qcr AND QCanvas

Open platforms for quantum research and education

Szabolcs Jóczik

QCR MTÜ

AIME26 · BUDAPEST · 13 NOVEMBER 2026

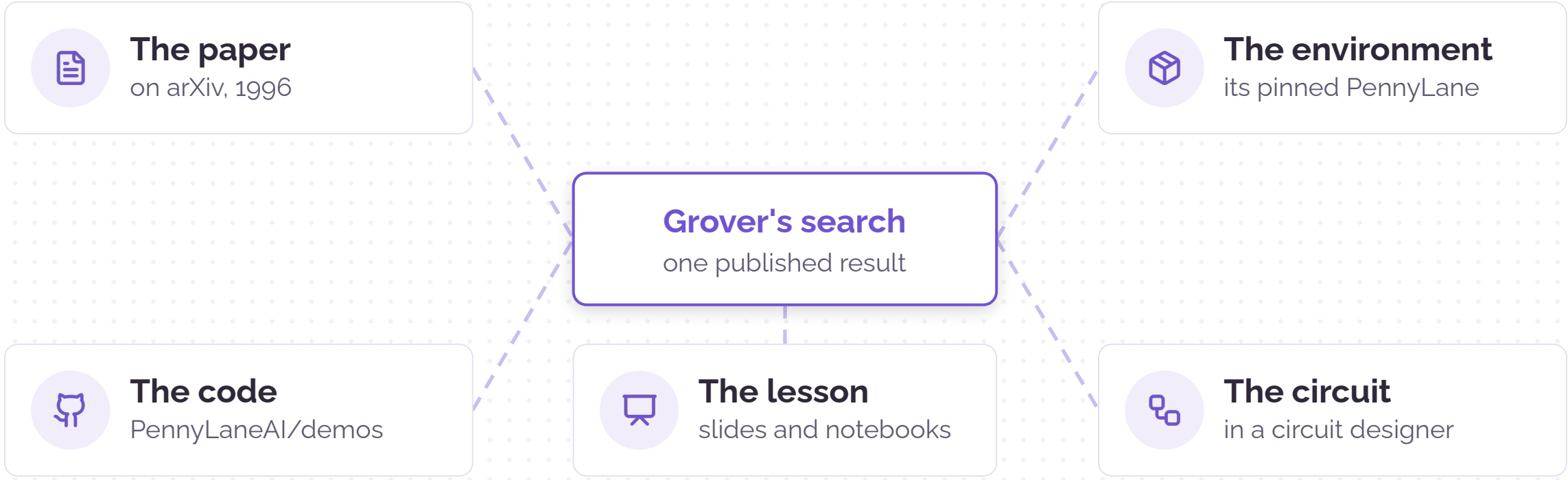
About QCR MTÜ

QCR MTÜ is a non-profit association dedicated to advancing quantum computing research and education through open and accessible infrastructure.

qcr QCanvas

One result, its material in several places

Reproducing a result needs its paper, its code and the environment it ran in, together. Teaching it draws on more.



Two complementary, open-access platforms





qcr

Find and reproduce

Papers, code, tutorials and tools, linked, each with a citable identifier.

QCanvas

Teach and learn

Lessons on one canvas, from the mathematics to real hardware.

