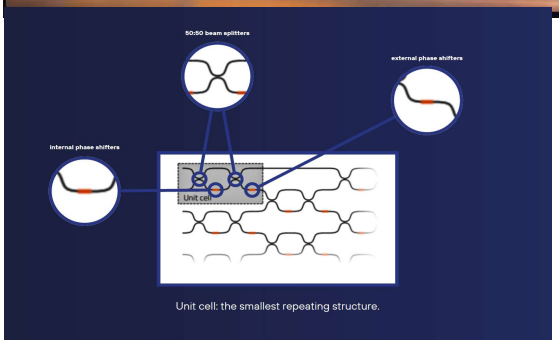
台北廣集企業

北京华通特瑞

Alquor 2.0 to Accelerate Photonic Quantum Research Beyond the Optical Table

直接替代龐大光學桌裝置,,直通光量子計算Photonic Quantum Processor的橋樑-QuiX Alquor









The unit cell consists of a Mach-Zehnder interferometer (MZI) acting as a tunable beam splitter, formed by two 50:50 beam splitters and an internal phase shifter between them, as well as an external phase shifter

Photonic Assembly Control Unit: *Thermally Controlled ,*Fully Calibrated, *PC Interface with Python,

System Integration

--fiber-coupled lightsources (single-photon sources, CW lasers, etc.),
--a demultiplexing mechanism (a DMUX or fiber switch),
--a phase locking system (if required for the experiment)
--and a detection system (PD arrays, SNSPDs, etc.).

QuiX Quantum | DLR QCI

QuiX Quantum wins €14 million contract with the German Aerospace Center to deliver a Universal Quantum Computer

QuiX Quantum | QuBriC

QuiX Quantum Advances Photonic Quantum Error Correction Through European QuBriC Initiative

Applications

Quantum Information Processing

Alquor can be used for various applications in the field of quantum information processing (QIP). Of course, Alquor alone is not enough; it can only perform as part of a larger set-up that includes, for example, single photon sources and single photon detectors, or a phase-locking solution. Below is a list of linear optics QIP protocols that are possible to run on Alquor-like devices.
These scientific papers are intended primarily as inspiration.

1. Single- and multi-qubit manipulation [1, 2]
2. Multi-photon interference [3-7]
3. Boson sampling [8,9]
4. Quantum walks [10-12]
5. Linear optics quantum gates [13-15]
6. Shors algorithm [16]
7. Variational eigenvalue solver [17]
8. Quantum phase estimation [18]
9. Generate molecular vibronic spectra [19]

What are the key advantages of Alquor?

Alquor is a turn-key solution to enhance and speed-up quantum optics experiments.

Quantum Computing

Ultimately, Alquor and its further developments can we used as the quantum processing unit (QPU) of a photonic quantum computing system.

Alternatives

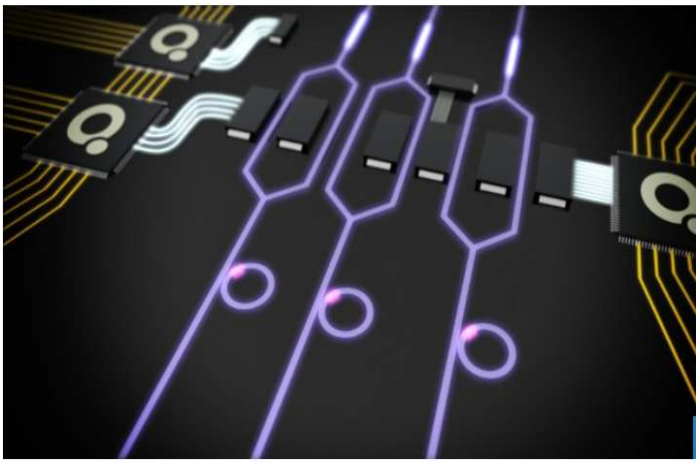
MAY REQUIRE SPECIALIZED ADDITIONAL EQUIPMENTS OR EXTENSIVE CUSTOMIZATION

Quantum Cryptography

Quantum Random Number Generation

Optical Network Switching

Optical Power Grid Distribution



Graphical representation of a photonic quantum computer with ring resonators as quantum lightsources (violet circles),waveguides (violet lines),electrically modulable Mach-Zehnder interferometers (diamonds) as well as electrical contacts (black boxes), chip control (black ICs with the Q logo) and wiring (gold and white lines).

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