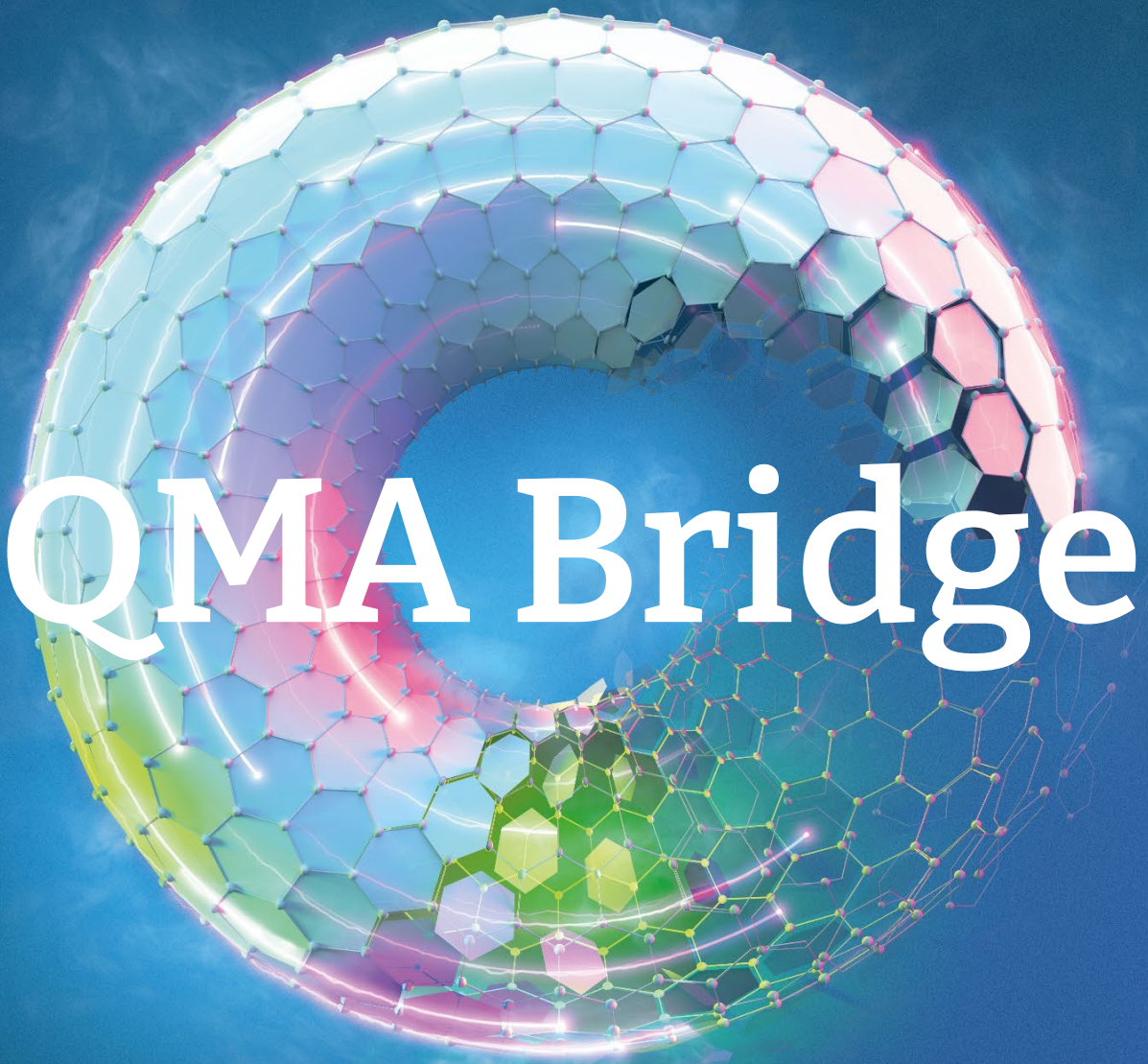
ctd.qmat
Complexity, Topology and Dynamics in Quantum Matter

Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Technische
Universität
Dresden



QMA Bridge

Building Reflecting Inspiring
Developing Generating Exchanging

June 18 – 19, 2026 in Dresden

Program

Thursday, June 18

08:00	Bus departure from Würzburg	
12:30	Lunch *Meet at Lecture Hall A1E.10 at IFW for talks and lab tours*	Alte Mensa
13:45	Welcome	Matthias Vojta TU Dresden
14:15	**Talk:** Topological Surface Superconductivity in $PtBi_2$: a successful cooperation within ctd.qmat	Bernd Büchner IFW Dresden
14:45	**Talk:** Recent research activity of the cluster in Area B – Quantum Magnetism	Roderich Moessner MPI-PKS Dresden
15:15	Coffee Break	IFW
15:30	**Lab Tour** – Magnetic Thermodynamics	Anja Wolter-Giraud IFW Dresden
16:15	**Lab Tour** – Electron Holography and related Techniques	Axel Lubk IFW Dresden
17:30	Hotel Check-in	Gästehaus am Weberplatz
18:45	Transfer to Dinner	
19:00	Dinner *Meet at Alaunstraße 70*	Lila Soße