Cirq









mitiq







qosf

IBM Quantum

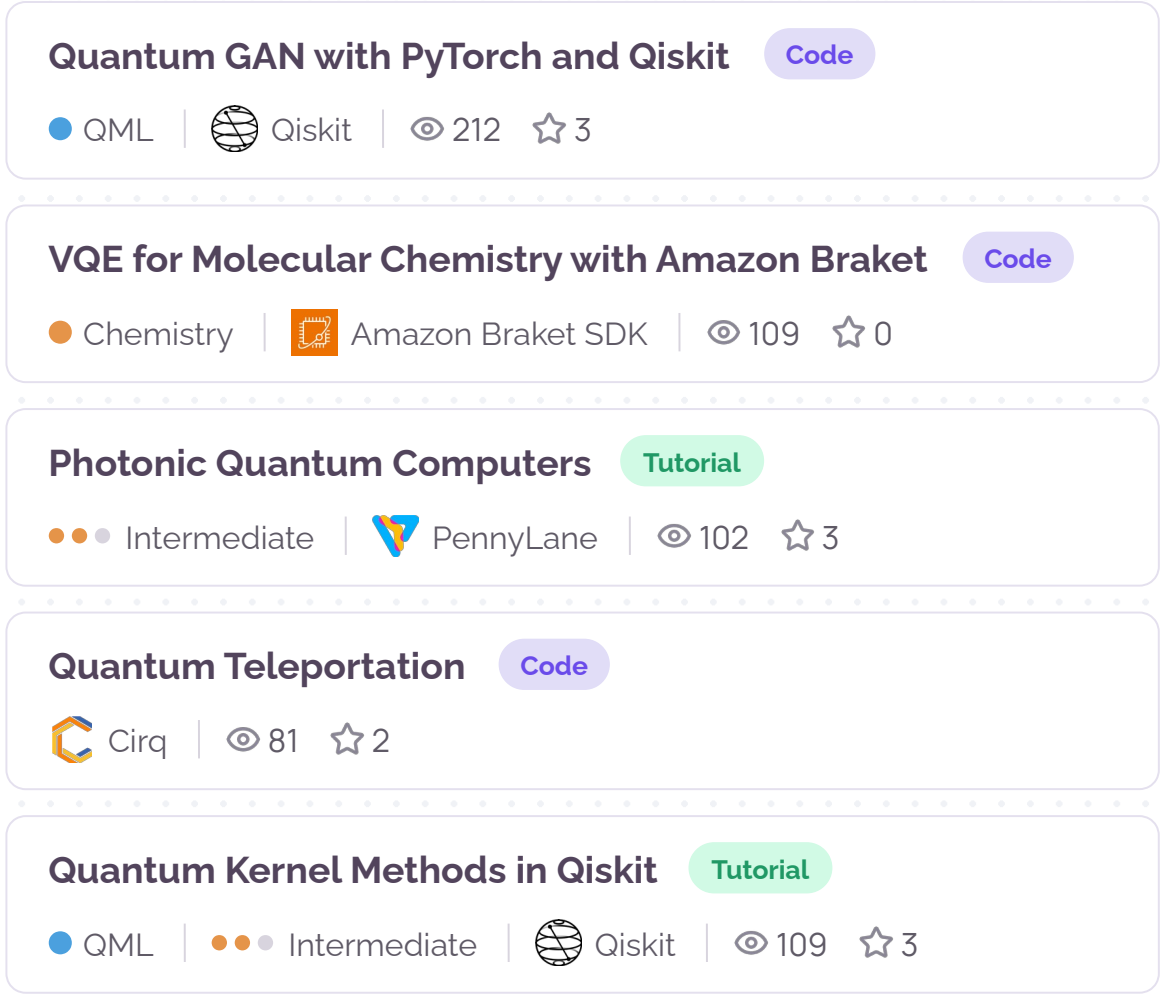
pytket

QCREPOSITORY.ORG

The open repository for quantum computing

Browse **300+** code, tools, tutorials and papers shared by the community.

Every entry is connected to the others.



Entries linked around one algorithm

Grover's search on QCR, with its paper, its implementations, a tutorial and the tools they use.

Example: Grover's Algorithm

CODE

Grover's Algorithm with PennyLane

Optimization | PennyLane | 112 | 1

Grover's Search Algorithm with Amazon Braket

Optimization | Amazon Braket SDK | 243 | 1

TOOLS

Qiskit

98 | 2

PAPERS

A fast quantum mechanical algorithm for database search

Lov K. Grover | Published 1996 | 92 | 1

TUTORIALS

Grover's Algorithm and Amplitude Amplification with Qiskit

Intermediate | Qiskit | 278 | 3

Organised for discovery

Each entry is labelled with its category, its topics and the quantum packages it uses.

300+ entries can be filtered on all three.

CATEGORIES

Code | Tutorial | Tool | Paper

TOPICS

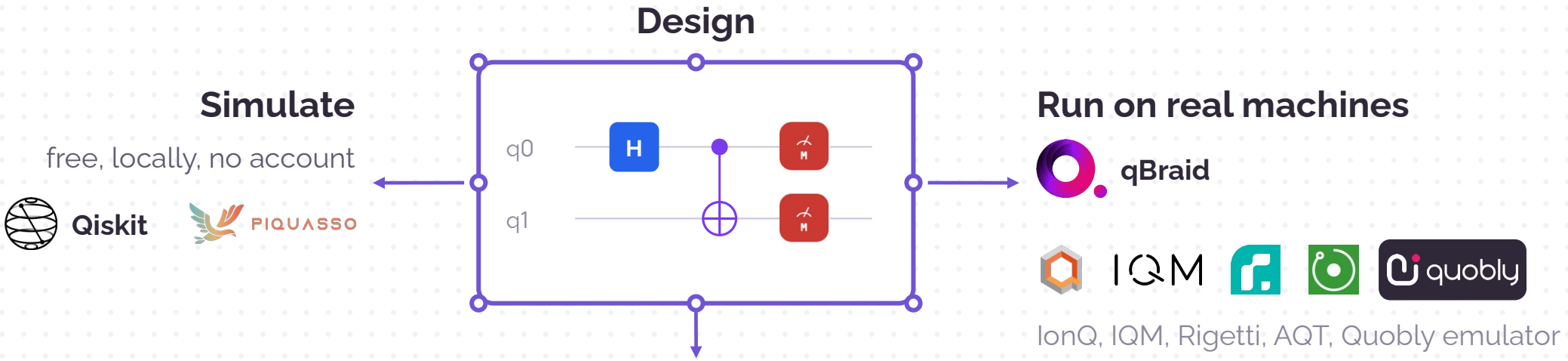
Compilation | Benchmarking | Quantum Simulation | Chemistry | State Preparation | Sampling | QML | Cryptography | Linear Algebra | Optimization | QEC | QEM

QUANTUM PACKAGES

Qiskit | Cirq | PennyLane | PyQuil | Piquasso | Q#

What is QCanvas?

QCanvas is an infinite canvas for quantum computing education and collaboration, closer to a shared whiteboard than to a code editor.



How does QCanvas work?

A short lesson, built one element at a time.

BUILDING A COURSE · STEP 1

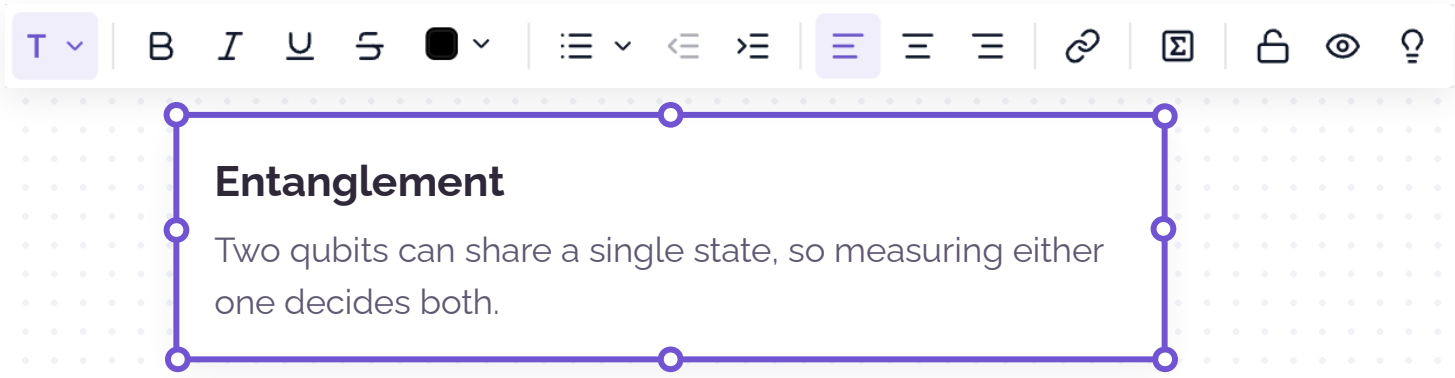
Start with the text

A lesson starts as text on the canvas.

