CONFERENCE + CAREERS FAIR

QUANTUM AUSTRALIA

PRESENTED BY:

SYDNEY QUANTUM ACADEMY

02:2023

Sydney + Online

Make quantum opportunities happen in New South Wales

New South Wales (NSW) has globally-competitive capabilities in quantum computing and devices, as well as major businesses investing in R&D, pilots and early adoption approaches.

This, along with being the nation's best performing economy, makes NSW the ideal place for businesses looking to expand in Australia and Asia-Pacific.

A quantum powerhouse

NSW has strong R&D capabilities in quantum computing and devices

NSW has more universities with world-leading quantum science capabilities than any other state in Australia

NSW is a leading regional hub for the emerging quantum industry, with some of Australia's largest investments

The Quantum Terminal in Sydney's Tech Central, offers 3000+ sqm of affordable co-working space for quantum startups

NSW GOVERNMENT

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Investment NSW

A message from the Chair of the Quantum Australia Conference Steering Committee

WELCOME TO THE SECOND QUANTUM AUSTRALIA CONFERENCE AND CAREERS FAIR!

It is an exciting time for the quantum industry in Australia and overseas. Interest in quantum remains high, despite the challenges facing emerging technologies provided by the current financial environment.

We are looking forward to building on the success of last year's inaugural event and welcoming people from across industry, academia and government with an expanded program here in Sydney and online.

The conference theme for Quantum Australia 2023 is 'Building the foundations for a quantum economy'. The program will explore the role of industry-led initiatives, government policy and innovative Australian and international collaborations in helping to drive the industry forward.

It is an exciting time for the quantum industry in Australia and overseas. Interest in quantum remains high, despite the challenges facing emerging technologies provided by the current financial environment. The unique potential of quantum technology and the ground-breaking developments delivered over the past year, all to be discussed over the coming days, are helping to drive continued interest and investment. We will hear from our expert quantum science community, from industry leaders, and government representatives on the latest in collaborative efforts to build the quantum ecosystem.

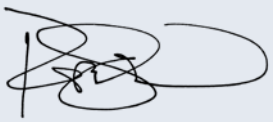
Perhaps the most important investment we can make is in emerging talent. The poster sessions will highlight the achievements of some of our community's brightest researchers. During the careers fair on day three, we will also hear about the multitude of quantum career opportunities on offer in the expanding quantum ecosystem.

Thanks to our sponsors for their support, including our official government sponsor NSW Government, our Platinum sponsors Diraq and Keysight Technologies, and the more than 20 other sponsors and exhibitors helping to make Quantum Australia a reality.

I would also like to thank Sydney Quantum Academy's founding partners, Macquarie University, UNSW Sydney, University of Sydney and University of Technology Sydney and their representatives on the Conference Steering Committee.

We very much hope you enjoy the event. Your input is also appreciated – please take advantage of our post-event surveys to let us know what you would like to see at Quantum Australia 2024.

Kind regards,



Prof Peter Turner, CEO
Sydney Quantum Academy

QUANTUM AUSTRALIA

CONFERENCE STEERING COMMITTEE

ARNE LAUCHT – Associate Professor, School of Electrical Engineering & Telecommunications, UNSW Sydney; Program Manager, ARC Centre of Excellence for Quantum Computation and Communication Technology (CQC2T); Head of Quantum Measurement, Diraq

DANIEL BURGARTH – Professor and ARC Future Fellow, Macquarie University, Chief Investigator, ARC Centre of Excellence for Engineered Quantum Systems (EQUS)

KRISTEN MULLIGAN – Manager, Science & Research Policy, Office of the NSW Chief Scientist & Engineer, Department of Enterprise, Investment and Trade

MARIKA KIEFEROVA – Senior Lecturer, Centre for Quantum Software and Information, University of Technology Sydney; Research Scientist, Google Quantum AI

TING REI TAN – University of Sydney; Sydney Quantum Academy (SQA) Fellow; ARC Future Fellow; Associate Investigator, EQUS

STUDENT REPRESENTATIVE - Ritika Bazzad, SQA PhD Scholar at UTS

SYDNEY QUANTUM ACADEMY TEAM – Peter Turner – CEO; Renee Williams - Manager, Communications and Marketing; Pauline Woo – Manager, Engagement, Industry and Entrepreneurship; Tara Wolfson – Events Officer

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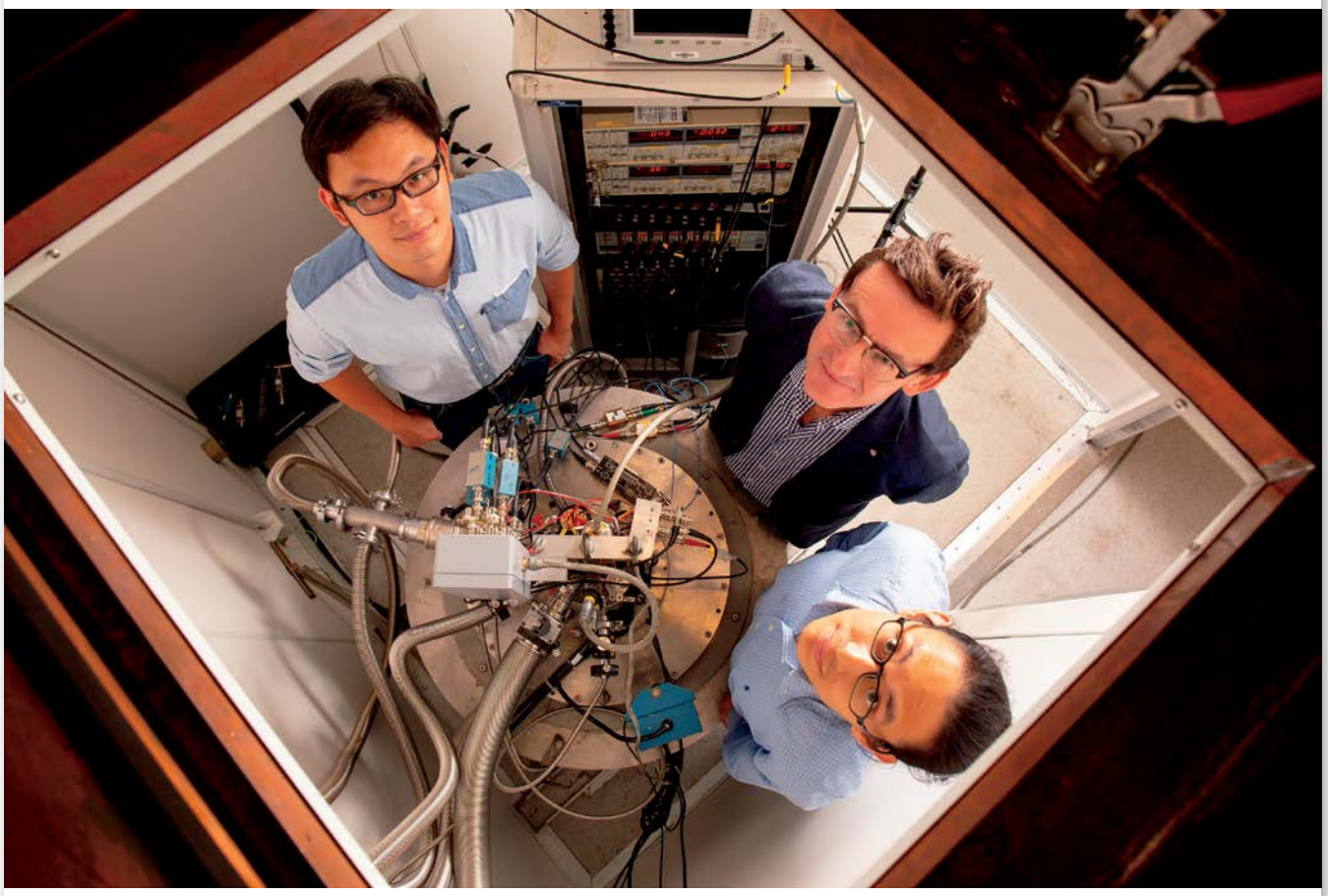

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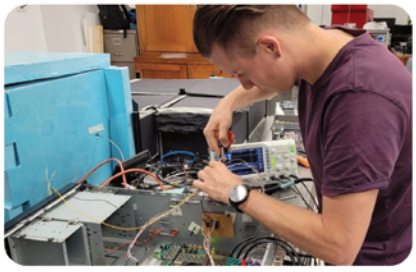
Quantum Brilliance is the world leader in room temperature diamond quantum computing technology.

In 2022 we deployed the world's first room temperature quantum computer in a computer centre, at Australia's largest supercomputing centre, Pawsey Supercomputing Centre.



We also work with companies today to access our software suite, and work with developers to start designing and testing quantum applications.

Our Products

Diamond quantum computer
Plug & play, operates at room temperature, low power consumption, and low barrier to adoption.

Quantum Software Suite
Our software suite includes development tools to help expert users to explore quantum applications. We support popular open-source frameworks and can be programmed in Python or C++.

Quantum Applications Co-Development
We work with customers to explore how room-temperature diamond quantum computers can unlock new possibilities in their industries and create proprietary use cases.

