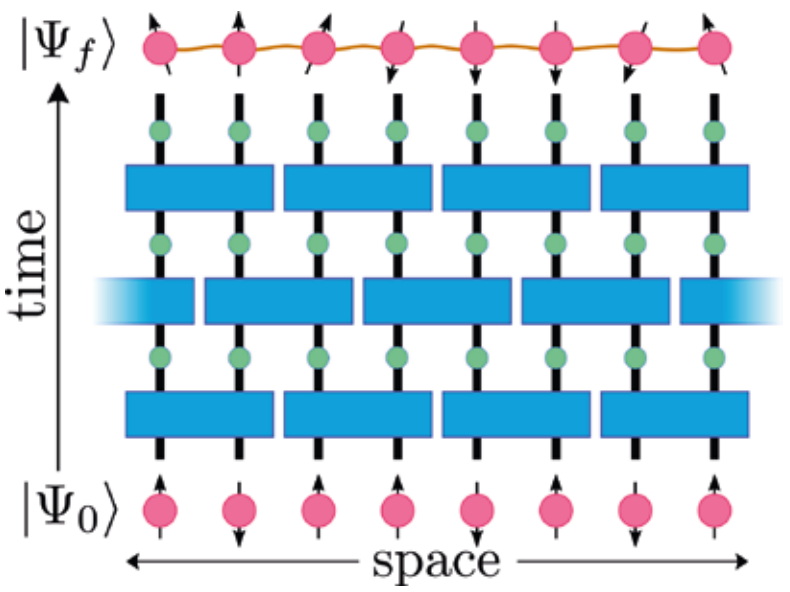
Max Planck Institute for the Physics of Complex Systems

mpipks

Dynamics, Criticality, and Universality in Random Quantum Circuits

Virtual Workshop
30 September - 02 October 2020

The past decade has witnessed a number of breakthroughs in our understanding of nonequilibrium quantum dynamics. While this has traditionally focused on the study of dynamics generated by an energy conserving Hamiltonian or a Floquet unitary, random quantum circuit models have recently emerged as minimally structured systems where equivalent questions can be addressed, sometimes with more analytical and numerical ease. As quantum circuits are conventionally studied in the context of quantum computing and quantum information, this brings together a diverse crowd working on an interesting set of related and fundamental questions from different viewpoints. Moreover, with the recent experimental advances in isolated quantum systems and quantum computation it is essential to unite these perspectives. This virtual conference will address the physics of quantum circuits both from the quantum information/quantum computation and condensed matter perspectives, and help mediate and foster interdisciplinary discoveries.



Topics

- Dynamics of entanglement and quantum information
- Random quantum circuits
- Operator spreading and scrambling
- Measurement-induced phase transitions
- Experimental results on quantum computation

Invited speakers:

Maissam Barkeshli
(University of Maryland)

Bruno Bertini
(University of Ljubljana)

Soonwon Choi
(UC Berkeley)

Bill Fefferman
(University of Chicago)

Matthew Fisher
(UC Santa Barbara)

Aram Harrow
(MIT)

Timothy Hsieh
(Perimeter Institute)

Liang Jiang
(University of Chicago)

Vedika Khemani
(Stanford)

Adam Nahum
(Oxford)

Crystal Noel
(JQI, Maryland)

Frank Pollmann
(Technical University of Munich)

Sagar Vijay
(UC Santa Barbara)

Yi-Zhuang You
(UC San Diego)

Nicole Yunger Halpern
(Harvard)

Scientific coordinators:

Michael Gullans
(Princeton University, soon NIST/-QuICS)

Jedediah Pixley
(Rutgers University)

Romain Vasseur
(University of Massachusetts, Amherst)

Justin Wilson
(Rutgers University)

Organisation:

Katrin Lantsch &
Claudia Domaschke
MPIPKS Dresden

Applications received before 15th September 2020 are considered preferentially.

Applications are welcome and should be made by using the application form on the event's web page. The number of attendees is limited.

For further information please contact:
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