

International Workshop
24 - 28 September 2018

Anderson Localization and Interactions

PROGRAM



Münchscaufen

O. Herjolt 1918

Scientific coordinators:

Ferdinand Evers • University of Regensburg, Germany
Alexander Mirlin • Karlsruhe Institute of Technology, Germany

Organisation:

Maria de Haas

The program will be continuously updated during the event. This
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Program

Sunday, 23 September

18:00 - 20:00 Registration in guest house 4

19:00 - 21:00 Welcome reception

Monday, 24 September

- 09:00 - 09:15 **Roderich Moessner** (MPI for the Physics of Complex Systems) and **Scientific organizers**
Opening
- Session Chair*
Ferdinand Evers
- 09:15 - 09:55 **Wojciech De Roeck** (KU Leuven)
The MBL transition
- 09:55 - 10:25 **Elmer Doggen** (Karlsruhe Institute of Technology)
Many-body localization in large quantum chains
- 10:25 - 10:55 Coffee break
- 10:55 - 11:35 **Soumya Bera**
(Indian Institute of Technology Bombay)
Dynamical properties of many-body localization transition
- 11:35 - 12:15 **Sergej Flach** (Center for Theoretical Physics of Complex Systems)
Dynamical glass
- 12:15 - 13:15 Lunch
- 13:15 - 14:00 Discussion
- Session Chair*
Victor Gurarie
- 14:00 - 14:40 **Hartmut Buhmann** (University of Würzburg)
Transport properties of HgTe based topological systems

- 14:40 - 15:20 **Rui-Rui Du** (Rice University)
Transport of interacting and disordered helical edge states in the InAs/GaSb and InAs/GaInSb double quantum wells
- 15:20 - 16:00 **Adrian Po** (MIT)
Topological phases in disordered and driven systems
- 16:00 - 16:30 Coffee break
- 16:30 - 17:30 **locint18 colloquium**
Chair: David Luitz
(MPI for the Physics of Complex Systems)
Immanuel Bloch (MPI für Quantenoptik)
Probing many-body localization using ultracold atoms
- 18:30 - 19:30 Dinner
- 19:30 - 20:30 Informal discussion

Tuesday, 25 September

Session Chair
Alexander Mirlin

09:00 - 09:40 **Ulrich Schneider** (University of Cambridge)
Quasicrystalline potentials for ultracold atoms

09:40 - 10:10 **Maksym Serbyn**
(Institute of Science and Technology Austria)
Analytically solvable renormalization group for the
many-body localization transition

10:10 - 10:40 Coffee break

10:40 - 11:20 **David Luitz**
(MPI for the Physics of Complex Systems)
Multifractal analysis of many-body wavefunctions
across the MBL transition

11:20 - 11:50 **Zala Lenarčič** (University of Cologne)
Activating many-body localization in solids by
driving with light

11:50 - 12:50 Lunch

12:50 - 14:00 Discussion

Session Chair
Ilya Gruzberg

14:00 - 14:40 **Konstantin Tikhonov**
(Karlsruhe Institute of Technology)
Statistics of eigenstates near the localization
transition on a random regular graph

- 14:40 - 15:20 **Gabriel Lemarié** (LPT, IRSAMC)
Glassy properties of Anderson localization:
pinning, avalanches and chaos
- 15:20 - 16:00 **Marco Tarzia** (Sorbonne Université)
Delocalized glassy dynamics, many-body
localization, and the freezing transition of directed
polymers in random media
- 16:00 - 16:30 Coffee break
- 16:30 - 17:10 **Roderich Moessner**
(MPI for the Physics of Complex Systems)
Floquet multifractality
- 17:10 - 17:50 **Matthew Foster** (Rice University)
Two new applications of geometric critical
phenomena for disordered electron systems
- 18:30 - 19:30 Dinner
- 19:30 - 22:00 Poster session I (focus on odd poster numbers)

Wednesday, 26 September

Session Chair
Sergej Flach

09:00 - 09:40

Michael Pretko
(University of Colorado at Boulder)
Localization in fractonic random circuits

09:40 - 10:10

Ivan Protopopov (University of Geneva)
Destruction of many-body localization by
long-distance resonances

10:10 - 10:40

Coffee break

10:40 - 11:20

Guido Pagano (University of Maryland)
Non-equilibrium phases of quantum spin systems
engineered from ground up

