



The Abdus Salam
International Centre for Theoretical Physics



Workshop on Quantum Statistical Mechanics, Computation and Information

14 - 18 June 2010

(Miramare - Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics is organizing a Workshop on *Quantum Statistical Mechanics, Computation and Information* to be held at ICTP, Trieste, Italy from 14 to 18 June 2010.

Recent progress in quantum information and computing has led to the discovery of deep connections between quantum statistical mechanics and quantum complexity theory. These include topics such as the study of adiabatic quantum computation, the encoding of QMA-complete problems into ground states of quantum Hamiltonians, the study of typical case complexity, as well as quantum spin glasses and quantum glassy systems in general.

The goal of this workshop is to bring together scientists from quantum computing and statistical mechanics/field theory in order to stimulate cross-fertilization and to develop new ideas and directions of research.

This five-day workshop will consist in 3-4 talks a day, plenty of time for interaction and organized discussion groups.

Participation

Applicants from all countries that are members of the United Nations, UNESCO or IAEA may attend. As the Workshop 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 programme of training activities within a framework of international cooperation, a limited number of students and post-doctoral scientists from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by their home institutions. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants, who are nationals of, and working in, a developing country, and who are not more than 45 years old. Such support is available only to those attending the entire activity. *There is no registration fee.*

HOW TO APPLY FOR PARTICIPATION

The Online Application can be accessed at the activity website: <http://agenda.ictp.it/smr.php?2143>. Comprehensive instructions will guide you step-by-step on how to fill out and submit the application form. Kindly send all file attachments in Word or Acrobat format.

Secretariat: Ms. Rosa del Rio (smr 2143)

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Directors

Edward Farhi (MIT)
Matthew Hastings (Microsoft)
Giuseppe Mussardo (SISSA)
Antonello Scardicchio (ICTP)
Shivaji Sondhi (Princeton)

Local Organisers

Markus Mueller (ICTP)
Antonello Scardicchio (ICTP)

Invited Speakers

G. Aeppli (LCN London)
B. Altshuler (Columbia Univ.)
S. Bravyi (IBM)
P. Fendley (Univ. of Virginia)
D. Gottesman (Perimeter Institute)
S. Jordan (Caltech)
J. Kempe (Tel Aviv University)
F. Krzakala (ESPCI Paris)
L. Levitov (MIT)
R. Moessner (MPI Dresden)
D. Poulin (Sherbrooke)
G. Semerjian (ENS Paris)
F. Verstraete (IQI Vienna)
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P. Young (UC Santa Cruz)
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* t.b.c.

Application

DEADLINE

1 March 2010