BUILDING A COURSE · STEP 1

Start with the text

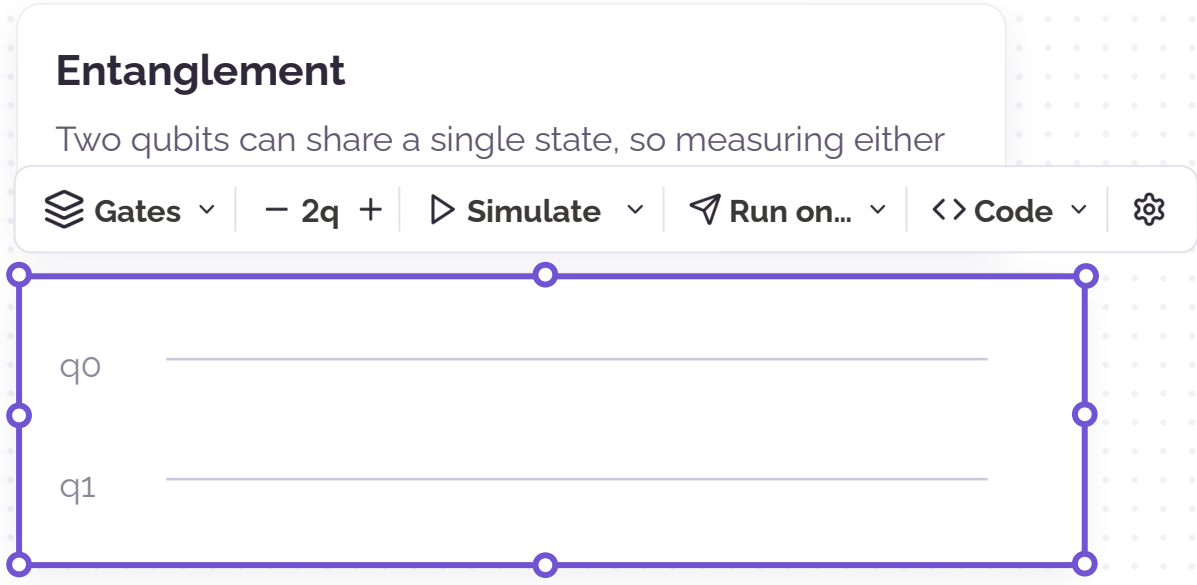
Text takes rich formatting and LaTeX.



BUILDING A COURSE · STEP 2

Add the circuit beside it

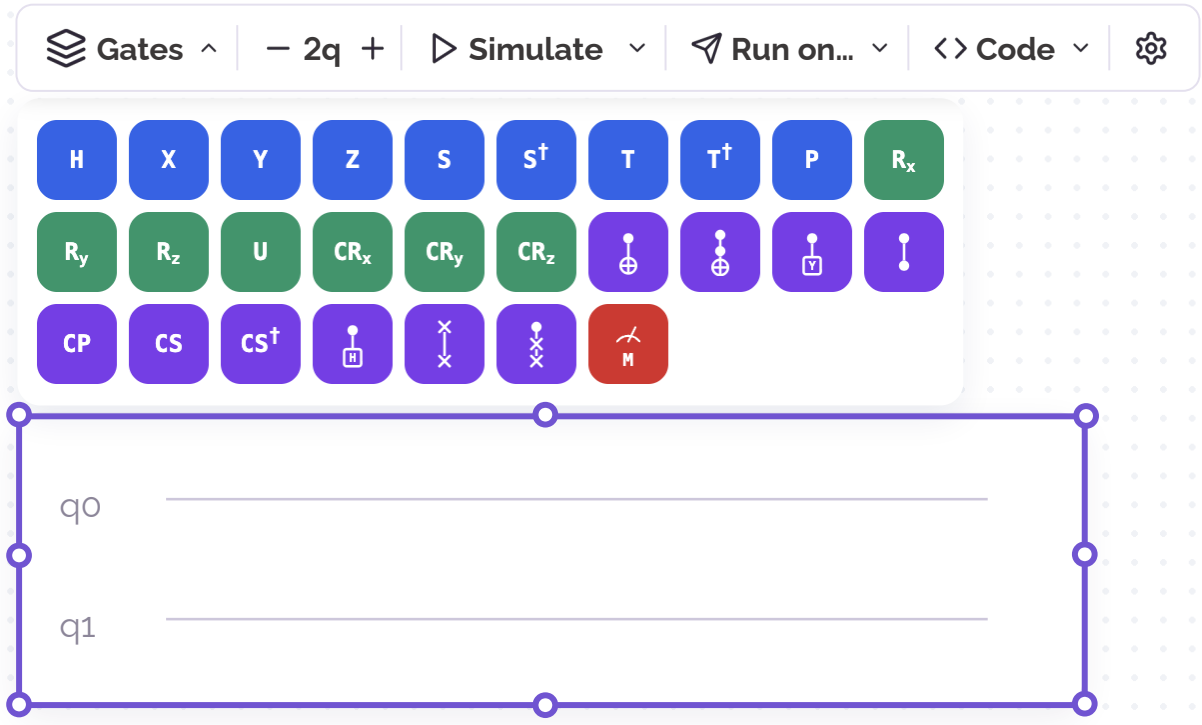
The circuit sits beside its explanation.



