



Workshop Program (as of July 7, 2014)

QS14
Mountain View, CA
July 9 - 10, 2014

Program

Note: All talks will be held in the Colloquium Room at the SETI Institute.

Wednesday July 9

Opening Session (Chair: Andrew Sornborger)

- 9:00am - 9:15am Mike Geller (UGA)
Opening remarks
- 9:15am - 9:45am Lin Tian (UC Merced)
Emulating quantum many-body physics with superconducting qubits and resonators
- 9:45am - 10:15am Hao You (UGA)
Simulating the Transverse Ising Model
- 10:15am - 10:30am **Coffee break**
- 10:30am - 11:00am Laura García-Álvarez (U. Basque Country)
Fermion-Fermion Scattering with Superconducting Circuits
- 11:00am - 11:30am Phillip Stancil (UGA)
Molecular Collisions on Classical and Quantum Computers
- 11:30am - 12:00pm Rami Barends (UC Santa Barbara)
Design of a Superconducting Quantum Computer
- 12:00pm - 2:00pm **Lunch**

Session 2 (Chair: Phillip Stancil)

- 2:00pm - 2:30pm Nathan Wiebe (Microsoft)
Quantum Hamiltonian Learning
- 2:30pm - 3:00pm Lucas Lamata (U. Basque Country)
Digital Quantum Simulation of Spin Systems in Superconducting Circuits
- 3:00pm - 3:30pm Pedram Roushan (UC Santa Barbara)
Observation of Topological Transitions in Interacting Superconducting Circuits
- 3:30pm - 3:45pm **Coffee Break**

Session 3 (Chair: Hao You)

- 3:45pm - 4:15pm Alejandro Perdomo (NASA Ames)
Programming and Tuning a Quantum Annealing Device
- 4:15pm - 4:45pm Nathaniel Thomas (Stanford University)
Computational universality of the Fermi-Hubbard and t-J Hamiltonians

Thursday July 10**Session 4** (Chair: Amara Katarwa)

- 9:00am - 9:30am Austin Fowler (UC Santa Barbara)
Fault-tolerant Quantum Chemistry
- 9:30am - 10:00am Vadim Smelyanskiy (NASA Ames)
Functional role of tunneling in quantum annealing with D-Wave machine
- 10:00am - 10:30am Davide Venturelli (NASA Ames)
Quantum Optimization of Fully-Connected Spin Glasses
- 10:30am-10:45am **Coffee Break**

10:45am - 11:15am Enrique Solano (U. Basque Country)
Unphysical operations and embedding quantum simulators

11:15am - 11:30am *Final Remarks*

11:30am **Meeting Adjourned**