GROUP BOOKING OFFER:
WHEN 2 COLLEAGUES ATTEND THE 3RD GOES FREE!
CONFERENCE OVERVIEW

THURSDAY 21ST NOVEMBER:
MAIN CONFERENCE STREAM:
QUANTUM COMPUTING IN FINANCE CONFERENCE

IMPORTANT NOTES:

The conference files will be made available for download via a password protected website before the event. Please print out each presentation if you wish to have hard copies before the conference and bring them with you.

Also, Wi-Fi access will be available at the venue to view presentations on laptops and mobile devices.

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- When 2 colleagues attend the 3rd goes free!
- Early Bird Discount: 20% until 18th October 2019
- Academic Discount 70%. FULL-TIME students only. Please respect this, we will check. The academic discount can’t be used in conjunction with some of our other discounts.

LOCATION

LEVEL39
ONE CANADA SQUARE
CANARY WHARF
LONDON
E14 5AB
www.level39.co
08:00 – 08:55  REGISTRATION AND MORNING WELCOME COFFEE

08:55 – 09:00  CHAIR INTRODUCTION:
David Garvin: Principal Researcher Quantitative Analysis, Rigetti

09:00 – 09:45  FINANCIAL INDUSTRY APPLICATIONS OF QUANTUM COMPUTING

Quantum computing is an emergent technology with the potential to increase computational capabilities for organisations. The financial applications of quantum computing should increase profit, reduce risk and enhance the customer experience. This presentation will cover:

- Technology and landscape.
- Important quantum algorithms.
- Applicability of quantum algorithms to financial use cases.
- Three developed examples of financial applications using quantum computing, involving Monte Carlo simulation, approximate optimisation, and machine learning algorithms.

Presenter: David Garvin: Principal Researcher Quantitative Analysis, Rigetti

09:45 – 10:30  PANEL: PREPARING THE ORGANIZATION FOR QUANTUM COMPUTING

PANELLISTS:
- Alexei Kondratyev: Managing Director, Head of Data Analytics, Standard Chartered Bank
- Marco Paini: Quantum Computing – Program Management and Business Development, Rigetti
- Paul Warburton: Professor of Nanoelectronics, University College London
- Geoff Kates: CEO, HTF Group

TOPICS:
- How to train the workforce?
- How to educate management and develop a proper quantum computing strategy?
- How to identify financial applications with potential to be implemented on quantum computers?
- How to derive value from your quantum computing activities?

10:30 – 11:00  MORNING BREAK AND NETWORKING OPPORTUNITIES

11:00 – 11:45  QUANTUM COMPUTING AND QUANTUM MACHINE LEARNING: QUANT FINANCE PERSPECTIVE

- Gate model and analog quantum computing
- Quantum Neural Networks
- Boltzmann Machines and Born Machines

Presenter: Alexei Kondratyev: Managing Director, Head of Data Analytics, Standard Chartered Bank
11:45 – 12:30  PROSPECTS FOR A SOLID-STATE QUANTUM COMPUTER

Presenter: Paul Warburton: Professor of Nanoelectronics, University College London

12:30 – 13:30  LUNCH

13:30 – 14:15  PROSPECTS AND CHALLENGES IN QUANTUM COMPUTING RESEARCH FOR THE PRICING OF FINANCIAL DERIVATIVES

Presenter: Ángel Rodríguez-Rozas: Associate Director, Quantitative Analyst, Model Validation, Banco Santander

14:15 – 15:00  THE PATH TO REALIZING PRACTICAL QUANTUM COMPUTERS

Abstract:

The challenge to build a universal quantum computers has been described as difficult as manned space travel to Mars. By inventing a new method where voltages applied to a quantum computer microchip are used to implement entanglement operations, we have managed to remove one of the biggest barriers traditionally faced to build a large-scale quantum computer, namely having to precisely align billions of lasers to execute quantum gate operations.

In order to be able to build large scale device, a quantum computer needs to be modular. One approach features modules that are connected via photonic interconnect, however, with only very small connection speeds between modules demonstrated so far. We have invented an alternative method where modules are connected via electric fields, allowing ions to be transported from one module to another giving rise to much faster connection speeds.

Incorporating these two inventions, we recently unveiled the first industrial blueprint on how to build a large-scale quantum computer which I will discuss in this talk. I will show progress in constructing a quantum computer prototype at the University of Sussex featuring this technology. So far only proof-of-principle quantum computers exist. I will explain the development path towards building practical quantum computers with sufficiently many qubits capable of solving problems intractable for the even fastest supercomputers. Such machines should then be capable for highly disruptive applications in the financial sector.

Presenter: Prof. Winfried Hensinger: Professor of Quantum Technologies, University of Sussex

15:00 – 15:30  AFTERNOON BREAK AND NETWORKING OPPORTUNITIES

15:30 – 16:15  THE QUEST FOR QUANTUM ADVANTAGE IN THE FINANCIAL SECTOR

Presenter: Mattia Fiorentini: Head of Machine Learning and Quantum Algorithms, Cambridge Quantum Computing

16:15 – 16:45  QUANTUM COMPUTING FOR SECURITIES TRANSACTION SETTLEMENT

Presenter: Lee Braine: Director of Research and Engineering, Barclays
16:45 - 17:30  PANEL: WHICH FINANCIAL APPLICATIONS WILL BECOME QUANTUM COMPUTING KILLER APPS?

PANELLISTS:

- Prof. Winfried Hensinger: Professor of Quantum Technologies, University of Sussex
- David Garvin: Principal Researcher Quantitative Analysis, Rigetti
- Mattia Fiorentini: Head of Machine Learning and Quantum Algorithms, Cambridge Quantum Computing
- Ángel Rodríguez-Rozas: Associate Director, Quantitative Analyst, Model Validation, Banco Santander

TOPICS:

- Which applications are causing the most pain for financial institutions, or provide the most opportunity, due to their characteristics as potential candidates for a quantum computing solution?
- What algorithms do you think will create quantum advantage for the financial industry?
- What proof would a bank need to see to believe advantage?
- What hardware characteristics will provide the best potential to obtain value?
- Which parts of a financial organization should investigate quantum computing?

END OF CONFERENCE
Established in 2014, Cambridge Quantum Computing (CQC) is a world leading independent quantum computing software company, with operations in US, Europe & Japan. CQC builds tools for the commercialisation of quantum technologies whose long-term impact will be profound. CQC design solutions that benefit from quantum computing even in its earliest forms and allow the most effective access to these solutions for the widest variety of corporate and government users.

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

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Rigetti Computing develops and delivers integrated quantum and classical computing capabilities over the cloud. The company’s flagship product, Quantum Cloud Services, provides dedicated access to quantum hardware and a development environment tailored for practical applications. Rigetti serves government and commercial customers in the finance, insurance, energy, pharmaceutical, and chemical industries with customized application design and development. Rigetti was founded in 2013 and is based in Berkeley, California with offices in Fremont, California; Washington, D.C.; London, U.K.; and Adelaide, Australia.

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FLIGHT DETAILS:
All delegates flying into London on the morning of the event are reminded that they should arrive 30 minutes before the event starts for registration. The location of the venue is approximately 1 hour from all 3 main London airports, Heathrow, Gatwick and City. Returning flights should equally allow for the events finishing time.

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