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Enable the New Quantum Engineering Era with Keysight

Innovators
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DAY 1

Sheraton Grand Sydney Hyde Park + Online

Please note program may be subject to change

8.30 am	**Registration and Arrival Tea and Coffee**	
9.00 am	**Welcome to Country and Official Opening**	*Brian Boyle*, Chair, Sydney Quantum Academy *Bernie Hobbs*, Event MC
9.30 am	**Keynote Presentation**	*Dr Cathy Foley*, Australia's Chief Scientist
10.00 am	**Panel: State of the Nation**	*Bronwyn Fox*, Chief Scientist, CSIRO *Anthony Murfett*, Head of Division for Technology and National Security, Department of Industry, Science, Energy and Resources *Kate Pounder*, CEO, Tech Council of Australia *Peter Turner*, CEO, Sydney Quantum Academy *Judi Zielke PSM*, CEO, Australian Research Council *Emma Johnston,* Deputy Vice-Chancellor (Research), University of Sydney *(Panel Chair)*
11.00 am	**Morning Tea, Exhibitor Booths (online and in-person)**	
11.30 am	**Panel: Industry-led quantum initiatives**	*Celia Merzbacher*, Executive Director, Quantum Economic Development Consortium (QED-C) SRI International (V) *Araceli Venegas-Gomez*, Founder & CEO, QURECA *Vikram Sharma*, Founder & CEO, QuintessenceLabs *(Panel Chair)*
12.00 pm	**Presentation: Accelerating quantum computing by bridging theory and experiment**	*Joel Wallman*, Scientific Planner and Software Architect, Keysight Technologies
12.30 pm	**Presentation: The potential for quantum in biotechnology**	*Warwick Bowen*, Professor, School of Mathematics and Physics, the University of Queensland; and Director, ARC Centre of Excellence in Quantum Biotechnology
1.00 pm	**Lunch, Exhibitor Booths (online and in-person)**	
1.45 pm	**Panel: The role of government in quantum ecosystem development** Proudly sponsored by: diraq	*Dana Anderson*, Founder & Chief Strategy Officer, Infleqtion *Michael J. Biercuk*, CEO, Q-CTRL *Hugh Durrant-Whyte*, NSW Chief Scientist and Engineer *Tanya Monro AC*, FAA, FTSE, FOSA, FAIP, Chief Defence Scientist, Defence Science and Technology Group, Department of Defence *Camille DeBurgh*, General Manager, Technology Policy and Engagement in the Technology and National Security Division within the Department of Industry, Science and Resources *(Panel Chair)*

CONFERENCE PROGRAM
DAY 1 – 21 FEBRUARY 2023

(V) = joining virtually

DAY 1 – Conference Program *continued*		
2.45 pm	**Presentation: Quantum Canada**	***Barry C Sanders***, Professor, University of Calgary
3.15 pm	**Afternoon Tea; Networking (online and for in-person at the Keysight Technologies Lounge); Poster Session (in-person only) sponsored by PsiQuantum; Exhibition (online and in-person)**	
3.45 pm	**Ask me anything quantum Q&A *(in-person only)***	***Simon Devitt***, Research Director, Centre for Quantum Software & Information, University of Technology Sydney; Cofounder and Managing Director, h-bar ***Andrew Doherty***, Professor, School of Physics, University of Sydney ***Zixin Huang***, Sydney Quantum Academy and DECRA Fellow
4.30 pm	**Panel: Quantum technologies and sustainability** Proudly sponsored by: KEYSIGHT	***Alexia Auffèves***, Research Director, Head of the CNRS International Research Lab MajuLab, Singapore (V) ***Alex Hamilton***, Deputy Director, Australian Research Council Centre for Future Low Energy Electronics (FLEET) ***Elanor Huntington***, Executive Director-Digital, National Facilities and Collections, CSIRO ***Christian Weedbrook***, CEO & Founder, Xanadu Quantum Technologies ***John Bartholomew***, Senior Lecturer, University of Sydney *(Panel Chair)*
5.30 pm	**Closing Remarks**	***Bernie Hobbs,*** Event MC
5.45 pm	**Welcome Cocktail Party (in person only)** *Sheraton Grand Sydney Hyde Park* **Proudly sponsored by Diraq**	

Sheraton Grand Sydney Hyde Park

DAY 2

Sheraton Grand Sydney Hyde Park + Online

Please note program may be subject to change

8.30 am	**Registration and Arrival Tea and Coffee**	
9.00 am	**Day Two Opening**	
9.15 am	**Panel: What will it take to build a fully functional quantum software stack?** Proudly sponsored by: IBM Quantum	*Andrew Doherty*, Professor, School of Physics, University of Sydney *Mark Hodson*, Software Engineering Director, Rigetti Computing *Jingbo Wang*, Professor and Head of Physics Department, The University of Western Australia *Owen Arnold*, Lead Software Engineer, Oxford Quantum Circuits (V) *Michael Bremner*, Director of the Centre for Quantum Software and Information, University of Technology Sydney *(Panel Chair)*
10.15 am	**Presentation: The Digital Future Initiative and what it means for Australia's quantum ecosystem**	*Kate Weber*, Interim Global Lead for Emerging Technologies Policy, Google (V)
10.45 am	**Morning Tea, Exhibitor Booths (online and in-person)**	
11.15 am	**Panel: Cyber security in the quantum age** Proudly sponsored by: aws	*Alexey Bocharnikov*, APAC Quantum Technology Leader, EY *Lily Chen*, Manager, Cryptographic Technology Group, Computer Security Division, National Institute of Standards and Technology, USA (V) *Julian Fay*, Chief Technology Officer, Senetas *Peter Rohde*, Senior Lecturer, UTS *Gavin Brennen*, Professor, Macquarie University *(Panel Chair)*
12.15 pm	**Presentation: Establishing a new national laboratory - NQCC purpose & progress**	*Michael Cuthbert*, Director, National Quantum Computing Centre (UK)
12.45 pm	**Lunch, Exhibitor Booths (online and in-person)**	
1.30 pm	**Keynote Presentation: Silicon photonic quantum computing – towards large-scale systems**	*Jeremy O'Brien*, Co-founder & CEO, PsiQuantum
2.15 pm	**Ministerial Keynote: Delivering on Australia's strengths in quantum technologies**	*The Hon Ed Husic MP*, Federal Minister for Industry and Science

CONFERENCE PROGRAM
DAY 2 – 22 FEBRUARY 2023

(V) = joining virtually

DAY 2 – Conference Program *continued*		
2.45 pm	**Afternoon Tea; Networking (online and for in-person at the Keysight Technologies Lounge); Poster Session (in-person only) sponsored by PsiQuantum; Exhibition (online and in-person)**	
3.15 pm	**Ask me anything quantum Q&A *(in-person only) with SQA Experts***	
4.00 pm	**Panel: Will quantum chemistry be the first to achieve useful quantum computational advantage?** Proudly sponsored by: CSIRO	*Jared Cole*, Professor of Physics, RMIT University *Pedro C.S. Costa*, Research Fellow, Macquarie University *Nicole Holzmann*, Manager, Quantum Science, Riverlane *Ivan Kassal*, Associate Professor, University of Sydney *(Panel Chair)*
5.00 pm	**Closing Remarks**	*Bernie Hobbs,* Event MC
6.30 pm	**Gala Dinner (in person only) *Sheraton Grand Sydney Hyde Park***	

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Are you ready to join the quantum wave?

We're building the next-generation of technologies to create new markets, new applications and new jobs in Australia. Collaborate with us to unlock a better future.

csiro.au/quantum

Australia's National Science Agency

DAY 3

Sheraton Grand Sydney Hyde Park + Online

Please note program may be subject to change

8.30 am	**Registration and Arrival Tea and Coffee**	
9.00 am	**Day Three Opening**	
9.15 am	**Panel: The race to fault-tolerant quantum computing hardware** Proudly sponsored by: OXFORD INSTRUMENTS	*Arkady Fedorov*, Assoc Prof, University of Queensland; Chief Scientific Officer, Analog Quantum Circuits *Yasunobu Nakamura*, Director, RIKEN Center for Quantum Computing and Professor, The University of Tokyo (V) *Hanhee Paik*, Senior Research Scientist, IBM Quantum *David Reilly*, Partner Architect, Microsoft Quantum *Michelle Simmons*, Director, Centre of Excellence for Quantum Computation and Communication Technology, Founder and Director, Silicon Quantum Computing *Xanthe Croot*, Lecturer, University of Sydney *(Panel Chair)*
10.15 am	**Keynote Presentation: Reimagining silicon chips for a quantum future**	*Andrew Dzurak*, CEO & Founder, Diraq
11.00 am	**Morning Tea, Exhibitor Booths (online and in-person)**	
11.30 am	**Panel: Australia's strengths in quantum sensing** Proudly sponsored by: KPMG	*Andre Luiten*, Managing Director, QuantX Pty Ltd *Silvana Palacios*, Lead Quantum Physicist, Nomad Atomics *Jim Rabeau*, Director, Quantum Technologies, CSIRO *(Panel Chair)*
12.00 pm	**Panel: Bridging the research to commercialisation gap** Proudly sponsored by: QUANTUM BRILLIANCE	*Clare Birch*, Associate and Scientist in Residence, Blackbird *Lucas Hakewill*, Accelerator Program Manager, UNSW Founders *Nat Puffer*, Managing Director, IQT International *Thomas Volz*, Professor, Macquarie University; Strategic Partnerships Manager, Redback Systems *Annie Parker*, Executive Director, Tech Central, Greater Cities Commission *(Panel Chair)*
1.00 pm	**Closing of Conference**	
1.15 pm	**Closing Lunch (conference delegates only)**	
2.00 pm	**CAREER FAIR BEGINS - Registration + Poster Session (in-person only)**	
2.30 pm	**Careers Fair Opening**	

CAREERS FAIR PROGRAM
DAY 3 – 23 FEBRUARY 2023

(V) = joining virtually

DAY 3 – Careers Fair *continued*		
2.45 pm	**Panel: The skills needed to succeed in quantum**	***Liz Bridge***, Strategic Talent Partner, Quantum Brilliance ***Dilan Rajasingham***, ANZ Business Development & GTM Solutions Lead, Amazon Web Services (AWS) ***Ian Hill***, President and CIO, Silicon Quantum Computing ***Michael Egan***, Director, Quantum Technologies, KPMG Futures ***Rebecca Halligan***, Chief Operating Officer, Sydney Quantum Academy ***(Panel Chair)***
3.30 pm	**Panel: Quantum Careers: Academia vs Industry**	***Alexandra Dickie***, Test and Equipment Engineer, Diraq ***Anna Phan***, Asia Pacific Partner Lead, IBM Quantum ***Rose Ahlefeldt***, Senior Research Fellow, The Australian National University ***Muhammad Usman***, Team Leader Quantum Systems, Data61/CSIRO ***Maja Cassidy***, Scientia Fellow and Senior Lecturer, UNSW Sydney ***(Panel Chair)***
4.15 pm	**Afternoon Tea, Poster Session (in-person only), Employer Booths (online and in-person)**	
5.30 pm	**Careers Fair Concludes**	

Let's build the future of quantum together

IBM Quantum is at the forefront of ushering in an era of practical quantum computing.