Friday, June 19

08:15	Meet at hotel lobby to go to MPI-CPfS	
	Location MPI-CPfS *Meet at seminar room 5 for talks and lab tours*	
09:00	**Talk:** Recent research activity of the cluster in Area C – Synthetic Quantum Matter	Libo Ma IFW Dresden
09:30	**Lab Tour** – Claudia Felser's Labs	Changjiang Yi MPI-CPfS
10:15	**Lab Tours** Claire Donnelly's Spin 3D Group & Uri Vool's QIQM	Jeffrey Neethirajan MPI-CPfS Hayden Binger MPI-CPfS
12:00	Lunch	Neue Mensa
13:00	Transfer to Zwinger *Meet at Neue Mensa*	
13:15	**Social Program** – Zwinger Visit	City Center
	Location TU Dresden	
15:15	**Lab Tour** – NV Magnetometry *Meet at REC C208*	Aparajita Singha TU Dresden
16:00	**Lab Tour** – IFMP X-ray Facility *Meet at REC C009*	Alexander Mistonov TU Dresden
	Location MPI-PKS	
17:00	**Talk:** Intro to MPI-PKS	Libor Šmejkal MPI-PKS Dresden
17:45	Pizza Party	MPI-PKS Dresden
19:00	Bus departure from Dresden	

Lab Tour - Abstracts

Thursday, June 18

15:30

Lab Tour – Magnetic Thermodynamics

In the thermodynamics group at the IFW we investigate magnetic and electronic properties of materials with strong electronic correlations. Particular focus is given to quantum magnets with reduced dimensionality, magnetic frustration and the interplay of spin, charge, structure and orbitals in complex transition metal oxide systems as well as in unconventional superconductors. Our main goal is to obtain fundamental insights into the properties of emerging unconventional spin phases in low-dimensional and frustrated quantum magnets, such as the tantalizing quantum spin-liquid state, to examine their low-energy spin excitations as well as to explore complex, possibly topological, superconducting order parameters in unconventional superconductors.

The applied thermodynamic methods comprise high-resolution magnetometry, dilatometry and calorimetry at low temperatures (3He and 4He temperatures), high magnetic fields (up to 18 T) and high pressures (up to 7 GPa). In addition to AC and DC magnetization, specific heat, thermal expansion and magnetostriction measurements give us the opportunity to evaluate not only the temperature but also the pressure dependence of the magnetization and entropy, which in turn gives information on the pressure dependence of the magnetic transition temperature Tc (TN). In this context, our unique low-background hydrostatic pressure-cell and three state-of-the-art dilatometers serve as exceptional experimental tools.

16:15

Lab Tour – Electron Holography and related Techniques

FRIDAY, JUNE 19

09:30

Lab Tour – Claudia Felser's Labs

This lab tour will provide an introduction to our single-crystal and thin-film growth facilities, as well as the fabrication of devices based on exfoliated 2D materials and the corresponding measurement techniques. In addition, you will learn about the scientific questions we investigate using samples fabricated through various approaches and gain firsthand insight into how topological quantum chemistry and physics are explored in a laboratory environment.

10:15

Lab Tour – Claire Donnelly's Spin 3D Group

Our group, Spin3D, experimentally explores topological configurations in three-dimensional magnetic systems. To visualise these configurations, we develop high resolution synchrotron X-ray tomography to visualise three-dimensional magnetic vector field, and complement these with lab-based scanning probe magnetic microscopy. To control the magnetic configurations that form, we exploit advanced nanofabrication techniques - both additive and subtractive - to realise three dimensional magnetic nanostructures. In this tour, we will present our lab-based nanofabrication and scanning probe techniques - and give an overview of our tomographic imaging with synchrotron X-ray sources.

11:00

Lab Tour – Uri Vool's QIQM

We are an experimental research group working on quantum sensing and hybrid quantum devices, combining techniques from quantum information and condensed matter physics. Our group mainly specializes in two experimental techniques: quantum scanning magnetometry based on Nitrogen-Vacancy centers in diamond, and hybrid superconducting circuits integrated with quantum materials. We use these advanced techniques to explore new types of condensed matter systems, including topological materials, unconventional superconductors, and magnetically ordered materials.

15:15

Lab Tour - Aparajita Singha's NV Magnetometer

The research activities at NQM focusses on nanoscale magnetism, coherent quantum control, and nanoscale transport phenomena using advanced scanning NV magnetometry. NV-probes are known for their exceptional magnetic field sensitivity. Some of our focus goes into realizing better sensors with improved spatial resolution. In parallel, we use these probes under extreme conditions of UHV and low temperature for exploring and controlling quantum phenomena with nanoscale spatial resolution.

16:00

Lab Tour – Jochen Geck's Advanced X-ray Characterization Facility

You will see modern, well-equipped X-ray laboratories where we perform single-crystal as well as powder diffraction experiments. Our facility allows us to study the structure of a wide range of quantum materials at temperatures down to 8 K and under pressures of up to 35 GPa (and possibly even higher). We can also apply uniaxial strain to single crystals and perform in operando powder XRD measurements on batteries.