BUILDING A COURSE · STEP 2

Add the circuit beside it

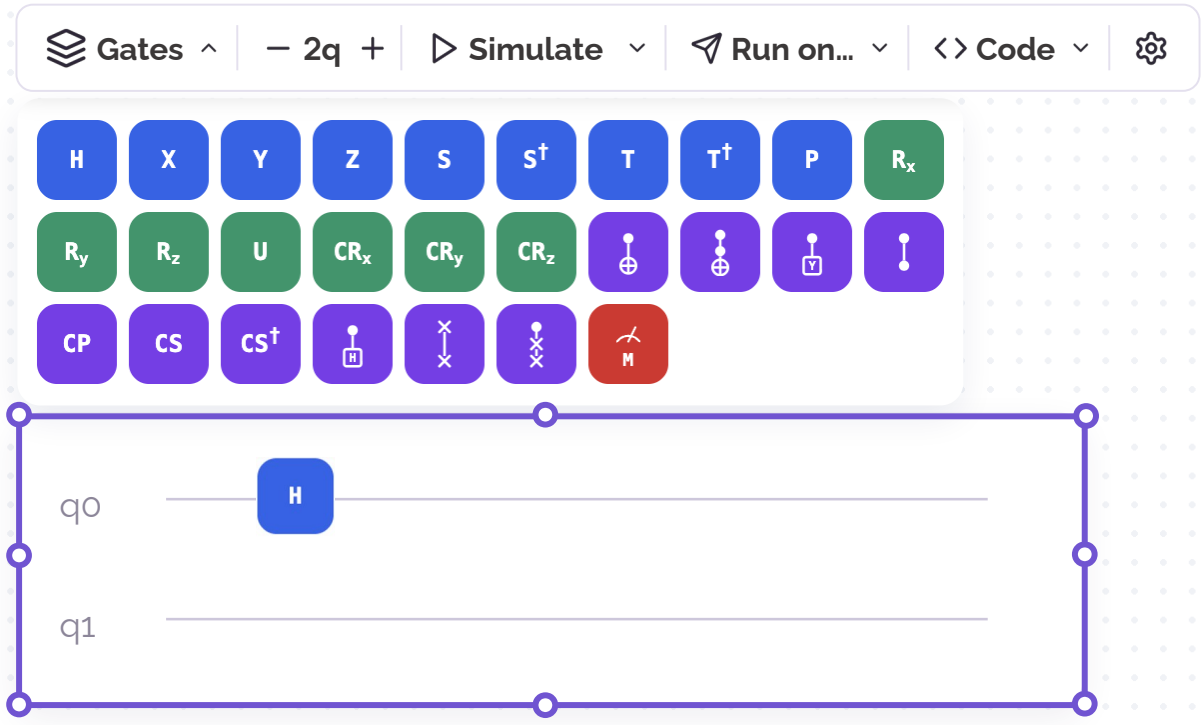
Every gate is in the palette.



BUILDING A COURSE · STEP 2

Add the circuit beside it

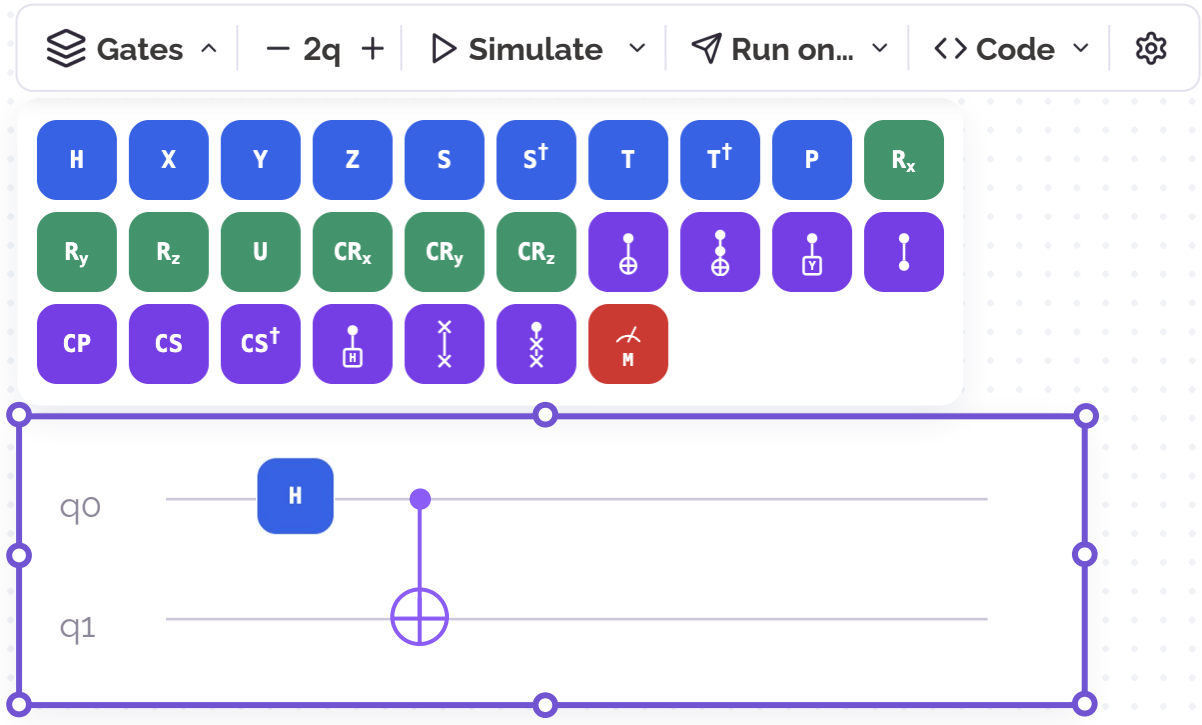
Gates drag onto the wires, and the simulation follows each change.



BUILDING A COURSE · STEP 2

Add the circuit beside it

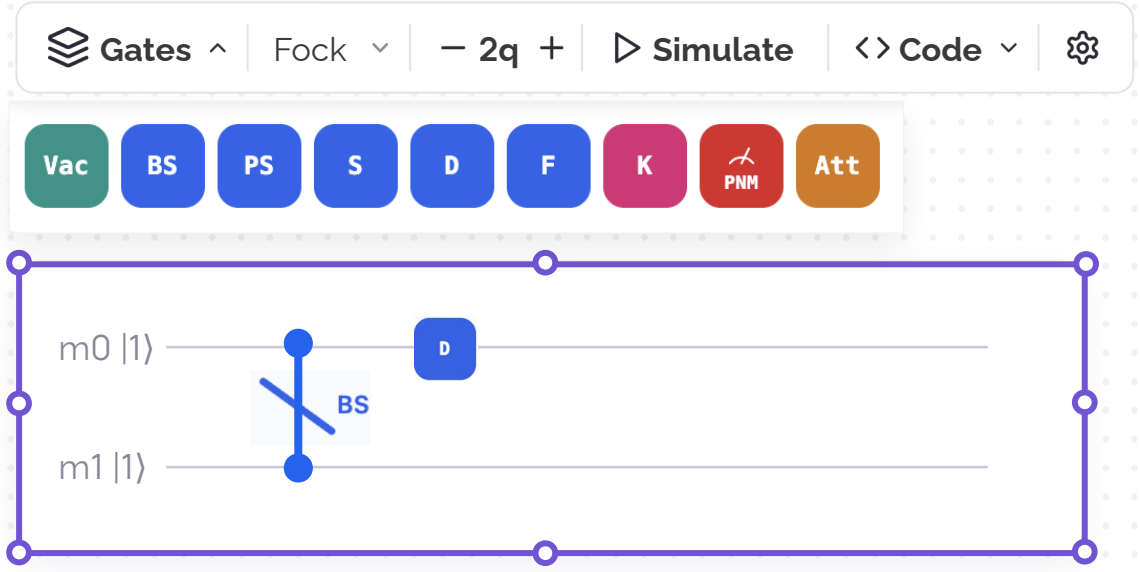
Multi-qubit gates are placed the same way.



