Spring School on Quantum Computation

March 19-22, 2018
University of California, San Diego

https://goo.gl/Ua5GRc

The 3.5-day Spring school will bring TCS researchers up to speed on the current excitement in quantum computing.

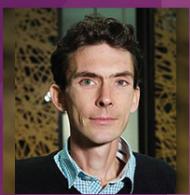Registration deadline: **February 1, 2018** . Limited funding available for students.

Dorit Aharonov
Hebrew University

David Gosset
IBM Research

Thomas Vidick
Caltech

TARGET AUDIENCE

The school is oriented towards graduate students, postdocs and faculty alike. We expect participants to have a background in computer science (complexity and algorithms), as well as a working familiarity with linear algebra, but no prior exposure to quantum information is needed.

TOPICS COVERED

Emphasis will be put on interesting open algorithmic and computational complexity questions which are of appeal to theoretical computer scientists. The following topics will be discussed:

- Basics of quantum mechanics, entanglement, the quantum circuit model, the complexity class BQP, the notion of a local Hamiltonian, and the class QMA (the quantum analog of NP).

- Restricted models of quantum computation, such as low-depth circuits and adiabatic computation.

- Quantum error correcting codes and multiparticle entanglement.

- Quantum interactive proofs with one or more provers and their connection to cryptography (delegating quantum computations) and complexity (the quantum PCP conjecture).