

Program Cluster Retreat 2023

MONDAY, 20.03.2023

08:00 – 12:00 Arrival

12:30 – 13:30 Lunch Break

13:30 – 13:50 Welcome/Retreat Essentials

13:50 – 15:00 **Session 1: Topological systems – spectroscopy**

Chair: M. Bode

13:50 – 14:20 Germanane: a versatile member of the family of 2D materials P. Rudolf (Groningen)

14:20 – 14:40 Bulk signatures of topology in a QSH insulator probed by circular dichroism in ARPES J. Erhardt (JMU)

14:40 – 15:00 Assessing nontrivial topology in Weyl semimetals by dichroic photoemission J. Schusser (JMU)

15:00 – 16:00 Coffee Break & Check in

16:00 – 17:20 **Session 2: Topological systems – transport**

Chair: H. Buhmann

16:00 – 16:20 Influence of so-called Volkov-Pakratov states on the quantum Hall signature in 3D TI material W. Beugeling (JMU)

16:20 – 16:40 Nernst effect in topological materials Y. Pan (MPI CPFS)

16:40 – 17:00 Direct visualization of electronic transport in a quantum anomalous Hall insulator G. M. Ferguson

17:00 – 17:20 Electron transport in channels in a magnetic field Z. Y. Xian (JMU)

17:20 – 17:35 Acknowledgement & Honoring of the Quantubers

17:40 – 19:00 Poster Session 1

Presenters: Odd poster numbers

Moderator: Maria Herz

17:40 – 18:10 Poster Pitches

18:10 – 19:00 Poster Session

19:00 – 20:30 Dinner

20:30 – 21:30 Unconscious bias: how it impacts careers in science and how to mitigate this influence

Moderator: E. Hassinger

Guest: P. Rudolf (University of Groningen)

21:30 – 23:00 Poster Session 1 (open end extension) & Networking

Presenters: Odd poster numbers

TUESDAY, 21.03.2023

08:00 – 09:00 Breakfast

09:00 – 10:00 Session 3: Quantum phase transitions

Chair: L. Janssen

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| 09:00 – 09:20 | Fermion disorder operator at Gross-Neveu and deconfined quantum criticalities | Z. Liu (JMU) |
| 09:20 – 09:40 | SU(2)-symmetric spin-boson model: Quantum criticality, fixed-point annihilation, and duality | M. Weber (TUD) |
| 09:40 – 10:00 | Numerical simulations of the Su-Schrieffer-Heeger model | A. Goetz (JMU) |

10:00 – 11:00 Coffee Break

11:00 – 11:40 Session 4: New magnetic & electronic orders

Chair: B. Trauzettel

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| 11:00 – 11:20 | Spin-split collinear antiferromagnets – altermagnetism | Y. Guo (IFW) |
| 11:20 – 11:40 | Role of topology and structure in conductive, ferroelectric domain walls | M. Rüsing (TUD) |

11:40 – 12:20 Session 5: Topological systems – theory

Chair: B. Trauzettel

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| 11:40 – 12:00 | Spacetime as a quantum circuit | A.-L. Weigel (JMU) |
| 12:00 – 12:20 | Finite-size topology | A. Cook (MPI PKS) |

12:20 – 13:40 Lunch Break

13:50 – 15:20 Poster Session 2

Presenter: Even poster numbers

Moderator: P. Basteiro

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| 13:50 – 14:20 | Poster Pitches |
| 14:20 – 15:20 | Poster Session |

15:20 – 16:20 Coffee Break

16:20 – 18:00 Session 6: Dynamical systems

Chair: A. Chernikov

16:20 – 16:40	Signatures of QPT after quenches	A. Haldar (MPI PKS)
16:40 – 17:00	Making Trotterization adaptive for NISQ devices and beyond	H. Zhao (MPI PKS)
17:00 – 17:20	Floquet topoelectric circuits	A. Stegmaier (JMU)
17:20 – 17:40	Advances on coupled organic microcavities	S. Betzold (JMU)
17:40 – 18:00	Topological quantum photonics	S. Höfling (JMU)

18:00 – 19:00 Dinner

19:00 – 20:00 Steering Committee Meeting

19:00 – 20:00 Social Event

20:00 – 23:00 Poster Session 2 (open end extension) & Poster Voting

Presenters: Even poster numbers

WEDNESDAY, 22.03.2023

08:00 – 09:00 Breakfast

09:00 – 10:20 Session 7: Frustrated magnetism

Chair: M. Vojta

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| 09:00 – 09:20 | Phases and phase transitions in a spin-1/2 chain on solid surfaces | B. Danu (JMU) |
| 09:20 – 09:40 | High-field ESR in low-D and frustrated spin systems | S. Zvyagin (HZDR) |
| 09:40 – 10:00 | Triple-Q order in $\text{Na}_2\text{Co}_2\text{TeO}_6$ from proximity to hidden-SU(2)-symmetric point | W. Krüger (TUD) |
| 10:00 – 10:20 | Rouaite: incommensurate frustrated magnetism and a potential platform for spinon-magnon mixing | D. Peets (TUD) |

10:20 – 11:00 Coffee Break

10:45 – 12:15 Guided City Tour (in English & German)

10:20 – 12:15 Break-Out Sessions – Pillars and Friends

12:15 – 13:10 Lunch Break

13:10 – 14:30 Session 8: Unconventional superconductivity

Chair: C. Timm

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| 13:10 – 13:30 | Proximity induced superconductivity in Bi-containing thin TI and highly ordered TI films (Bi_2Te_3 , Bi(111) and Bi(100)) grown on the Nb(110) surface | A. Odobesko (JMU) |
| 13:30 – 13:50 | New type of helical topological SC pairing at finite excitation energies | M. Bahari (JMU) |
| 13:50 – 14:10 | Interplay of ordered states in the two-phase superconductor CeRh_2As_2 | K. Semeniuk (TUD) |
| 14:10 – 14:30 | Twisted bilayer graphene | J. Zhu (MPI PKS) |

14:30 – 14:45 Closing Remarks & Announcement of the poster award