BUILDING A COURSE · STEP 2

Add the circuit beside it

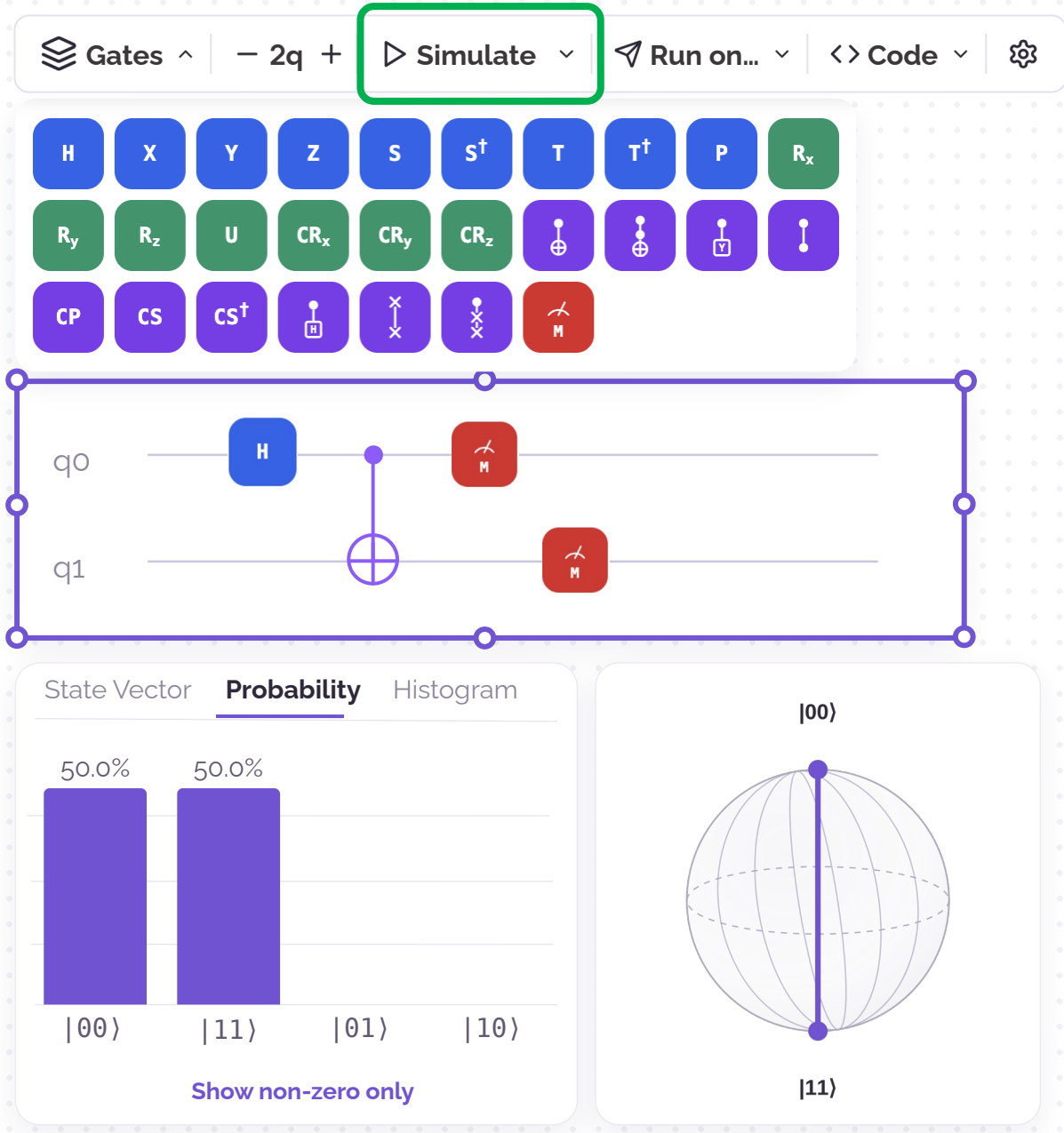
Photonic circuits work the same way, simulated with Piquasso.



BUILDING A COURSE · STEP 3

Run it and keep the result

Simulate, and the results appear.



BUILDING A COURSE · STEP 4

Close it with a question

A question sits beside the result.

Edit | Answer | Reset

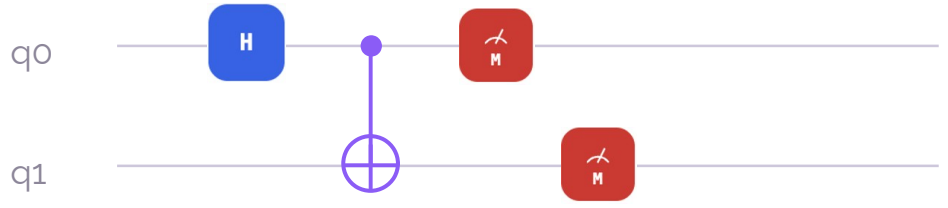
1 After applying H to |0⟩, what is the probability of measuring 0?

