QMA BRIDGE

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THURSDAY, Jan 16

	Arrival at HZDR
12:00–12:30	**Welcome/Opening Remarks T. Hermannsdörfer/ K. Brankatschk**
12:45-13:30	**Lunch at HDZR**
13:45–14:45	**Lab tour 1 HZDR** The Dresden High Magnetic Field Laboratory (HLD), an institute of the Helmholtz-Zentrum Dresden - Rossendorf (HZDR) and founding partner of the European Magnetic Field Laboratory (EMFL), is one of the few user facilities for research at highest magnetic fields worldwide. It is the only facility of its kind in Germany. The lab tour will provide insights into the research topics, measurement and magnet technology as well as the HLD's pulsed current capacitor bank. **Lab tour 2 HZDR** You will visit the "cave" housing the free-electron laser, where its operation and applications will be explained, and explore the terahertz labs. Here, beams of light in the 5–250 micrometer range are used to study fast processes in quantum materials and semiconductors: from pump-probe experiments to nonlinear spectroscopy. Please note: Entry is not allowed for pregnant or breastfeeding individuals due to safety regulations.
15:00–15:45	**Bus shuttle to Campus Nöthnitzer Strasse**
16:00–17:00	**Lab tour 3 Dufouleur (IFW) Quantum quantum transport lab tour** Labs dedicated to quantum transport measurements at the IFW will be shown. The set-up are dedicated to very low temperature measurements (dilution fridges, ^{3}He refrigerator, VTI, etc …) and measurement under magnetic field (vector fields, rotators, etc…). **Lab tour 5 Shandra (MPI-CPfS) Exploring Single Crystal Synthesis Facilities at MPI-CPfS** The tour will provide an overview of the single crystal synthesis labs at MPI-CPfS, showcasing equipment such as high-temperature muffle furnaces, CVT setups, Czochralski, Bridgman, laser floating zone, and high-temperature centrifuge systems, along with essential vacuum sealing techniques. It will also highlight the advanced capabilities of the FIB and methods for characterizing single crystals. **Lab tour 6 Chernikov (TUD/IAP)** **Ultrafast microscopy laboratory:** Time-, spectrally- and spatially-resolved studies of low-dimensional materials, focused on many-particle phenomena. You will see excitation laser sources, a typical microscopy setup operated down to cryogenic temperatures, as well as ultrafast streak cameras at the heart of the light detection to monitor transient optical phenomena in solids. **Van der Waals assembly laboratory:** Preparation of ultrathin van der Waals samples and more complex heterostructures involving deterministically stamped layers. You will see several setups for micro-mechanical cleavage and transfer used for a variety of layered materials, from inorganic semiconductors, insulators, and semimetals to inorganic-organic hybrid perovskites.
17:15	**Bus shuttle & Hotel Check-In „Gästehaus am Weberplatz“ Am Weberplatz 3, 01217 Dresden**
19:00–22:00	**Dinner at Gartenlokal Fortschritt, Bärnsdorfer Str. 2a, 01097 Dresden**

FRIDAY, Jan 17

08:45	**Bus Shuttle in Front of Hotel to Technische Sammlungen; Junghans-strasse 1-3, 01277 Dresden**	**Technische Sammlungen**
09:15–10:15	**Escape Room KittyQ**	
10:15–11:00	**Travel back to campus with Bus Shuttle to Nöthnitz Strasse**	
11:00–12:00	**Lab tour 7 Geck (TUD/IFMP) X-ray facilities at the IFMP Recknagelbau, Haeckelstrasse 3** At IFMP, we operate two versatile X-ray facilities that offer exceptional resolution and sensitivity. During the visit, we will introduce the capabilities of these facilities, the available sample environments and visit our high-pressure laboratory. **Lab tour 8 Leo (TUD/IAP) Krone-Bau, Nöthnitzer Strasse 61** Polymer-based electrochemical systems offer various possibilities to implement principles of in-material computing, including stochastic computing due to programmable phase transitions or spatial multiplexing. We show in our labs how such materials and devices can be easily integrated into asynchronous circuits using printing methods. Furthermore, we demonstrate an evolvable electronic system where dendritic polymer structure are used to build spatially coupled synaptic arrays. **Lab tour 9 Wolter-Giraud (IFW) Thermodynamic insight - probing new quantum materials in a multifaceted approach IFW, Helmholtzstrasse 20** Visit our thermodynamics lab where we explore magnetism, superconductivity, and other fascinating phenomena in emergent materials in a broad parameter space (down to mK temperatures, high magnetic fields and high pressure).	
12:30–14:00	**Lunch at Alte Mensa meet at entrance Mommsenstrasse 13 after lab tour**	
14:00-15:00	**Talk Jan Budich "Topological Insulators: a New Periodic Table For Physics"**	**IFW D2E.27 Helmholzstrasse 20**
15:00-17:00	**Free time**	
17:00–19:00	**Exhibition opening RETHINKING PHYSICS (NO bus transfer)**	**Kulturpalast Schloßstrasse 2**
	Späti-Tour	

Saturday, Jan 18

10:00	**Departure at Gästehaus am Weberplatz**