Summer School 2025

Correlated Quantum Materials & Solid State Quantum Systems

www.q-ms.org

September 15-19, 2025

Julius-Maximilians-Universität Würzburg
Röntgen Lecture Hall (Campus Hubland Süd, Building P1)
Würzburg, Germany

www.tuwien.at

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Research project SFB Q-M&S

Hopes are high that quantum computers will revolutionize conventional computation and data processing. Although they can already perform certain computations faster than conventional computers, more robust solid state quantum systems are needed to solve the problem of quantum error correction and fully exploit the potential of quantum computing. A currently disjunct field are correlated quantum materials. These are designer materials with properties due to quantum effects of strongly interacting electrons. They represent a highly active but particularly complex area of fundamental solid state physics.

The SFB Correlated Quantum Materials & Solid State Quantum Systems (Q-M&S) is a collaborative research project funded by the Austrian Science Fund and the German Research Foundation, with 10 PIs hosted at 4 institutions in Austria and Germany, aiming to connect both areas. Concepts and methods developed in the context of quantum information and computation will contribute to a better understanding of correlated quantum materials. For example, "entanglement meters" will be devised to unravel the mystery of the strange metal state. In turn, research will be conducted into how correlated quantum materials can be used for quantum applications. Correlated quantum materials with topological properties for instance could lead to very robust and well-controllable quantum devices in novel hybrid systems.

For more information, please visit our project website www.q-ms.org.

The Summer School 2025 on Correlated Quantum Materials & Solid State Quantum Systems is the third school of the SFB Q-M&S and the first one to collaborate with the Cluster of Excellence "ct.qmat – Complexity and Topology in Quantum Matter" (www.ctqmat.de). It consists of tutorials on selected topics of the SFB Q-M&S and ct.qmat, student talks for students, a poster session as well as individual discussions, Ladies' Dinner, School Dinner, and a social activity. The school is an annual training event primarily designed to train the SFB Q-M&S's and ct-qmat's PhD students and postdocs, but it is also open to other researchers.

FWF Österreichischer Wissenschaftsfonds
DFG Deutsche Forschungsgemeinschaft
ct.qmat Complexity and Topology in Quantum Matter

School program

Join us via **Zoom**: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1
School location: **Röntgen Lecture Hall**, Campus Hubland Süd, Building P1, Julius-Maximilians-Universität Würzburg, Am Hubland, 97074 Würzburg, Germany

	9:00-10:00	10:00-11:00		11:30-12:30		14:00-15:00	15:00-16:00		16:30-17:30	17:30-18:00	Evening
Mon, Sep 15	Arrival 07:13-12:22 - Train Vienna-Würzburg (direct) 08:10-12:28 - Train Dresden-Würzburg (1x change in Fulda) 06:45-12:21 - Train Konstanz-Würzburg (2x change in Singen and Stuttgart) --- 12:30-12:50 - Shared taxi from railway station to Röntgen Lecture Hall (or "Bus 14, Gerbrunn" from Busbahnhof to Am Hubland)				12:50 - Registration 13:00 - Lunch 13:50 - Opening	Uri Vool (MPI-CPfS, Dresden)	Karlo Penc (Wigner, Budapest)	Coffee	Karlo Penc (Wigner, Budapest)	Johanna Erdmenger: Grete Hermann Network	18:30-20:30 Ladies' Dinner @Restaurant Hubland
Tue, Sep 16	Uri Vool (MPI-CPfS, Dresden)	William Witczak-Krempa (U Montreal)	11:00 - Group photo 11:05 - Coffee	William Witczak-Krempa (U Montreal)	Lunch	Uri Vool (MPI-CPfS, Dresden)	Karlo Penc (Wigner, Budapest)	Coffee	Debanjan Chowdhury (Cornell U)	SFB Q-M&S EB Meeting (members only)	Free time
Wed, Sep 17	William Witczak-Krempa (U Montreal)	William Witczak-Krempa (U Montreal)	Coffee	Debanjan Chowdhury (Cornell U)	Lunch	Hryhoriy Polshyn (ISTA, Klosterneuburg)	15:00-19:00 - Würzburg Guided Tour - Group EN led by English speaking guide - Group DE led by German speaking guide				19:00-22:00 School Dinner @Mennas Time Out
Thu, Sep 18	Student talks for students	Zhanybek Alpichshev (ISTA, Klosterneuburg)	Coffee	Debanjan Chowdhury (Cornell U)	Lunch	Hryhoriy Polshyn (ISTA, Klosterneuburg)	Aline Ramires (TU Wien, Vienna)	Coffee	Posters		Free time
Fri, Sep 19	Student talks for students	Zhanybek Alpichshev (ISTA, Klosterneuburg)	Coffee	Karlo Penc (Wigner, Budapest)	Lunch	Hryhoriy Polshyn (ISTA, Klosterneuburg)	Aline Ramires (TU Wien, Vienna)	16:00 - Closure 16:10 - Coffee	Departure 16:45-17:15 - Shared taxi from Röntgen Lecture Hall to railway station (or "Bus 14, Busbahnhof" from Am Hubland to Busbahnhof) --- 17:33-23:05 - Train Würzburg-Vienna (direct) 17:27-21:40 - Train Würzburg-Dresden (1x change) 17:37-23:05 - Train Würzburg-Konstanz (2x change)		