In 2022 we delivered Osprey, the largest quantum processor to date with 433 qubits, and ibm_sherbrooke, our most performant 127-qubit system yet. We also introduced the ability to run dynamic circuits to open new avenues for achieving near-term quantum advantage.

To date, we've had over 400,000 users access the IBM Quantum Experience Platform and welcomed 210+ IBM Quantum Network members. We also have the largest open-source quantum developer community, running over 1 billion executions a day on a fleet of 20+ of the most powerful commercially available quantum computers in the world.

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For over 15 years, Amazon Web Services has been collaborating with researchers around the world, providing the tools that accelerate the time to science. Amazon Braket provides users with priority access to different types of quantum computers and circuit simulators, and run hybrid quantum-classical algorithms faster and easier with no classical infrastructure to manage.

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MAKING THE MOST OUT OF QUANTUM AUSTRALIA

Here are some tips and tricks to make sure you get the most out of the Quantum Australia experience over the next three days and beyond.

Whether you are joining us in person or online, there are plenty of ways to engage with the program and other attendees.

For more detail on how to use our online platform, please see the '***How-to Guide***' at:

live.quantum-australia.com

Check out our exhibitors

We have over 20 in-person exhibitors and online booths from across government and industry.

Make some connections!

You can view the Quantum Australia attendee list and send a message to fellow delegates at ***live.quantum-australia.com***

Update your profile

Ensure your attendee profile is up to date on the online platform.

Catch up with content on-demand

Missed a session? All content will be made available within 48 hrs of live sessions.

Visit the research poster room to meet with poster authors

You can vote for your favourites to go in the running for a People's Choice Award.

Join in the conversation

Post a question to Q&A, join the discussion board or use ***#QuantumAustralia*** on social media.

Meet up at the networking lounge

For those joining in-person, you can meet with colleagues or fellow delegates at the **Keysight Technologies** Networking Lounge

QUANTUM AUSTRALIA SPEAKERS AND PANELLISTS

Ministerial Keynote Speaker

The Hon Ed Husic MP

Federal Minister for Industry and Science.

The Hon Ed Husic MP is the Federal Minister for Industry and Science and has been the Member for Chifley since 2010. Rebuilding Australia's manufacturing capacity and delivering secure, rewarding and well-paid jobs to Australians is of the highest priority for Mr Husic. This requires placing industry and workers in the driver's seat to maximise opportunities domestically and abroad. Mr Husic has a strong and ongoing interest in the Australian science, tech and digital sectors, and has been vocal about the need for the country to think ahead about the impact of technology on jobs and communities – to help industry prepare and capitalise on future opportunities.

Before entering Federal Parliament Mr Husic worked in roles spanning the private and public sectors, including as National President of the Communications, Electrical and Plumbing Union and at Integral Energy (now Endeavour Energy). Mr Husic was raised and educated in Western Sydney, a community he is proud to represent in Parliament.

Keynote Speaker

Andrew Dzurak

CEO & Founder, Diraq.

Professor Andrew Dzurak is an innovator and entrepreneur in the global quantum technologies ecosystem, leading teams in both industry and academia.

He is CEO & Founder of Diraq, a full-stack quantum computing company employing the silicon CMOS qubits developed by his team at UNSW Sydney over the past two decades. He is also concurrently a Scientia Professor in Quantum Engineering at UNSW Sydney, an ARC Laureate Fellow and a Member of the Executive Board of the Sydney Quantum Academy.

Keynote Speakers

Cathy Foley

Australia's Chief Scientist.

Dr Cathy Foley AO PSM is Australia's ninth Chief Scientist. Her term began in January 2021 after an extensive career at Australia's national science agency, the CSIRO, where she was appointed as the agency's Chief Scientist in August 2018.

Dr Foley is an internationally recognised physicist with major research achievements in superconductors and sensors which led to the development of the LANDTEM sensor system to locate valuable mineral deposits deep underground. Dr Foley's scientific excellence and influential leadership have been recognised with numerous awards and fellowships, including election to the Australian Academy of Science in 2020, and an Order of Australia for service to research science and to the advancement of women in physics.

She is also a Fellow of Australian Academy of Technological Science and Engineering (2008) and an honorary Fellow of the Australian Institute of Physics (2019). Dr Foley's previous roles include membership of the Prime Minister's Science, Engineering and Innovation Council, President of the Australian Institute of Physics, and President of Science and Technology Australia.

Jeremy O'Brien

Co-Founder & CEO, PsiQuantum.

PsiQuantum is building a large-scale general-purpose silicon photonic quantum computer to solve the many important problems that will forever be beyond the capabilities of any conventional computer. Prior to founding the company, Jeremy was Professor of Physics and Electrical Engineering at Stanford and Bristol Universities, and Director of the Centre for Quantum Photonics.

He has spent more than 20 years working towards scalable quantum computing, including: micro-, nano- and atomic-scale design, fabrication and operation of superconducting and semiconductor devices; design, construction and operation of cryogenic and ultra-high vacuum systems; design, construction and application of low-noise electrical measurement to organic-, super- and semi-conductor (nano)structures; and the theory of quantum computing.

Master of ceremonies

Bernie Hobbs

Bernie Hobbs is best known as a popular judge from ABC TV's The New Inventors, and her many years presenting science on ABC radio & TV around Australia.

She has won awards for the kids TV show the experiMENTALS, and for her greenhouse website PlanetSlayer. Bernie has a first class honours degree in biochemistry and microbiology, and before joining the ABC did brief stints in medical research and science teaching.

Bernie has MC'd and chaired her way through many forums and events for clients including the Prime Minister's Prizes for Science, The Association of Australian Medical Research Institutes (AAMRI), CSIRO, World Science Festival Brisbane, The Investor Group on Climate Change, a swathe of government departments and writers festivals, WaterAID Australia, 1Million Women, The Sustainable Living Festival, Queerscreen, Mardi Gras, The World Congress of Science Journalists, and Questacon.

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Panellists

PANEL: State Of The Nation

Bronwyn Fox

Chief Scientist, CSIRO.

Professor Bronwyn Fox is Chief Scientist of CSIRO, Australia's national science agency and innovation catalyst. Professor Bronwyn Fox joined CSIRO in October 2021 and became CSIRO's fourth female Chief Scientist. She is known globally as a leader in advanced manufacturing, materials science, and industry 4.0 technologies, and is passionate about bringing together multidisciplinary teams for collaborative research.

She was formerly Deputy Vice-Chancellor (Research and Enterprise) at Swinburne University of Technology and founding Director of Swinburne's Manufacturing Futures Research Institute. During that time, she established of a world first Industry 4.0 Testlab for additive manufacturing of carbon fibre composites, in collaboration with CSIRO.

Anthony Murfett

Head of Division for Technology and National Security within the Department of Industry, Science, Energy and Resources.

The Division for Technology and National Security is responsible for providing advice, delivering programs and engaging domestically and internationally on the digital economy, emerging and critical technologies that will be central to Australia's economic prosperity, safety, security and social cohesion. This includes in areas such as quantum technologies, AI, cyber security capabilities, digitization as well as critical technologies.

Previously, Anthony was the inaugural Deputy Head of the Australian Space Agency, where he had oversight of the establishment of the Agency, as well as strategy, policy and day-to-day operations. Anthony has also worked as Minister Counsellor, Industry, Science and Education at the Australian Embassy in Washington DC and as General Manager of the Growth Centres Branch within the Department of Industry, Innovation and Science in Canberra.

Kate Pounder

CEO, Tech Council of Australia.

Kate is an experienced tech policy expert and senior executive who has worked across the public, private and non-profit sectors. She is the CEO of the Tech Council of Australia, the peak body representing the Australian tech sector.

Before her time in consulting, she spent 15 years working in technology policy roles with the Australian Industry Group, National ICT Australia (NICTA), Network Ten, and the Federal Government. Kate is passionate about growing Australia's tech sector, creating new jobs and businesses, and helping all Australian businesses make the most of tech adoption.

Panellists and Chair

Peter Turner

CEO, Sydney Quantum Academy (SQA).

Peter is the inaugural CEO of Sydney Quantum Academy, and holds an Honorary Professorship in the School of Mathematical and Physical Sciences at Macquarie University as a member of the Centre for Quantum Engineering. Active in the quantum information field for nearly 20 years, Peter completed his PhD in Physics at the University of Toronto, followed by an Alberta Ingenuity Fellowship at the Institute for Quantum Information Science at the University of Calgary, and then an Assistant Professorship at the University of Tokyo.

As Director of the Quantum Engineering Centre for Doctoral Training at the University of Bristol, in 2014 Peter established one of the world's first programs aimed specifically at preparing graduates for the nascent quantum technology industry.

Judi Zielke PSM

CEO, Australian Research Council (ARC).

Judi Zielke commenced as CEO of the ARC on 1 February 2022. She brings a passion for research and innovation, especially the process of taking an idea into a practical outcome for Australia. She was previously Chief Operating Officer, CSIRO, where her responsibilities included oversight of the operations of the organisation with specific focus on governance, corporate affairs, finance and infrastructure and major investments.

Ms Zielke has had a lengthy public sector career encompassing a range of policy advice and implementation positions in the Australian Government in the industry and innovation, infrastructure, trade and Attorney General's portfolios. She was also Chief Coordinator, Joint Agency Coordination Centre, which was established by the Prime Minister in March 2014 to coordinate the Australian Government's support for the search into missing flight MH370. Her work was recognised with a Public Service Medal in 2015.

CHAIR: Emma Johnston

Deputy Vice-Chancellor (Research), University of Sydney.

Professor Johnston is a leading authority in marine ecology, a sustainability and diversity champion and a Chief Author of the Australian State of Environment Report 2021. She is the Deputy Vice-Chancellor (Research) at the University of Sydney. She has held the roles of Pro Vice-Chancellor (Research) and Dean of Science at UNSW, and is a past President of Science & Technology Australia (STA).

Prof Johnston has led major research projects for industry, government, the ARC and the Australian Antarctic Science Program and contributed to the development of national and international research priorities and plans.

She is a Director of the Great Barrier Reef Marine Park Authority and Governor of the Ian Potter Foundation. Prof Johnston was made an Officer of the Order of Australia (AO) in 2018 for distinguished service to higher education, particularly to marine ecology and ecotoxicology, as an academic, researcher and administrator, and to scientific institutes.

Panellists

PANEL: Industry-Led Initiatives

Araceli Venegas Gomez

Founder & CEO, Qureca.

After several years working for Airbus, Araceli followed her passion for quantum mechanics and moved to Scotland to pursue a PhD in quantum simulation. Following discussions with the different quantum stakeholders over the years, Araceli identified the need to bridge the gap between businesses and academia, and to raise quantum awareness to the public.

She was named the "quantum ambassador", after winning the OPTICA Milton and Rosalind Chang Pivoting fellowship in 2019. Araceli then founded her own company called QURECA (Quantum Resources and Careers) to create a link between the different stakeholders in the quantum community through a common language.

Celia Merzbacher

Executive Director, Quantum Economic Development Consortium (QED-C) SRI International.

Dr Celia Merzbacher is Executive Director of the Quantum Economic Development Consortium (QED-C), which aims to grow the quantum industry.

Dr Merzbacher has two decades of experience leading technology initiatives and partnerships. Previously, she was Vice President for Innovative Partnerships at the Semiconductor Research Corporation. In 2003-2008, she was Assistant Director for Technology R&D in the White House Office of Science and Technology Policy and also served as Executive Director of the President's Council of Advisors on Science and Technology (PCAST). She is a Fellow of the AAAS and serves on advisory boards for several quantum centres.

CHAIR: Vikram Sharma

Founder & CEO, QuintessenceLabs.

Vikram has over 20 years of success in building and managing technology companies and has positioned QuintessenceLabs as a global leader in quantum cybersecurity. QuintessenceLabs emerged from the world-leading research Vikram conducted with the Australian National University Quantum Optics Group in the Department of Physics. Prior to founding QuintessenceLabs in 2008, Vikram founded three successful startup companies, including one of India's first private ISPs and a consulting company that provided IT services to the federal government in Australia.

Vikram serves on the World Economic Forum's Global Future Council on Cybersecurity and is a member of the Wall Street Journal CEO Council, the Forbes Technology Council, and the Sydney Quantum Academy Advisory Board. He holds a Master of Science in computer science from the Australian National University, a Master of Science in management (Sloan Fellow) from Stanford University, and a doctorate in quantum physics from the Australian National University.

Presenters

PRESENTATION: Accelerating quantum computing by bridging theory and experiment

Joel Wallman

Scientific Planner and Software Architect, Keysight Technologies.

Dr Wallman holds a PhD in Physics specialising in Quantum Information from the University of Sydney. Joel is the co-founder and the former CTO of Quantum Benchmark, a company that spun off from the Institute for Quantum Computing at the University of Waterloo in 2017. Quantum Benchmark was acquired by Keysight in 2021.

Joel is a co-author of 37 peer-reviewed papers in quantum information, and the co-inventor of two patents around characterizing and operating noisy quantum computers. Currently, he is architecting a fully functional quantum software stack that is integrated with Keysight's control hardware.

PRESENTATION: The potential for quantum in biotechnology

Warwick Bowen

Professor, School of Mathematics and Physics, the University of Queensland; and Director, ARC Centre of Excellence in Quantum Biotechnology.

Professor Bowen's research focuses on the implications of quantum science on precision measurement, and applications of quantum measurement in areas ranging from quantum condensed matter physics to the biosciences.

He is a Fellow of the Australian Institute of Physics, Director of the University of Queensland Precision Technologies Translation Hub, and Director of the ARC Centre of Excellence in Quantum Biotechnology. His lab has made important contributions to quantum-light microscopy, for e.g., demonstrating absolute quantum advantage for the first time (Nature, 2021).

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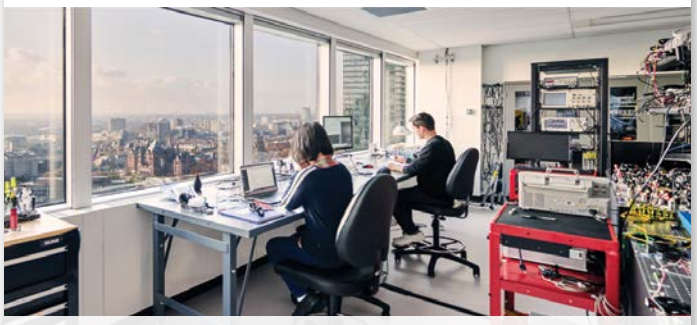

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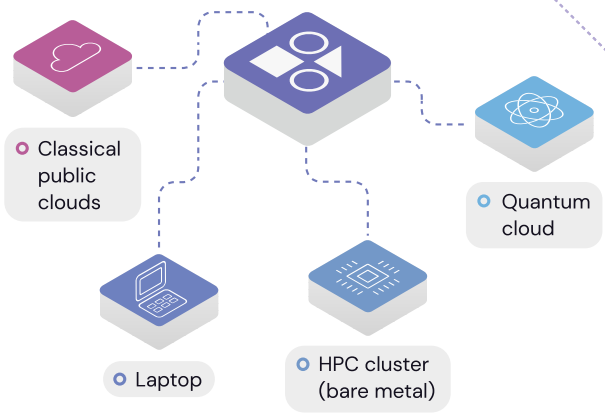

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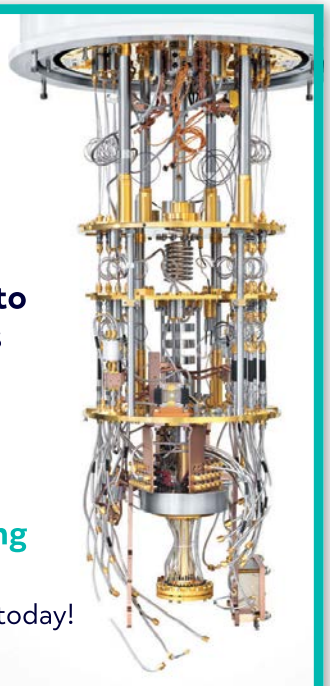

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Panellists

PANEL: The role of government in quantum ecosystem development

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Dana Anderson

Founder & Chief Strategy Officer, Infleqtion.

Dana Anderson is co-founder and the former CEO of ColdQuanta, now Infleqtion. Currently he serves as Chief Strategy Officer. In addition, Dana is a Fellow of the JILA Institute, and a Professor in the Departments of Physics as well as the Department of Electrical Engineering at the University of Colorado, Boulder. He serves on the Steering Committee of the Quantum Economic Development Consortium (QED-C). Dana is a Fellow of the Optical Society of America and the American Physical Society and is a recipient of the R.W. Wood Prize of Optica and the Willis E. Lamb Award in Physics of Quantum Electronics.

Michael J. Biercuk

CEO, Q-CTRL.

Michael Biercuk is the CEO and Founder of Q-CTRL, Australia's first VC-backed quantum technology company, a Professor of Quantum Physics and Quantum Technology at the University of Sydney, and a Chief Investigator in the ARC Centre of Excellence for Engineered Quantum Systems (EQUS). Michael is a pioneer in the discipline of quantum control engineering, learning how to make systems obeying the rules of quantum physics perform useful work – from computing to sensing.

Michael earned his undergraduate degree from the University of Pennsylvania, and his Masters and PhD from Harvard University. He held a research fellowship in the Ion Storage Group at NIST Boulder, and has served as a fulltime technical consultant to DARPA, helping to steer government investments in quantum information and advanced computer architectures. Michael is a SXSW and TEDx speaking alumnus and a multi-time Australian Museum Eureka Prize nominee and winner.

Hugh Durrant-Whyte

NSW Chief Scientist and Engineer.

From 2017-18 Hugh was Chief Scientific Advisor to the UK Ministry of Defence, from 2010-2014, he was CEO of National ICT Australia (NICTA), and from 1995-2010 Director of the ARC Centre of Excellence for Autonomous Systems, an ARC Federation Fellow, and the founding Director of the Australian Centre for Field Robotics (ACFR) at the University of Sydney.

Hugh is an honorary Fellow of Engineers Australia (HonFIEAus), a Fellow of the IEEE (FIEEE), of the Australian Academy of Science (FAA), of the Royal Academy of Engineering (FREng), and of the Royal Society of London (FRS).

Panellist and Chair

Tanya Monro AC, FAA, FTSE, FOSA, FAIP

Chief Defence Scientist, Defence Science and Technology Group, Department of Defence.

Professor Tanya Monro commenced as Chief Defence Scientist in March 2019. In this role she is head of Defence Science and Technology Group (DSTG) and Capability Manager for Innovation, Science and Technology for Defence.

In June 2022, Prof Monro was awarded a Companion of the Order of Australia (AC) for eminent service to scientific and technological development, research and innovation, tertiary education, and professional organisations.

Her previous roles include Deputy Vice Chancellor Research and Innovation (University of SA) and inaugural director of the Institute for Photonics and Advanced Sensing and the ARC Centre of Excellence for Nanoscale Bio Photonics (University of Adelaide). Prof Monro is a Fellow of the Australian Academy of Science, the Australian Academy of Technology and Engineering (ATSE), the Optical Society of America and the Australian Institute of Physics. She also sits on the board of CSIRO.

CHAIR: Camille de Burgh

General Manager, Technology Policy and Engagement in the Technology and National Security Division within the Department of Industry, Science and Resources.

The Technology and National Security Division is responsible for providing advice, delivering programs and engaging domestically and internationally on the digital economy, emerging and critical technologies that will be central to Australia's economic prosperity, safety, security and social cohesion. This includes areas such as quantum technologies, AI, cyber security capabilities, digitization as well as critical technologies. A significant focus is on ensuring Australia is positioned to capture these opportunities through the growth of Australia's industry. Within the division, Camille's responsibilities include Quantum, Cyber Security Policy, engagement with technology companies and international fora such as G20 and OECD.

Camille has been at DISER for 18 months, working across a variety of roles including, Property and Security and COVID-19 response. Prior to joining the department, Camille spent 24 years as a career diplomat in the Department of Foreign Affairs and Trade. Over her career, Camille had postings to Hong Kong and Bangkok and covered a variety of policy areas for the department.

Presenter and Panellists

PRESENTATION: Accelerating quantum computing by bridging theory and experiment

Barry Sanders

Professor, University of Calgary.

Barry Sanders is Scientific Director of Calgary's "Quantum City". His 1988 Doctor of Philosophy and 2018 Doctor of Science are from Imperial College London, and his research includes quantum sensing, quantum computing and quantum communication.

He is a distinguished visiting professor at the University of Science and Technology of China, a Scientist Mentor with the Creative Destruction Lab at the Universities of Toronto and Calgary, and an affiliate of the Perimeter Institute for Theoretical Physics. He is a Fellow of the Royal Society of Canada, of the United Kingdom Institute of Physics, of the American Physical Society, and of Optica, and he received the City of Calgary International Achievement Award 2022.

PANEL: Ask me anything quantum

Simon Devitt

Research Director, Centre for Quantum Software & Information, University of Technology Sydney; Cofounder and Managing Director, h-bar.

A/Prof Simon Devitt is Research Director at the Centre for Quantum Software & Information at UTS. His research focuses on Quantum Error Correction and Fault-tolerance, the design of large-scale quantum computing and communications systems and the compilation and resource optimisation of quantum algorithms.

Simon is the co-founder and managing director of h-bar quantum consultants and Co-founder of a new quantum startup, Eigensystems Pty Ltd. Having spent over a decade overseas working in the quantum computing programs of the UK and Japan, Simon has worked with numerous corporations, startups and VC firms on their expansion into the quantum technology space and advised multiple government agencies on multimillion-dollar R&D initiatives.

Panellist: Andrew Doherty

Professor, School of Physics, University of Sydney. (See page 32 for full biography).

Panellists

Zixin Huang

Sydney Quantum Academy and DECRA Fellow.

Dr Zixin Huang obtained her PhD in quantum photonics at the University of Sydney, before moving to the University of Sheffield (UK) for a postdoctoral position as part of the Quantum Communications Hub.

She is currently a SQA and DECRA Fellow whose research at the Macquarie Centre for Quantum Engineering involves exploring how astronomers can utilise enhanced quantum imaging to probe deeper into space with unprecedented resolution.

KEYSIGHT

PANEL: Quantum technologies and sustainability

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Alexia Auffèves

Research Director, Head of the CNRS International Research Lab MajuLab, Singapore.

Alexia was appointed Head of the CNRS International Research Lab MajuLab (Singapore) in January 2023. After an experimental PhD under the supervision of Prof S. Haroche, she was recruited at CNRS in 2005 in Grenoble where she developed a research line around the theory of quantum optics and quantum thermodynamics.

She promotes the physics-philosophy interface within the Grenoble Centre for Quantum Science and Technologies, which she ran from 2017 to 2022. In 2022, she launched the Quantum Energy Initiative (QEI), an interdisciplinary and international research community to understand and minimize the energetic footprint of emerging quantum technologies.

Alex Hamilton

Scientia Professor of Physics, UNSW; Deputy Director of the Australian Research Council Centre for Future Low Energy Electronics Technologies (FLEET).

Alex Hamilton is one of Australia's leading experimental condensed matter physicists. He is Deputy Director of the Australian Research Council Centre for Future Low Energy Electronics Technologies (FLEET), a Fellow of the American Physical Society, and a Scientia Professor of Physics at UNSW.

He completed his BSc at Imperial College London, and his PhD and EPSRC Postdoctoral Fellowship at the Cavendish Laboratory, Cambridge. His research interests include developing topological materials for low-power electronics and using semiconductor holes for high-speed quantum computation. Industry collaborations have included Nippon Telegraph and Telecommunications in Japan and the semiconductor research conglomerate IMEC in Europe.

His research group's website is www.physics.unsw.edu.au/qed.

Panellists and Chair

Elanor Huntington

Executive Director- Digital, National Facilities and Collections, CSIRO.

Prior to CSIRO, Elanor was the Dean of the College of Engineering and Computer Science at the Australian National University (ANU). She has also held Board appointments at Innovation Science Australia, Significant Ventures, Questacon and other government scientific advisory roles. Elanor was elected a Fellow of the Academy of Technology and Engineering in 2020 and was named an honorary Fellow of Engineers Australia in 2017. She led the extended Group of Eight (Go8+) Engineering Deans as first female Chair from 2017-2019.

In 2000, Elanor completed her PhD in experimental Quantum Optics. Her current research includes the control of quantum systems, more specifically; the interface between theory and applications. She was a Program Manager in the ARC Centre of Excellence for Quantum Computation and Communication Technologies for nearly two decades.

Christian Weedbrook

CEO & Founder, Xanadu Quantum Technologies.

Christian Weedbrook is the CEO and Founder of Xanadu Quantum Technologies, a Canadian quantum technology company building fault-tolerant quantum computers using light. Over the last 15 years, he has been at the forefront of bringing quantum technology to the world through his research and leadership in academia, government, and industry.

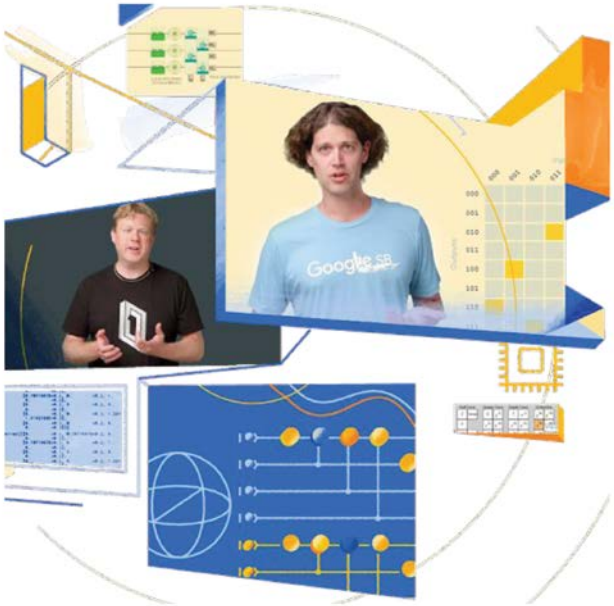
Christian holds a PhD in Physics from the University of Queensland and held postdoc positions at MIT and the University of Toronto.

CHAIR: John Bartholomew

Senior Lecturer, University of Sydney.

Dr John Bartholomew is the Director of the Quantum Integration Laboratory and a Chief Investigator for the Centre of Excellence for Engineered Quantum Systems. His research group builds technologies for the quantum internet including new qubit platforms, high-capacity long-lived quantum memories and interconnects for hybrid optical-microwave systems. John is known for his contributions to understanding solid-state rare-earth ion systems, which have led to new qubit and quantum network technologies.

Prior to commencing his position at The University of Sydney in 2019, he worked in Europe and the USA, including as an American Australian Association Northrop Grumman Fellow at Caltech.



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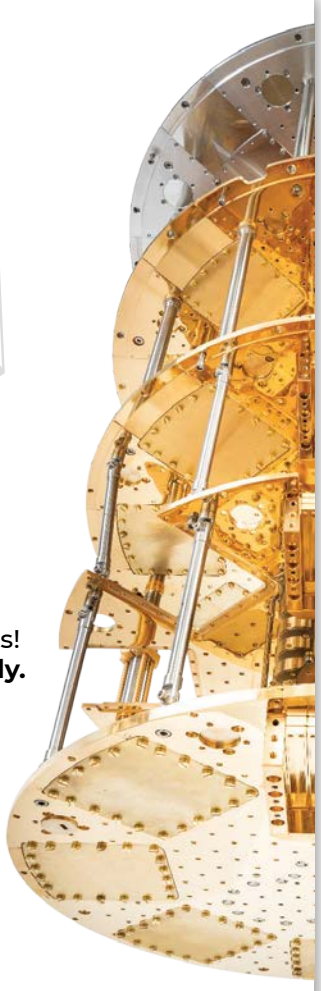

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DAY 2

22 February
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Panellists

IBM Quantum

PANEL: What will it take to build a fully functional quantum software stack?

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Andrew Doherty

Professor, School of Physics, University of Sydney.

Professor Andrew Doherty is a theoretical physicist in the School of Physics at The University of Sydney with more than 20 years of experience in quantum physics research. His research interests are in quantum control, quantum information, and quantum computing. He has extensive collaborations with experimentalists in a wide range of systems from quantum optics, including cavity QED and optomechanical systems, to condensed matter, including circuit QED and semiconductor quantum dots.

Andrew completed his PhD at the University of Auckland in 2000 and did postdoctoral research at the California Institute of Technology before taking on academic positions at the University of Queensland and the University of Sydney. From 2019 to 2021 he worked for quantum computing company PsiQuantum, including as CTO from March 2020.

Mark Hodson

Software Engineering Director, Rigetti Computing.

Mark is a software and systems engineer with more than six years' experience in the quantum computing industry, and more than twenty years' experience in research and development and technology transfer roles.

Mark has led applied research in quantum computing with US National Laboratories and Global Fortune 100 companies, and serves technical and management roles on collaborative projects with members of the Australian quantum ecosystem.

Jingbo Wang

Professor and Head of Physics Department The University of Western Australia.

Professor Jingbo Wang is leading an active research group in quantum information, simulation and algorithm development at the QUISA Research Centre (https://quisa.tech/) hosted at The University of Western Australia. Prof Wang and her team pioneered quantum walk-based algorithms to solve computationally challenging problems of practical importance, which include complex network analysis, graph theoretical studies, combinatorial optimisation, quantum machine learning, and quantum simulation. She is currently also the Head of Physics Department, Deputy Head of School of Physics, Mathematics and Computing at UWA, and Chair of Quantum Science and Technology Topical Group within the Australian Institute of Physics.

Panellist, Chair and Presenter

Owen Arnold

Lead Software Engineer, Oxford Quantum Circuits.

Owen joined Oxford Quantum Circuits as Lead Software Engineer, responsible for the software components integral to the operation of the quantum computing systems.

Prior to joining OQC, Owen worked as part of a scientific and engineering software consultancy for 14 years. For more than a decade, Owen has built and managed scientific software projects as part of international collaborations and most recently, has worked with the European Spallation Source under construction in Sweden.

When not looking after his young children, Owen can be found building and riding bikes.

CHAIR: Michael Bremner

Director of the Centre for Quantum Software and Information, University of Technology Sydney.

Professor Michael Bremner is the Director of the Centre for Quantum Software and Information and a Professor of Computer Science at the University of Technology Sydney (UTS). He also leads the UTS node of the Australian Research Council Centre of Excellence for Quantum Computation and Communication Technology. Michael is a founding member of the Australian Quantum Software Network and the Executive Advisory Board of the Sydney Quantum Academy. He is also serving as co-Editor in Chief of the Nature Partner Journal Quantum Information.

PRESENTATION: The Digital Future Initiative and what it means for Australia's quantum ecosystem

Kate Weber

Interim Global Lead for Emerging Technologies Policy, Google.

Kate leads global public policy for Google's emerging technologies research, including quantum computing (as well as AI and machine learning, AI for Social Good, robotics, open data, and more).

Prior to Google, she led a team at the US Department of State covering bilateral and multilateral work on chemicals management, air quality, and waste management, where she was also an American Association for the Advancement of Science S&T policy fellow.

She holds a PhD in Molecular Biology from the University of Cambridge and a B.S. in Biochemistry from the University of Richmond.

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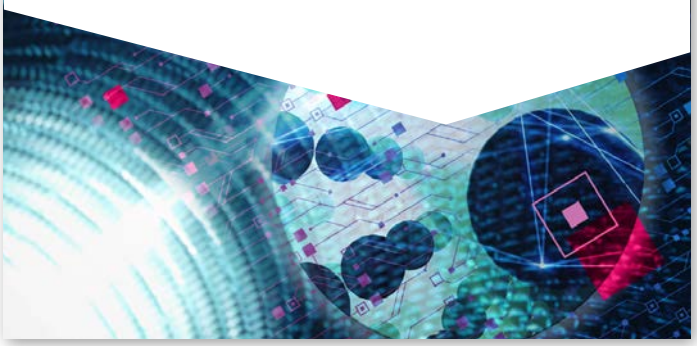

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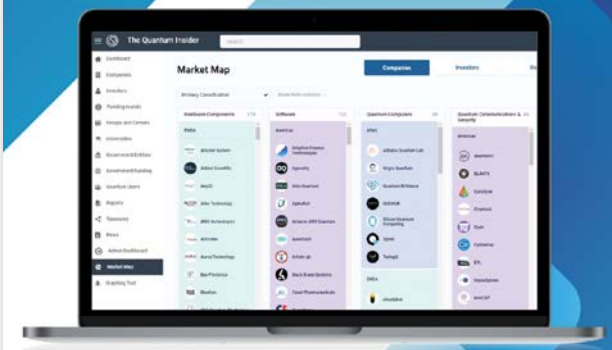

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Panellists

PANEL: Cyber security in the quantum age

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Alexey Bocharnikov

APAC Quantum Technology Leader, EY.

Alexey has over 15 years of experience and has specialised in quantum technology commercialisation, building cyber security functions and risk management. He is a Senior Manager at EY, is part of the EY Global Innovation Quantum Technology Lab, leads the Global Quantum Strategy efforts, and delivers Cyber Security Transformation projects.

Before EY, Alexey worked as a County Information Security Officer at the Deutsche Bank Moscow Branch. Alexey graduated from Bauman Moscow State Technical University, the same university from which Yuri Gagarin, the first man in space, finished.

Lily Chen

Manager, Cryptographic Technology Group, Computer Security Division, National Institute of Standards and Technology, USA.

Dr Lily (Lidong) Chen is a mathematician and heads the Cryptographic Technology Group in the Computer Security Division, NIST. Her team has been developing cryptographic standards published in Federal Information Processing Standards (FIPS) and NIST Special Publications (SP).

The team is currently devoted to developing next generation cryptography standards, including post-quantum cryptography, lightweight cryptography for constrained environment, and approaches multiple advanced cryptographic areas.

Julian Fay

Chief Technology Officer, Senetas.

Julian Fay is CTO of Senetas Corporation Limited and co-founder of Senetas's leading high-assurance encryption technology used to protect government, defence and commercial enterprise networks in more than 35 countries. Julian's responsibilities include product development and working with technology partners, service providers, channel partners and major customers around the world to identify their current and emerging data security needs.

With more than 25 years' IT&T experience and his key role in Senetas's product planning and R&D, Julian has worked closely with many of the world's most secure organisations.

Panellist, Chair and Presenter

Peter Rohde

Senior Lecturer, UTS.

Dr Peter Rohde is senior lecturer and former ARC Future Fellow in the Centre for Quantum Software and Information at UTS. He is lead author of the book "The Quantum Internet", in press with Cambridge University Press.

His research focuses on optical quantum computing, quantum networking and the economics of quantum technology, and has presented at TEDxNewtown on the geo-strategic implications of quantum computing. When not pursuing quantum computer science he pursues mountaineering, although often does them simultaneously.

CHAIR:
Gavin Brennen

Professor, Macquarie University.

Gavin Brennen is a Professor of Physics and Director of the Centre for Quantum Engineering at Macquarie University where he leads a theory group working on quantum computing, simulations, and sensing. He is a Chief Investigator in the ARC Centre for Excellence in Engineered Quantum Systems (EQUS), and executive board member of the Sydney Quantum Academy (SQA). Gavin is also quantum information advisor to the company BTQ working on quantum-ready blockchain technologies.

PRESENTATION: Establishing a new national laboratory - NQCC purpose and progress

Michael N. Cuthbert

Director, National Quantum Computing Centre.

Dr Cuthbert joined the National Quantum Computing Centre as its Director in June 2020. He has a research background in cryogenics, superconductivity and solid state physics. He joined Oxford Instruments in 1998 and held a number of technical, commercial and leadership roles - in Japan, North America and the UK, most recently as Head of Quantum Technologies.

He is a member of the Institute of Physics and sits on several advisory panels including the UK National Quantum Technologies Programme Strategic Advisory Board. Dr Cuthbert is an Aegis Professor in Quantum Technologies at University of Bristol.

Panellists

PANEL: Will quantum chemistry be the first to achieve useful quantum computational advantage?

