

Semiconductor Physics Division Fachverband Halbleiterphysik (HL)

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Overview of Invited Talks and Sessions

(Lecture halls H1, H3, H4, H5, and H7; Poster P)

Invited Talks

HL 1.1	Mon	10:00–10:30	H4	Phonon Screening of Excitons in Halide Perovskites and Beyond — •MARINA FILIP
HL 1.2	Mon	10:30–11:00	H4	Anharmonic semiconductors - Lessons Learned from Halide perovskites — •OMER YAFFE
HL 1.3	Mon	11:00–11:30	H4	Exciton structure symmetry analysis for quantum-well layered halide perovskites and charge-energy transfer in presence of π-conjugated organic chromophores — •CLAUDIO QUARTI
HL 1.4	Mon	11:45–12:15	H4	Solid state ionic of hybrid halide perovskites: equilibrium situation and light effects — •ALESSANDRO SENOCRATE, GEE YEONG KIM, TAE-YOUL YANG, GIULIANO GREGORI, MICHAEL GRÄTZEL, JOACHIM MAIER
HL 1.5	Mon	12:15–12:45	H4	Unifying Ultrafast Polarization Responses of Lead Halide Perovskites via Two-Dimensional Optical Kerr Effect — •SEBASTIAN F. MAEHRLEIN
HL 5.1	Mon	13:30–14:00	H4	The role of chalcogen vacancies for atomic defect emission in MoS₂ — ELMAR MITTERREITER, BRUNO SCHULER, DANIEL HERNANGÓMEZ-PÉREZ, JULIAN KLEIN, JONATHAN FINLEY, SIVAN REFAELY-ABRAMSON, ALEXANDER HOLLEITNER, ALEXANDER WEBER-BARGIONI, •CHRISTOPH KASTL
HL 7.1	Tue	10:00–10:30	H4	Ultrafast Spin-Lasers — NATALIE JUNG, MARKUS LINDEMANN, TOBIAS PUSCH, RAINER MICHALZIK, MARTIN R. HOFMANN, •NILS C. GERHARDT
HL 11.1	Tue	13:30–14:00	H4	Modulation Doping in High-Mobility Alkaline-Earth Stannates — •BHARAT JALAN
HL 11.2	Tue	14:00–14:30	H4	Ultrathin oxides on InGaN nanowires: Hybrid nanostructure photoelectrodes and optical analysis of chemical processes — P. NEUDERTH, J. SCHÖRMANN, M. COLL, M. DE LA MATA, J. ARBIOL, R. MARSCHALL, •M. EICKHOFF
HL 11.3	Tue	14:30–15:00	H4	Doping and charge compensation mechanisms in semiconducting oxides — •ANDREAS KLEIN
HL 11.4	Tue	15:00–15:30	H4	Oxide Memristors for edge computing and secure electronics — •HEIDEMARIE SCHMIDT
HL 11.5	Tue	15:30–16:00	H4	Integration of 33°Y-LiNbO₃ films with high-frequency BAW resonators — SONDES BOUJNAH, MIHAELA IVAN, VINCENT ASTIÉ, SAMUEL MARGUERON, MARIO CONSTANZA, JEAN-MANUEL DECAMS, •AUSRINE BARTASYTE
HL 14.1	Wed	10:00–10:30	H4	Quantum Interference of Identical Photons from Remote Quantum Dots — •GIANG N. NGUYEN, LIANG ZHAI, CLEMENS SPINNLER, JULIAN RITZMANN, MATTHIAS C. LÖBL, ANDREAS D. WIECK, ARNE LUDWIG, ALISA JAVADI, RICHARD J. WARBURTON
HL 15.1	Thu	10:00–10:30	H4	Quasi-instantaneous switch-off of deep-strong light-matter coupling — •CHRISTOPH LANGE, JOSHUA MORNHINWEG, MAIKE HALBHUBER, VIOLA ZELLER, CRISTIANO CIUTI, DOMINIQUE BOUGEARD, RUPERT HUBER
HL 15.2	Thu	10:30–11:00	H4	Lithium niobate nonlinear nanophotonics — •FRANK SETZPFANDT
HL 15.3	Thu	11:00–11:30	H4	Quadratic nanomaterials for integrated photonic devices — •RACHEL GRANGE