Monday, September 15, 2025

Join us via Zoom: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1	
06:30-12:50	Arrival 07:13-12:22 - Train Vienna-Würzburg (direct) 08:10-12:28 - Train Dresden-Würzburg (1x change in Fulda) 06:45-12:21 - Train Konstanz-Würzburg (2x change in Singen and Stuttgart) --- 12:30-12:50 - Shared taxi from railway station to Röntgen Lecture Hall (or "Bus 14, Gerbrunn" from Busbahnhof to Am Hubland)
12:50-13:00	Registration
13:00-13:50	Lunch at Mensa
13:50-14:00	Opening by Silke Bühler-Paschen
Chair	Fakher Assaad
14:00-15:00 (45+15)	**Uri Vool**, Max-Planck-Institute for Chemical Physics of Solids, Dresden *Superconducting devices and circuits*
15:00-16:00 (45+15)	**Karlo Penc**, Wigner Research Centre for Physics, Budapest *Frustrated Magnets: From Spin Ice to Quantum Spin Liquids (1)*
16:00-16:30	Coffee
16:30-17:30 (45+15)	**Karlo Penc**, Wigner Research Centre for Physics, Budapest *Frustrated Magnets: From Spin Ice to Quantum Spin Liquids (2)*
17:30-18:00	**Johanna Erdmenger**, Julius-Maximilians-Universität Würzburg *Introduction to the Grete Hermann Network (GHN)*
18:30-20:30	Ladies‘ Dinner with Johanna Erdmenger and all registered female participants Restaurant Hubland https://restaurant-hubland.de/ Zeppelinstraße 118 97074 Würzburg

Tuesday, September 16, 2025

Join us via Zoom: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1	
Chair	Elke Scheer
09:00-10:00 (45+15)	**Uri Vool**, Max-Planck-Institute for Chemical Physics of Solids, Dresden *Hybrid circuits with unconventional superconductors*
10:00-11:00 (45+15)	**William Witczak-Krempa**, University of Montreal *What is entanglement?*
11:00-11:05	Group photo
11:05-11:30	Coffee
11:30-12:30 (45+15)	**William Witczak-Krempa**, University of Montreal *How to quantify entanglement?*
12:30-14:00	Lunch at Mensa
Chair	Neven Barišić
14:00-15:00 (45+15)	**Uri Vool**, Max-Planck-Institute for Chemical Physics of Solids, Dresden *Quantum sensing with nitrogen-vacancy centers*
15:00-16:00 (45+15)	**Karlo Penc**, Wigner Research Centre for Physics, Budapest *Frustrated Magnets: From Spin Ice to Quantum Spin Liquids (3)*
16:00-16:30	Coffee
16:30-17:30 (45+15)	**Debanjan Chowdhury**, Cornell University *Constraints on transport and superconductivity in quantum matter (1)*
17:30-18:00	SFB Q-M&S Executive Board Meeting (members only)

