

# 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<br>(Tokyo Tech, JPN) |
| 10:00 – 10:30 | Strongly correlated superconductivity induced by band topology | S. Huber<br>(ETH Zürich, SUI)    |

### 10:30 – 11:00 Coffee Break

#### 11:00 – 12:30 Talk Session 2

Chair: M. Vojta

- |               |   |                                     |
|---------------|---|-------------------------------------|
| 11:00 – 11:30 | Diode effect in topological Josephson junctions                             | J. Meyer<br>(U Grenoble Alpes, FRA) |
| 11:30 – 12:00 | Ring states in topological materials  | R. Queiroz<br>(Columbia U, USA)     |
| 12:00 – 12:20 | Designing three-dimensional flat bands in topological nodal-line semimetals | A. Lau<br>(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<br>(U Paris-Sud, FRA) |
| 14:30 – 14:50 | From topological pumping to entanglement measurement                                      | D. Carpentier<br>(U Lyon, FRA)    |
| 14:50 – 15:10 | Higher-dimensional topological and fractional states of matter in superconducting systems | W. Belzig<br>(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<br>(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<br>(Aarhus U, DEN)      |
| 16:20 – 16:40 | P-wave superconductivity in Luttinger semimetals   | J. Link<br>(TU Dresden, GER)          |
| 16:40 – 17:00 | Spin and orbital magnetism in rhombohedral multilayer graphene   | T. Wolf<br>(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<br>(Harvard, USA) |
| 09:50 – 10:20 | Applied string theory: Explaining strange metals with virtual black holes | K. Schalm<br>(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<br>(ETH Zürich, SUI)     |
| 11:30 – 12:00 | Encountering topology in the excitonic spectrum of atomically thin crystals                            | C. Schneider<br>(U Oldenburg, GER) |
| 12:00 – 12:30 | Parallel spin-momentum locking and correlations of multifold fermions in chiral topological semimetals | N. Schröter<br>(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<br>(NTU Singapore, SGP)   |
| 14:30 – 14:50 | Surface spin texture derived from a single mirror plane of $WTe_2$                         | L. Plucinski<br>(FZ Jülich, GER)   |
| 14:50 – 15:10 | Proximity-induced gap opening by twisted plumbene in epitaxial graphene                    | C. Tegenkamp<br>(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<br>(U West Bohemia Pilsen, CZE) |
| 16:00 – 16:20 | Superconductivity in flat-band semimetals  | A. Zyuzin<br>(Aalto U, FIN)              |
| 16:20 – 16:40 | Parallel and anti-parallel helical surface states for topological semimetals                                   | T. Zhang<br>(Tokyo Tech, JPN)            |
| 16:40 – 17:00 | Robustness of spin-polarized edge states in a two-dimensional topological semimetal without inversion symmetry | J. Mella<br>(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

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|---------------|--|------------------------------|
| 09:00 – 09:50 | The topological transistor as a low-voltage switch | M. Fuhrer<br>(Monash U, AUS) |
| 09:50 – 10:20 | Fermiology of $AV_3Sb_5$ kagome superconductors    | R. Comin<br>(MIT, USA)       |

### 10:30 – 11:00 Coffee Break

### 11:00 – 12:30 Talk Session 10

Chair: M. Vojta

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|---------------|--|------------------------------------|
| 11:00 – 11:30 | Topological magnons in chiral magnets  | C. Pfleiderer<br>(TU München, GER) |
| 11:30 – 12:00 | Superconductivity and competing orders in flat bands with tunable quantum metric | D. Chowdhury<br>(Cornell, USA)     |
| 12:00 – 12:30 | Spin dynamics and unconventional Coulomb phase in $Nd_2Zr_2O_7$                  | E. Lhotel<br>(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

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|---------------|--|---------------------------------|
| 14:00 – 14:30 | Building crystalline topological superconductors from Shiba lattices | T. Neupert<br>(U Zürich, SUI)   |
| 14:30 – 14:50 | Hydrodynamics, Thermalization & Entanglement from Spacetime Geometry | M. Kaminski<br>(U Alabama, USA) |
| 14:50 – 15:10 | Topological charge pumping in the dimerized ionic Hubbard model      | A. Aligia<br>(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<br>(LU München, GER) |
| 09:50 – 10:20 | Novel tools for studying lattice physics with ultracold atoms | C. Weitenberg<br>(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<br>(IFW Dresden, GER) |
| 11:20 – 11:40 | Quantized Faraday rotation and the band structure in 2D quantum wells              | A. Pimenov<br>(TU Wien, AUT)           |
| 11:40 – 12:00 | Optical signature of anomalous Hall effect in a correlated magnetic Weyl semimetal | L. Degiorgi<br>(ETH Zürich, SUI)       |
| 12:00 – 12:20 | PT-symmetric non-Hermitian superconductors   | V. Kornich<br>(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<br>(U Fribourg, SUI)  |
| 14:30 – 14:50 | Microwave bulk and edge transport in HgTe-based 2D topological insulators                                   | E. Bocquillon<br>(U Köln, GER) |
| 14:50 – 15:10 | Exploring the full potential of edge channel transport in HgTe based two-dimensional topological insulators | S. Shamim<br>(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 <sub>2</sub> | K. Franke<br>(FU Berlin, GER)      |
| 16:00 – 16:20 | Searching for superconductors with Majorana corner modes   | Y.-T. Hsu<br>(U Notre Dame, USA)   |
| 16:20 – 16:40 | Fraunhofer pattern in the presence of Majorana zero modes  | P. Recher<br>(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!