

C²QA All Hands Meeting
Hosted by Johns Hopkins University
Hilton Inner Harbor
401 West Pratt Street, Baltimore, MD 21201
Tue, Oct 3 – Thu Oct 5, 2023

Tue, Oct 3, 2022	
6:00 – 7:00 p.m.	Dinner Welcomed by our C²QA Postdocs & Graduate Students <i>Diamond Tavern, Hilton Inner Harbor</i>
Wed, Oct 4, 2022	
7:00 – 8:30 a.m.	Breakfast Available <i>Key Ballroom 1, 2, 5</i>
8:30 – 8:45 a.m.	Welcome Andrew Houck, Director, C ² QA <i>Key Ballroom 3, 4, 6</i>
8:45 – 9:00 a.m.	Words from our DOE Program Manager Thomas Settersten, Dept of Energy. Atomic, Molecular and Optical Sciences Program Manager.
9:00 – 10:00 a.m.	Qubits 9:00 am. Overview. Nathalie de Leon, C ² QA Materials Subthrust Leader. 9:15 am. Keynote. Dual-Rail Architecture. Rob Schoelkopf, C ² QA Devices Subthrust Leader. 9:40 am. Flash Talk. Synthesizing X-Basis Qubit Measurements with Parametric Drives, Michael Hatridge, C ² QA Principal Investigator. 9:50 am. Flash Talk. Investigating 1/f Flux Noise in Superconducting Qubits with Applied Magnetic Fields. David Rower, C ² QA Graduate Student.
10:00 – 10:30 a.m.	Break
10:30 – 11:30 a.m.	Networks 10:30 am. Overview. Hong Tang, C ² QA Subthrust Leader Quantum Repeaters & Transduction. 10:45 am. Keynote. Indistinguishable telecom band photons from a single erbium ion in the solid state. Lukasz Dusanowski, C ² QA Postdoc. 11:10 am. Flash Talk. Quantum interactions in rare-earth solid-state spin systems. Andrei Faraon, C ² QA Principal Investigator. 11:20 am. Flash Talk. Silicon-Lattice-Matched Boron-Doped Gallium Phosphide: A Scalable Acousto-Optic Platform. Kai-Mei Fu, C ² QA Deputy Director.

AGENDA

11:30 – 1:00 p.m.	Lunch Available Key 1, 2, 5
1:00 – 2:00 p.m.	Theory & Software 1:00 pm. Overview. Andrew Cross, C ² QA Subthrust Leader. 1:15 pm. Keynote. Instruction Set Architecture and Abstract Machine Models for Hybrid Oscillator-Qubit Processors. Yuan Liu, C ² QA Postdoc. 1:40 pm. Flash Talk. Generalized Quantum Signal Processing. Daniel Motlagh, C ² QA Invited Speaker. 1:50 pm. Flash Talk. Quantum Control and Near-Term Algorithms. Sophia Economou.
2:00 – 2:20 p.m.	XCITe Overview. Mark Ritter, C ² QA Chair, XCITe Team.
2:20 – 2:40 p.m.	Outreach, Education, Workforce Development Overview. Kimberly McGuire, C ² QA Chief Operating Officer.
2:40 – 3:00 p.m.	Data Management Juan Marulanda Arias. C ² QA Data Management Scientist.
3:00 – 3:30 p.m.	Break
3:30 – 5:00 p.m.	Breakout Sessions <u>Algorithms: Beyond NISQ to DISQ</u> Group A chaired by Ali Javadi. Conf Room Calloway A, 2 nd floor Group B chaired by Jens Koch. Conf Room Calloway B, 2 nd floor <u>Architectures, Modular Systems, and Error Correction</u> Group A chaired by Jeff Thompson. Conf Room Poe A, 2 nd floor Group B chaired by Sam Stein. Conf Room Poe B, 2 nd floor <u>Building Modular Systems</u> Group A chaired by Michael Hatridge. Conf Room Douglass, 3 rd floor Group B chaired by Chen Wang. Conf Room Brent, 3 rd floor <u>Discovering New Platforms, Quantum Materials Science</u> Group A chaired by Nathalie de Leon. Conf Room Carroll A, 3 rd floor Group B chaired by Mingzhao Liu. Conf Room Carroll B, 3 rd floor
5:00 – 6:30 p.m.	Poster Session Key 1, 2, 5. Key 3, 4, 6. Pre-function Area Key 3, 4, 6.
6:30 – 8:00 p.m.	Dinner Available Key 1, 2, 5

Thu, Oct 5, 2023	
7:30 – 8:30 a.m.	Breakfast Available <i>Key Ballroom 1, 2, 5</i>
8:30 – 9:30 a.m.	Breakout Sessions Report Out (15 minutes each) 8:30 am. Algorithms: Beyond NISQ to DISQ 8:45 am. Architectures, Modular Systems, and Error Correction 9:00 am. Building Modular Systems 9:15 am. Discovering New Platforms, Quantum Materials Science <i>Key Ballroom 3, 4, 6</i>
9:30 – 10:15 a.m.	New Opportunities 9:30 am. LDPC Codes. Ted Yoder, C ² QA Principal Investigator. 9:45 am. Erasure Conversion. Jeff Thompson, C ² QA New Qubits for Computing & Networks Subthrust Leader. 10:00 am. Exponential Speedups for Quantum Walks in Random Hierarchical Graphs. Aram Harrow, C ² QA Principal Investigator.
10:15 – 10:30 a.m.	Break
10:30 – 11:30 p.m.	New Opportunities 10:30 am. New Opportunities for Diamond Growth. Nathalie de Leon, C ² QA Materials Thrust Leader. 10:45 am. New insights in recombination mechanisms and the search for novel quantum defects. Chris Van De Walle, C ² QA Principal Investigator. 11:00 am. JHUs New HIQT and Potential Future Directions for C ² QA. Tyrel McQueen, C ² QA Principal Investigator. 11:15 am. Heterogeneous Architectures. Sam Stein, C ² QA Postdoc.
11:30 – 12:00 p.m.	Close Andrew Houck, C ² QA Director
12:00 – 1:00 p.m.	Lunch Available <i>Key 1, 2, 5</i>
1:00 p.m.	All Hands Meeting Attendee Departures