Wednesday, September 17, 2025

Join us via Zoom: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1	
Chair	Neven Barišić
09:00-10:00 (45+15)	**William Witczak-Krempa**, University of Montreal *Multiparty entanglement in quantum matter*
10:00-11:00 (45+15)	**William Witczak-Krempa**, University of Montreal *Entanglement beyond equilibrium, and beyond theory!*
11:00-11:30	Coffee
11:30-12:30 (45+15)	**Debanjan Chowdhury**, Cornell University *Constraints on transport and superconductivity in quantum matter (2)*
12:30-14:00	Lunch at Mensa
Chair	Silke Bühler-Paschen
14:00-15:00 (45+15)	**Hryhoriy Polshyn**, Institute of Science and Technology Austria, Klosterneuburg *Strongly-correlated and topological electronic states in graphene multilayers (1)*
15:00-19:00	Würzburg Guided Tour - Group EN led by English speaking guide - Group DE led by German speaking guide
19:00-22:00	School Dinner with all registered participants Restaurant Mennas Time Out http://www.timeout-wuerzburg.de/ Frankfurter Str. 1 97082 Würzburg

Thursday, September 18, 2025

Join us via Zoom: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1	
Chair	Shiva Safari
09:00-10:00 (5x 8+4)	Student talks for students: 09:00-09:12 - Group Alpichshev (SFB Q-M&S P2): Chao Shen, ISTA 09:12-09:24 - Group Assaad (SFB Q-M&S P3): João Carvalho Inácio, Univ. Würzburg 09:24-09:36 - Group Held (SFB Q-M&S P5): Gergö Roósz, TU Wien 09:36-09:48 - Group Nogueira (ct.qmat): Anastasiia Chyzhykova, IFW Dresden 09:48-10:00 - Group Assaad: Bimla Danu, Univ. Würzburg
Chair	Silke Bühler-Paschen
10:00-11:00 (45+15)	**Zhanybek Alpichshev**, Institute of Science and Technology Austria, Klosterneuburg *2D THz Spectroscopy in Complex Materials (1)*
11:00-11:30	Coffee
11:30-12:30 (45+15)	**Debanjan Chowdhury**, Cornell University *Constraints on transport and superconductivity in quantum matter (3)*
12:30-14:00	Lunch at Mensa
Chair	Elke Scheer
14:00-15:00 (45+15)	**Hryhoriy Polshyn**, Institute of Science and Technology Austria, Klosterneuburg *Strongly-correlated and topological electronic states in graphene multilayers (2)*
15:00-16:00 (45+15)	**Aline Ramires**, Technische Universität Wien *Majorana bound states in artificial Kitaev chains (2)*
16:00-16:30	Coffee
16:30-18:00	Poster session

Friday, September 19, 2025

Join us via Zoom: https://uni-wuerzburg.zoom-x.de/j/65545508734?pwd=idCs8w91b1TILF3p7cQiaxLKQCJ0aV.1	
Chair	Luka Akšamović
09:00-10:00 (5x 8+4)	Student talks for students: 09:00-09:12 - Group Scheer (SFB Q-M&S P10): Tiark Tiwary, Univ. Konstanz 09:12-09:24 - Group Serbyn (SFB Q-M&S P11): Lucia Vigliotti, ISTA 09:24-09:36 - Group Vojta (ct.qmat): Chi Chen, TU Dresden 09:36-09:48 - Group Held: Dongwook Kim, TU Wien 09:48-10:00 - TBA
Chair	Fakher Assaad
10:00-11:00 (45+15)	**Zhanybek Alpichshev**, Institute of Science and Technology Austria, Klosterneuburg *2D THz Spectroscopy in Complex Materials (2)*
11:00-11:30	Coffee
11:30-12:30 (45+15)	**Karlo Penc**, Wigner Research Centre for Physics, Budapest *Frustrated Magnets: From Spin Ice to Quantum Spin Liquids (1)*
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Chair	Silke Bühler-Paschen
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15:00-16:00 (45+15)	**Aline Ramires**, Technische Universität Wien *Majorana bound states in artificial Kitaev chains (2)*
16:00-16:10	Closure by Silke Bühler-Paschen
16:10-16:30	Coffee
16:45-23:00	Departure 16:45-17:15 - Shared taxi from Röntgen Lecture Hall to railway station (or "Bus 14, Busbahnhof" from Am Hubland to Busbahnhof) --- 17:33-23:05 - Train Würzburg-Vienna (direct) 17:27-21:40 - Train Würzburg-Dresden (1x change in Fulda) 17:37-23:05 - Train Würzburg-Konstanz (2x change in Stuttgart and Singen)

