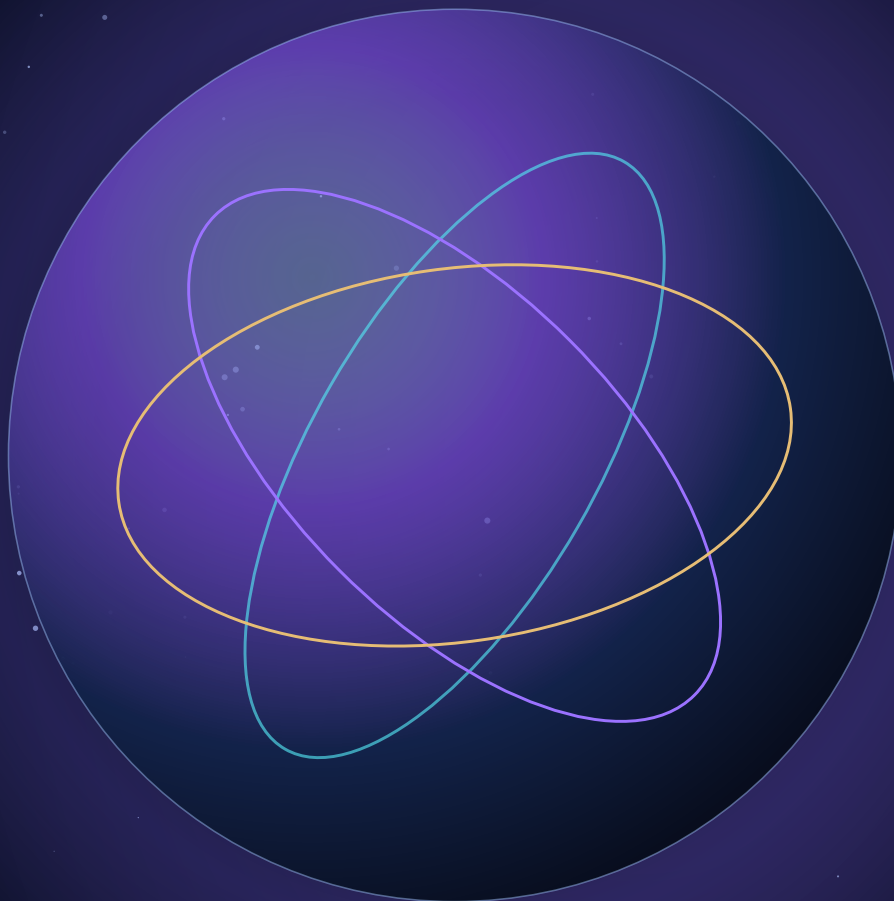




◆ OBSERVATORY ANALYSIS

QOBLIB: A Shared Yardstick for Quantum Optimization

Why an open benchmark library matters more to the
economics of quantum computing than another advantage
claim

PUBLICATION RECORD

IDENTIFIER	QCO-2026-005
SERIES	Quantum Civilization Observatory Analyses
TITLE	QOBLIB: A Shared Yardstick for Quantum Optimization: Why an open benchmark library matters more to the economics of quantum computing than another advantage claim
TYPE	Observatory analysis
VERSION	1.1 · published 28 October 2026
AUTHOR	Steven Alber
INSTITUTION	Quantum Civilization
PUBLISHER	Quantum Civilization
HISTORY	1.1 · 28 October 2026 · Author attribution added: Steven Alber (author), Quantum Civilization (institution and publisher). 1.0 · 28 October 2026 · First edition.
CITE AS	Alber, S. (2026). QOBLIB: A Shared Yardstick for Quantum Optimization. Quantum Civilization Observatory Analyses, QCO-2026-005, version 1.1. Quantum Civilization. https://quantumcivilization.org/observatory/qoblib-benchmark/
ONLINE	https://quantumcivilization.org/observatory/qoblib-benchmark/

Abstract

Ten optimization problem classes with open data and code: the precondition for any credible claim that a quantum workflow beats the strongest classical method. Development: 23 June 2026 · Koch et al. · Nature Computational Science, 2026 · Peer-reviewed benchmark.

KEYWORDS Quantum Observatory · method · L3

QOBLIB: A Shared Yardstick for Quantum Optimization

The result

The Quantum Optimization Benchmarking Library, published in *Nature Computational Science* in June 2026, defines ten classes of optimization problems and releases the instances, data and code openly [1][2].

What it establishes

Optimization is where commercial expectations of quantum computing are highest and where claims have been hardest to verify. Results have often been reported on problems chosen by the authors, against classical baselines of uneven strength. An independent 2025 study found that a hybrid annealing solver did well on some tests but did not outperform the classical Gurobi solver, in either runtime or solution quality, on a power-generation scheduling case [3]. A shared library changes the terms of the debate: claims can be compared on the same instances, with the same metrics, against the best known classical results.

Position in the Civilizational Compute Stack

L3, hybrid workflow. This is the layer where physical progress is converted, or fails to be converted, into economic value, and therefore where measurement discipline matters most.

Why it matters

Institutions, investors and governments are making decisions on the basis of quantum advantage claims. Without common yardsticks, those decisions rest on announcements. With them, advantage becomes a contest that can be scored on total cost: time, solution quality and the strength of the classical alternative. QCTM adopts this principle for every workflow-level indicator.

The open question

Which QOBLIB problem class will be the first where a quantum or hybrid workflow beats the strongest classical baseline on total cost, and does that advantage survive the next round of classical improvement?

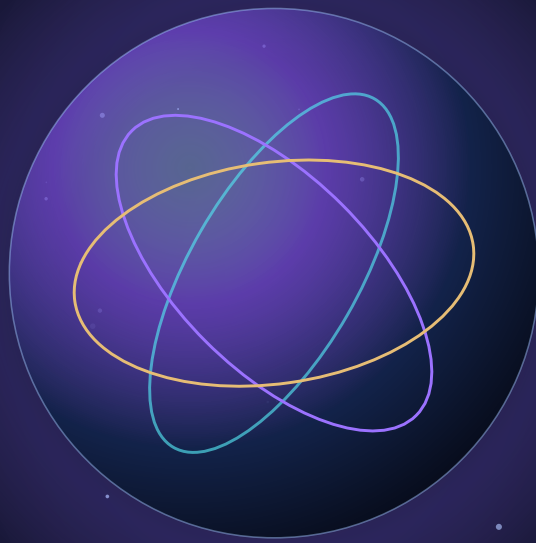
Signposts

Quantum and classical results reported on identical QOBLIB instances; independent replication; total-cost reporting that includes queueing, repetitions and classical pre- and post-processing.

REFERENCES

Sources

- 1 Koch, T. et al. The Quantum Optimization Benchmarking Library. Nature Computational Science, 23 June 2026.
PEER-REVIEWED ARTICLE
<https://pmc.ncbi.nlm.nih.gov/articles/PMC13293884/>
- 2 QOBLIB — Quantum Optimization Benchmarking Library. Open code and data.
OPEN DATASET AND SOFTWARE
<https://github.com/ZIB-AOPT/QOBLIB>
- 3 Quantum annealing applications, challenges and limitations for optimisation problems compared to classical solvers. Scientific Reports, 13 April 2025.
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<https://www.nature.com/articles/s41598-025-96220-2>



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Physics will decide what becomes computable.
Institutions will decide what becomes of it.