

Conference Program

Monday

MONDAY, 25.07.2022

09:00 – 09:10 Opening

09:10 – 10:30 Talk Session 1

Chair: R. Claessen

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|---------------|--|----------------------------------|
| 09:10 – 10:00 | Corner and hinge charges of obstructed atomic insulators | S. Murakami
(Tokyo Tech, JPN) |
| 10:00 – 10:30 | Strongly correlated superconductivity induced by band topology | S. Huber
(ETH Zürich, SUI) |

10:30 – 11:00 Coffee Break

11:00 – 12:30 Talk Session 2

Chair: M. Vojta

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|---------------|---|-------------------------------------|
| 11:00 – 11:30 | Diode effect in topological Josephson junctions | J. Meyer
(U Grenoble Alpes, FRA) |
| 11:30 – 12:00 | Ring states in topological materials | R. Queiroz
(Columbia U, USA) |
| 12:00 – 12:20 | Designing three-dimensional flat bands in topological nodal-line semimetals | A. Lau
(TU Delft, NED) |

12:30 – 14:00 Lunch Break

14:00 – 15:10 Talk Session 3

Chair: E. Hankiewicz

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|---------------|---|-----------------------------------|
| 14:00 – 14:30 | Revealing the second-order topological character of bismuth-based Josephson junctions | H. Bouchiat
(U Paris-Sud, FRA) |
| 14:30 – 14:50 | From topological pumping to entanglement measurement | D. Carpentier
(U Lyon, FRA) |
| 14:50 – 15:10 | Higher-dimensional topological and fractional states of matter in superconducting systems | W. Belzig
(U Konstanz, GER) |

15:10 – 15:40 Coffee Break

15:40 – 17:00 Talk Session 4

Chair: R. Thomale

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|---------------|--|---------------------------------------|
| 15:40 – 16:00 | Dynamical fractal and anomalous noise in clean magnetic crystals | R. Moessner
(MPI PKS Dresden, GER) |
| 16:00 – 16:20 | Non-Abelian chiral spin liquid on spin-1 kagome lattice: truncation of an exact Hamiltonian and numerical optimization | B. Jaworowski
(Aarhus U, DEN) |
| 16:20 – 16:40 | P-wave superconductivity in Luttinger semimetals | J. Link
(TU Dresden, GER) |
| 16:40 – 17:00 | Spin and orbital magnetism in rhombohedral multilayer graphene | T. Wolf
(UT Austin, GER) |

Conference Program

Tuesday

TUESDAY, 26.07.22

09:00 – 10:30 Talk Session 5

Chair: J. Erdmenger

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|---------------|---|------------------------------|
| 09:00 – 09:50 | Universal theory of strange metals from spatially random interactions | S. Sachdev
(Harvard, USA) |
| 09:50 – 10:20 | Applied string theory: Explaining strange metals with virtual black holes | K. Schalm
(U Leiden, NED) |

10:30 – 11:00 Coffee Break

11:00 – 12:30 Talk Session 6

Chair: V. Dyakonov

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|---------------|--|------------------------------------|
| 11:00 – 11:30 | Bose polaron formation and interactions in a cavity-coupled monolayer semiconductor | M. Kroner
(ETH Zürich, SUI) |
| 11:30 – 12:00 | Encountering topology in the excitonic spectrum of atomically thin crystals | C. Schneider
(U Oldenburg, GER) |
| 12:00 – 12:30 | Parallel spin-momentum locking and correlations of multifold fermions in chiral topological semimetals | N. Schröter
(MPI Halle, GER) |

12:30 – 14:00 Lunch Break

14:00 – 15:10 Talk Session 7

Chair: M. Bode

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|---------------|--|------------------------------------|
| 14:00 – 14:30 | Tunable many-body interactions and induced superconductivity in a helical Luttinger Liquid | B. Weber
(NTU Singapore, SGP) |
| 14:30 – 14:50 | Surface spin texture derived from a single mirror plane of WTe_2 | L. Plucinski
(FZ Jülich, GER) |
| 14:50 – 15:10 | Proximity-induced gap opening by twisted plumbene in epitaxial graphene | C. Tegenkamp
(TU Chemnitz, GER) |

15:10 – 15:40 Coffee Break

15:40 – 17:00 Talk Session 8

Chair: J. van den Brink

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|---------------|--|--|
| 15:40 – 16:00 | Spin polarisation and dichroism effects in ARPES of 2D materials | J. Minar
(U West Bohemia Pilsen, CZE) |
| 16:00 – 16:20 | Superconductivity in flat-band semimetals | A. Zyuzin
(Aalto U, FIN) |
| 16:20 – 16:40 | Parallel and anti-parallel helical surface states for topological semimetals | T. Zhang
(Tokyo Tech, JPN) |
| 16:40 – 17:00 | Robustness of spin-polarized edge states in a two-dimensional topological semimetal without inversion symmetry | J. Mella
(U of Chile, CHI) |

17:00 – 19:00 Poster Session 1

Presenters: odd poster numbers

19:30 – 22:30 GHN Dinner

Location: Nikolaushof, Würzburg

Shuttle bus departure: 19:10 o'clock, Maritim

Conference Program

Wednesday

WEDNESDAY, 27.07.22

09:00 – 10:30 Talk Session 9

Chair: F. Reinert

09:00 – 09:50 The topological transistor as a low-voltage switch

M. Fuhrer
(Monash U, AUS)

09:50 – 10:20 Fermiology of AV_3Sb_5 kagome superconductors

R. Comin
(MIT, USA)

10:30 – 11:00 Coffee Break

11:00 – 12:30 Talk Session 10

Chair: M. Vojta

11:00 – 11:30 Topological magnons in chiral magnets

C. Pfleiderer
(TU München, GER)

11:30 – 12:00 Superconductivity and competing orders in flat bands with tunable quantum metric

