The Abdus Salam International Centre for Theoretical Physics
www.ictp.it

UNESCO
United Nations Educational, Scientific and Cultural Organization

IAEA
International Atomic Energy Agency
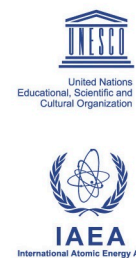
Workshop on Theory and Practice of Adiabatic Quantum Computers and Quantum Simulation

22 - 26 August 2016
(Miramare – Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, is organizing a **Workshop on Theory and Practice of Adiabatic Quantum Computers and Quantum Simulation,** to be held at ICTP, Trieste, Italy, from **22 to 26 August 2016.** This event is co-sponsored by the U.S. National Science Foundation I2CAM International Materials Institute Award, Grant DMR-1411344.

The aim of this interdisciplinary workshop is to gather together physicists and computer scientists to discuss various outstanding open issues related to the potential efficiency of adiabatic quantum computers, quantum annealers, and quantum simulators. In particular, the following questions will be addressed: under which conditions can adiabatic quantum computers outperform classical devices, providing a speed-up for some computational tasks? How do we define, detect and quantify quantum speed-up? Can we use classical computers to test quantum annealers? Which physical processes limit the efficiency of adiabatic quantum computers?

This workshop is addressed to researchers with interest and expertise in the foundations of quantum computing, in the theory and computational methods for disordered quantum systems, and in machine learning methods.

The program will include oral presentations given by invited speakers and short talks selected from contributed Abstracts.

CALL FOR CONTRIBUTED ABSTRACTS:

All applicants are invited to submit an Abstract for a poster presentation and for a flash talk. A limited number of contributed Abstracts will be selected by the organizing committee for a short oral presentation.

GRANTS

Scientists and students from all countries that are members of the United Nations, UNESCO or IAEA may attend the Workshop. As it will be conducted in English, participants should have an adequate working knowledge of this language. Although the main purpose of the Centre is to help research workers from developing countries, through a program of training activities within a framework of international cooperation, students, post-doctoral fellow and researchers from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants are borne by their home institutions. Every effort should be made by candidates to secure support for their fare (or at least half-fare). A limited number of grants are available to support the travel and living expenses of selected participants, with priority given to participants working in a developing country and who are at the early stages of their career and who are not more than 45 years old. Such support is available only for those who attend the entire activity.

There is no registration fee.

HOW TO APPLY FOR PARTICIPATION

The online application form can be accessed at the activity website:
https://e-applications.ictp.it/applicant/login/2825

DEADLINE for requesting participation: 31 MAY 2016

Co-sponsors:

ICAM-I2CAM
Institute for Complex Adaptive Matter

NSF

ORGANIZERS:

Eliot KAPIT
(Oxford University)
Hidetoshi NISHIMORI
(Tokyo Institute of Technology)
Vadim OGANESYAN
(City University of New York)
Sebastiano PILATI *
(ICTP, Trieste, Italy)
Giuseppe SANTORO
(SISSA, Trieste, Italy)
Antonello SCARDICCHIO *
(ICTP, Trieste, Italy)

* also Local Organizers

INVITED SPEAKERS:

Steven ADACHI (Lockheed-Martin) **
Dorit AHARONOV (Hebrew U.) **
Mohammad AMIN (D-Wave)
Sergio BOIXO (Google)
Bikas K. CHAKRABARTI (Saha I.)
Amit DUTTA (IIT Kanpur)
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Anatoli POLKOVNIKOV (Boston)
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Vadim N. SMELYANSKIY (Google)
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Sei SUZUKI (Saitama Med. U.)
Matthias TROYER (ETHZ)
Peter YOUNG (UCSC)

**** to be confirmed**

EVENT WEB PAGE:
http://indico.ictp.it/event/7607/