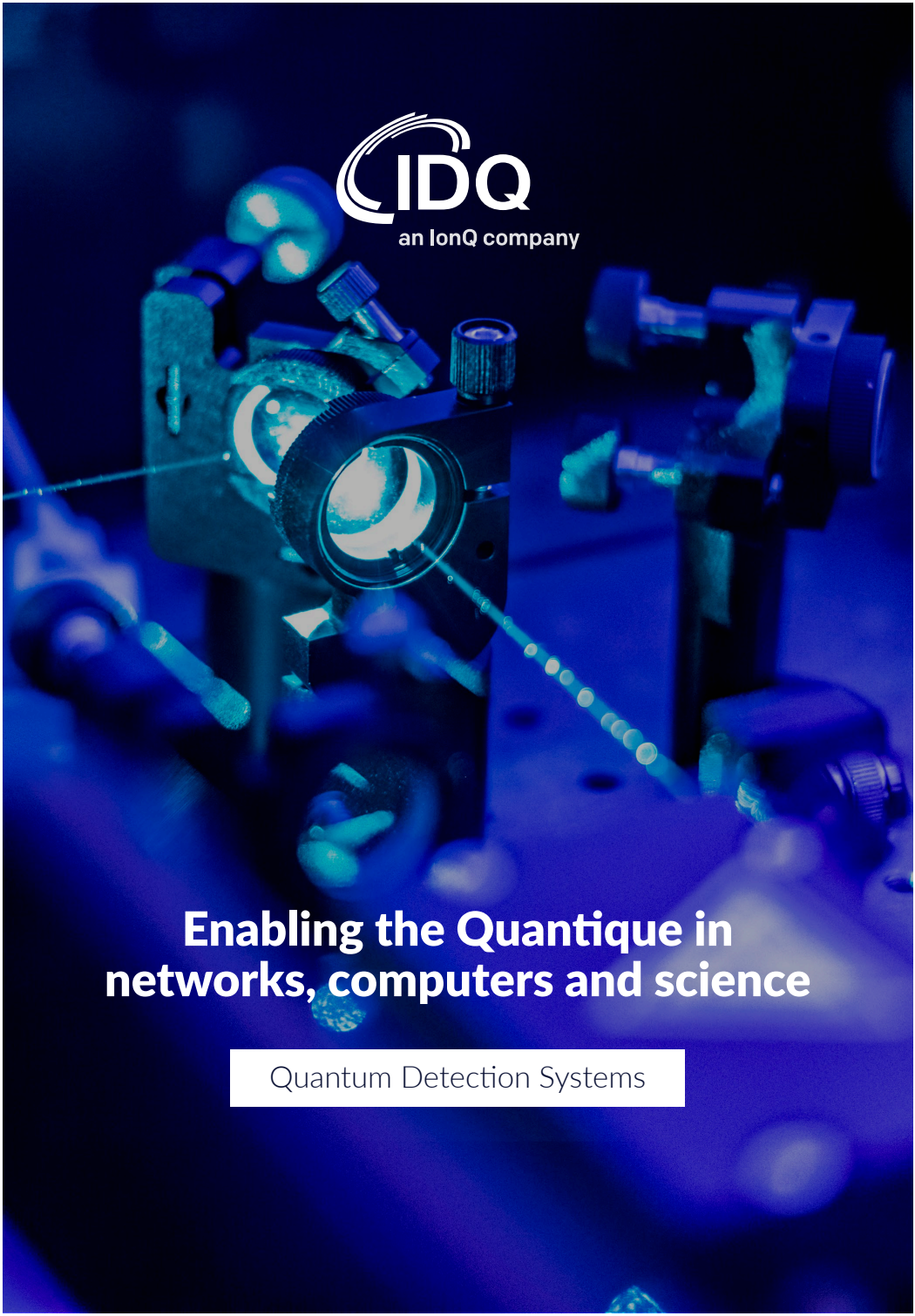

IDQ
an IonQ company
Enabling the Quantique in networks, computers and science
Quantum Detection Systems

ID Quantique, an IonQ company

From our origins in 2001 as a smalll university spin-off to the global leader we are today, we have always been driven by the same core conviction: Quantum Technologies will help tackle some of the most complex problems known to mankind, and the world will be richer for it.