- ○ 50%
- ○ 25%
- ○ 100%
- ○ 0%

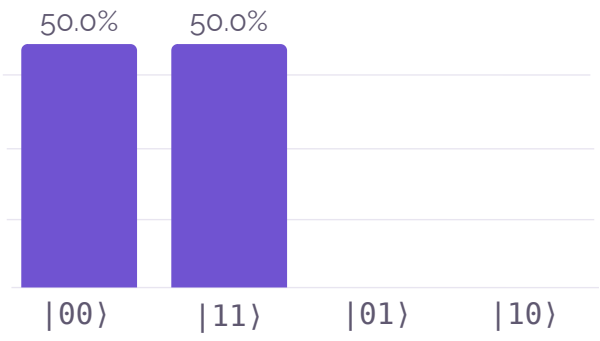
Submit

Entanglement

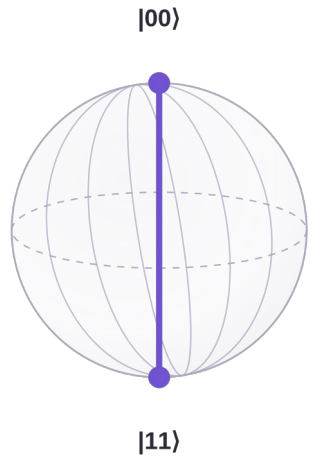
Two qubits can share a single state, so measuring either one decides both.



State Vector | **Probability** | Histogram



Show non-zero only



BUILDING A COURSE · STEP 4

Close it with a question

The lesson explains, shows and asks.

Edit | Answer | Reset

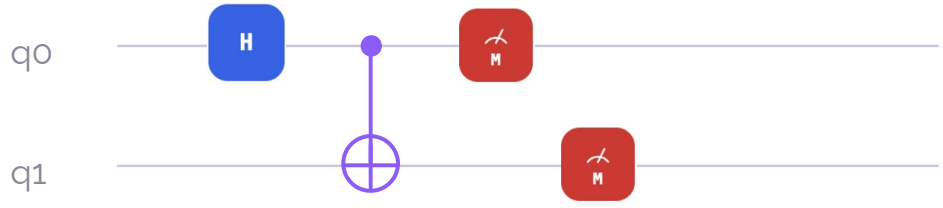
1 After applying H to |0⟩, what is the probability of measuring 0?

- 50%
- 25%
- 100%
- 0%

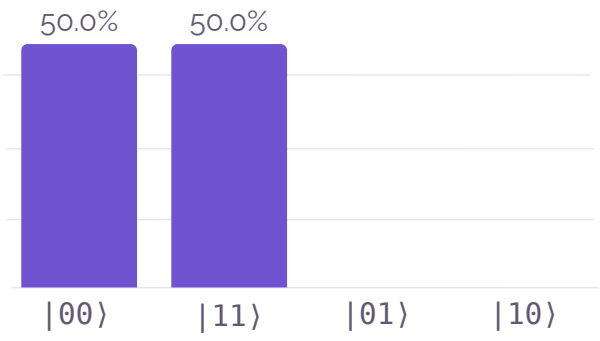
1 / 1 correct

Entanglement

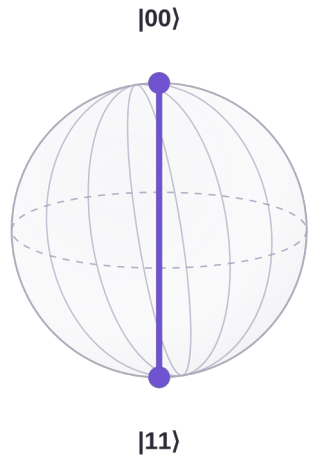
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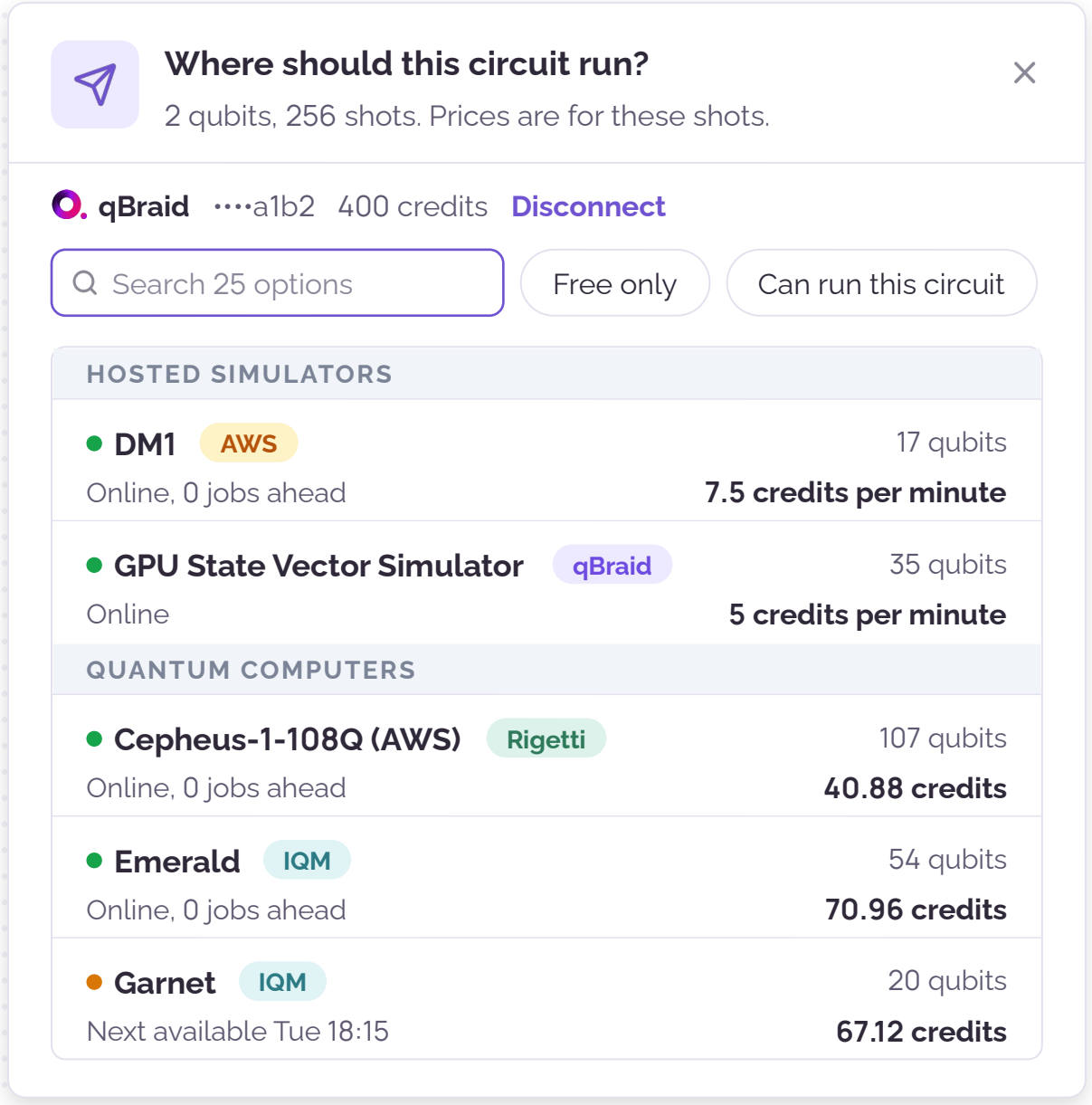