Abstracts

Alpichshev, Zhanybek (Institute of Science and Technology Austria)

2D THz Spectroscopy in Complex Materials (1-2)

This two-part lecture series explores how two-dimensional terahertz (2D THz) spectroscopy offers new insights into the dynamics of complex materials.

In the first lecture, we will briefly introduce the principles and methodology of 2D THz spectroscopy, and as an illustration will discuss how this technique can be helpful in shedding light on a classic problem. We will discuss how new experimental results challenge foundational assumptions about light propagation in matter—ideas dating back to Lorentz, Sommerfeld, and Brillouin. These findings offer a renewed perspective on a subject long considered settled, reopening questions at the heart of wave physics.

The second lecture turns to light-matter interactions in strongly correlated systems—where quasiparticles are no longer well-defined. In conventional dielectrics, light propagates as polaritons: hybrid excitations of photons and local quasiparticles. But what happens to this picture in strongly correlated systems when quasiparticles are no longer well-defined? We will focus on the paradigmatic material $SrTiO_3$ in the low-temperature “Quantum Paraelectric” regime, where lattice dynamics is dominated by strong quantum critical fluctuations. Using 2D THz Kerr effect spectroscopy, we will examine how the traditional phonon-polariton model fails, and how a new, non-perturbative regime of light-matter interaction emerges.

Chowdhury, Debanjan (Cornell University)

Constraints on transport and superconductivity in quantum matter (1-3)

Transport and superconductivity in weakly interacting metals are governed by the long-lived quasiparticles near sharp electronic Fermi surfaces. Motivated by empirical evidence for seemingly universal quantum bounds on transport scattering rates and superconducting transition temperatures across strongly correlated metals, I will discuss “solvable” examples of correlated fermionic systems that provide unique insights into these puzzling phenomena. In the first part, I survey a few distinct examples of metallic phases exhibiting T-linear resistivity above a characteristic temperature, and discuss possible implications on transport bounds. In the second part, I demonstrate how to formulate rigorous bounds on the superconducting transition temperature for two-dimensional superconductors in the absence of a microscopic theory of superconductivity. The examples raise fundamental questions about bounds in quantum many-body systems that can provide new perspectives on unconventional transport and high-temperature superconductivity in correlated electronic solids.

Penc, Karlo (Wigner Research Centre for Physics)

Frustrated Magnets: From Spin Ice to Quantum Spin Liquids (1-4)

In this series of four lectures, we will introduce and explore the essentials of Mott insulating systems that exhibit no conventional magnetic orderings.

Lecture 1: Basic Concepts and Interactions We will cover fundamental spin interactions, including dipolar, Heisenberg, 90-degree exchange, and spin-orbit coupling-induced Dzyaloshinskii-Moriya (DM) and Kitaev interactions. The lecture will also introduce essential concepts, such as ground-state degeneracy, valence bonds, and the geometric and anisotropic interaction-driven frustrations.

Lecture 2: Classical Spin Models and Frustration This lecture explores frustration within classical spin models, focusing on how competing interactions give rise to exotic states such as spin-spiral liquids and spin ice. We will discuss the underlying physics, degeneracies, and emergent phenomena characteristic of these models.

Lecture 3: Quantum Spin Liquids and Frustration We will examine the spin-1/2 chain as an ideal quantum spin-liquid system. Key concepts include resonating valence bond (RVB) states, spinon excitations, and the Gutzwiller-projected ground state. We will further discuss how these concepts extend into two-dimensional quantum spin liquid models.

Lecture 4: The Kitaev Model and Majorana Fermions In the final lecture, we will introduce the Kitaev model. We will see how local conserved quantities appear. Representing spins by Majorana fermions, we will show how we obtain an exactly solvable quantum spin-liquid state with nontrivial topology. Finally, we will mention a few potential experimental realizations.