HL 15.4	Thu	11:45–12:15	H4	Topological plasmonics: Ultrafast vector movies of plasmonic skyrmions on the nanoscale — ●HARALD GIESSEN, PASCAL DREHER, DAVID JANOSCHKA, FRANK MEYER ZU HERINGDORF, TIM DAVIS, BETTINA FRANK
HL 15.5	Thu	12:15–12:45	H4	Supercontinuum second-harmonic generation spectroscopy of 2D semiconductors — ●STEFFEN MICHAELIS DE VASCONCELLOS
HL 18.1	Thu	13:30–14:00	H4	Telecom wavelength quantum dot-based single-photon sources for quantum technologies — ●ANNA MUSIAL
HL 22.1	Fri	10:00–10:30	H4	Two-dimensional gain materials for new nanolaser concepts — ●CHRISTOPHER GIES
HL 22.2	Fri	10:30–11:00	H4	Room-temperature polariton lattices for quantum simulation — ●STEPHANE KENA-COHEN
HL 22.3	Fri	11:00–11:30	H4	Topological nanocavity lasers and topological high-power lasers — ●YASUTOMO OTA, YASUHIKO ARAKAWA, SATOSHI IWAMOTO
HL 22.4	Fri	11:45–12:15	H4	Topological Insulator Lasers — ●MIGUEL A. BANDRES, STEFFEN WITTEK, GAL HARARI, MORDECHAI SEGEV, DEMETRIOS N. CHRISTODOULIDES, MERCEDEH KHAJAVIKHAN
HL 22.5	Fri	12:15–12:45	H4	When polariton condensates have dissipations or have no excitons — ●HUI DENG

Invited talks of the joint symposium SKM Dissertation Prize 2021 (SYSD)

See SYSD for the full program of the symposium.

SYSD 1.1	Mon	10:00–10:25	Audimax 2	Avoided quasiparticle decay from strong quantum interactions — ●RUBEN VERRESEN, RODERICH MOESSNER, FRANK POLLMANN
SYSD 1.2	Mon	10:25–10:50	Audimax 2	Co-evaporated Hybrid Metal-Halide Perovskite Thin-Films for Optoelectronic Applications — ●JULIANE BORCHERT
SYSD 1.3	Mon	10:55–11:20	Audimax 2	Attosecond-fast electron dynamics in graphene and graphene-based interfaces — ●CHRISTIAN HEIDE
SYSD 1.4	Mon	11:20–11:45	Audimax 2	The thermodynamics of stochastic systems with time delay — ●SARAH A.M. LOOS
SYSD 1.5	Mon	11:50–12:15	Audimax 2	First Results on Atomically Resolved Spin-Wave Spectroscopy by TEM — ●BENJAMIN ZINGSEM

Invited talks of the joint symposium Potentials for NVs sensing magnetic phases, textures and excitations (SYNV)

See SYNV for the full program of the symposium.

SYNV 1.1	Mon	13:30–14:00	Audimax 2	Harnessing Nitrogen Vacancy Centers in Diamond for Next-Generation Quantum Science and Technology — ●CHUNHUI DU
SYNV 1.2	Mon	14:00–14:30	Audimax 2	Nanoscale imaging of spin textures with single spins in diamond — ●PATRICK MALETINSKY
SYNV 1.3	Mon	14:30–15:00	Audimax 2	Spin-based microscopy of 2D magnetic systems — ●JÖRG WRACHTRUP
SYNV 1.4	Mon	15:15–15:45	Audimax 2	Exploring antiferromagnetic order at the nanoscale with a single spin microscope — ●VINCENT JACQUES
SYNV 1.5	Mon	15:45–16:15	Audimax 2	Nanoscale magnetic resonance spectroscopy with NV-diamond quantum sensors — ●DOMINIK BUCHER

Invited talks of the joint symposium Multidimensional coherent spectroscopy of functional nanostructures (SYCS)

See SYCS for the full program of the symposium.