11:20 - 11:50

Anirban Dutta (Indian Institute of Science)
Many-body localized phase of bosonic dipoles

11:50 - 12:50

Lunch

12:50 - 14:00

Discussion

Session Chair
Ulrich Schneider

14:00 - 14:40

Hannes Pichler (Harvard University)
Exploring many-body quantum physics with trapped
Rydberg atoms

14:40 - 15:20

Dimitry Abanin (University of Geneva)
Weak ergodicity breaking from quantum
many-body scars

- 15:30 - 19:30 **Excursion**
- 15:30 Meeting at MPIPKS reception
- 16:15 Guided tour through the Green Vault
- 17:30 Church of our Lady and ascent to the dome
- 18:30 Guided tour through old city
- 19:30 - 22:00 Conference dinner at Eventroom of **Gasthaus am
Neumarkt/Gin House**
Rampische Str. 3
phone +49 351 417270

Thursday, 27 September

Session Chair
Dragana Popovic

09:00 - 09:40

Dan Shahar (The Weizmann Institute)
Superconductors, superinsulators and metals

09:40 - 10:10

Igor Gornyi (Karlsruhe Institute of Technology)
Superconductor-insulator transitions: fermionic approach

10:10 - 10:40

Group picture (to be published on event's web page) & coffee break

10:40 - 11:20

Aviad Frydman (Bar-Ilan University)
Thermal measurements at the SIT

11:20 - 12:00

Christoph Strunk (University of Regensburg)
Quantum criticality and isosbestic points in the magnetoresistance of thin TiN-films

12:00 - 13:00

Lunch

13:00 - 14:00

Discussion

Session Chair
Matthew Foster

14:00 - 14:40

Dragana Popovic
(The National High Magnetic Field Laboratory)
Interplay of superconductivity and charge order in cuprates at high magnetic fields: hidden order of Cooper pairs

- 14:40 - 15:20 **Thomas Vojta**
(Missouri University of Science and Technology)
Fate of the amplitude (Higgs) mode at the
superfluid-Mott glass quantum phase transition
- 15:20 - 15:50 Coffee break
- 15:50 - 16:30 **Igor Burmistrov**
(L.D. Landau Institute for Theoretical Physics)
Quantum corrections to conductivity of disordered
electrons due to inelastic scattering off magnetic
impurities
- 16:30 - 17:10 **Alexander Altland** (University of Cologne)
The Sachdev-Ye-Kitaev model beyond random
matrix theory
- 17:10 - 17:40 **Masaki Tezuka** (Kyoto University)
Chaotic-integrable transition and many-body
localization in generalized Sachdev-Ye-Kitaev
models
- 18:30 - 19:30 Dinner
- 19:30 - 22:00 Poster session II (focus on even poster numbers)

Friday, 28 September

Session Chair
Gabriel Lemarié

- 09:00 - 09:40 **Tomi Ohtsuki** (Sophia University)
Applications of deep 3D convolutional neural network to Anderson and quantum percolation models
- 09:40 - 10:10 **Xin Wan** (Zhejiang University)
A convolutional neural network study of the quantum Hall plateau transition
- 10:10 - 10:40 **Keith Slevin** (Osaka University)
Critical exponent of the Anderson transition using massively parallel supercomputing
- 10:40 - 11:10 Coffee break
- 11:10 - 11:50 **Antonello Scardicchio** (International Centre for Theoretical Physics)
The Anderson model on the Bethe lattice
- 11:50 - 12:20 **Ivan Khaymovich**
(MPI for the Physics of Complex Systems)
Robust multifractal phases and role of correlated hoppings in localization of static and periodically-driven systems
- 12:20 - 13:20 Lunch
- 13:20 - 14:00 Discussion

Session Chair
Alexander Altland

- 14:00 - 14:40 **Siddharth A. Parameswaran** (Oxford University)
Floquet quantum criticality
- 14:40 - 15:20 **Ilya A. Gruzberg** (The Ohio State University)
Anderson transitions in curved space
- 15:20 - 16:00 **Victor Gurarie** (University of Colorado)
Quantum particles in a random potential in high
dimensions
- 16:00 - 16:10 Closing
- 16:10 - 16:40 Coffee break
- 16:40 - 18:30 Discussion
- 18:30 - 19:30 Dinner
- 19:30 - 20:30 Informal discussion