Polshyn, Hryhoriy (Institute of Science and Technology Austria)

Strongly-correlated and topological electronic states in graphene multilayers (1-3)

Combining atomically-thin layers of graphene and other van der Waals (vdW) materials into vdW heterostructures provides a versatile and uniquely-tunable platform for stabilizing and investigating electronic states with strong electronic correlations and topology. There are two main routes for producing strong electronic correlations in graphene heterostructures. One is to use a high magnetic field to generate flat Landau levels that quench the kinetic energy of electrons. In this case, strong electronic interactions at partial fillings of Landau levels give rise to a sequence of fractional quantum Hall states that have quasiparticles with fractional charge and anionic statistics. Some of these states that occur at even-denominator fillings of Landau levels are strong candidates for non-Abelian anionic statistics. The second way to induce strong electronic correlation is to leverage stacking orders in graphene multilayers to obtain narrow or locally flat electronic bands at zero magnetic field. For instance, graphene multilayers with rhombohedral stacking have van Hove singularities that can be tuned with the perpendicular electric field. The corresponding locally flat regions of electronic bands have a high density of states and host a plethora of correlated metals and intriguing superconducting states. Alternatively, globally narrow and isolated electronic bands arise in moiré superlattices obtained by small rotational misalignment between the layers. The corresponding electronic moiré bands host multiple gapped and metallic correlated states, including superconductivity, correlated insulators, and metals with broken valley and spin symmetries. Furthermore, strong electronic interactions and the incipient topology of graphene can also result in the quantum anomalous Hall (QAH) states in which the electrons are polarized into a subset moiré miniband with a non-zero Chern number. The magnetization of these “orbital Chern insulators” (OCI) arises predominantly from the orbital motion of the electrons rather than the electron spin. This orbital character endows OCIs with curious magnetic properties and enables novel effects, such as non-volatile electrical switching of the magnetic order using gate voltages or currents. Strong Coulomb interactions at partial fillings of flat topological moiré bands also lead to a plethora of isospin-polarized metallic states and additional topologically gapped states.

In the first lecture, I will introduce graphene van der Waals heterostructures and discuss the fractional quantum Hall effect. In the second lecture, I will talk about the flat-band physics in rhombohedral graphene and moiré superlattices. In the third lecture, I will focus on intrinsic quantum anomalous Hall states in graphene moiré systems.

Ramires, Aline (Technische Universität Wien)

Introduction to Group Theory

We will introduce basic notions of group theory with focus on crystallographic space groups and their application in the classification on unconventional phases in the superconducting and magnetic sectors.

Nonsymmorphic surprises

Building up on the topics introduced in the previous lecture, we will highlight the non-trivial effects nonsymmorphic symmetries bring to electronic band structures, order parameter classification, and physical observables.

Vool, Uri (Max-Planck-Institute for Chemical Physics of Solids)

Superconducting devices and circuits

In the last decades, superconductors have moves from only being topics of fundamental research into applications in metrology, detection, and computation. This talk will introduce superconductivity and give an overview of devices based on superconductors. Later in the talk, we will focus on superconducting microwave circuits, and how such macroscopic objects can mimic the quantum properties of atomic systems.

Hybrid circuits with unconventional superconductors

Traditional superconducting circuits are made using known superconductors such as aluminium or niobium, but the integration of novel superconductors as part of the circuit can lead to new scientific insights and new capabilities. This talk will introduce how the superconducting circuit can be used as a unique sensor of the superconducting gap structure using micron-sized samples. We will also discuss how such hybrid circuits use the unique properties of unconventional superconductors for new quantum technology devices.

Quantum sensing with nitrogen-vacancy centers

The nitrogen-vacancy (NV) defect in the diamond lattice exhibits remarkable spin coherence and control, making it a leading platform for implementing quantum technology. Due to its high sensitivity to magnetic field via the Zeeman effect, the NV is often used for magnetometry applications with magnetic sensitivity up to the nanotesla. By etching the diamond into a pillar with a single NV at its edge, we can scan the NV across a sample and measure the electron spin at every position to obtain local magnetic images with a spatial resolution of 10s of nm. This talk will introduce the NV center and discuss how it is used as a quantum sensor. We will also showcase recent experimental results of imaging magnetic textures and local current flows using this technique.

