

Low Temperature Physics Division Fachverband Tiefe Temperaturen (TT)

Elke Scheer
Universität Konstanz
Fachbereich Physik
78457 Konstanz
dpg-fvtiefetemperaturen@uni-konstanz.de

Overview of Invited Talks and Sessions

(Lecture halls HSZ 101, HSZ 103, HSZ 201, HSZ 204, and HSZ 304; Poster P2/2OG, P2/3OG, and P2/4OG)

Tutorial “Physics Meets Machine Learning (joint session DY/TT)”

TT 1.1	Sun	16:00–16:45	HSZ 01	Machine Learning for Quantum Technologies — ●FLORIAN MARQUARDT
TT 1.2	Sun	16:45–17:30	HSZ 01	The Unreasonable Effectiveness of Gaussians in the Theory of Deep Neural Networks — ●ZOHAR RINGEL
TT 1.3	Sun	17:30–18:15	HSZ 01	Computing learning curves for large machine learning models using the replica approach — ●MANFRED OPPER

Plenary Talk

PLV X	Thu	14:00–14:45	HSZ 02	Single-electron-spin-resonance detection by microwave photon counting — ●PATRICE BERTET
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Invited Talks of the joint Symposium SKM Dissertation Prize 2023 (SYSD)

See SYSD for the full program of the symposium.

SYSD 1.1	Mon	9:30–10:00	HSZ 04	Diffusion of antibodies in solution: from individual proteins to phase separation domains — ●ANITA GIRELLI
SYSD 1.2	Mon	10:00–10:30	HSZ 04	Intermediate Filament Mechanics Across Scales — ●ANNA V. SCHEPERS
SYSD 1.3	Mon	10:30–11:00	HSZ 04	Ultrafast Probing and Coherent Vibrational Control of a Surface Structural Phase Transition — ●JAN GERRIT HORSTMANN
SYSD 1.4	Mon	11:00–11:30	HSZ 04	Electro-active metasurfaces employing metal-to-insulator phase transitions — ●JULIAN KARST
SYSD 1.5	Mon	11:30–12:00	HSZ 04	The role of unconventional symmetries in the dynamics of many-body systems — ●PABLO SALA

Invited Talks of the joint Symposium Ultrafast Excitation Pathways of Quantum Materials (SYUE)

See SYUE for the full program of the symposium.

SYUE 1.1	Wed	9:30–10:00	HSZ 01	Dynamics and control in quantum materials using multi-terahertz spectroscopy — ●RICHARD AVERITT
SYUE 1.2	Wed	10:00–10:30	HSZ 01	Accessing the nonthermal phonon populations in 2D materials with femtosecond electron diffuse scattering — ●HÉLÈNE SEILER
SYUE 1.3	Wed	10:30–11:00	HSZ 01	Exciting potentials – Exploring the realms of ultrafast phase transitions — ●LAURENZ RETTIG
SYUE 1.4	Wed	11:15–11:45	HSZ 01	Sub-cycle multidimensional spectroscopy of strongly correlated materials — ●OLGA SMIRNOVA
SYUE 1.5	Wed	11:45–12:15	HSZ 01	Witnessing many-body entanglement in light-driven quantum materials — ●MATTEO MITRANO
SYUE 1.6	Wed	12:15–12:45	HSZ 01	Optical responses of photoexcited materials: from parametric amplification to photoinduced superconductivity — ●EUGENE DEMLER

Invited Talks of the joint Symposium Topology in Quantum and Classical Physics – From Topological Insulators to Active Matter (SYQC)

See SYQC for the full program of the symposium.

SYQC 1.1	Wed	15:00–15:30	HSZ 01	Topological magnetic whirls for computing — ●KARIN EVERSCHORSITTE
SYQC 1.2	Wed	15:30–16:00	HSZ 01	Topological waves from solids to geo/astrophysical flows — ●PIERRE DELPLACE
SYQC 1.3	Wed	16:00–16:30	HSZ 01	Topological Phase Transitions in Population Dynamics — ●ERWIN FREY
SYQC 1.4	Wed	16:45–17:15	HSZ 01	Topological invariants protect robust chiral currents in active matter — ●EVELYN TANG
SYQC 1.5	Wed	17:15–17:45	HSZ 01	Topological defects in biological active matter — ●AMIN DOOSTMOHAMMADI

Invited Talks of the joint Symposium Real-Time Measurements of Quantum Dynamics (SYQD)

See SYQD for the full program of the symposium.

