

# What an honest quantum benchmark looks like

One unedited run, 78 assets: QAOA versus a certified classical referee — from an Excel workbook to a defensible **go/no-go**.

**78 assets**

**QAOA gap: 0.0%**

**Certified referee**

**Numbers unedited**

# From Excel workbook to a defensible decision

Every run follows the same pipeline — and every quantum result is checked against a **proven classical optimum**, not a vibe.

**YOUR  
DATA**

## Excel workbook

Positions, constraints, market data.

**STEP 1**

## Quantum algorithm

QAOA on the portfolio QUBO.

**STEP 2**

## Certified referee

Exact branch & bound (SCIP), proven optimum.

**STEP 3**

## Benchmark report

Gaps, diagnostics, full transparency.

**OUTCOME**

## Decision

Stop or go — with evidence.

# One run, four numbers — unedited

78 assets · 23 binary decisions (17 single names + 6 thematic bundles) · 3 sector-budget bands · QAOA  $p=4$ .

## PORTFOLIOS IN THE SEARCH SPACE

**8,388,608**

$2^{23}$  candidate portfolios — exact statevector readout, **no sampling**.

## QAOA GAP TO CERTIFIED OPTIMUM

**0.0%**

Best QAOA portfolio = SCIP-proven optimum, **bit for bit**.

## CLASSICAL HEURISTIC GAP

**+3.2%**

465 heuristic candidates — **none reached the optimum**.

## ODDS BOOST FOR THE OPTIMAL STATE

**137<sub>x</sub>**

vs uniform sampling — yet still 0.0016%, inside the top 5,000 most-probable of 8,388,608 states, **and the report says so**.

All figures: unedited solver output on demo data

# The winning portfolio — and the run behind it

## EXPECTED RETURN

**8.0%**

The portfolio QAOA selected — identical to the referee's proven optimum.

## VOLATILITY

**15.3%**

With Sharpe 0.33 and a budget gap of 0.08%.

## END-TO-END RUNTIME

**2h 28min**

Certified end-to-end — quantum run plus exact classical proof.

## REPRODUCIBLE

**seed 42**

Warm-started  $p=4$  · statevector simulator — anyone can rerun it.

**The actual certified report is public:** gaps, diagnostics, and probabilities printed in full — sample download at **qubit-lab.ch**.

# Why we publish the boring numbers too

## CERTIFIED

### Verified, not asserted

QAOA's best portfolio equals the referee's proven optimum — **gap 0.0%**, **certified by exact branch & bound (MIQP / SCIP)** — while the classical heuristic fell 3.2% short of it.

## TRANSPARENT

### No magic claimed

The optimum's sampling probability was 0.0016% — a 137× boost over uniform, **and still a small number** — yet concentrated enough to sit inside the top 5,000 most-probable states of 8,388,608, which is what put it in the export pool. Both figures are printed in the report, not hidden behind the headline.

## GROUNDED

### Scale is stated, not implied

Simulator memory doubles with every qubit — around 30 is where real hardware has to take over. **Prototyping below that line, with a referee**, is how you build a quantum case you can defend.

# Let's explore — no strings attached.

A relaxed 30-minute call or a live demo, management-friendly or physicist to physicist — **your data, your questions, real runs.**

**Book a call · [qubit-lab.ch](https://qubit-lab.ch)**

sample report: **[qubit-lab.ch](https://qubit-lab.ch)**

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Source: published sample report of 16 Jul 2026 (78-asset demo universe), gated download at [qubit-lab.ch](https://qubit-lab.ch). All figures are unedited solver output on demo data — illustrative only, not investment advice, not indicative of results on other problems.