Defining the quantum reality

June 2024

Pasqal

History of Pasqal & Key Figures

2019

Pasqal is founded out of the Institut d'Optique Paris, by five visionary scientists bringing a unique mix of science and engineering: Dr. Georges-Olivier Reymond, Prof. Alain Aspect (Nobel Laureate in Physics 2022), Dr. Christophe Jurczak, Dr. Antoine Browaeys, and Dr. Thierry Lahaye.

The backbone of Pasqal's neutral atoms quantum computing technology is Prof. Alain Aspect's pioneering work that earned him the Nobel Prize, with the first experiment dating back to 1980.

2021

Pasqal raises €25 M in Series A Funding to Speed Up Commercialization of Quantum Processors.

2022

First Neutral Atoms Quantum Computer available on the cloud.

Pasqal merges with Dutch quantum software start-up QU&CO to strengthen his full stack offer and customer centric strategy.

Professor Alain Aspect, co-founder of Pasqal, is awarded the Nobel Prize in Physics for experiments with entangled photons and pioneering quantum information science.

Pasqal acquires My Cryo Firm to deepen expertise to contribute to the next quantum gen processors and scaling the number of qubits.

2023

Pasqal raises €100 M in Series B funding to advance research and industrialization of neutral atoms quantum computing.

Highlighted by the BCG as the only non-US based quantum computing company developing enterprise-grade ready offer. Thanks to the most ambitous quantum use case implemented in the world together with a private customer (CA CIB).

2024

New technology roadmap focused on business utility and scaling beyond 1,000 qubits towards Fault-Tolerance Era.

A workforce of over 300 people.

A well-established global presence with offices in Europe (France, Italy, Germany, the Netherlands, United Kingdom), North America (Canada, United States), Middle East (Saudi Arabia), APAC (South Korea).

Over 50 customers and partners from Fortune 500 companies spanning more than 10 countries.

Our Vision & Mission

Vision

"Our ambition is to break through the limits of computing by leading the delivery of state-of-the art quantum computing."

Mission

"From single atoms to global impact, our passion for science helps interpret the complexity of the world."

Pasqal is a Unique Mix of Science and Engineering

"When there are no fundamental limitations, engineers find a path."

– Prof. Alain Aspect

Georges-Olivier Reymond

Co-founder & CEO

16 years in bringing new tech to the market

Prof. Alain Aspect

Co-founder & Scientific Advisor

2022 Nobel Prize Laureate in Physics

Prof. Antoine Browaeys

Co-founder & Scientific Lead

2022 Solvay conference attendee, Nature 2021 & 2023, French Sciences Academy since 2024

Defining the Quantum Reality

Pasqal and IBM Collaborate to Define Future of Quantum and HPC Integration and Development

Pasqal announced the partnership agreement with IBM on June 6, 2024.

Pasqal and IBM, as leaders in neutral atom-based quantum computing and superconducting circuits respectively, will collaborate with leading institutions in high-performance computing (HPC) to build the next generation of supercomputers powered by quantum computing.

As part of this agreement, the two partners will co-sponsor a regional HPC technical forum in Germany, with plans to expand to other geographies.

Pasqal and IBM will also focus on promoting utility-scale industry adoption in materials science and chemistry.

Pasqal Recently Announced a Groundbreaking QPU Sale to Saudi Aramco

The agreement, signed on May 20, 2024, will provide Saudi Aramco with a 200-qubit, on-prem quantum computer.
Deployment in scheduled for H2 2025.

The transaction reflects the first sale of a quantum computer in Saudi Arabia, and one of the first to a private entity.

Saudi Arabia's public and private will continue to seek out quantum technologies, with the country's Quantum Economy Project as part of their Vision 2030 national strategy.

With an established footprint in KSA (office established in 2023), and commercial experience, Pasqal is well positioned to capitalize on the growth in the country's quantum market.

April 23, 2024

First Pasqal Event Drawing 100+ Attendees from Customers and Partners

Pasqal's Where Quantum Becomes Reality event showcased latest quantum use cases and brought together blue-chip customers, partners, and industry experts from across the globe to discuss the future of quantum computing.