SYQD 1.1	Thu	9:30–10:00	HSZ 01	Real-time measurement and control of spin dynamics in quantum dots — ●SEIGO TARUCHA
SYQD 1.2	Thu	10:00–10:30	HSZ 01	Quantum Dot arrays for Quantum Information Transfer — ●GLORIA PLATERO
SYQD 1.3	Thu	10:30–11:00	HSZ 01	Optical Detection of Real-Time Quantum Dynamics in Quantum Dots — ●MARTIN GELLER
SYQD 1.4	Thu	11:30–12:00	HSZ 01	Cooper Pair Splitting in Real-Time — ●CHRISTIAN FLINDT
SYQD 1.5	Thu	12:00–12:30	HSZ 01	Trajectory-based detection in stochastic and quantum thermodynamics — ●JUKKA PEKOLA

Invited Talks of the joint Symposium Topological Superconductor-Magnet Heterostructures (SYTS)

See SYTS for the full program of the symposium.

SYTS 1.1	Thu	15:00–15:30	HSZ 01	Blending of superconductivity and magnetism via topological solitons — ●CHRISTOS PANAGOPOULOS
SYTS 1.2	Thu	15:30–16:00	HSZ 01	Topological landscaping in magnet-superconductor heterostructures — ●SEBASTIÁN A. DÍAZ
SYTS 1.3	Thu	16:00–16:30	HSZ 01	Experimental study of minigaps and end states in bottom-up designed multi-orbital Shiba chains — ●JENS WIEBE
SYTS 1.4	Thu	16:45–17:15	HSZ 01	Quantum spins and hybridization in artificially-constructed chains of magnetic adatoms on superconducting 2H-NbSe₂ — ●KATHARINA J. FRANKE
SYTS 1.5	Thu	17:15–17:45	HSZ 01	Braiding of Majorana zero modes — ●STEPHAN RACHEL

Invited Talks of the joint Symposium Physics of van der Waals 2D Heterostructures (SYHS)

See SYHS for the full program of the symposium.

SYHS 1.1	Fri	9:30–10:00	HSZ 01	Novel moiré excitons and ultrafast optical dynamics in van der Waals 2D heterostructures — ●STEVEN G. LOUIE
SYHS 1.2	Fri	10:00–10:30	HSZ 01	Interaction induced magnetism in 2D semiconductor moiré superlattices — ●XIAODONG XU
SYHS 1.3	Fri	10:30–11:00	HSZ 01	Ions in tight places: intercalation and transport of ions in van der Waals heterostructures — ●IRINA GRIGORIEVA
SYHS 1.4	Fri	11:15–11:45	HSZ 01	Spin-orbit proximity in van der Waals heterostructures — ●FELIX CASANOVA
SYHS 1.5	Fri	11:45–12:15	HSZ 01	Plethora of many-body ground states in magic angle twisted bilayer graphene — ●DMITRI EFETOV

Invited Talks of the Focus Session “Physics Meets ML I - Machine Learning for Complex Quantum Systems (joint session DY/TT)”

TT 2.1	Mon	9:30–10:00	HSZ 03	Enhanced variational Monte Carlo for Rydberg atom arrays — •STEFANIE CZISCHEK
TT 2.2	Mon	10:00–10:30	HSZ 03	Data mining the output of quantum simulators – from critical behavior to algorithmic complexity — •MARCELLO DALMONTE
TT 2.3	Mon	10:30–11:00	HSZ 03	Reinforcement learning for quantum technologies — •FLORIAN MARQUARDT
TT 2.4	Mon	11:00–11:30	HSZ 03	Machine learning of phase transition — •CHRISTOF WEITENBERG

Invited Talks of the Focus Session “Physics Meets ML II - Understanding Machine Learning as Complex Interacting Systems (joint session DY/TT)”

TT 13.1	Mon	15:00–15:30	ZEU 250	The challenge of structured disorder in statistical physics — •MARC MEZARD
TT 13.2	Mon	15:30–16:00	ZEU 250	The emergence of concepts in shallow neural-networks — •ELENA AGLIARI
TT 13.3	Mon	16:00–16:30	ZEU 250	Adaptive Kernel Approaches to Feature Learning in Deep Neural Networks — •ZOHAR RINGEL
TT 13.5	Mon	17:00–17:30	ZEU 250	Analysing the dynamics of message passing algorithms — •MANFRED OPPER
TT 13.6	Mon	17:30–18:00	ZEU 250	Deep Learning Theory Beyond the Kernel Limit — •CENGIZ PEHLEVAN

