Cambridge Quantum Computing teams up with CERN to advance quantum technologies

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Cambridge Quantum Computing (CQC) is looking to explore and advance the application of quantum technologies to particle physics as part of the QUATERNION project in the CERN openlab.

Quantum computers and their potential is being researched by CERN through the openlab. The team is collaborating with major hardware vendors and users of quantum computing, launching a number of projects in this realm.

According to CERN, the enhanced computational capabilities of quantum computers could help to improve the analysis and classification of their vast data sets, thus helping to push back the boundaries of particle physics.

More recently, the CERN openlab team have stated they will leverage the power of t|ket, CQC's proprietary quantum development platform for the QUATERNION project.

CQC's t|ket converts machine-independent quantum circuits into executable circuits, reducing the number of required operations whilst optimising physical qubit arrangements.

The architecture-agnostic nature of t|ket will help the members of the CERN openlab project team to work across multiple platforms to achieve optimal results even on today's noisy quantum hardware, CERN states.

The QUATERNION project will also investigate the application of CQC's four qubit quantum technology device named Ironbridge to CERN's Monte Carlo methods for data analysis.

Such methods are not only a vital component of particle physics research, but are also applicable to many other areas, such as financial and climate modelling, CERN states.

Monte Carlo methods use high-quality entropy sources to simulate and analyse complex data. Using CQC's IronBridge platform, the world's first commercially available device-independent and quantum-certifiable cryptographic device, the teams will investigate for the first time the effects of certified entropy on Monte Carlo simulations.

CQC founder and CEO Ilyas Khan says, "We are excited to collaborate with CERN, the European Laboratory for Particle Physics, on this innovative quantum computing based research project.

"CQC is focussed on using the world's best science to develop technologies for the coming quantum age. Joining CERN openlab is a special development for any organisation and we look forward to developing advances together."

CERN openlab head Alberto Di Meglio says, "Our unique public-private partnership works to accelerate the development of cutting-edge computing technologies for our research community.

"Quantum computing research is one of the most exciting areas of study today; we are pleased to welcome CQC and their world-class scientists into collaboration with us."

CQC is a quantum computing software company that builds tools for the commercialisation of quantum technologies that will have a global impact.

CQC combines expertise in quantum software, specifically a quantum development platform (t|ket), enterprise applications in the areas of quantum chemistry (EUMEN), quantum machine learning (QML), and quantum augmented cybersecurity (IronBridge).

The company states it has a deep commitment to the cultivation of scientific research.