We are dedicated to helping researchers, governments, and enterprises to fully harness the 2nd Quantum Revolution.

Today, we make organizations ready for a quantum-safe future through Quantum Cyber Security, and help researchers to bridge the gap from experiments to real-life applications through a range of single-photon detection devices and systems.

Our goal is to empower you to build tomorrow's world.

Through continuing passion, a strong focus on innovation, and the flexibility and experience of a dedicated team, ID Quantique has become a global quantum technology leader.

Quantum Cyber Security

We believe secure communication is a fundamental human right. The rapid rise of quantum computing has started a countdown on today's cryptographic systems, many of which will soon be obsolete. This marks the largest cryptographic migration in history.

With IDQ's quantum-safe solutions, organizations can build end-to-end, out-of-band key distribution infrastructures that ensure future-proof, quantum-safe global data protection and trust.

Quantum Detection Systems

We envision a world where light enables limitles innovation. Our quantum detection systems empower innovators in quantum communications, computing, and science with market-leading single-photon detectors — from ultra-sensitive SNSPDs and photon-number-resolving (PNR) systems to robust telecom SPADs.

By uniting precision, reliability, and manufacturing excellence, we deliver cutting-edge, seamlessly integrable detection solutions that drive scalability, speed, and performance in quantum experiments and networks, transforming single photons into the foundation of tomorrow's quantum internet.

QUANTUM DETECTION SOLUTIONS

ID Quantique serves and collaborates with researchers and developers around the world, sharing our single-photon detection devices and systems to enable their progress in the quantum technology field, and support their development of incidental photonic sensing innovations.

Selected Publications

PNR and ultrafast SNSPDs

Photon-number resolution of up to 8 photons with 250 Mcps detection rate.

Enhanced Detection Rate and High Photon-Number Efficiencies with a Scalable Parallel SNSPD
Lorenzo Stasi *et al.*, *ACS Photonics* **12**, 320 (2025)

Ultrafast single-photon detection elevates QKD key rate

Combining custom multi-pixel SNSPDs with ultra-fast electronics, delivers remarkably high quantum key rates in real-time over more than 100 km fiber.

Fast single-photon detectors and real-time key distillation enable high secret-key-rate quantum key distribution systems
F. Grünenfelder *et al.*, *Nature Photonics* **17**, 422 (2023)

Astronomy meets Quantum Optics

Developing a 20 ps resolution spectrometer for intensity interferometry on the largest telescopes, aiming for Event Horizon Telescope-like resolution in visible light.

QUASAR: Development of 20 picosecond resolution intensity interferometry
G. Koziol *et al.*, *39th International Cosmic Ray Conference*, p. 942 (2025)

3D cryogenic temperature mapping using optical fibers and SNSPDs

Advancing distributed sensing for precise cryogenic temperature monitoring with standard telecom fiber and SNSPD technology.

Cryogenic temperature 3D mapping via a distributed temperature sensor with centimeter resolution
L. Corradin *et al.*, *Optics Express* **32**, 24889 (2024)

SNSPDs power photonic Quantum Computing platform

Supporting the advancement of ORCA Computing's latest quantum-AI computing system.