Invited Talks of the Focus Session “New Perspectives for Adiabatic Demagnetization Refrigeration in the Kelvin and sub-Kelvin Range (joint session TT/MA)”

TT 19.1	Tue	9:30–10:00	HSZ 03	Self-cooling molecular spin quantum processors — •MARCO EVANGELISTI
TT 19.2	Tue	10:00–10:30	HSZ 03	Triangular rare-earth borates for milli-Kelvin adiabatic demagnetization refrigeration — •PHILIPP GEGENWART
TT 19.3	Tue	10:30–11:00	HSZ 03	A millikelvin scanning tunnelling microscope in ultra-high vacuum with adiabatic demagnetisation refrigeration — •RUSLAN TEMIROV
TT 19.4	Tue	11:15–11:45	HSZ 03	ADR cryostats in low temperature physics and their applications — •DOREEN WERNICKE
TT 19.5	Tue	11:45–12:15	HSZ 03	Frustrated dipolar materials for low-temperature magnetic refrigeration — •MIKE ZHITOMIRSKY

Invited Talks of the Focus Session “Unconventional Transport Phenomena in Low-Dimensional Superconducting Heterostructures”

TT 27.1	Wed	9:30–10:00	HSZ 03	Superconducting diode effect in Rashba superlattice — •TERUO ONO
TT 27.2	Wed	10:00–10:30	HSZ 03	Quasiparticle-based and Cooper-pair based superconducting diodes — •MARIA SPIES
TT 27.3	Wed	10:30–11:00	HSZ 03	Non-reciprocal superconductivity and the field free Josephson diode — •MAZHAR ALI

Invited Talks of the Focus Session “Correlations in Moiré Quantum Matter”

TT 35.1	Wed	15:00–15:30	HSZ 03	Strongly correlated excitons in atomic double layers — •PHUONG NGUYEN
TT 35.2	Wed	15:30–16:00	HSZ 03	The Quantum Twisting Microscope — •SHAHAL ILANI
TT 35.3	Wed	16:00–16:30	HSZ 03	Light-driven phenomena in two-dimensional and correlated quantum materials — •ANGEL RUBIO
TT 35.4	Wed	16:45–17:15	HSZ 03	Cascade of transitions in twisted and non-twisted graphene layers within the van Hove scenario — •LAURA CLASSEN

TT 35.5 Wed 17:15–17:45 HSZ 03 **Topology and strong correlation: From twisted bilayer graphene to the boundary zeros of Mott insulators** — ●GIORGIO SANGIOVANNI

Invited Talks of the Focus Session “Superconducting Nickelates”

TT 44.1 Thu 9:30–10:00 HSZ 03 **Atomic-scale insights to lattice and electronic structure in superconducting nickelates** — ●BERIT GOODGE
 TT 44.2 Thu 10:00–10:30 HSZ 03 **Nickelate and cuprate superconductors: Similar yet different** — ●VAMSHI MOHAN KATUKURI
 TT 44.3 Thu 10:30–11:00 HSZ 03 **Superconducting instabilities in strongly-correlated infinite-layer nickelates** — ●ANDREAS KREISEL
 TT 44.5 Thu 11:45–12:15 HSZ 03 **Superconducting layered square-planar nickelates: Synthesis, properties, and progress** — ●GRACE PAN
 TT 44.4 Thu 11:15–11:45 HSZ 03 **Infinite-layer nickelate thin films: From synthesis to spectroscopy** — ●DANIELE PREZIOSI

Invited Talks not included in Focus Sessions

TT 8.1 Mon 15:00–15:30 HSZ 103 **Molecules on a superconductor: Inducing magnetism and resonance-enhanced vibrational spectroscopy** — ●RICHARD BERNDT
 TT 17.3 Mon 17:15–17:45 HSZ 304 **Noise signatures of anyon statistics and Andreev scattering in the $\nu = 1/3$ fractional quantum Hall regime** — ●ANNE ANTHORE
 TT 22.6 Tue 11:00–11:30 HSZ 204 **Higgs spectroscopy of superconductors in nonequilibrium** — ●DIRK MANSKE
 TT 28.6 Wed 10:45–11:15 HSZ 103 **Studying the Fulde-Ferrell-Larkin-Ovchinnikov order parameter in quasi-2D organic superconductors** — ●TOMMY KOTTE
 TT 39.1 Wed 15:00–15:30 HSZ 304 **Sensing and control of MHz photons with microwave photon-pressure** — ●DANIEL BOTHNER
 TT 66.1 Fri 9:30–10:00 HSZ 304 **Towards ultrasensitive calorimetric detection in superconducting quantum circuits** — ●BAYAN KARIMI