Witczak-Krempa, William (University of Montreal)

What is entanglement?

In the first lecture, we will cover the basics of entanglement in general quantum states. This will involve an introduction to density matrices, separability, and to the space of states. The discussion will cover general multi-party states.

How to quantify entanglement?

We will introduce the notion of an entanglement measure, and see important examples for both bipartite and multi-party states. We will see the challenge to evaluate true entanglement measures, and how it can be overcome in some situations.

Multiparty entanglement in quantum matter

We will start to answer the fundamental question: how is entanglement organized in quantum matter / materials? One way to make progress is “entanglement microscopy”: one focuses on microscopic regions. It’s numerically friendly.

Entanglement beyond equilibrium, and beyond theory!

How does entanglement change under time evolution? We will see some general principles in quantum quenches. Finally, we will discuss current and future efforts to experimentally detect entanglement in quantum materials.

Student talks for students

Carvalho Inácio, João (Julius-Maximilians-Universität Würzburg)
Peierls instability of the U(1) Dirac spin liquid

Chen, Chi (Technische Universität Dresden)
False Vacuum Decay in the Quantum Ising Chain

Chyzhykova, Anastasiia (Leibniz Institute for Solid State and Materials Research Dresden)
The Feynman paradox in axion insulators

Danu, Bimla (Julius-Maximilians-Universität Würzburg)
Physics of an S=3/2 chain on metallic and semi-metallic surfaces

Kim, Dongwook (Technische Universität Wien)
Unexpected Weakening of Antiferromagnetism at Very Low Temperatures in Doped Mott Insulators

Roósz, Gergö (Technische Universität Wien)
Two-site entanglement in the two-dimensional Hubbard model

Shen, Chao (Institute of Science and Technology Austria)
Non-resonant anharmonic excitation of Raman phonons in lead bromide perovskite revealed by two-dimensional THz Kerr effect spectroscopy

Tiwary, Tiark (University of Konstanz)
TBA

Vigliotti, Lucia (Institute of Science and Technology Austria)
Interacting plasmonic waves in Josephson junction chains: from thermal equilibrium to non-equilibrium steady state

Posters

1. Akšamović, Luka (Technische Universität Wien)
   Kohler's rule in the strange metal regime of cuprates

2. Babkin, Serafim (Institute of Science and Technology Austria)
   Superconducting proximity effect in two-dimensional hole gases

3. Beck, Jonas (Julius-Maximilians-Universität Würzburg)
   Kekulé order from diffuse nesting near higher-order Van Hove points

4. De Carvalho Costa, Natanael (Universidade Federal do Rio de Janeiro)
   Quantum criticality in the Su-Schrieffer-Heeger-Hubbard model

5. Fischer, Lukas (Technische Universität Wien)
   MBE growth of $YbRh_2Si_2$

6. Fischer-Süßlin, Ronja (University of Konstanz)
   TBA

7. Jang, Iksu (Karlsruhe Institute of Technology)
   Elastic Quantum Criticality in Nematics and Altermagnets via the Elasto-Caloric Effect

8. Khatua, Subhankar (Leibniz Institute for Solid State and Materials Research Dresden)
   Topological magnons in an altermagnet

9. Le Roy, Gwenvredig (Technische Universität Wien)
   Thermal conductivity measurement in the quantum critical compound $Ce_3Pd_{20}Si_6$

10. Liu, Wei (Julius-Maximilians-Universität Würzburg)
    Microwave spectroscopy of spin-orbit-splitting Andreev bound states in a superconducting quantum point contact

11. Marzouk, Mostafa (Julius-Maximilians-Universität Würzburg)
    Growth of Heusler thin films by Molecular Beam Epitaxy

12. Pan, Gaopei (Julius-Maximilians-Universität Würzburg)
    Quantum Monte Carlo Simulation of a U(1) Gauge Field Model for Kondo Breakdown

13. Phan, Duc (Technische Universität Wien)
    Conductivity of $YbRh_2Si_2$ thin film at mK

14. Piatrusha, Stanislau (Julius-Maximilians-Universität Würzburg)
    Wiedemann-Franz behavior at the Weyl points in compressively strained HgTe

