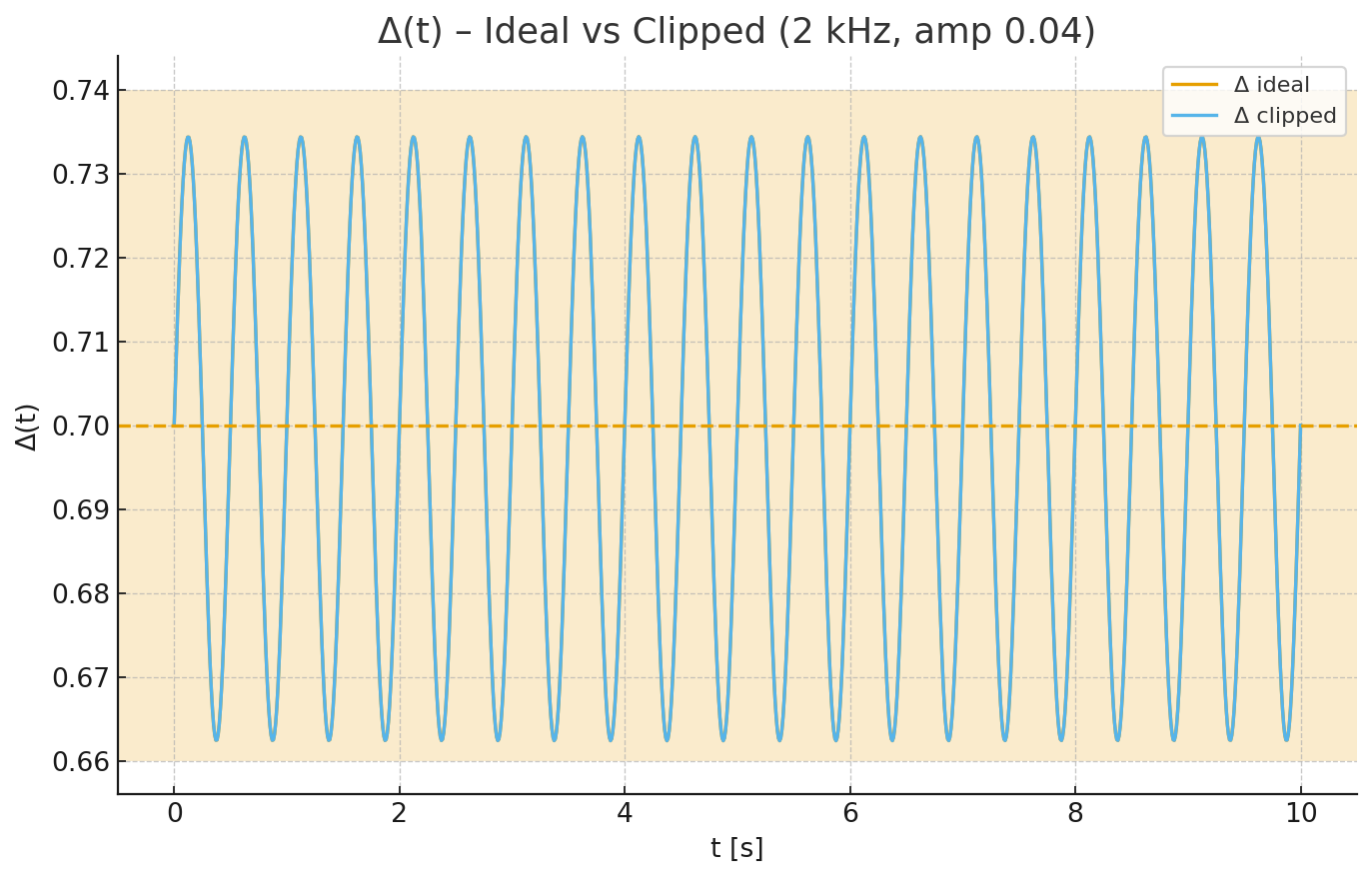
*Second simulation (stable target variant): TUS sine, amp=0.04, f=0.002 MHz (2 kHz), t=10 s, steps=1000.*