Sessions

TT 1.1–1.3 Sun 16:00–18:15 HSZ 01 **Tutorial: Physics Meets Machine Learning (joint session DY/TUT/TT)**
 TT 2.1–2.9 Mon 9:30–13:00 HSZ 03 **Focus Session: Physics Meets ML I – Machine Learning for Complex Quantum Systems (joint session TT/DY)**
 TT 3.1–3.13 Mon 9:30–13:00 HSZ 103 **Superconductivity: Properties and Electronic Structure**
 TT 4.1–4.13 Mon 9:30–13:00 HSZ 201 **f-Electron Systems and Heavy Fermions I**
 TT 5.1–5.14 Mon 9:30–13:15 HSZ 204 **Correlated Electrons: Method Development**
 TT 6.1–6.13 Mon 9:30–13:00 HSZ 304 **Topological Semimetals**
 TT 7.1–7.14 Mon 9:30–13:00 HSZ 403 **Spin Transport and Orbitronics, Spin-Hall Effects (joint session MA/TT)**
 TT 8.1–8.8 Mon 15:00–17:15 HSZ 103 **Yu-Shiba-Rusinov Systems**
 TT 9.1–9.8 Mon 15:00–17:00 HSZ 201 **f-Electron Systems and Heavy Fermions II**
 TT 10.1–10.12 Mon 15:00–18:15 HSZ 204 **Correlated Electrons: Other Materials**
 TT 11.1–11.6 Mon 15:00–16:30 HSZ 304 **Spintronics, Spincalorics and Magnetotransport**
 TT 12.1–12.8 Mon 15:00–17:15 HSZ 403 **Topological Insulators (joint session MA/TT)**
 TT 13.1–13.8 Mon 15:00–18:30 ZEU 250 **Focus Session: Physics Meets ML II – Understanding Machine Learning as Complex Interacting Systems (joint session DY/TT)**
 TT 14.1–14.5 Mon 15:00–17:45 POT 361 **Focus Session: Graphene Quantum Dots (joint session HL/TT)**
 TT 15.1–15.7 Mon 15:00–17:15 POT 251 **Quantum Transport and Quantum Hall Effects I (joint session HL/TT)**
 TT 16.1–16.18 Mon 15:00–18:00 P2/OG4 **Poster: Transport**
 TT 17.1–17.7 Mon 16:45–18:45 HSZ 304 **Topology: Quantum Hall Systems**
 TT 18.1–18.5 Mon 17:15–18:30 HSZ 201 **Nano- and Optomechanics**

