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.
### Quantum Computing & Engineering

**Engage with Quantum Minds in Colorado**

**October 12-16 2020**

qce.quantum.ieee.org

---

### 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 |
| ustge@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 DeBenedicts, IEEE Quantum Initiative |
| erikdebenedicts@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

---

**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
- **Panel Chair** — Erik DeBenedicts, IEEE Quantum Initiative
- **Posters Co-Chairs** — Andreas Bergen, erigaLively, 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