



IEEE Future Directions <https://www.ieee.org/about/technologies.html>

The **IEEE Future Directions** Committee identifies selected technologies as primary focus areas and establishes them as formal initiatives to engage IEEE. For each initiative, the initiative subcommittee collects and develops a wealth of knowledge, resources, and opportunities to participate on a dedicated portal.

IEEE Quantum <https://quantum.ieee.org>

IEEE Quantum is a new IEEE Future Directions initiative launched in 2019 that will serve as IEEE's leading community for all projects and activities on quantum technologies. IEEE Quantum will be supported by leadership and representation across IEEE Societies and Organizational Units. The initiative is developing a project plan to address the landscape of quantum technologies, identify challenges and opportunities, leverage and collaborate with existing initiatives, and engage the quantum community at large.

IEEE Quantum Steering Committee

Initiative Co-Chairs	Candace Culhane, Los Alamos National Laboratory
	Erik DeBenedictis, IEEE Quantum Initiative
	Travis Humble, Oak Ridge National Laboratories
	Hausi Müller, University of Victoria
Steering Committee	Scott Koziol, Baylor University
	Bruce Kraemer, IEEE Standards Organization
	Elie Track, IEEE Council on Superconductivity
Program Manager	Terence Martinez, IEEE Future Directions

Participating Organizational Units



IEEE Future Directions Quantum Initiative Meeting — Wed, May 1, 2019

AGENDA

Hilton Washington DC North / Gaithersburg, 620 Perry Parkway, Gaithersburg, MD, USA

1:30–2:00	Registration
	Joint Standards Technical Advisory Committee with IEEE Quantum Initiative <i>Session Chairs: Tom Lubinski, ORNL, USA and Travis Humble, ORNL, USA</i>
	Opening Remarks <i>Tom Lubinski, Quantum Circuits, USA</i>
2:00–5:30	IEEE Quantum Initiative <i>Travis Humble, ORNL, USA</i>
	Benchmarks <i>Robin Blume-Kohout, Sandia National Laboratories, USA</i>
	Resonator Specifications <i>Alan Ho, Google, USA</i>
	Open Discussion <i>Moderator: Tom Lubinski, Quantum Circuits, USA</i>
5:30	Adjourn

IEEE Future Directions Quantum Initiative Meeting — Thu, May 2, 2019

AGENDA

Hilton Washington DC North / Gaithersburg, 620 Perry Parkway, Gaithersburg, MD, USA

7:30–8:15	Registration and Light Breakfast	
8:15–8:30	Welcome and Opening Remarks	
Track A		Track B
8:30–12:00	Quantum Measures and Benchmarks <i>Session Chair: Travis Humble, Oak Ridge National Lab, USA</i>	8:30–12:00 Quantum Education <i>Session Chairs: Scott Koziol, Baylor University, USA & Bruce Kraemer, IEEE Standards Organization, USA</i>
8:30–9:00	Status of Quantum Computing Systems and Benchmarks <i>Mark Ritter, IBM T.J. Watson Research Center, USA</i>	8:30–9:00 Quantum Economic Development Consortium <i>Celia Merzbacher, SRI, USA</i>
9:00–9:30	A Very Hasty Overview of Known Metrics and Benchmarks for Digital Quantum Processors <i>Robin Blume-Kohout, Sandia National Laboratories, USA</i>	9:00–9:30 Educational Programs in QIS at UT Austin <i>Brian LaCour, ARL University of Texas at Austin, USA</i>
9:30–10:00	XEB Benchmarking: An Architecture-neutral Multiqubit Benchmark for NISQ Processors <i>Alan Ho, Google, USA</i>	9:30–10:00 Quantum Computing Summer School at LANL <i>Stephan Eidenbenz, Los Alamos National Laboratory, USA</i>
10:00–10:30	Break	10:00–10:30 Break
10:30–11:00	Benchmarking Applications on Near-term Quantum Computers over the Cloud <i>Raphael Pooser, Oak Ridge National Lab, USA</i>	10:30–11:00 Quantum Education at University of New Mexico & IEEE Partnering with Universities <i>Ivan Deutsch, University of New Mexico, USA</i>
11:00–11:30	NIST's Best Practices For Quantum Tomography <i>Scott Glancy, NIST, USA</i>	11:00–11:30 How NC State is Planning for the Future of QC <i>Daniel Stancil, North Carolina State University, USA</i>
11:30–12:00	Quantum Heuristics for Optimization Problems Quantum Annealing and Gate Model Algorithms <i>Zhihui Wang, NASA, USA</i>	11:30–12:00 Overview of IEEE Education Activities <i>Scott Koziol, Bruce Kraemer, Erik DeBenedictis & Terence Martinez, IEEE</i>
12:00–1:30	Lunch and Birds of a Feather Session	12:00–1:30 Lunch and Birds of a Feather Session
1:30–5:00	Quantum Algorithms and Quantum Software Development <i>Session Chair: Hausi Müller, University of Victoria, Canada</i>	1:30–5:00 Quantum Engineering <i>Session Chair: Erik DeBenedictis, IEEE Quantum Initiative, USA</i>
1:30–2:00	Quantum Annealing and D-Wave Leap <i>Catherine McGeoch, D-Wave Systems, Canada</i>	Scalable Control Systems for Superconducting Qubits SFQ-based Control System <i>Britton Plourde, Syracuse University, USA & Oleg Mukhanov, SeeQC, USA</i>
2:00–2:30	Quantum Hardness of Learning Shallow Circuits <i>Aarthi Sundaram, QuICS & University of Maryland, USA</i>	1:30–3:00 Transistor-based Control <i>Joseph Bardin, University of Massachusetts, Amherst, USA</i>
2:30–3:00	Learning Quantum Algorithms for NISQ Computers <i>Lukasz Cincio, Los Alamos National Laboratory (LANL), USA</i>	
3:00–3:30	Break	3:00–3:30 Break
3:30–4:00	Programming Quantum Computers with Qiskit <i>Douglas McClure, IBM T.J. Watson Research Center, USA</i>	3:30–5:00 Fidelity Improvement Resonator Q Project <i>David Pappas, NIST, USA</i>
4:00–4:30	Computational Chemistry for Quantum Computing <i>Karol Kowalski, Pacific Northwest National Lab (PNNL), USA</i>	Open to New Ideas <i>Tom Ohki, Raytheon BBN Tech, USA (open to others)</i>
4:30–5:00	Hybrid Decomposition Algorithms for Quantum Computing <i>Yuri Alexeev, Argonne National Laboratory (ANL), USA</i>	Planning Session <i>Erik DeBenedictis, IEEE Quantum Initiative, USA</i>
5:00	Adjourn	5:00 Adjourn