

Call for Participation

Workshop on Benchmarking Quantum Computational Devices and Systems

In conjunction with the
IEEE International Conference on Rebooting Computing (ICRC 2018).
Wednesday, 7th November, 10 a.m. - 12 p.m.

This workshop is intended to bring together researchers who are developing quantum computational devices, and researchers with experience benchmarking classical machines and systems at all levels of the stack, including hardware components, subsystems and coprocessors, software tools, and application-specific code.

The goal of the workshop is to facilitate knowledge transfer from benchmarking classical systems to the task of benchmarking quantum systems. Topics to be addressed include:

- What are the desirable properties of computational benchmarks?
- What questions about performance can and cannot be feasibly addressed?
- What pitfalls arise in designing benchmark test suites and test procedures?
- How can standard benchmarking practices and performance metrics be adapted to the quantum paradigm, which has the following properties:
 - Computation is inherently hybrid, involving a quantum circuit embedded in a classical control and memory system.
 - Computation is inherently probabilistic (the circuit returns a correct answer with probability < 1).
 - The quantum computation is often invoked as a subroutine of a classical solver.
 - Quantum algorithms are often evaluated in comparison to classical heuristics.
 - Quantum circuits in current development exhibit wide variations at all design levels, including materials, architectures, machine instruction sets, and qubit counts.
 - Different quantum devices are designed to solve different categories of problems.

Workshop participation is open to all ICRC attendees. Some limited time will be available for short presentations of position papers: those interested in presenting a position paper should contact the organizers with a description of the proposed topic and content.

Workshop Dates: Two sessions, November 7th and 8th, 2018.

Workshop Location: Co-located with ICRC (icrc.eee.org), Tysons, VA, USA.

Workshop Organizers:

- Anastasiia Butko, Lawrence Berkeley National Laboratory (abutko@lbl.gov)
- Catherine McGeoch, D-Wave Systems (cmcgeoch@dwavesys.com)
- Travis Humble, Oak Ridge National Laboratory (humblets@ornl.gov)