SYCS 1.1	Tue	10:00–10:30	Audimax 1	Multidimensional coherent spectroscopy of perovskite nanocrystals — ●STEVEN CUNDIFF, ALBERT LIU, DIOGO ALMEIDA, GABRIEL NAGAMINE, LAZARO PADILHA
SYCS 1.2	Tue	10:30–11:00	Audimax 1	Coherent multidimensional techniques for the characterization of nanomaterials — ●ELISABETTA COLLINI

SYCS 1.3	Tue	11:00–11:30	Audimax 1	Exciton Dynamics revealed by Multidimensional Coherent Spectroscopies applied to Light-Harvesting Systems — ●THOMAS L.C. JANSEN
SYCS 1.4	Tue	11:45–12:15	Audimax 1	Revealing couplings with action-based 2D microscopy — ●TOBIAS BRIXNER
SYCS 1.5	Tue	12:15–12:45	Audimax 1	Low-frequency phonons affect charge carrier dynamics in hybrid perovskites — ●MISCHA BONN

Invited talks of the joint symposium **Advanced neuromorphic computing hardware: Towards efficient machine learning (SYNC)**

See SYNC for the full program of the symposium.

SYNC 1.1	Wed	10:00–10:30	Audimax 1	Equilibrium Propagation: a Road for Physics-Based Learning — ●DAMIEN QUERLIOZ
SYNC 1.2	Wed	10:30–11:00	Audimax 1	Machine Learning and Neuromorphic Computing: Why Physics and Complex Systems are Indispensable — ●INGO FISCHER
SYNC 1.3	Wed	11:00–11:30	Audimax 1	Photonic Tensor Core Processor and Photonic Memristor for Machine Intelligence — ●VOLKER SORGER
SYNC 1.4	Wed	11:45–12:15	Audimax 1	Material learning with disordered dopant networks — ●WILFRED VAN DER WIEL
SYNC 1.5	Wed	12:15–12:45	Audimax 1	In-memory computing with non-volatile analog devices for machine learning applications — ●JOHN PAUL STRACHAN

Prize talks of the joint **Awards Symposium (SYAW)**

See SYAW for the full program of the symposium.

SYAW 1.1	Wed	13:30–14:00	Audimax 1	Organic semiconductors - materials for today and tomorrow — ●ANNA KÖHLER
SYAW 1.2	Wed	14:00–14:30	Audimax 1	PbTe/CdTe nanocomposite as an attractive candidate for room-temperature infrared detectors — ●GRZEGORZ KARCZEWSKI
SYAW 1.3	Wed	14:40–15:10	Audimax 1	Fingerprints of correlation in electronic spectra of materials — ●LUCIA REINING
SYAW 1.4	Wed	15:10–15:40	Audimax 1	Artificial Spin Ice: From Correlations to Computation — ●NAËMI LEO
SYAW 1.5	Wed	15:40–16:10	Audimax 1	From microwave optomechanics to quantum transport – carbon nanotubes as highly versatile hybrid devices — ●ANDREAS K. HÜTTEL
SYAW 1.6	Wed	16:20–16:50	Audimax 1	Quantum spin dynamics of a spin-1/2 antiferromagnetic Heisenberg-Ising chain — ●ZHE WANG
SYAW 1.7	Wed	16:50–17:20	Audimax 1	Imaging the effect of electron transfer at the atomic scale — ●LAERTE PATERA

Invited talks of the joint symposium **Spain as Guest of Honor (SYES)**

See SYES for the full program of the symposium.

