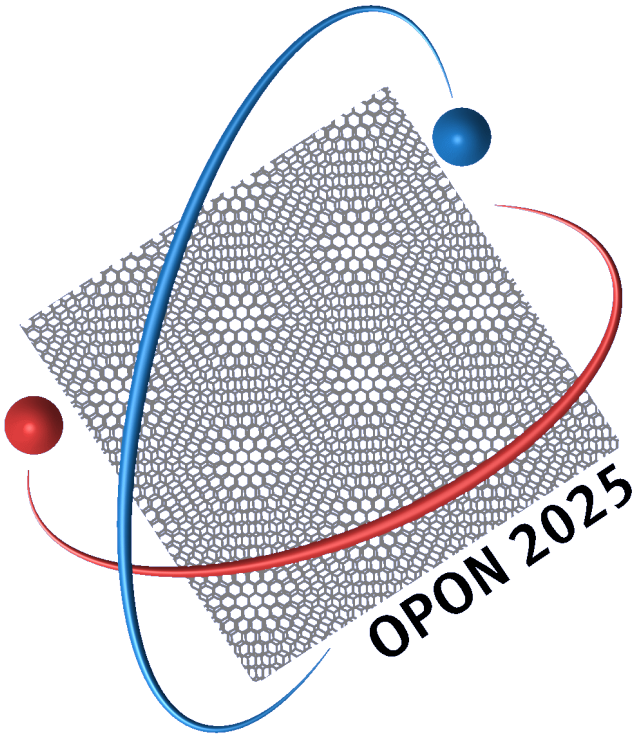
8th International Workshop on the Optical Properties of Nanostructures

Münster, 12-14 February 2025



Program

UNTERSTÜTZT VON / SUPPORTED BY

Alexander von HUMBOLDT STIFTUNG

INTERNATIONAL OFFICE

Politechnika Wrocławska

Universität Münster

Welcome to OPON 2025

Dear Colleagues,

The *International Workshop on the Optical Properties of Nanostructures* (OPON 2025) in Münster is the 8th workshop in a series that started with two Workshops in Wrocław (2011) and Münster (2012), organized within the framework of a Research Group Linkage Grant between the groups of Paweł Machnikowski and Tilmann Kuhn funded by the Alexander von Humboldt Foundation. The series was then continued with Workshops in Bayreuth (2013), Wrocław (2016), Münster (2018) and Warsaw (2020). After some years of break, partly due to the Covid pandemic, another Research Group Linkage Grant from the Alexander von Humboldt Foundation between groups in Münster (T. