

IEEE Quantum Week

Denver • Broomfield • Colorado • USA

October 12-16, 2020

qce.quantum.ieee.org

Call for Contributions and Participation

The IEEE Future Directions Quantum Initiative invites you to IEEE Quantum Week 2020—the inaugural IEEE International Conference on Quantum Computing and Engineering (QCE). With your contributions and participation, together we can build a premier meeting of quantum minds and advance quantum computing, engineering, and technology. Quantum Week provides ample opportunities to network with your peers and explore partnerships with industry, government, and academia.

IEEE Quantum Week is a highly multidisciplinary quantum computing venue where you can discuss challenges and opportunities with quantum researchers, scientists, engineers, entrepreneurs, developers, students, practitioners, educators, programmers, and newcomers.

The IEEE Quantum Week Conference invites contributions and participation from the international quantum community to form an exceptional program with outstanding keynotes, technical paper presentations, world-class exhibits, technical briefings, informative tutorials, community-building workshops, collocated events, and exciting posters.

IEEE Quantum Week aims to showcase quantum research, practice, applications, education, and training including programming systems, software engineering methods & tools, algorithms, benchmarks & performance metrics, hardware engineering, architectures & topologies, software systems and infrastructure, hybrid computing, simulating chemical, physical and biological systems, optimization, machine learning.



EDI Statement

Equity, Diversity, and Inclusion are central to the goals of IEEE Quantum Week 2020, the IEEE International Conference on Quantum Computing and Engineering (QCE) and its activities. Equity at its heart is about removing barriers, biases, and obstacles that impede equal access and opportunity to succeed. Diversity is fundamentally about valuing human differences and recognizing diverse talents. Inclusion is the active engagement of Diversity and Equity.

Quantum Computing & Engineering

Engage with Quantum Minds in Colorado

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Tutorials

The shortage of skilled labour is one of the quantum computing sector's greatest challenges. The week-long tutorials program, with half- and full-day tutorials by leading experts, is aimed squarely at workforce development and training considerations. The tutorials are ideally suited to develop quantum champions for industry, academia, government, and build expertise for emerging quantum ecosystems. IEEE Quantum Week will cover a broad range of topics in quantum computing and technologies including a lineup of fantastic hands-on tutorials on programming and applications.

Mar 16, 2020 — Tutorial submission deadline
Contact: Scott Koziol, Baylor University
scott_koziol@baylor.edu

Exhibits

IEEE Quantum Week aims to provide attendees the unique opportunity to see the latest quantum technologies that will shape the exciting quantum future. Exhibits will feature the latest quantum technologies and accomplishments from the world's leading companies, start-ups, national labs, research institutes, and universities. Exhibits are a great opportunity to showcase emerging products, tools, services, and posters. The Quantum Week exhibits will feature daily receptions to facilitate networking with participants of the rapidly growing quantum computing community.

Jul 14, 2020 — Exhibit submission deadline
Contact: Candace Culhane, Los Alamos Nat Lab
culhane@lanl.gov

Workshops

IEEE Quantum Week Workshops provide forums for group discussions on topics in quantum research, practice, education, standards, and applications. Workshops provide opportunities for researchers to exchange and discuss scientific and engineering ideas at an early stage, before they have matured to warrant a conference or journal publication. In this manner, an IEEE Quantum Week workshop serves as an incubator for a scientific community to form a research roadmap or share a research agenda. Workshops are the key to sustaining, growing and evolving IEEE Quantum Week in the future.

Mar 16, 2020 — Workshop submission deadline
Contact: Travis Humble, Oak Ridge National Lab
humblets@ornl.gov

Papers

IEEE Quantum Week aims to be a leading venue for presenting high-quality original research, groundbreaking innovations, and compelling insights in quantum computing and technologies. Technical papers are peer-reviewed and can be on topics related to quantum computing, engineering, and technologies.

Apr 27, 2020 — Paper submission deadline
Contact: Greg Byrd, NC State University
gbyrd@ncsu.edu

Posters

The IEEE Quantum Week Posters program presents excellent opportunities for practitioners, researchers, graduate students, entrepreneurs, and start-ups to showcase their work and engage with the international quantum computing R&D community during the IEEE Quantum Week Exhibits.

Jul 6, 2020 — Poster submission deadline
Contact: Ulrike Stege, University of Victoria
ustege@uvic.ca

Panels

IEEE Quantum Week aims to facilitate enlightening and impactful discussions among experts on different perspectives of quantum topics including hardware-software co-design, hybrid computing, quantum information science and programming education and training, or frontiers of quantum algorithms.

May 18, 2020 — Panel submission deadline
Contact: Erik DeBenedictis, IEEE Quantum Initiative
erikdebenedictis@gmail.com

Quantum Week Topics — including, but not limited to ...

Quantum Computing — Quantum information science; algorithms & complexity; theoretical & empirical algorithm analysis; quantum advantage or supremacy; adiabatic quantum computing; quantum programming, software engineering; development environments, languages & tools; hardware-software co-design; software stack & infrastructure; hybrid computing; quantum simulators; checking quantum computers

Quantum Applications & Nature Computing — NISQ applications; simulations of chemical, biological & physical systems; quantum chemistry & materials; optimization problems—transportation, supply chain & logistics; AI and decision making; medicine & precision health; financial modeling, services & portfolio management; manufacturing & mining; machine learning & big data analytics

Quantum Algorithms, Quantum Computation & Quantum Information — Quantum information science; NISQ algorithms; quantum advantage; quantum supremacy; algorithms & complexity; theoretical & empirical algorithm analysis; adiabatic annealing; Hamiltonian dynamics

Quantum Engineering — Quantum computer, hardware & NISQ; superconducting & trapped ion circuits; topological & silicon spin qubits; quantum dots; connectivity & topology; quantum measures & benchmarks, quantum volume, fidelity, metrology; gate & measurement errors, connectivity & topology, quantum error correction, quantum sensors; RF; microwave engineering; cold electronics, packaging & cryogenics

Quantum Benchmarks & Measurements — Quantum measures & benchmarks, quantum volume & fidelity; quantum metrology; gate & measurement errors; connectivity & topology; quantum error correction; randomized benchmarking; quantum control; standards

Quantum Communications — Communications theory, quantum internet, quantum signal processing, quantum error correction & mitigation; coding theory; quantum security & privacy; cryptography & quantum key distribution (QKD), post quantum cryptography; teleportation

Quantum Photonics & Optics — Quantum photonics & optics; photonics information technologies; photonics quantum computing; quantum integrated photonics; quantum photonics devices; optical quantum communications theory; optical coherence; silicon quantum photonics

Quantum Education & Training — Ramping up quantum workforce; undergraduate & graduate courses in quantum computing, information science, algorithms, applications; quantum standards; quantum teachers training; quantum summer schools; quantum ecosystems

Quantum Computing & Engineering — Challenges & Opportunities

IEEE Quantum Week Organization Team

- General Chair — Hausi Müller, University of Victoria
- Finance & Exhibits Chair — Candace Culhane, Los Alamos National Laboratory
- Program Board Chair — Greg Byrd, North Carolina State University
- Panels Chair — Erik DeBenedictis, IEEE Quantum Initiative
- Posters Co-Chairs — Andreas Bergen, engageLively, Inc. & Ulrike Stege, University of Victoria
- Tutorials Co-Chairs — Scott Koziol, Baylor University & Bruce Kraemer, IEEE Quantum Initiative
- Workshops Co-Chairs — Kristel Travis Humble, Oak Ridge National Laboratory & Kristel Michielsen, Forschungszentrum Jülich
- Manager — Terence Martinez, IEEE Future Directions

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