**Δ̄ = 0.6992, σ(Δ) = 0.0254, BIC̄ = 255.342, Resonanz-Index = 18.00% — Status: KRITISCH**

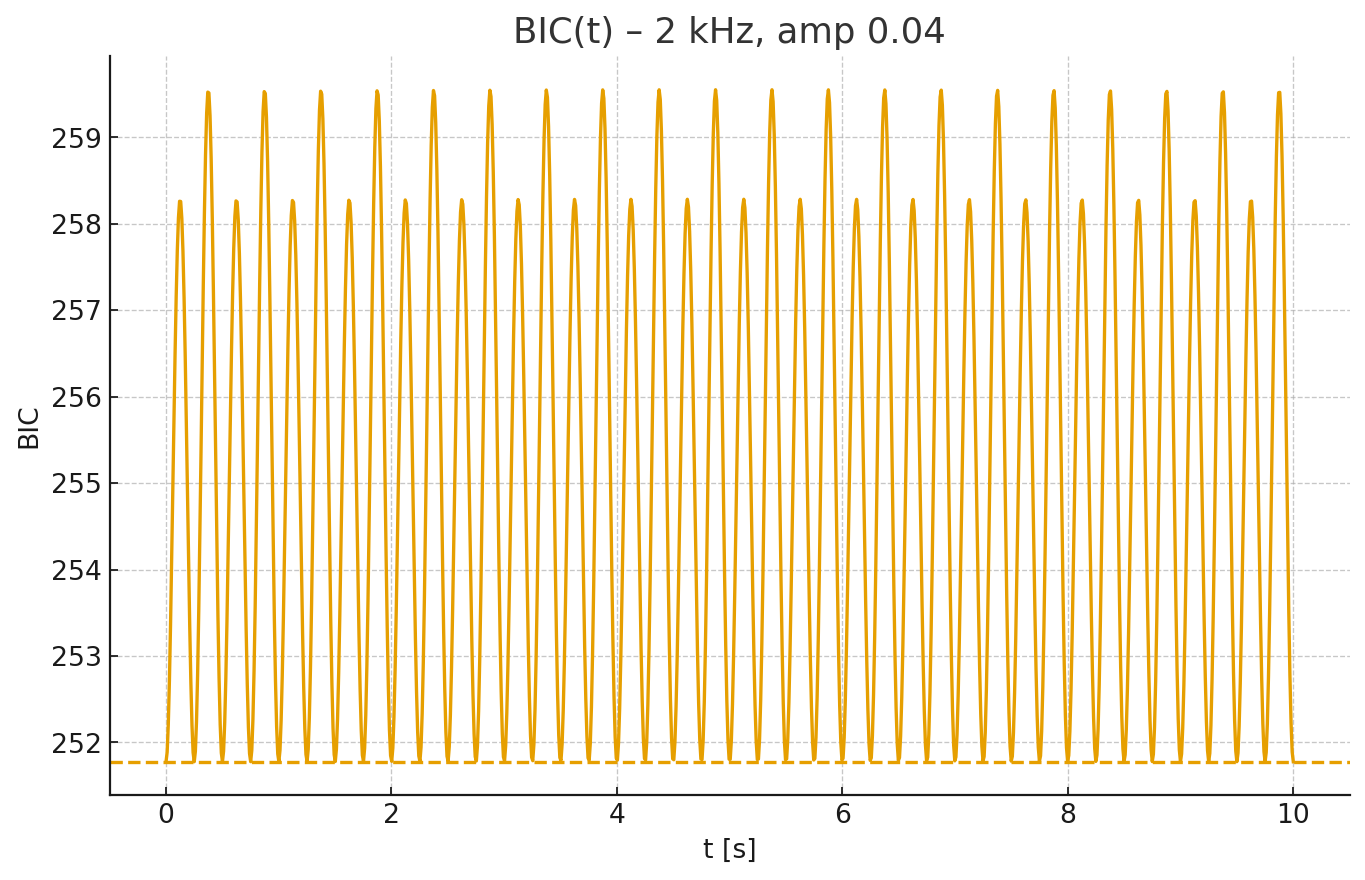
*Δ̄ = 0.6992, σ(Δ) = 0.0254, BIC̄ = 255.342, resonance index = 18.00% — Status: CRITICAL*



