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

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

**Quantum Photonics** — 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

---

### 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.

**Papers**

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.

**Exhibits**

IEEE Quantum Week aims to 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.

---

**IEEE Quantum Week Topics**

- Quantum Computing
- Quantum Applications
- Quantum Engineering
- Quantum Communications
- Quantum Photonics
- Quantum Education & Training

---

**Contact**

- Scott Koziol, Baylor University: scott.koziol@baylor.edu
- Candace Culhane, Los Alamos Nat Lab: culhane@lanl.gov
- Erik DeBenedictis, IEEE Quantum Initiative: erikdebenedictis@gmail.com
- Terence Martinez, IEEE Future Directions: tterence@ieee.org

---

**IEEE Quantum Week Organization**

- General Chair — Hausi Müller, University of Victoria
- Finance & Exhibits Chair — Candace Culhane, Los Alamos National Laboratory
- Program Chair — Greg Byrd, North Carolina State University
- Workshops Chair — Travis Humble, Oak Ridge National Laboratory
- Panel & Technical Briefings Chair — Erik DeBenedictis, IEEE Quantum Initiative
- Tutorials Chair — Scott Koziol, Baylor University
- Manager — Terence Martinez, IEEE Future Directions