D. Chowdhury
(Cornell, USA)

12:00 – 12:30 Spin dynamics and unconventional Coulomb phase in $Nd_2Zr_2O_7$

E. Lhotel
(Institut Néel, FRA)

12:30 – 12:45 Group picture

Location: Congress Centrum, Würzburg

Meeting point: Information desk

Who: members of the cluster of Excellence ct.qmat (PIs and Associated)

12:30 – 14:00 Lunch Break

14:00 – 15:10 Talk Session 11

Chair: B. Trauzettel

14:00 – 14:30 Building crystalline topological superconductors from Shiba lattices

T. Neupert
(U Zürich, SUI)

14:30 – 14:50 Hydrodynamics, Thermalization & Entanglement from Spacetime Geometry

M. Kaminski
(U Alabama, USA)

14:50 – 15:10 Topological charge pumping in the dimerized ionic Hubbard model

A. Aligia
(U Göttingen, GER)

15:10 – 15:40 Coffee Break & GHN Coffee Break (at the GHN booth)

16:00 – 17:30 City Tours of Würzburg

Departure: 16:00 o'clock, Maritim

18:45 – 19:00 Group picture

Location: Fountain in front of the Residence, Würzburg

Who: all participants of CT.QMAT22

19:00 – 23:30 Conference Dinner

Location: Staatlicher Hofkeller, Würzburg

Meetingpoint: Fountain in front of the Residence, Würzburg

Conference Program

Thursday

THURSDAY, 28.07.22

09:00 – 10:30 Talk Session 12

Chair: F. Assaad

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|---------------|---|--------------------------------------|
| 09:00 – 09:50 | Anomalous Floquet topological systems with ultracold atoms | M. Aidelsburger
(LU München, GER) |
| 09:50 – 10:20 | Novel tools for studying lattice physics with ultracold atoms | C. Weitenberg
(U Hamburg, GER) |

10:30 – 11:00 Coffee Break

11:00 – 12:30 Talk Session 13

Chair: A. Chernikov

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|---------------|--|--|
| 11:00 – 11:20 | Surfaces Berry-curve Bloch-electrons | J. van den Brink
(IFW Dresden, GER) |
| 11:20 – 11:40 | Quantized Faraday rotation and the band structure in 2D quantum wells | A. Pimenov
(TU Wien, AUT) |
| 11:40 – 12:00 | Optical signature of anomalous Hall effect in a correlated magnetic Weyl semimetal | L. Degiorgi
(ETH Zürich, SUI) |
| 12:00 – 12:20 | PT-symmetric non-Hermitian superconductors | V. Kornich
(U Würzburg, GER) |

12:30 – 14:00 Lunch Break

14:00 – 15:10 Talk Session 14

Chair: H. Buhmann

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|---------------|---|--------------------------------|
| 14:00 – 14:30 | Landau level spectroscopy: a window into topological semimetals | A. Akrap
(U Fribourg, SUI) |
| 14:30 – 14:50 | Microwave bulk and edge transport in HgTe-based 2D topological insulators | E. Bocquillon
(U Köln, GER) |
| 14:50 – 15:10 | Exploring the full potential of edge channel transport in HgTe based two-dimensional topological insulators | S. Shamim
(U Würzburg, GER) |

15:10 – 15:40 Coffee Break

15:40 – 17:00 Talk Session 15

Chair: G. Sangiovanni

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|---------------|--|------------------------------------|
| 15:40 – 16:00 | Quantum spins and hybridization in artificially-constructed chains of magnetic adatoms on superconducting 2H-NbSe ₂ | K. Franke
(FU Berlin, GER) |
| 16:00 – 16:20 | Searching for superconductors with Majorana corner modes | Y.-T. Hsu
(U Notre Dame, USA) |
| 16:20 – 16:40 | Fraunhofer pattern in the presence of Majorana zero modes | P. Recher
(U Braunschweig, GER) |

17:00 – 19:00 Poster Session 2

Presenters: even poster numbers

Conference Program

Friday

FRIDAY, 29.07.22

09:00 – 10:30 **Talk Session 16** Chair: S. Klembt

09:00 – 09:50 AI for topological physics

M. Soljatic
(MIT, USA)

09:50 – 10:20 Non-hermitian Spin-Hall effect in photonic Dirac waveguides

A. Khanikaev
(CUNY, USA)

10:30 – 11:00 **Coffee Break**

11:00 – 12:30 **Talk Session 17** Chair: T. Kießling

11:00 – 11:20 Topological insulator vertical-cavity laser array

S. Klembt
(U Würzburg, GER)

11:20 – 11:40 Hyperbolic matter in electrical circuits with tunable complex phases

I. Boettcher
(U Alberta, CAN)

11:40 – 12:00 From a hyperbolic drum towards hyperbolic topological insulators

P. Lenggenger
(ETH Zürich, SUI)

12:00 – 12:20 From chiral squeezing to nonlinear topology in optomechanics

J. del Pino
(ETH Zürich, SUI)

12:20 – 12:30 **Poster Prizes & Closing Remarks**

12:30 – 14:00 **Lunch**

- End of Conference -

It was a pleasure to have you in Würzburg!

Have a good trip home and see you soon at the next
ct.qmat-event!