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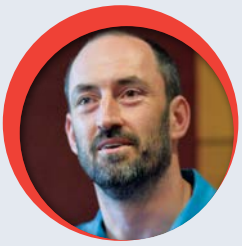
Jared Cole

Professor of Physics, RMIT University.



Professor Jared Cole is a theoretical physicist, specialising in quantum theory and its application in electronics, computing and condensed-matter physics. His current research focuses on multi-scale computational modelling of advanced materials and devices for quantum technology. This includes developing simulations methods for superconducting and semiconducting quantum computers, quantum sensors, low power electronics and renewable energy applications. In addition, Jared co-founded H-bar Quantum Consultants and currently works with several startups in the quantum eco-system, both in Australia and internationally.

Pedro C.S Costa

Research Fellow, Macquarie University.

Pedro Costa received his PhD from the Brazilian Centre of Research in Physics in 2018. Since 2019, he has been working as Postdoctoral Research Fellow at Macquarie University under the supervision of Dominic Berry.

Since completing his PhD, Pedro has worked closely with industry to develop quantum algorithms for practical applications of future error-free quantum computers. His research includes developing differential equations and demonstrating quantum chemistry simulations as practical uses of the quantum computer.

Nicole Holzmann

Manager, Quantum Science, Riverlane.

Nicole has a PhD in Theoretical Chemistry and has worked in application-focused Quantum and Computational Chemistry for 12 years before joining Riverlane in 2020. She is the Technical Lead of Riverlane's Discover team, a research-focused multidisciplinary group of scientists with their main focus on finding industrial benefit in applications and algorithms for quantum computing.

Panellist and Chair

CHAIR:
Ivan Kassal
Associate Professor, University of Sydney.

Ivan Kassal is an Associate Professor in the School of Chemistry at the University of Sydney. He graduated from Stanford in 2006 and completed a PhD in Chemical Physics at Harvard in 2010. He is a theorist working at the interface between quantum science and problems in chemistry and materials science.

He pioneered some of the first applications of quantum computers to chemistry, showing they could dramatically accelerate difficult chemical calculations. He is a recipient of a DECRA fellowship, a Westpac fellowship, and the Le Fèvre Medal of the Australian Academy of Science for "outstanding basic research in chemistry".

Panellists

PANEL: The race to fault-tolerant quantum computing hardware

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Arkady Fedorov

Associate Professor, University of Queensland; Chief Scientific Officer, Analog Quantum Circuits.

A/Prof Arkady Fedorov is an experimental quantum physicist with over 40 peer-reviewed publications and one patent. He completed his PhD at Clarkson University, US in 2005 and has held postdoctoral and research scientist appointments KIT, TU Delft and ETH Zurich. He is now a lab leader at The University of Queensland, Chief Investigator at the Australian Research Council Centre of Excellence in Engineered Quantum Systems and a co-founder of Analog Quantum Circuits.

Over his career he has been awarded the Australian Research Council Future Fellowship and UQ Research Excellence Award. His research focuses on quantum phenomena in superconducting artificial atoms, microwave resonators and mechanical oscillators.

Yasunobu Nakamura

Director, RIKEN Center for Quantum Computing; Professor, The University of Tokyo.

Yasu Nakamura started his research career at NEC Fundamental Research Laboratories in 1992, where he demonstrated the first coherent manipulation of a superconducting qubit in 1999 and met quantum information science. He also spent a year as a Visiting Researcher at TU Delft from 2001 to 2002. Since 2012, he has been a Professor at The University of Tokyo.

He has also been leading his research team at RIKEN since 2014. He is currently the Director of RIKEN Center for Quantum Computing and the Project Leader of the MEXT Q-LEAP Flagship project on Superconducting Quantum Computing.

Hanhee Paik

Senior Research Scientist, IBM Quantum.

Dr Hanhee Paik is a Senior Research Scientist at IBM Quantum. Through her research career, she has been working on understanding the coherence mechanisms of superconducting qubits and developing superconducting multi-qubit architectures. Dr Paik pioneered the novel design of a superconducting qubit that helped the industry to push the quality of quantum computing performance, greatly impacting the quantum computing community.

Today's IBM Quantum systems coherence times benefit from Dr Paik's work. She played a pivotal role developing the 16-qubit IBM Quantum processors (Rueschlikon and Melbourne). In the past few years, she has been focusing on developing the global quantum ecosystem.

Panellists and Chair

David Reilly

Partner Architect, Microsoft Quantum.

Professor David J. Reilly joined Microsoft in 2017 where he is Partner and Research Manager of Microsoft Quantum – Sydney and a Professor in the School of Physics, The University of Sydney. The focus of much of David's work is at the quantum-classical interface and the scaleup of quantum technology. As a leader in Microsoft's quantum effort he bridges the gap between fundamental quantum physics and the engineering approaches needed to scale quantum devices into quantum machines.

Prior to joining the University of Sydney, David was a postdoctoral Fellow at Harvard University (USA) and has held a Fellowship from Hewlett-Packard. Born in Sydney Australia, he hold degrees from UNSW (PhD) and UTS (B.App.Science Hons-1).

Michelle Simmons

Director, Centre of Excellence for Quantum Computation and Communication Technology; Founder and Director, Silicon Quantum Computing.

Professor Michelle Simmons is the founder of Silicon Quantum Computing, Australia's first quantum computing company. She is also Director of the Centre of Excellence for Quantum Computation and Communication Technology (CQC2T) at UNSW Sydney and internationally renowned for creating the field of atomic electronics, pioneering new technologies to build computing devices in silicon at the atomic scale.

Her team is leading the global race to develop a quantum computer in silicon, a transformational technology that has promise to exploit quantum physics to provide an exponential speed up in computing power for key problems.

She has been recognised by the American Computer Museum as a pioneer in quantum computing, awarded the US Feynman Prize in Nanotechnology and was named the 2017 L'ORÉAL-UNESCO Asia-Pacific Laureate in the Physical Sciences. In 2018 Professor Simmons was admitted as a Fellow to the Royal Society of London and named Australian of the Year. She is currently Editor-in-Chief of Nature Quantum Information and Chair of the American Physical Society Division of Quantum Information.

CHAIR: Xanthe Croot

Senior Lecturer, University of Sydney.

Dr Xanthe Croot is an experimental physicist and director of the Superconducting Quantum Circuits Laboratory, with a focus on superconducting and hybrid semi-superconducting circuits for novel qubits. Xanthe completed her PhD in semiconductor spin qubits at the University of Sydney in 2018.

Following this, Xanthe was a Dicke Fellow at Princeton University where she worked on long-range spin-spin interactions in semi-superconducting systems and novel protected superconducting qubits.

Panellists and Chair

PANEL: Australia's strengths in quantum sensing

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Andre Luiten

Managing Director, QuantX Pty Ltd.

Professor Andre Luiten is Director of the Institute for Photonics and Advanced Sensing and Chair of Experimental Physics at the University of Adelaide, as well as Managing Director of QuantX, a startup company with 20 employees that is growing fast. Andre has published 132 journal papers and raised $40M for research. His work aims at the development and application of state of-the-art physics-based instruments.

His efforts have been recognised with a 2018 Eureka Prize for Outstanding Science in Safeguarding Australia, the Alan Walsh Medal for services to industry, the Barry Inglis Medal for Measurement Science and he is South Australia's 2022 Innovator of the Year.

Silvana Palacios

Lead Quantum Physicist, Nomad Atomics.

Silvana is the lead quantum physicist at Nomad Atomics. She is a globally recognized researcher in quantum physics and completed her PhD at Spain's premier institute, ICFO. While at ICFO she was responsible for the build and operation of the first ultra-cold precision sensing lab in Spain.

She has previously held positions in industry where she worked to commercialize optics solutions to advance European partners towards Industry 4.0.

CHAIR: Jim Rabeau

Director, Quantum Technologies, CSIRO.

Professor Jim Rabeau has been leading the Quantum Technologies Future Science Platform at CSIRO since its inception in September 2021. Prior to this he was a Professor in the School of Physics and Deputy Director at University of Sydney Nano Institute. He has spent several years working in industry, most recently as program manager at Microsoft Quantum Computing.

He has led the strategy unit at Macquarie University and was a Director at Deloitte in the Data Analytics practice. In his current role at CSIRO, his focus is on establishing a large, multi-disciplinary quantum research program operating across all of CSIRO's business units.

Panellists

PANEL: Bridging the research to commercialisation gap

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Clare Birch

Associate and Scientist in Residence, Blackbird.

Clare works across the deep tech companies in Blackbird's portfolio, supporting new and existing investments in quantum tech, diagnostic and interventional medical devices, fusion, biotech, space, photonics, and next-gen media. She also sits on the Minister for Industry and Science's National Quantum Advisory Panel.

She was previously Programs Coordinator at DeadlyScience, and studied science at The University of Sydney.

Lucas Hakewill

Accelerator Program Manager, UNSW Founders.

Lucas Hakewill is Accelerator Program Manager at UNSW Founders. Through this role he invests in UNSW-affiliated startups and spinouts, and leads a tailored accelerator program, called 10x. This accelerator helps companies to de-risk development, secure investment, and execute a growth strategy.

Before this, he led for-credit and co-curricular programs for students, researchers and alumni at UNSW, Sydney School of Entrepreneurship and INCUBATE (University of Sydney).

Nat Puffer

Managing Director, IQT International.

Nat Puffer has more than 20 years of experience in Information Technology and Data Security including over a decade dedicated to directly managing and growing lines of business. He currently serves as the Managing Director in London for In-Q-Tel, an international strategic investor for the Intelligence and Defence Community.

