

# International Workshop: Current topics in the nonequilibrium physics of quantum many-body systems

Sept. 25 – 27, 2023, Georg-August-Universität Göttingen

Location: Room HS3, Department of Physics, Friedrich-Hund Platz 1, 37077 Göttingen

## Scientific Organizers:

Fabian Heidrich-Meisner, Georg-August-Universität Göttingen

Ulrich Schneider, Cambridge University, U.K.

Lev Vidmar, Jožef Stefan Institute and University of Ljubljana, Slovenia

## Final Program

Invited talks: 30mins + 5 mins discussion

Contributed talks: 20 mins + 5 mins discussion

## Monday, Sept. 25

Noon	Registration
1pm	<b>Welcome</b>
	<b>Quasi-periodic Systems</b> Chair: Fabian Heidrich-Meisner, Universität Göttingen
1:20pm	Cristiane de Morais Smith, Utrecht University: <i>tba</i>
1:55pm	Antonio Strkalj, University of Cambridge: <i>Coexistence of localisation and transport in many-body two-dimensional quasiperiodic models</i>
2:30pm	Emmanuel Gottlob, University of Cambridge: <i>Topological pumping in quasiperiodic optical lattices</i>
2:55pm	Coffee Break
	<b>Quantum Chaos and Ergodicity</b> Chair: Ulrich Schneider, University of Cambridge
3:30pm	Tomaž Prosen, University of Ljubljana: <i>Floquet Quantum East Circuit: Localization Transition in Thermodynamic Limit</i>
4:05pm	Patrycja Łydźba, Wrocław University of Science and Technology: <i>Quantum-chaotic quadratic Hamiltonians: Weak eigenstate thermalization and equilibration of many-body observables</i>
4:40pm	Miroslav Hopjan, Josef Stefan Institute, Ljubljana: <i>Scale invariant mid-time dynamics at eigenstate transitions</i>
5:15pm	<b>Poster Session</b> (with Catering, snacks)
7:30pm	Dinner (self-organized) or For those who asked to go together: Restaurant Fellini, Groner-Tor-Straße 28. We will take the bus # 21 at 7:54pm from Tammanstrasse. The reservation is for 8:15pm. Other options: Restaurant Mazzoni at Best Western am Papenberg Goa India Restaurant, downtown Göttingen Zum Szültenbürger, downtown Göttingen Sen Viet Cuisine Bistro, downtown Göttingen

## Tuesday, Sept. 26

	<b>Integrable systems and transport</b> Chair: Lev Vidmar, Josef Stefan Institute, Ljubljana
9am	David Wei, MPQ Garching: <i>Microscopic observation of spin superdiffusion in Heisenberg chains</i>
9:35am	Marcos Rigol, Penn State University: <i>Generalized hydrodynamics, local prethermalization, and hydrodynamization in ultracold 1D gases</i>
10:10am	Coffee Break
10:50am	Zala Lenarčič, Josef Stefan Institute, Ljubljana: <i>Iterative construction of conserved quantities in dissipative nearly integrable systems</i>
11:25am	Robin Steinigeweg, Universität Osnabrück: <i>Constructing nonequilibrium steady states from equilibrium correlation functions</i>
12:00pm	Lunch -Self organized 12:30 Restaurant Mazzoni (reservation for 20 persons)
	<b>Accessing long-time dynamics</b> Chair: Marcos Rigol, Penn State
2pm	Mari Carmen Bañuls, MPQ Garching: <i>Converting entanglement into mixture: a new algorithm for long-time dynamics with tensor networks</i>
2:35pm	Iva Brezinova, TU Vienna: <i>Time-dependent correlations in fermionic many-body systems</i>
3:10pm	Coffee Break & Group Picture
3:50pm	Igor Lesanovsky, Universität Tübingen: <i>Quantum reaction-diffusion systems</i>
	<b>Contributed Talks</b> Chair: Fabian Heidrich-Meisner, Göttingen
4:25pm	Soumik Bandyopadhyay, University of Trento: <i>Quantum simulation and out-of-equilibrium dynamics of Sachdev-Ye-Kitaev (SYK) model</i>
4:50pm	Salvatore Manmana, Universität Göttingen: <i>A Villain-like in-gap mode in a periodically driven charge density wave insulator</i>
5:15pm	Discussions Tour Historic Collection (15 persons, first-come-first-serve)
7pm -- 10pm	<b>Workshop Dinner</b> (Restaurant Bullerjahn – for directions, see workshop webpage) Departure for Dinner: 6:21pm from “Tammannstr”, Bus # 22, get off at “Markt”

**Wednesday, Sept. 27**

	<b>Disorder and MBL</b> Chair: Robin Steinigeweg, Universität Osnabrück
9am	Adrian Braemer, Universität Heidelberg: <i>Emergent integrability in Heisenberg spin models with disordered couplings</i>
9:35am	Antonello Scardicchio, ICTP Trieste: <i>Renormalization Group Analysis of the Anderson Model in infinite dimensions: 1/d expansion and many-body localization</i>
10:10am	Coffee Break
	<b>Disorder and MBL II</b> Chair: Mari Carmen Bañuls, MPQ Garching
10:50am	Peter Sollich, Universität Göttingen: <i>Spectra and localization properties of master operators: glassy models on random graphs</i>
11:25am	Madhumita Sarkar, Josef Stefan Institute, Ljubljana: <i>Tuning the phase diagram of the Rosenzweig-Porter model</i>
11:50pm	Marcin Mierzejewski, Wroclaw University of Science and Technology: <i>Strongly disordered Anderson insulator chains with generic two-body interaction</i>
12:25pm	Concluding remarks
12:35pm	Lunch -- Self organized, Departure

## Poster Contributions

Name	Title
Damerow, Sarah (University of Göttingen)	<i>A Conjecture Regarding the Overlap of Different Ground States within the Same Phase</i>
Jafarizadeh, Arash (University of Nottingham)	<i>Mathematical study of Gaussian fermionic operators with linear part</i>
Jiricek, Simon (University of Göttingen)	<i>Temporal dynamics of inhomogeneous initial states in disordered quantum systems</i>
Füllgraf, Merlin (University of Osnabrück)	<i>Novel techniques to improve the results of DMRG-X</i>
Gibbins, Molly (University of Nottingham)	<i>Quench dynamics of a free-fermionic lattice system in <math>d&gt;1</math> spatial dimensions</i>
Li, Yahui (TU Munich)	<i>Hilbert space fragmentation in open quantum systems</i>
Menzler, Heiko (University of Göttingen)	<i>Relaxation dynamics of quantum many-body systems with phonon degrees of freedom using the multitrajjectory Ehrenfest method</i>
Mondal, Suman (University of Göttingen)	<i>Existence of extended states in periodically disordered systems</i>
Moustaj, Anouar (Utrecht University)	<i>Non-Hermitian Isospectral Reductions</i>
Schuricht, Dirk (Utrecht University)	<i>Long-lived circulating currents in strongly correlated nanorings</i>
Singh Roy, Monalisa (Bar-Ilan University)	<i>Measurement induced phase transition with an extended log-law phase in an integrability-broken transverse field Ising model</i>
Swietek, Rafal (Josef Stefan Institute Ljubljana)	<i>Average entanglement entropy of midspectrum eigenstates of quantum-chaotic interacting Hamiltonians</i>
Tapias, Diego (University of Göttingen)	<i>Probes for localization on the sparse Barrat-Mézard trap model</i>
Will, Melissa (TU Munich)	<i>Hilbert space fragmentation in a tilted, two-dimensional Bose Hubbard model</i>