Random Matrix Theory and Networks
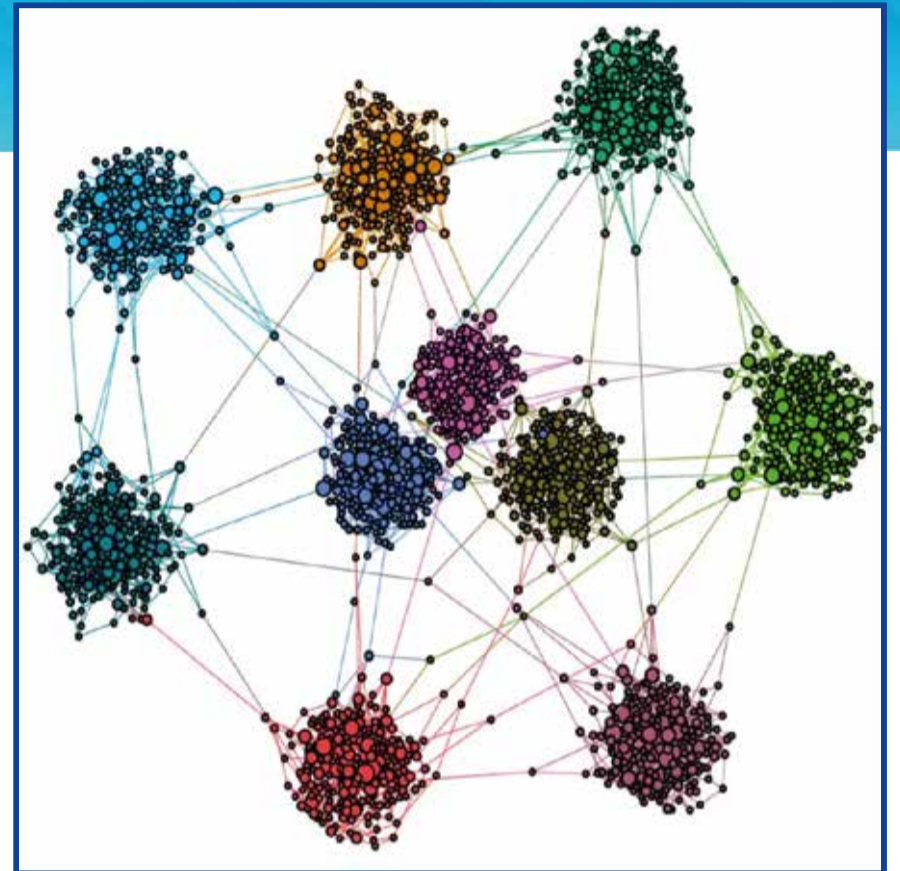
VIRTUAL

Virtual Workshop
7 - 18 June 2021

Random matrix theory was initiated about 80 years ago as a new mathematical tool to study many-body systems, such as, heavy nuclei or atoms. Standard models of random matrix theory rely on independent and identically distributed matrix entries. Recent years, new random matrix models have been developed that incorporate features of real-world systems, such as, network architecture, modularity, and recurrent motifs. These network models appear in the study of complex systems, such as, financial markets, signalling networks, neural networks, or ecosystems. Potential topics of the workshop are the analysis of systemic risk in financial markets, the stability of ecosystems, or applications of random matrix theory in statistical inference, to name a few. The aim of the workshop is to bring together researchers working on random matrix theory and complex systems.

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Topics

- Applications of random matrices and network theory in ecology, neural networks or economics
- Statistical inference and spectral algorithms
- Dynamics of complex systems
- Mathematical aspects of spectral graph theory

Invited speakers

Stefano Allesina (US)
Ariel Amir (US)
Charles Bordenave (FR)
Jean-Philippe Bouchaud (FR)
Fabio Caccioli (UK)
Andrea De Martino (IT)
Carl Dettmann (UK)
Joshua Feinberg (IL)
Yan Fyodorov (UK)
Thomas Guhr (DE)
Reimer Kühn (UK)
Carlo Lucibello (IT)
Satya Majumdar (FR)
Matteo Marsili (IT)
Rémi Monasson (FR)
David R. Nelson (US)
Maciej Nowak (PL)
Srdjan Ostojic (FR)
Federico Ricci-Tersenghi (IT)

Tim Rogers (UK)
Marc Timme (DE)
Martin Weigt (FR)
Lenka Zdeborová (CH)

Scientific coordinators

Fernando Lucas Metz
Porto Alegre, Brazil

Izaak Neri
London, UK

Isaac Pérez Castillo
Mexico City, Mexico

Organisation

Katrin Lantsch &
Mandy Lochar
MPIPKS Dresden

Applications received before 30th April 2021 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. There is no registration fee for the virtual workshop.

For further information please contact:
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Max Planck Institute for the Physics of Complex Systems

We also offer individual fellowships (phd, postdoc, sabbatical). Applications are accepted continuously. For details, please check www.pks.mpg.de/visitors