Press release (2024)

Ultra-Accurate Fiber Optic Testing for Ariane 6 Control Systems

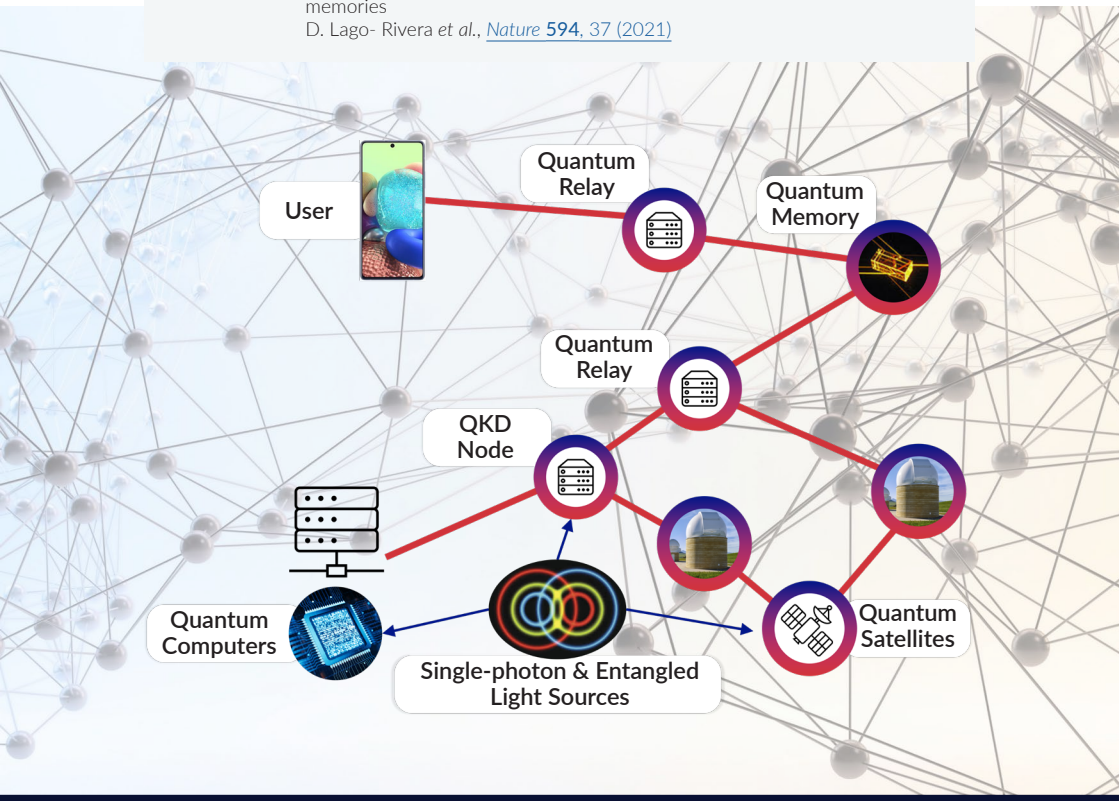
Providing ultra-high accuracy automatic ground test equipment to monitor the integrity and performance of the Ariane 6 fiber optic control system network.

Press release (2025)

Towards a Quantum Internet

Developing the infrastructure components to distribute entanglement across a quantum network for a future-proof quantum internet.

Telecom-heralded entanglement between multimode solid-state quantum memories
D. Lago- Rivera *et al.*, *Nature* **594**, 37 (2021)



SUPERCONDUCTING NANOWIRE SINGLE-PHOTON DETECTORS

Turnkey high-performance multi-channel solutions with timing electronics, representing the very best in single-photon detection. Ideal for applications with very low optical powers or a high number of detector cross-correlations.

The ID281 SNSPD System

Ideal for lab environments or applications for which form-factor and simplicity are less crucial

- ✓ Near-ideal detection efficiency: can exceed 95%
- ✓ Ultra-low noise: as low as < 1 cps dark count rate
- ✓ Superb precision: as low as < 20 ps jitter
- ✓ Hardware-based true latch-free operation at any detection rate
- ✓ Ultrafast and photon-number-resolving detector designs available
- ✓ Up to 16 detectors in one system, customized for the best performance on your application

The ID281 Pro SNSPD System

Intuitive, rack-mountable system designed for reliability and ease-of-use, ideal for quantum computing applications

All the benefits of the ID281, plus:

- ✓ Fully autonomous 24/7 continuous operation
- ✓ Rapid and simple installation
- ✓ Intuitive Web UI for remote operability
- ✓ Compact, 8U high rack mount cryogenic system with up to 16 detectors
- ✓ Optional rack-mounted vacuum pump and/or compressor

SINGLE-PHOTON AVALANCHE DETECTORS

Compact and cost-effective semiconductor-based single-photon detectors in the near infrared (900-1700 nm), for when you need reliably high efficiency, low noise, and precise timing.