15. Rak, Dmytro (Institute of Science and Technology Austria)
    Flexoelectric domain walls enable charge separation and transport in cubic perovskites

16. Rodríguez Ruiz, Gabriel Fernando (Instituto de Nanociencia y Nanotecnología CONICET-CNEA)
    Antichiral edge states and Bogoliubov Fermi surfaces in a two-dimensional proximity-induced superconductor

17. Shen, Chao (Institute of Science and Technology Austria)
    Terahertz field-induced nonlinear magnon coupling in the canted antiferromagnet $YFeO_3$

18. Shyta, Vira (Max Planck Institute for the Physics of Complex Systems, Dresden)
    Axion electrodynamics of Weyl superconductors

19. Sorn, Sopheak (Karlsruhe Institute of Technology)
    Antichiral surface states in altermagnets

20. Stehno, Martin (Julius-Maximilians-Universität Würzburg)
    Period-doubling dynamics and detection of 4pi-periodic supercurrent

21. Ulybyshev, Maksim (Julius-Maximilians-Universität Würzburg)
    Frustrated magnetism in hydrogenated hexagonal Boron Nitride

22. Wiedemann, Christian (University of Konstanz)
    Proximity effect in superconductor-altermagnet heterostructures with nonmagnetic impurities

23. Yudhistira, Indra (Julius-Maximilians-Universität Würzburg)
    Taming sign problem with variational auxiliary field quantum Monte Carlo

Grete Hermann Network

The Grete Hermann Network (GHN) is an initiative of the Cluster of Excellence "ct.qmat – Complexity and Topology in Quantum Matter" (www.ctqmat.de) of the University of Würzburg and TU Dresden that has been funded since 2019 as part of the German Excellence Strategy.

Grete Hermann (1901-1984), after whom the GHN is named, was a German mathematician, physicist, philosopher, and educator who helped shape modern quantum physics. As early as in the 1930s, she anticipated an important result about the structure of quantum mechanics which only became established in the 1960s.

The GHN supports female scientists at all career levels. Its goals include network building, development of joint research projects, mentoring and providing support for pursuing an academic career. An important aspect is also to increase the visibility of the participating female researchers in view of future appointments to professorships.

Würzburg Guided Tour

Würzburg Residence with Court Garden

The Würzburg Residence is the masterpiece of southern German Baroque architecture and one of the most important palaces in Europe. UNESCO added it to the list of World Heritage Sites in 1981 - the third building in Germany to do so. The Residence was built from 1720 to 1744 according to plans by Balthasar Neumann. May 22, 2020 marked the 300th anniversary of the laying of the foundation stone. The impressive staircase – a single, self-supporting trough construction – reveals the genius of Neumann, who was still at the beginning of his career at the time.

