Center for Nonlinear Studies

Classical and Quantum Information Theory

March 24-28, 2008 | Santa Fe, NM, USA

Register online at:

http://cnls.lanl.gov/CQIT

cqit@cnls.lanl.gov

Conference Information:

Over half a century ago, it was realized that quantum and statistical field theories are intimately related, both at the formal and physical levels. Quantum critical phenomena provide examples where quantum systems are frequently mapped onto classical systems, while non-equilibrium statistical mechanics provides an example of proceeding in the other direction via stochastic operator techniques. We are now witnessing a similar phenomenon in the areas of classical and quantum information theory, where methods and concepts of many-body physics are found to be the common element for seemingly different problems such as quantum and classical spin glasses and quantum and classical error correcting codes.

Our workshop will explore and exploit these developments, inviting leading experts to discuss the latest problems and techniques of interest. We intend to explore various questions at the interface of these fields such as, to name a very few, possible new behaviors in quantum spin glasses due to entanglement and the role of message passing algorithms for quantum systems, both for decoding of error correcting codes and for finding ground and thermal states.

This conference will bring together experts from classical and quantum information theory, statistical physics and computer science, in order to improve communication and contribute to a coherent description of this class of problems.

Call for Contributions:

If you are interested in presenting a contributed talk or poster, please submit an abstract online by March 3, 2008.

Conference Location:

La Posada de Santa Fe

Conference Organizers:

Misha Chertkov
Matthew Hastings
Razvan Teodorescu
Jon Yard

Technical Program Coordinator:

Hasan Guclu

Conference Administrator:

Adam Shipman

Speakers:

Dorit Aharonov
Hebrew University
Andris Ambainis
University of Latvia
Alexei Ashikhmin
Alcatel-Lucent
Howard Barnum
LANL
Sergey Bravyi
IBM
Volodya Chernyak
Wayne State University
Sue Coppersmith
Wisconsin
Jens Eisert
Imperial
Paul Fendley
Virginia
Michael Freedman
Microsoft
Jim Harrington
LANL
Aram Harrow
Bristol
Patrick Hayden
McGill
Vladimir Korepin
Stony Brook
Leonid Levitov
MIT
Brad Marston
Brown
Andrea Montanari
Stanford
Chris Moore
UNM
Tobias Osborne
Royal Holloway
David Poulin
Caltech
John Preskill
Caltech
Eric Rowell
Texas A&M
David Sherrington
Oxford
Shivaji Sondhi
Princeton
Barbara Terhal
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Frank Verstraete
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UCF
Jonathan Yedidia
Mitsubishi
Oleg Zaboronski
Warwick
Wojciech Zurek
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This conference is:
Open to the Public

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