The ID Qube NIR Series

Compact & cost-effective single photon detection at telecom wavelengths

The ID230 Infrared Single-Photon Detector

NIR single-photon counter with extremely few dark counts

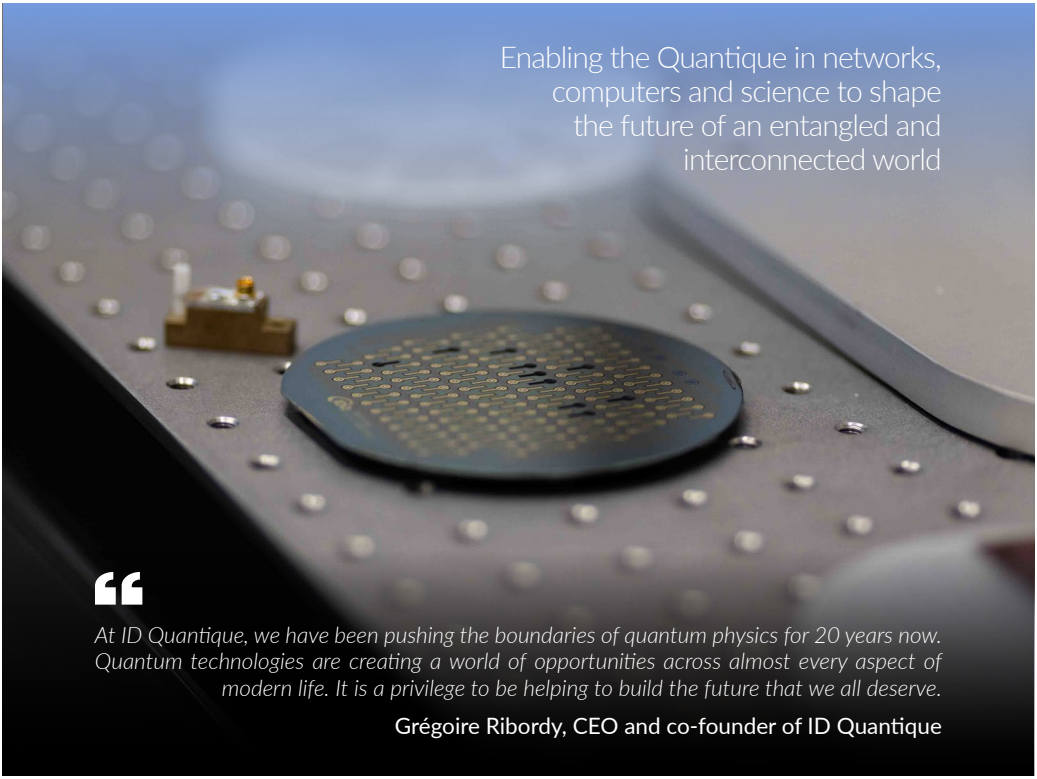
TIMING PRECISION

Picosecond-responsive electronics and photonics for rapid and precise experimental measurement and control.

The ID1000 Time Controller Series

The backbone of any single-photon experiment or application.

- 1-ps-precise time-tagging
- Real-time 4-fold coincidence filtering
- Integrated delay/pulse generation electronics



At ID Quantique, we have been pushing the boundaries of quantum physics for 20 years now. Quantum technologies are creating a world of opportunities across almost every aspect of modern life. It is a privilege to be helping to build the future that we all deserve.

Grégoire Ribordy, CEO and co-founder of ID Quantique

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