St. Kilian's Cathedral

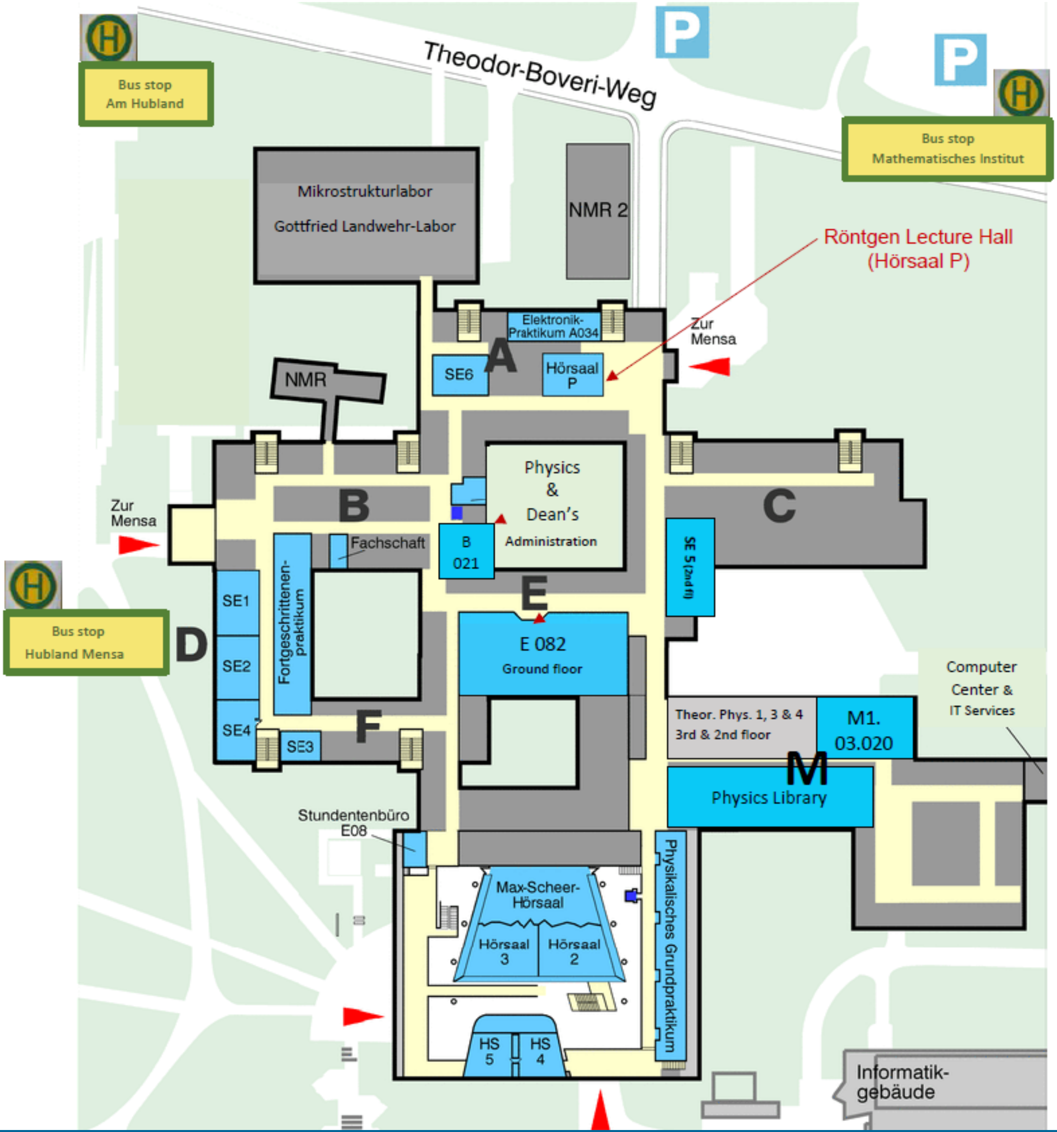
St. Kilian's Cathedral is the fourth largest Romanesque church in Germany and a major work of German architecture at the time of the Salian emperors. The attached Schönborn Chapel is considered a significant creation by Balthasar Neumann. Construction began around 1040 and the east towers were completed in 1237. The interior was stuccoed in 1701/04 by Pietro Magno in the richest High Baroque style. St. Kilian's Cathedral burned down completely in 1945. The consecration after the reconstruction took place in 1967.

Old bridge over the Main

Much more than just a bridge! People meet on this bridge, enjoy the "Brückenschoppen" and the fantastic view of the Marienberg fortress, the Käppele and the vineyards of Würzburg. Pure atmosphere! Germany's first stone bridge is said to have been built on the site of today's bridge around 1120. Due to increasing damage, it was decided in the 15th century to build a new bridge by the master builder Hans von Königshofen.

School location

Röntgen Lecture Hall
Campus Hubland Süd, Building P1
Julius-Maximilians-Universität Würzburg
Am Hubland, 97074 Würzburg, Germany
Building P1 on Google Maps



Editor
Technische Universität Wien
Karlsplatz 13
1040 Wien
Layout PR & Marketing
03/2022

Responsible for content
Prof. Dr. Silke Bühler-Paschen

Contact
Mag. Angelika Bosak
Research Project Manager

Technische Universität Wien
Institute of Solid State Physics
Wiedner Hauptstr. 8-10/E138, 1040 Vienna
Telefon +43 1 58801 13713
angelika.bosak@tuwien.ac.at

www.tuwien.at