100+

Attendees from Customers & Partners

Quantum Will Unlock the Full Potential of AI and Enable the Green Transition.

Operating in an ~$800B+ market, quantum computing will solve AI and green transition challenges.

Quantum Enabled AI

Opportunity

Primary bottleneck is lack of computing power.

PASQAL Solution

Quantum will enable more computational power.

PASQAL is already developing quantum machine learning use cases.

Green Transition

Opportunity

Energy efficiency is critical for computational and data requirements.

PASQAL Solution

PASQAL's QPUs provide energy savings that compound rapidly with scale.

PASQAL's flagship Orion machine requires only 3kW compared to 1,400+ kW for a classical supercomputer[1].

[1] Nominal power requirements of Joliot-Curie, based on LINPACK benchmark power consumption per TOP500

Quantum computers compatible with standard environment

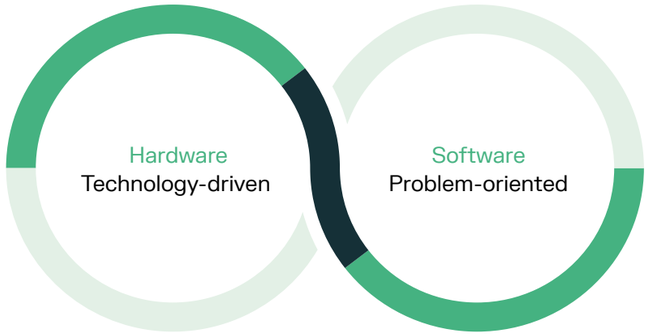
Setup at room temperature

Low energy consumption
(equivalent to 4 hair dryers)

Industrial off-the-shelf components

Our Plug and Play Quantum Computers for Customers

Pasqal Operates Utilizing a Best-in-Class Ecosystem



Co-developing hardware and software will allow Pasqal to reach Practical Quantum Advantage.

Partnership

Partners/Customers

End-User Pool
(Public and Private)

Cloud Access & Remote HPC

Development of Application Portfolio & Software Stack

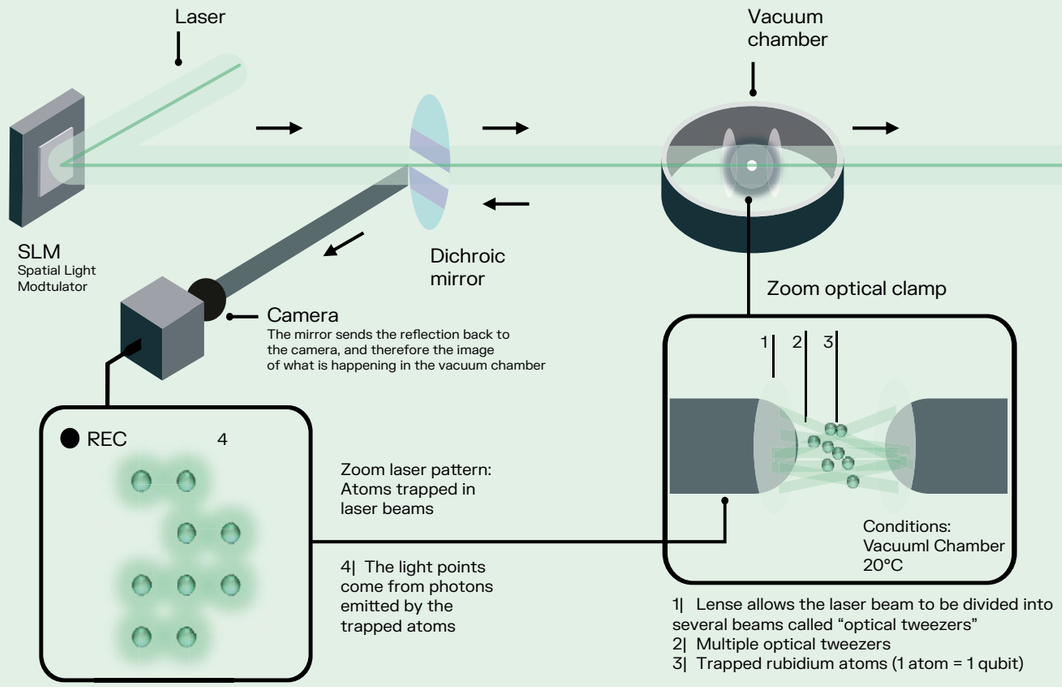
Programming Environment
(QC Framework and Open-Source Library)