SYES 1.1	Wed	13:30–13:40	Audimax 2	DFMC-GEFES — ●JULIA HERRERO-ALBILLOS
SYES 1.2	Wed	13:40–14:10	Audimax 2	Towards Phononic Circuits based on Optomechanics — ●CLIVIA M. SOTOMAYOR TORRES
SYES 1.3	Wed	14:10–14:40	Audimax 2	Adding magnetic functionalities to epitaxial graphene — ●RODOLFO MIRANDA
SYES 1.4	Wed	14:45–15:15	Audimax 2	Bringing nanophotonics to the atomic scale — ●JAVIER AIZPURUA
SYES 1.5	Wed	15:15–15:45	Audimax 2	Hydrodynamics of collective cell migration in epithelial tissues — ●JAUME CASADEMUNT
SYES 1.6	Wed	15:45–16:15	Audimax 2	Understanding the physical variables driving mechanosensing — ●PERE ROCA-CUSACHS

Invited talks of the joint symposium **Attosecond and coherent spins: New frontiers (SYAS)**

See SYAS for the full program of the symposium.

SYAS 1.1	Thu	10:00–10:30	Audimax 2	Ultrafast Coherent Spin-Lattice Interactions in Iron Films — •STEVEN JOHNSON
SYAS 1.2	Thu	10:30–11:00	Audimax 2	Ultrafast spin, charge and nuclear dynamics: ab-initio description — •SANGEETA SHARMA, JOHN KAY DEWHURST
SYAS 1.3	Thu	11:15–11:45	Audimax 2	Light-wave driven Spin Dynamics — •MARTIN SCHULTZE, MARKUS MÜNZENBERG, SANGEETA SHARMA
SYAS 1.4	Thu	11:45–12:15	Audimax 2	All-coherent subcycle switching of spins by THz near fields — •CHRISTOPH LANGE, STEFAN SCHLAUDERER, SEBASTIAN BAIERL, THOMAS EBNET, CHRISTOPH SCHMID, DARREN VALOVICIN, ANATOLY ZVEZDIN, ALEXEY KIMEL, ROSTISLAV MIKHAYLOVSKIY, RUPERT HU- BER
SYAS 1.5	Thu	12:15–12:45	Audimax 2	Ultrafast optically-induced spin transfer in ferromagnetic alloys — •STEFAN MATHIAS

Invited talks of the joint symposium Physics of van der Waals 2D heterostructures (SYWH)

See SYWH for the full program of the symposium.

SYWH 1.1	Thu	13:30–14:00	Audimax 2	Spin interactions in van der Waals topological materials and magnets — •SAROJ DASH
SYWH 1.2	Thu	14:00–14:30	Audimax 2	Exciton optics, dynamics and transport in atomically thin materials — •ERMIN MALIC, SAMUEL BREM, RAUL PEREA-CAUSIN, DANIEL ERKENSTEN, ROBERTO ROSATI
SYWH 1.3	Thu	14:30–15:00	Audimax 2	Correlated Electrons in van der Waals Superlattices: Control and Understanding — •TIM WEHLING
SYWH 1.4	Thu	15:15–15:45	Audimax 2	Exciton manipulation and transport in 2D semiconductor heterostructures — •ANDRAS KIS
SYWH 1.5	Thu	15:45–16:15	Audimax 2	Chern Insulators, van Hove singularities and Topological Flatbands in Magic-angle Twisted Bilayer Graphene* — •EVA AN- DREI, SHUANG WU, ZHENYUAN ZHANG

Invited talks of the joint symposium The Rise of Photonic Quantum Technologies – Practical and Fundamental Aspects (SYPQ)

See SYPQ for the full program of the symposium.