SIMULATING IN QCANVAS

Run on real quantum hardware with qBraid

Through qBraid, a qubit circuit runs on hosted simulators and quantum computers, with cost and queue shown first.

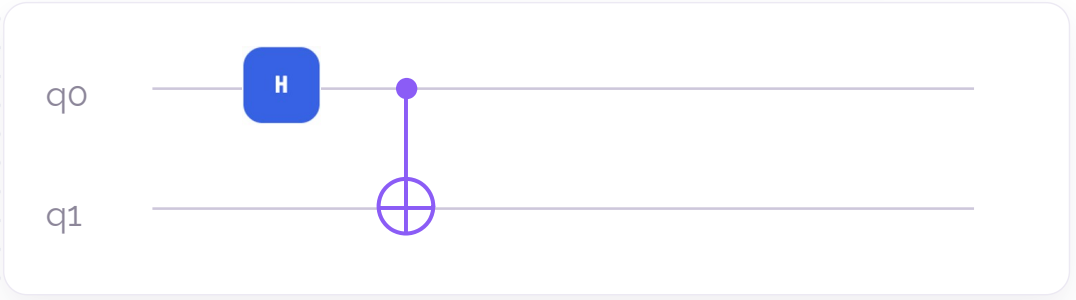




EXPORT IN DIFFERENT FORMATS

Exports to code and figures

A drawn circuit exports as code or markup, for a lecture, a notebook or a manuscript.



OpenQASM 2 | **OpenQASM 3** | Quil | QIR | Cirq | pytket

```
1 OPENQASM 3.0;
2 include "stdgates.inc";
3 qubit[2] q;
4 h q[0];
5 cx q[0], q[1];
6
```

Every format is generated from the circuit on the board, so nothing has to be kept in step by hand.

CIRCUIT FORMATS

OpenQASM 2 · OpenQASM 3 · Quil · QIR · Cirq · pytket

CODE

Qiskit · CUDA-Q · PennyLane · Workbench · Piquasso

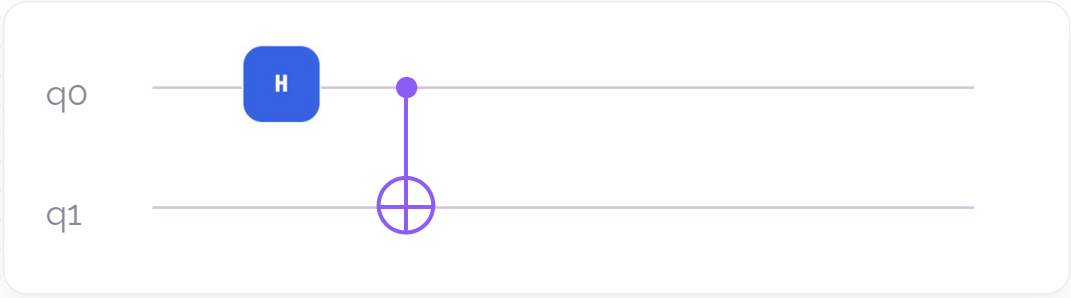
FIGURES

LaTeX (quantikz) · PNG · SVG

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Qiskit | PennyLane | CUDA-Q | Workbench | Piquasso

```
4 from qiskit import QuantumCircuit, transpile
5 from qiskit_aer import AerSimulator
6
7 qc = QuantumCircuit(2)
8 qc.h(0)
9 qc.cx(0, 1)
```

Every format is generated from the circuit on the board, so nothing has to be kept in step by hand.

CIRCUIT FORMATS

OpenQASM 2 · OpenQASM 3 · Quil · QIR · Cirq · pytket

CODE

Qiskit · CUDA-Q · PennyLane · Workbench · Piquasso

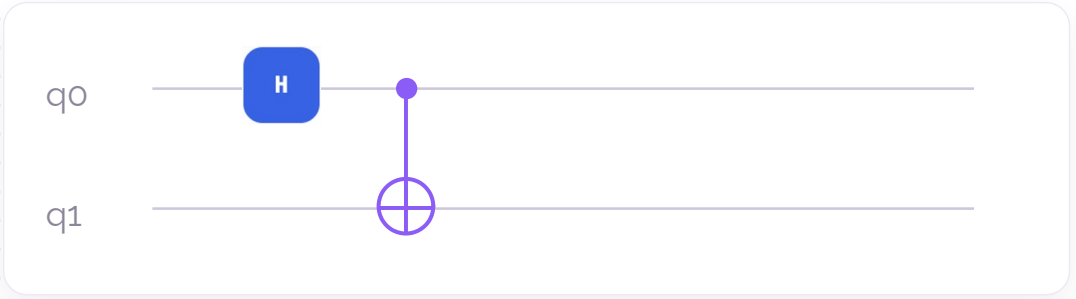
FIGURES

LaTeX (quantikz) · PNG · SVG

EXPORT IN DIFFERENT FORMATS

Exports to code and figures

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LaTeX (quantikz)

```
\usetikzlibrary{quantikz2}
\begin{document}
\begin{quantikz}
     & \gate{H} & \ctrl{1} &  \\
     &  & \targ{} &
\end{quantikz}
```