Neutral Atoms Drive Our Quantum Technology

Quantum computing uses the principles of quantum physics to create computers capable of performing new calculations and improving computing speed compared to the most powerful classical computers currently available.

Using qubits, which can represent not only 0 or 1, but also a combination of both at the same time, quantum computers are able to explore a multitude of solutions simultaneously – the massive increase in computing speed makes it possible to solve highly-complex problems which classical computers cannot undertake.

Pasqal's quantum processors are built from ordered neutral atoms in 2D and 3D, and what distinguishes them is that they operate at room-temperature, are scalable and have minimal energy consumption. Different from other technologies used in quantum hardware, neutral atoms provide numerous benefits: the fastest path to error correction, the greatest scalability, the biggest connectivity and the best qubit gate fidelities to date.



Source: Quantum with computing neutral atoms, Quantum 4, 327 (2020)

The backbone of Pasqal's technology is Prof. Alain Aspect's pioneering work that earned him the Nobel Prize, with the first experiment dating back to 1980. Pasqal operates a quantum processor factory, inaugurated in 2022, and provides a full-stack solution comprised of on-prem hardware (quantum computers with over 100 qubits to end users), middleware and cloud-accessible software.

To further secure its leading position, Pasqal is set to demonstrate an industrial quantum advantage by the end of 2024 and achieve 10,000 qubits with scalable logical qubits architecture in the 2026-2027 timeframe.

"After 20 years in the field, I now strongly believe that Neutral Atoms technology has all the assets to embrace Quantum Computing challenges and unlock all its opportunities."

— Prof. Antoine Browaeys, CSO and Co-founder of Pasqal; Research Director of CNRS

Our Full-Stack Solution is Key to Driving Customer Success

Pasqal's comprehensive full-stack offer covers the full range of needs from the quantum computer hardware to the way to use it on personalized software on use cases.

Services

Access	Remote access / Cloud	Data center install	On-premise install
Platform	Coding platform	GUI	Software integrations
Solutions	Turnkey solutions per problem and sector		Chemistry, CFD[1], Finance
Libraries	Quantum (ready) algorithms per mathematical problem		PDE, optimization, ML
Support	R&D support	Tech support	Maintenance

Hardware[2] +

Orion Alpha 200-Q
Market ready and fast prototyping and screening of applications

Orion Beta / Gamma 1,000-Q
De-risked demonstration of business cases and moved into production

Vela / Pegasus 10,000-Q
GPU Cluster Emulator
Delivering reliable and consistent quantum advantage, in production on the cloud

Centaurus 10,000-Q+
Error-corrected neutral atom quantum processor comprising 128+ of logical qubits

[1] CFD represents computational fluid dynamics
[2] Q represents qubits

Our Customers & High-Value Prospects Today are Global

- On Premise Sales and Remote / Cloud Hours & Services
- Only Remote / Cloud Hours & Services

Pasqal

About Pasqal

Pasqal is a leading quantum computing company that builds quantum processors from ordered neutral atoms in 2D and 3D arrays to bring a practical quantum advantage to its customers and address real-world problems. Pasqal was founded in 2019, out of the Institut d'Optique, by Georges-Olivier Reymond, Christophe Jurczak, Professor Dr. Alain Aspect – Nobel Prize Laureate Physics, 2022, Dr. Antoine Browaeys and Dr. Thierry Lahaye. Pasqal has secured more than €140 million in financing to date.

To learn more about us, visit www.pasqal.com.

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