LightOn Qore, a novel Quantum Photonic Processor

PARIS, France, June 1st, 2021 – Today, LightOn unveils its plan to join the quantum computing space with the LightOn Qore series of quantum photonic processors. LightOn Qores are versatile, powerful and low loss platforms designed for the rapidly growing field of NISQ (Noisy Intermediate Scale Quantum) computing.

The Qore devices feature plug-and-play photonic processors designed for robust reconfigurable unitary operations on quantum resources. As rackable units, they can be integrated into most existing optical quantum computing platforms. LightOn Qores are compatible with continuous and discrete variable systems and can deal with a wide range of wavelengths, from the visible to the telecom range. Each Qore connects up to 8 input quantum states onto 19 distinct optical railings, therefore, performing any 19x19 unitary linear operation with up to 8 entangled photons at minimal loss and a reconfigurability rate of 10Hz.

According to Sylvain Gigan, co-founder and optics advisor at LightOn *"As compact replacements for fully-fledged optical circuits, and as an alternative to integrated photonics circuits, this novel range of devices is a compelling contender for scalable photonic linear quantum optical computing. Starting from the interfacing of several qubits in its first generation, we plan to increase the circuit size in future iterations, with the aim to rapidly demonstrate a quantum advantage. In this context, a key feature of these devices is the ability to offer low losses, all-to-all circuit connectivity, and easy reconfigurability at any circuit size."*

Igor Carron, LightOn CEO, also shared his vision on how this product aligns with LigthOn's strategy :
"With this new release, LightOn builds upon its expertise in photonic processors for Artificial Intelligence and Scientific Computing. LightOn Qores can be used in non-classical applications that span from quantum computing to quantum cryptography and simulation. LightOn Qores open a new pathway for the scalability required by tomorrow's quantum computing challenges across several industries."

"The future of computing is hybrid, with Quantum Processing Units accelerating specific tasks in customers' workflows, the same way LightOn's already commercial Optical Processing Units that are bringing very substantial value to their users. This exciting development at LightOn has been achieved in record time, from the optical bench to a fully integrated and rackable device." said Charles Beigbeder of the Quantonation VC fund.

The first commercially available Qore processor is set for release in Q2 2022. This 3U rackable device features fibered inputs and outputs to interface with most quantum sources and detection systems available on the market.

About LightOn

LightOn provides high-performance Photonic Computing for some of today's largest computing challenges in Transformative AI. Its groundbreaking technology unlocks Machine Learning models orders of magnitude larger than the state-of-the-art, by re-imagining the whole hardware and algorithmic stack. LightOn's technology is currently available to a large community of users (Data Scientists, Machine Learning scientists and engineers) on-premises with the LightOn Appliance, or through the LightOn Cloud. Founded in 2016, LightOn is funded by Anorak Ventures and Quantonation and is headquartered in Paris, France. LightOn.ai

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