Prior to this role he was Senior Vice President for Enterprise Technologies at In-Q-Tel, overseeing investments in a portfolio that included Cyber, Infrastructure, and Analytics with a focus on forward leaning technologies like adversarial systems, software defined networking, and applied machine learning. He represents IQT on select portfolio company investments as a Board of Directors observer.

Panellists and Chair

Thomas Volz

Professor and Strategic Partnerships Manager, MQU and Redback Systems.

Thomas Volz is a Professor in Experimental Quantum Physics at Macquarie University in Sydney. His expertise lies in mesoscopic solid-state quantum optics, and he is particularly interested in strongly correlated quantum many-body states of both matter and light for applications in quantum sensing, communication and information processing. Besides his interest in discovering new science, Thomas is passionate about translation of scientific knowledge into real-world applications. He is a co-founder of and strategic partnerships manager at 'Redback Systems' (www.redback.systems), a university spin-off that sells high-resolution optical spectrometers to customers worldwide, including optical quantum computing startups and quantum materials researchers.

CHAIR: Annie Parker

Executive Director, Tech Central, Greater Cities Commission.

Annie is a globally recognised innovator in startup cultivation, and a distinguished community leader. She has built multiple startup programs that have invested in thousands of founders. A firm believer in the importance of paying her knowledge forward, Annie is also an active angel investor, mentor, keynote speaker and an advocate for inclusion and public interest technology. Annie joined the Greater Cities Commission in 2021 to lead the establishment and curation of Sydney and Australia's largest tech innovation district, Tech Central. Prior to Tech Central, she was a senior leader in Microsoft's Global Startups team leading all Equity and Inclusion and Social Impact partnerships and programs around the world. Annie also co-founded Telstra's startup accelerator program Muru-D, co-founded Techfugees Australia and Code Club Australia.

CAREERS FAIR

Panellists

PANEL: The skills needed to succeed in quantum

Liz Bridge

Strategic Talent Partner, Quantum Brilliance.

Quantum physicist turned technical recruiter. Liz's background is in quantum physics, with a PhD in atomic and laser physics and 9+ years of research experience in the UK and Australia. Her passion for quantum technologies has led her to pursue a career with Quantum Brilliance, an Australian-German startup developing room-temperature quantum computers for a wide range of applications.

Liz has a wealth of knowledge in the realm of assisting individuals wishing to join the quantum tech sector. Liz is also an advocate for equity and diversity in STEM, work she continues at Quantum Brilliance.

Dilan Rajasingham

ANZ Business Development & GTM Solutions Lead, Amazon Web Services (AWS).

Dilan has been working closely with customers using quantum and developing use cases like the big 4 banks and mining companies in Australia and New Zealand.

He has a background in quantum technology having worked as head of emerging technology at Commonwealth Bank of Australia, leading their quantum initiative.

Ian Hill

President & CIO, Silicon Quantum Computing.

Ian Hill has 20 years' experience as an executive in innovative companies and roles. He spent his early career in Silicon Valley and as a consultant at McKinsey & Company. From there he worked on major change and innovation projects at Microsoft, both in India and the US. More recently, Ian worked to bring these experiences to large financial institutions including Commonwealth Bank, where he held the role of General Manager of Transformation, Innovation & Strategy, and Standard Chartered, where he was COO (Transformation & Client Enablement).

Ian was also selected, along with small group, to help lead Barack Obama's presidential transition, and wrote Governor Schwarzenegger's education plan for California. Ian previously served on SQC's Board as Alternate Director, but this year took up a position at SQC as President and CIO.

Panellists and Chair

Michael Egan

Director, Quantum Technologies, KPMG Futures.

Michael leads a growing Quantum Team in KPMG, developing quantum inspired and quantum circuit level solutions to business problems. Michael has worked at the interface of technical innovation for more than 25 years and deeply understands the commercialisation of research. He has a background in high technology manufacturing and spent 14 years in the Semiconductor Industry and successfully started and built a business manufacturing High Power Lasers using technology from Imperial College, London. Previously, Michael has worked in CSIRO and The University of Melbourne, sourcing funding, building effective collaborative partnerships and managing stakeholder relationships across complex organisations.

CHAIR:
Rebecca Halligan

Chief Operating Officer, Sydney Quantum Academy.

Rebecca joined the Sydney Quantum Academy in 2020, as its inaugural Chief Operating Officer. She has a background in building high-performing teams and has held leadership roles in the education, health and pharmaceutical sectors. Prior to joining SQA Rebecca was the Director of Research Integrity and Ethics at the University of Sydney.

She has an interest in effecting change in complex environments and is currently focussed on delivering the SQA's vision - to grow Australia's quantum economy, with a focus on workforce development.

Panellists

PANEL: Quantum Careers: Academia vs Industry

Alexandra Dickie

Test and Equipment Engineer, Diraq.

Alex is a test and equipment engineer at Diraq. She transitioned into quantum after gaining extensive experience working with design electronics at multiple R&D engineering firms in Australia, such as Saluda Medical and Seeing Machines. At Diraq she builds and configures cryogenic measurement setups using her expertise in systems and electronics engineering.

She works to balance the academic expertise in which Diraq was founded with industry-grade engineering project management.

Anna Phan

Asia Pacific Partner Lead, IBM Quantum.

Dr Phan is a researcher with a passion for multidisciplinary science, education and outreach. As the Asia Pacific Partner Lead at IBM Quantum, her role is to ensure the success of IBM Quantum Network Hubs in the region. Previously at IBM Quantum, Anna researched quantum machine learning and created quantum computing educational materials.

Prior to joining IBM, as part of a postdoc and PhD in experimental particle physics, Anna worked as part of the LHCb and ATLAS collaborations at CERN, creating algorithms and models to measure particle properties and discover new physics.

Rose Ahlefeldt

Senior Research Fellow, ANU.

Rose is a Senior Research Fellow in the Research School of Physics at the Australian National University, and a program manager in the ARC Centre of Excellence for Quantum Computation and Communication Technology.

She studies quantum information applications of rare earth ions in crystals, including quantum memories, quantum processors and optical quantum interconnects, with a focus on developing the experimental and theoretical understanding of atom-atom and atom light interactions. In 2018 she was named Australian Capital Territory Scientist of the Year for her research.

Panellists and Chair

Muhammad Usman

Team Leader Quantum Systems, Data61/CSIRO.

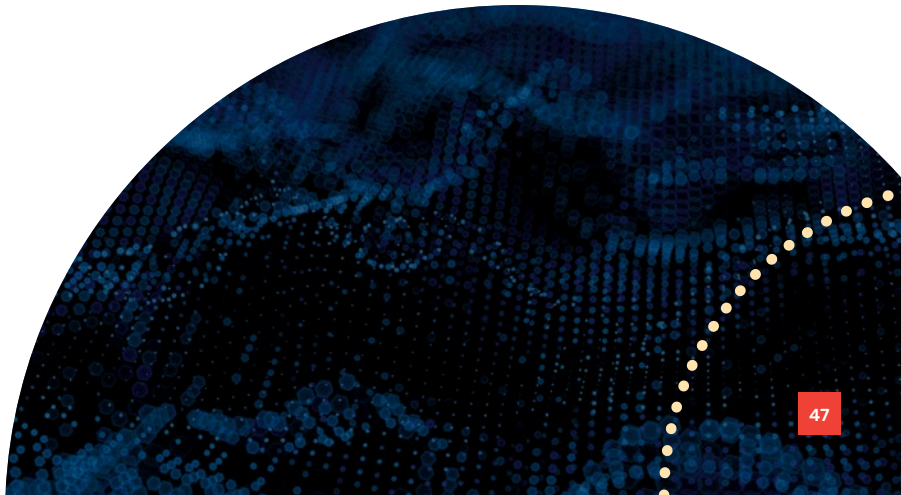
Dr Muhammad Usman is leading a team of quantum experts working in quantum software engineering, algorithms and security. Prior to joining CSIRO, Dr Usman spent 8 years at the Centre for Quantum Computation and Communication Technology at the University of Melbourne, where his research contributed towards the design and characterisation of silicon quantum devices and quantum processor architecture.

Dr Usman has published over 70 peer-reviewed papers and has delivered several invited talks in international conferences. He received his PhD in Electrical and Computer Engineering from Purdue University, Indiana USA in 2010. He is a recipient of several awards including 2020 Rising Stars List in Computational Material Science from Elsevier and 2019 Best Researcher Award at the University of Melbourne. As a passionate STEM educator, Dr Usman participates in CSIRO's STEM Scientists in Schools program.

CHAIR:
Maja Cassidy

Senior Lecturer, UNSW.

Dr Maja Cassidy is an experimental physicist working at the intersection of condensed matter physics and quantum devices. She is currently a Scientia Fellow and Senior Lecturer at the School of Physics at UNSW, where she leads the Quantum Materials and Devices group. Maja completed her PhD at Harvard University as a RG Menzies scholar in 2012, and then worked as a postdoctoral fellow at QuTech/TU Delft on hybrid superconducting circuits and topological materials. Before joining UNSW, she was a Principal Research Manager at Microsoft Quantum from 2017-2022.



SYDNEY QUANTUM ACADEMY

SYDNEY QUANTUM ACADEMY (SQA)

The SQA is a unique partnership between four world-leading universities – Macquarie University, UNSW Sydney, the University of Sydney and University of Technology Sydney. We are generously supported by the New South Wales Government.

Our vision is to build Australia's quantum economy. Collaborating with academia, industry and government, we're harnessing Sydney's collective quantum expertise to develop diverse talent and a globally recognised quantum ecosystem.

sydneyquantum.org

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