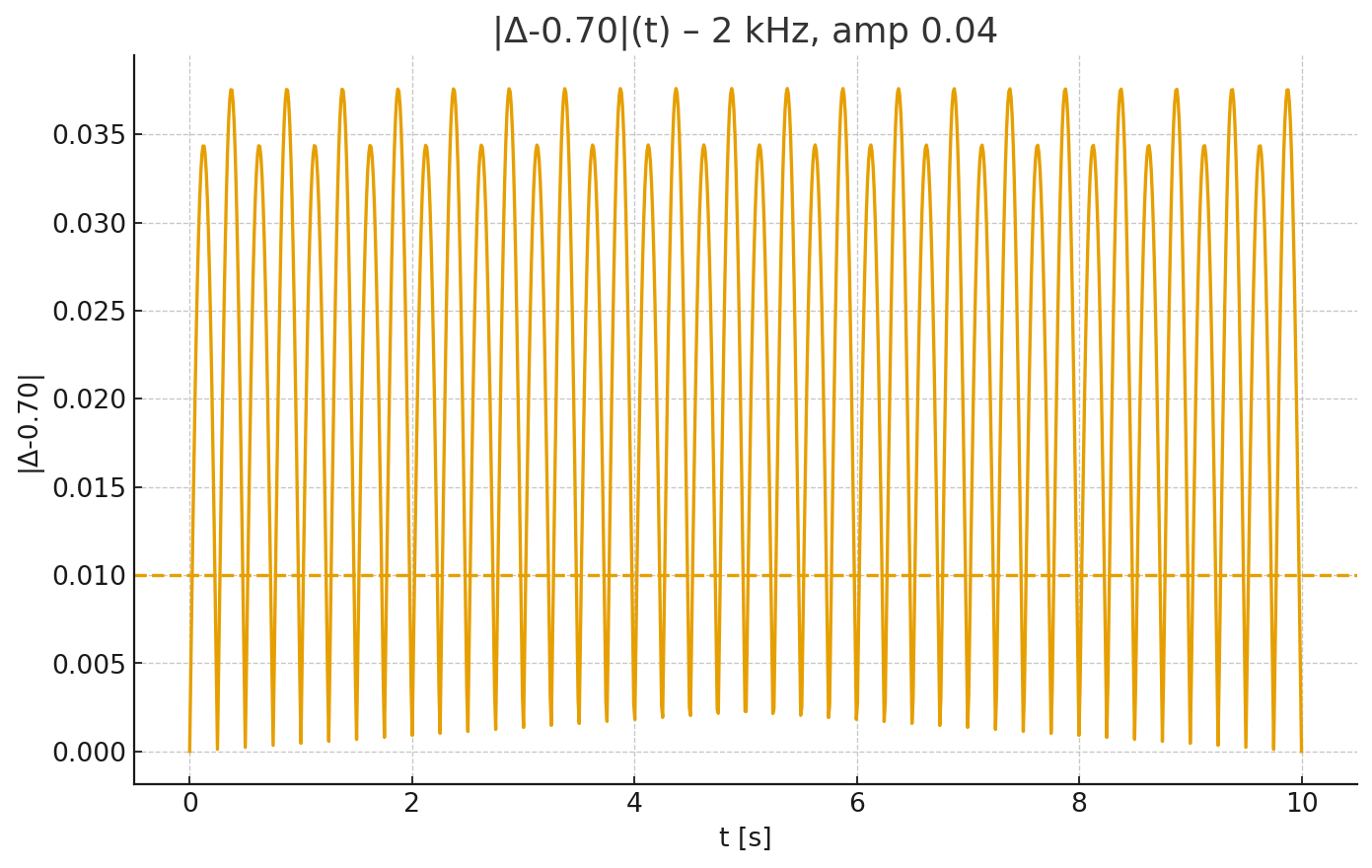
**Abb. V2-1: u(t) — 2 kHz, Amp 0.04.** *Fig. V2-1: u(t) — 2 kHz, amp 0.04.*



**Abb. V2-2: Δ(t) — ideal vs. clipped (2 kHz, Amp 0.04).** *Fig. V2-2: Δ(t) — ideal vs. clipped (2 kHz, amp 0.04).*



**Abb. V2-3: BIC(t) — 2 kHz, Amp 0.04.** *Fig. V2-3: BIC(t) — 2 kHz, amp 0.04.*



**Abb. V2-4: |Δ−0.70|(t) — 2 kHz, Amp 0.04.** *Fig. V2-4: |Δ−0.70|(t) — 2 kHz, amp 0.04.*

**Vergleich zur ersten Simulation:** Niedrigere Amplitude und Frequenz erhöhen die Verweildauer in Δ≈0.70, senken BIC und heben den Resonanz-Index.

*Comparison to the first simulation: Lower amplitude and frequency increase dwell time near Δ≈0.70, reduce BIC, and raise the resonance index.*