

IBM THINKQ Conference

Approximate Quantum Computing

Preliminary Agenda

Posted on November 29, 2017 - Subject to change

Day 1 - Wednesday, December 6

| Start Time | End Time | Speaker |
|------------|----------|--|
| 8:00am | 9:00am | Registration & Continental Breakfast |
| 9:00am | 9:15am | <i>Opening remarks</i> Jay Gambetta (IBM) |
| 9:15am | 10:00am | <i>QVECTOR: An algorithm for variational quantum error correction</i> Alán Aspuru-Guzik (Harvard University) |
| 10:00am | 10:45am | <i>Beyond classical computing via randomized low-depth quantum circuits</i> Michael Bremner (University of Technology Sydney) |
| 10:45am | 11:15am | Morning Coffee Break |
| 11:15am | 12:00pm | <i>Small quantum computers and big classical data</i> Aram Harrow (MIT) |
| 12:00pm | 12:45pm | <i>What to do with a near-term quantum computer</i> Eddie Farhi (MIT/Google) |
| 12:45pm | 2:00pm | Lunch |
| 2:00pm | 2:45pm | <i>Characterizing coherent errors efficiently, robustly, and simply</i> Shelby Kimmel (Middlebury College) |
| 2:45pm | 3:30pm | <i>Reducing errors in near-term quantum computers</i> Ken Brown (Georgia Tech) |
| 3:30pm | 4:00pm | Afternoon Coffee Break |
| 4:00pm | 4:45pm | <i>Toward protecting analog simulations from errors</i> Robin Blume-Kohout (Sandia National Laboratories) |
| 4:45pm | 5:30pm | <i>Error mitigation in quantum simulation</i> Xiao Yuan (Oxford) |
| 5:30pm | 6:30pm | Reception |

Day 2 - Thursday, December 7

| Start Time | End Time | Speaker |
|---------------|---------------|---|
| 8:30am | 9:00am | Registration & Continental Breakfast |
| 9:00am | 9:45am | <i>Towards quantum advantages of synthetic quantum systems</i> Jens Eisert (Freie Universität Berlin) |
| 9:45am | 10:30am | <i>Exploring quantum thermalization with a quantum computer</i> Bela Bauer (Microsoft) |
| 10:30am | 11:00am | Morning Coffee Break |
| 11:00am | 11:45am | <i>Quantum algorithms for Hamiltonian simulation: Recent results and open problems</i> Robin Kothari (Microsoft) |
| 11:45am | 12:30pm | <i>Toward the first quantum simulation with quantum speedup</i> Andrew Childs (University of Maryland) |
| 12:30pm | 2:00pm | Lunch |
| 1:00pm | 2:00pm | <i>Optional Tutorial: QISKIT quantum computing platform</i> Andrew Cross (IBM) |
| 2:00pm | 2:45pm | <i>Classical limits of simulating quantum systems</i> Garnet Chan (Caltech) |
| 2:45pm | 3:30pm | <i>Quantum simulation of electronic structure with low depth circuits</i> Ryan Babbush (Google) |
| 3:30pm | 4:00pm | Afternoon Coffee Break |
| 4:00pm | 4:45pm | <i>Costing quantum computer simulations of chemistry</i> Nathan Wiebe (Microsoft) |
| 4:45pm | 5:30pm | <i>Experimental quantum computing at IBM</i> Maika Takita (IBM) |
| 5:30pm | 7:00pm | Poster Session and Reception |

Day 3 - Friday, December 8

| Start Time | End Time | Speaker |
|---------------|---------------|--|
| 8:30am | 9:00am | Registration & Continental Breakfast |
| 9:00am | 9:45am | <i>Classical simulation of quantum computers with few nonClifford gates</i> Earl Campbell (University of Sheffield) |
| 9:45am | 10:30am | <i>Validating quantum hardware capabilities</i> Joseph Emerson (Quantum Benchmark, Inc) |
| 10:30am | 11:00am | Morning Coffee Break |
| 11:00am | 11:45am | <i>Quantum advantage with shallow circuits</i> Sergey Bravyi (IBM) |
| 11:45am | 12:30pm | <i>Quantum speed-ups for semidefinite programming</i> Fernando Brandão (Caltech) |
| 12:30pm | 2:00pm | Lunch |
| 1:00pm | 2:00pm | <i>Optional: Quantum Gaming Session</i> Maryam Ashoori & Justin Weisz (IBM) |
| 2:00pm | 2:45pm | <i>Classical simulation algorithms for quantum computational supremacy experiments</i> Ashley Montanaro (University of Bristol) |
| 2:45pm | 3:00pm | Afternoon Coffee Break |
| 3:00pm | 4:00pm | <i>Panel Discussion: Quantum computing before fault tolerance</i> <u>Moderator:</u> Dario Gil (IBM) <u>Panelists:</u> Dave Bacon (Google), Andrew Childs (University of Maryland), Richard Jozsa (Cambridge University), Jungsang Kim (Duke University / IonQ), Eleanor Rieffel (Nasa), Matthias Steffen (IBM) |
| 4:00pm | 4:15pm | <i>Closing remarks</i> Dario Gil (IBM) |