institute for pure & applied mathematics

Entropy Inequalities, Quantum Information and Quantum Physics

February 8 - 12, 2021

Scientific Overview

Entropy links diverse areas of mathematics, physics and information theory. Incisive functional inequalities are typically employed to make estimates and provide answers to concrete questions. In this workshop we will focus on recent research on convergence to equilibrium and entropy estimates for quantum mechanical systems, combining probabilistic and optimal mass transport methods, log-Sobolev inequalities and other functional inequalities. We will also better connect quantum information with high energy physics where entropy is used a tool to describe bulk/boundary effects in theories that combine gravity and quantum field theory. The ultimate goal of this workshop is to enable diverse research groups to find new grounds for collaboration, and new pathways forward in the development of pure and applied mathematics.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

Organizers

Eric Carlen (Rutgers University), Nilanjana Datta (University of Cambridge), and Marius Junge (University of Illinois at Urbana-Champaign).

Speakers

Tristan Benoist (Toulouse Mathematics Institute (CNRS)), Mario Berta (Imperial College), Angela Capel (Technische Universität München), Matthias Christandl (University of Copenhagen), Giacomo De Palma (Massachusetts Institute of Technology), Hamza Fawzi (University of Cambridge), Omar Fawzi (École Normale Supérieure de Lyon), Tryphon Georgiou (UCI), Michael Kastoryano (Universität zu Köln), Robert König (Technische Universtitat München), Haojan Li (University of Illinois at Urbana-Champaign), David Perez-Garcia (Universidad Complutense de Madrid), Eric Ricard (Université de Caen), Cambyse Rouze (Technische Universität München), David Sutter (IBM Zürich Research Laboratory), Kristan Temme (California Institute of Technology), Frank Verstraete (Ghent University), Anna Veshynina (University of Houston), Michael Walter (Universiteit van Amsterdam), Mark Wilde (Louisiana State University), Andreas Winter (Universitat Autònoma de Barcelona), Melchior Wirth (Institute of Science and Technology Austria (IST Austria), Department of Mathematics and Computer Science), Quanhua Xu (Université de Franche-Comté (Besançon)) Haonan Zhang (Institute of Science and Technology Austria (IST Austria))

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For more information, visit the program webpage:

www.ipam.ucla.edu/eqp2021