

Online Workshop on  
“Topology, Disorder, and Hydrodynamics in Non-equilibrium Quantum Matter”  
November 29 - December 3, 2021

organized by

Jörg Schmiedmayer (TU Vienna), Maksym Serbyn (ISTA, Klosterneuburg), Romain Vasseur  
(UMass Amherst)

• **Monday, November 29th, 2021**

11:00 – 11:35 **Benjamin Doyon (KCL, London)**

*Emergent hydrodynamics in many-body systems*

11:35 – 12:10 **Immanuel Bloch (MPI Quantum Optics, Garching)**

*Quantum Gas Microscopy of Kardar-Parisi-Zhang Superdiffusion*

12:10 – 14:00 **Lunch Break**

14:00 – 14:35 **Pasquale Calabrese (SISSA, Trieste)**

*Quantum generalized hydrodynamics*

14:35 – 15:10 **Zoran Hadzibabic (U Cambridge)**

*Two sounds and turbulence in shaken 2D Bose gases*

15:10 – 15:30 **Coffee/Tea Break**

15:30 – 16:05 **Isabelle Bouchoule (U Paris-Saclay)**

*Losses in 1D Bose gases*

16:05 – 16:40 **David Weiss**

*TBA*

16:40 – 17:15 **Ehud Altman**

*TBA*

• **Tuesday, November 30th, 2021**

11:00 – 11:35 **Dmitry Abanin (U Genève)**

*Influence matrix approach to quantum many-body dynamics*

11:35 – 12:10 **Ulrich Schneider (U Cambridge)**

*Observing novel phase transitions with Bosons in optical lattices*

12:10 – 14:00 **Lunch Break**

14:00 – 14:35 **Ivan Khaymovich (MPI Dresden)**

*Localization beyond convergence of locator expansion in correlated long-range systems*

14:35 – 15:10 **Siddharth Parameswaran (U Oxford)**

*Asymptotically exact nonlinear responses in interacting many-body systems (virtual)*

15:10 – 15:30 **Coffee/Tea Break**

15:30 – 16:05 **Michael Knap (TU Munich)**  
*Anomalous transport and operator growth in constrained quantum matter*

16:05 – 16:40 **Monika Aidelsburger (LMU Munich)**  
*Non-ergodicity and emergent Hilbert-space fragmentation in tilted Fermi-Hubbard chains*

16:40 – 17:15 **Rahul Nandkishore (U of Colorado, Boulder)**  
*Fracton dynamics*

• **Wednesday, December 1st, 2021**

11:00 – 11:35 **Frank Pollmann (TU Munich)**  
*Efficient Simulation of Quantum Transport in 1D*

11:35 – 12:10 **Jens H Bardarson (KTH Stockholm)**  
*Time-evolution of local information: thermalization dynamics of local observables*

12:10 – 14:00 **Lunch Break**

14:00 – 14:35 **Marko Znidaric (U Ljubljana)**  
*Non-Hermitian phantoms in random circuits*

14:35 – 15:10 **Zala Lenarcic (Jozef Stefan Institute, Ljubljana)**  
*Extracting complexity of quantum dynamics using machine learning*

15:10 – 15:30 **Coffee/Tea break**

15:30 – 16:05 **Jacopo De Nardis (Ghent U)**  
*Subdiffusive hydrodynamics of nearly-integrable anisotropic spin chains*

16:05 – 16:40 **Cheng Chin (U of Chicago)**  
*Dynamics of topological defects driven by density-dependent gauge field*

• **Thursday, December 2nd, 2021**

11:00 – 11:35 **Roderich Moessner (MPI Dresden)**  
*Topological Route to New and Unusual Coulomb Spin Liquids*

11:35 – 12:10 **Hannes Pichler (IQOQI, Innsbruck)**  
*Probing Quantum Spin Liquids with Rydberg Atom Arrays*

12:10 – 14:00 **Lunch Break**

14:00 – 14:35 **Marco Schiro (CNRS, Paris)**  
*Measurement-Induced Entanglement Transitions in the Quantum Ising Chain: From Infinite to Zero Clicks*

14:35 – 15:10 **Philipp Dumitrescu (Flatiron)**  
*Dynamic phases in quasiperiodically driven quantum many-body systems*

15:10 – 15:30 **Coffee/Tea Break**

15:30 – 16:05 **Sarang Gopalakrishnan (CUNY, New York)**  
*Entanglement transitions and symmetries*

16:05 – 16:40 **Matteo Ippoliti (SU)**  
*Monitored quantum dynamics via spacetime duality*

16:40 – 17:15 **Gil Refael (Caltech, Pasadena)**  
*Topological two frequency conversion in doubly driven Weyl semimetal*

- **Friday, December 3rd, 2021**

11:00 – 11:35 **Norbert Schuch (U Vienna)**

*Classification of Matrix Product Unitaries*

11:35 – 12:10 **Tomaz Prosen (U Ljubljana)**

*Exact results on dynamics of dual unitary circuits and their perturbations*

12:10 – 14:00 **Lunch Break**

14:00 – 14:35 **Christoph Naegerl (U Innsbruck)**

*Dynamics of impurities in strongly interacting one-dimensional quantum gases*

14:35 – 15:10 **Maximilian Pruefer (TU Vienna)**

*Probing emergent universal phenomena with one-dimensional Bose gases*

15:10 – 15:30 **Coffee/Tea Break**

15:30 – 16:05 **Adam Nahum**

*TBA*

16:05 – 16:40 **Wen Wei Ho (SU)**

*Exact emergent quantum state designs from quantum chaotic dynamics*

**All talks take place at Erwin Schrödinger Institute - virtual! Online participation is possible via zoom. Zoom coordinates are available on request (secr@esi.ac.at) and after registration until November 26, 2021.**