TT 19.1–19.9	Tue	9:30–13:15	HSZ 03	Focus Session: New Perspectives for Adiabatic Demagnetization Refrigeration in the Kelvin and sub-Kelvin Range (joint session TT/MA)
TT 20.1–20.13	Tue	9:30–13:00	HSZ 103	Superconductivity: Tunnelling and Josephson Junctions
TT 21.1–21.9	Tue	9:30–11:45	HSZ 201	Correlated Electrons: Electronic Structure Calculations
TT 22.1–22.13	Tue	9:30–13:15	HSZ 204	Nonequilibrium Quantum Many-Body Systems I (joint session TT/DY)
TT 23.1–23.13	Tue	9:30–13:00	HSZ 304	Kagome Systems
TT 24.1–24.9	Tue	9:30–12:15	POT 151	Quantum Dots: Transport (joint session HL/TT)
TT 25.1–25.4	Tue	12:00–13:00	HSZ 201	Molecular Electronics and Photonics (joint session TT/CPP)
TT 26	Tue	14:00–15:30	HSZ 304	Members' Assembly
TT 27.1–27.10	Wed	9:30–13:00	HSZ 03	Focus Session: Unconventional Transport Phenomena in Low-Dimensional Superconducting Heterostructures
TT 28.1–28.6	Wed	9:30–11:15	HSZ 103	Unconventional Superconductors
TT 29.1–29.14	Wed	9:30–13:15	HSZ 201	Frustrated Magnets: General
TT 30.1–30.13	Wed	9:30–13:00	HSZ 204	Complex Oxides
TT 31.1–31.12	Wed	9:30–12:45	HSZ 304	Topology: Majorana Physics
TT 32.1–32.11	Wed	9:30–12:30	GÖR 226	Molecular Electronics and Excited State Properties (joint session CPP/TT)
TT 33.1–33.12	Wed	9:30–13:00	MOL 213	Many-Body Quantum Dynamics (joint session DY/TT)
TT 34.1–34.6	Wed	11:30–13:00	HSZ 103	Fe-based Superconductors
TT 35.1–35.7	Wed	15:00–18:15	HSZ 03	Focus Session: Correlations in Moiré Quantum Matter I
TT 36.1–36.10	Wed	15:00–17:45	HSZ 103	Topological Insulators
TT 37.1–37.13	Wed	15:00–18:30	HSZ 201	Ruthenates
TT 38.1–38.13	Wed	15:00–18:30	HSZ 204	Nonequilibrium Quantum Many-Body Systems II (joint session TT/DY)
TT 39.1–39.11	Wed	15:00–18:15	HSZ 304	Superconducting Electronics
TT 40.1–40.8	Wed	15:00–18:30	POT 81	Focus Session: Wissenschaftskommunikation / Outreach (joint session HL/O/TT)
TT 41.1–41.6	Wed	15:00–17:00	POT 251	Quantum Transport and Quantum Hall Effects II (joint session HL/TT)
TT 42.1–42.22	Wed	15:00–18:00	P2/OG2	Poster: Correlated Electrons I
TT 43.1–43.33	Wed	15:00–18:00	P2/OG3	Poster: Correlated Electrons II
TT 44.1–44.8	Thu	9:30–13:00	HSZ 03	Focus Session: Superconducting Nickelates I
TT 45.1–45.10	Thu	9:30–12:15	HSZ 103	Correlated Electrons: 1D Theory
TT 46.1–46.13	Thu	9:30–13:00	HSZ 201	Frustrated Magnets: Spin Liquids
TT 47.1–47.13	Thu	9:30–13:00	HSZ 204	Quantum-Critical Phenomena
TT 48.1–48.7	Thu	9:30–11:15	HSZ 304	Topological Superconductors
TT 49.1–49.6	Thu	11:30–13:00	HSZ 304	Quantum Coherence and Quantum Information Systems I
TT 50.1–50.8	Thu	15:00–17:00	HSZ 03	Focus Session: Superconducting Nickelates II
TT 51.1–51.9	Thu	15:00–17:30	HSZ 103	Correlated Electrons: Charge Order
TT 52.1–52.9	Thu	15:00–17:30	HSZ 201	Frustrated Magnets: Strong Spin-Orbit Coupling
TT 53.1–53.10	Thu	15:00–17:45	HSZ 204	Graphene
TT 54.1–54.10	Thu	15:00–17:45	HSZ 304	Quantum Coherence and Quantum Information Systems II
TT 55.1–55.9	Thu	15:00–17:30	MOL 213	Dynamics and Chaos in Many-Body Systems I (joint session DY/TT)
TT 56.1–56.11	Thu	15:00–18:30	WIL A317	Focus Session: Making Experimental Data F.A.I.R. – New Concepts for Research Data Management I (joint session O/TT)
TT 57.1–57.28	Thu	15:00–18:00	P2/OG2	Poster: Superconductivity I
TT 58.1–58.31	Thu	15:00–18:00	P2/OG3	Poster: Superconductivity II
TT 59.1–59.18	Thu	15:00–18:00	P2/OG4	Poster Session: Topology
TT 60.1–60.7	Thu	17:15–19:00	HSZ 03	Quantum Dots, Quantum Wires, Point Contacts
TT 61.1–61.5	Thu	17:45–19:00	HSZ 201	Focus Session: Correlations in Moiré Quantum Matter II
TT 62.1–62.8	Fri	9:30–11:45	HSZ 03	Ultrafast Dynamics of Light-Driven Systems
TT 63.1–63.14	Fri	9:30–13:15	HSZ 103	Superconductivity: Theory
TT 64.1–64.8	Fri	9:30–11:30	HSZ 201	Topology: Other Topics
TT 65.1–65.10	Fri	9:30–12:15	HSZ 204	Correlated Electrons: Other Theoretical Topics
TT 66.1–66.7	Fri	9:30–11:30	HSZ 304	Cryogenic Detectors
TT 67.1–67.11	Fri	9:30–12:30	MOL 213	Dynamics and Chaos in Many-Body Systems II (joint session DY/TT)

TT 68.1–68.11 Fri 9:30–12:45 WIL A317 **Focus Session: Making Experimental Data F.A.I.R. – New Concepts for Research Data Management II (joint session O/TT)**

Annual Meeting of the Low Temperature Physics Division

Tuesday 14:00–15:30 HSZ 304

All members of the Low Temperature Physics Division are welcome to attend!

- Report
- Elections
- Miscellaneous