SYPQ 1.1	Fri	10:00–10:30	Audimax 2	Quantum dots operating at telecom wavelengths for photonic quantum technology — •SIMONE LUCA PORTALUPI
SYPQ 1.2	Fri	10:30–11:00	Audimax 2	Photonic graph states for quantum communication and quantum computing — •STEFANIE BARZ
SYPQ 1.3	Fri	11:00–11:30	Audimax 2	Rare-earth ion doped solids at sub-Kelvins: practical and fundamental aspects — •PAVEL BUSHEV
SYPQ 1.4	Fri	11:45–12:15	Audimax 2	Quantum Light and Strongly Correlated Electronic States in a Moiré Heterostructure — •BRIAN GERARDOT
SYPQ 1.5	Fri	12:15–12:45	Audimax 2	Quantum communication in fibers and free-space — •RUPERT URSIN

Sessions

HL 1.1–1.5	Mon	10:00–12:45	H4	Focus Session: When theory meets experiment: Hybrid halide perovskites for applications beyond solar
HL 2.1–2.5	Mon	10:00–12:45	H7	Focus Session: Exotic Charge Density Wave States of Matter: Correlations and Topology (joint session TT/HL)
HL 3.1–3.26	Mon	10:00–13:00	P	Poster Session I
HL 4.1–4.7	Mon	11:15–13:00	H3	2D materials and their heterostructures (joint session DS/HL/PPP)
HL 5.1–5.9	Mon	13:30–16:15	H4	2D semiconductors and van der Waals heterostructures I (joint session HL/DS)

HL 6.1–6.8	Mon	13:30–17:00	H5	Focus Session: Magnon Polarons - Magnon-Phonon Coupling and Spin Transport (joint session MA/HL)
HL 7.1–7.5	Tue	10:00–11:30	H4	Semiconductor Lasers
HL 8.1–8.28	Tue	10:00–13:00	P	Poster Session II
HL 9.1–9.3	Tue	11:45–12:30	H4	Nitride: Preparation, Charakterization and Devices
HL 10.1–10.5	Tue	13:30–16:15	H3	Focus Session: Highlights of Materials Science and Applied Physics I (joint session DS/HL)
HL 11.1–11.7	Tue	13:30–16:30	H4	Focus Session: Functional Metal Oxides for Novel Applications and Devices
HL 12.1–12.6	Tue	13:30–16:45	H5	Focus Session: Spin-Charge Interconversion (joint session MA/HL)
HL 13.1–13.32	Tue	13:30–16:30	P	Poster Session III
HL 14.1–14.9	Wed	10:00–12:45	H4	Materials and devices for quantum technology (joint session HL/TT)
HL 15.1–15.5	Thu	10:00–12:45	H4	Focus Session: Tailored Nonlinear Photonics
HL 16.1–16.6	Thu	11:15–12:45	H1	Semiconductors: Optical, Transport and Ultrafast Properties
HL 17.1–17.5	Thu	13:30–16:15	H1	Focus Session: Topological Phenomena in Synthetic Matter (joint session DS/HL)
HL 18.1–18.10	Thu	13:30–16:30	H4	Quantum Dots and Wires (joint session HL/TT)
HL 19.1–19.31	Thu	13:30–16:30	P	Poster Session IV
HL 20	Thu	18:00–19:00	MVHL	Annual General Meeting of the Semiconductor Physics Division
HL 21.1–21.4	Fri	10:00–11:00	H1	Focus Session: Highlights of Materials Science and Applied Physics II (joint session DS/HL)
HL 22.1–22.5	Fri	10:00–12:45	H4	Focus Session: Emerging Semiconductor Laser Concepts
HL 23.1–23.7	Fri	11:15–13:00	H1	Focus Session: Highlights of Materials Science and Applied Physics III (joint session DS/HL)
HL 24.1–24.1	Fri	13:30–15:00	Audimax 2	Quo Vadis Quantum Technologies? About Promises, Prospects, and Challenges
HL 25.1–25.5	Fri	13:30–14:45	H4	2D semiconductors and van der Waals heterostructures II (joint session HL/DS)

Annual General Meeting of the Semiconductor Physics Division

Thursday 18:00–19:00 MVHL

- Bericht des Vorsitzenden
- Wahl der Leitung des Halbleiterphysik Fachverbandes
- Verschiedenes