CIRCUIT FORMATS

OpenQASM 2 · OpenQASM 3 · Quil · QIR · Cirq · pytket

CODE

Qiskit · CUDA-Q · PennyLane · Workbench · Piquasso

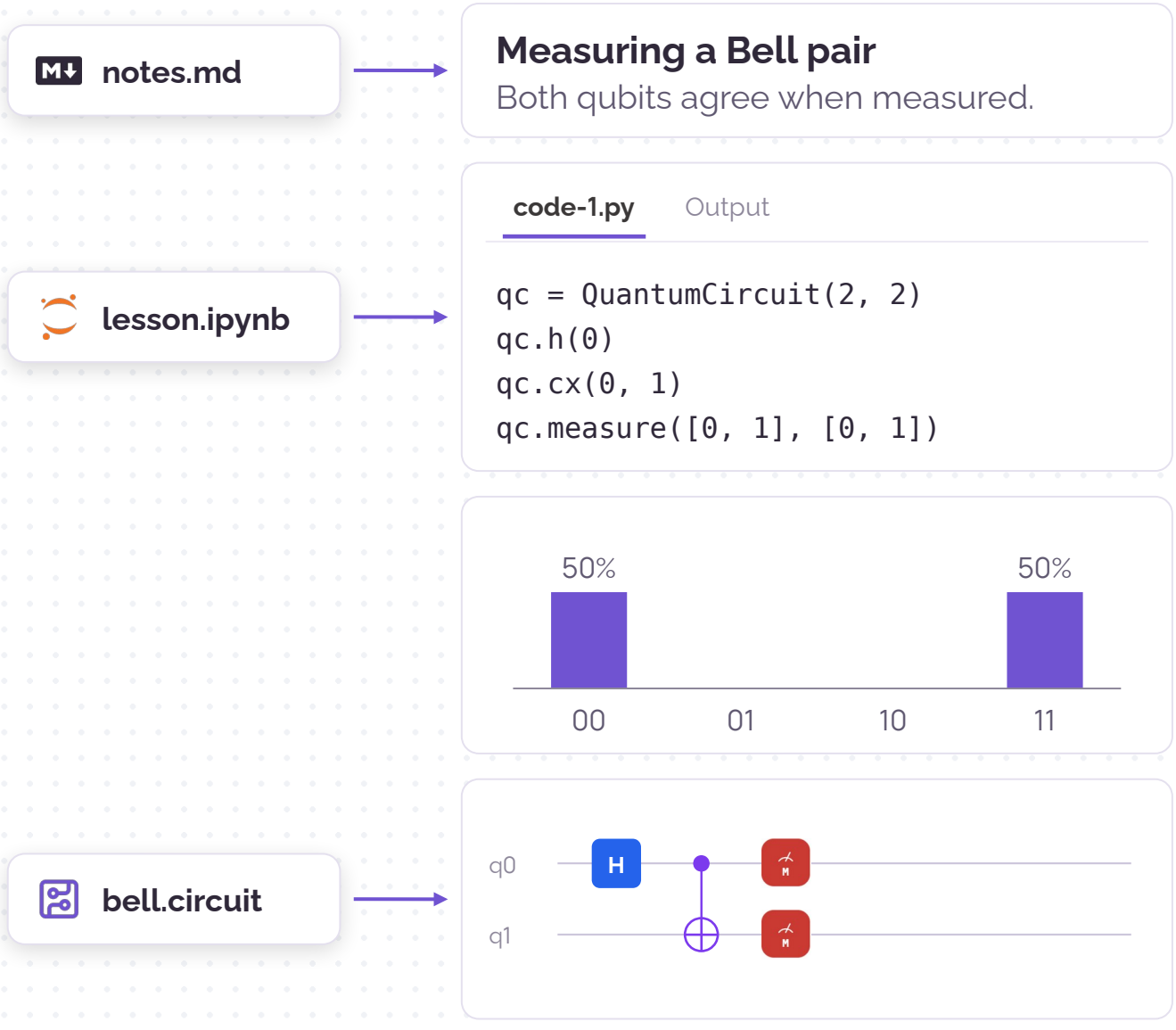
FIGURES

LaTeX (quantikz) · PNG · SVG

Every format is generated from the circuit on the board, so nothing has to be kept in step by hand.

In from other tools

A Jupyter notebook, a Markdown file or a Circuit Designer file, dropped on the canvas, arrives as text, code, pictures and circuits in one column.



QCanvas as a playground for QCR

The two platforms complement each other. We are integrating them in both directions.

qcr

qcr:2606.39573.1 Code

Grover's Algorithm with PennyLane

Optimization | PennyLane

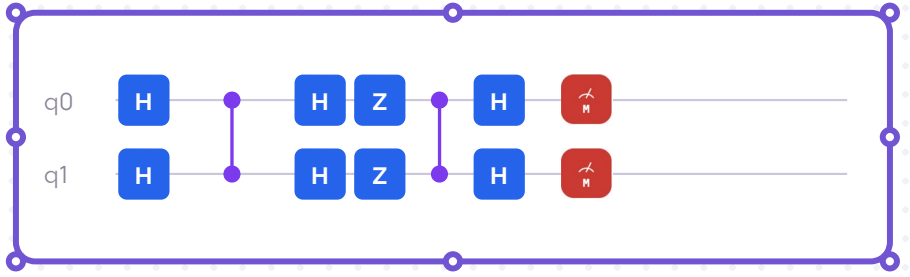
Open in QCanvas

explore an entry

Publish to QCR

with a citable identifier

QCanvas



Work with us

We welcome academic and industry partners.

Teach

Use QCanvas in your courses. It is free and needs no installation.

qcanvas.org

Contribute

Share your code, tutorials and papers on QCR, and cite them.

qcrepository.org

Integrate

Bring your SDK, tool or hardware to the canvas.

hello@qcrepository.org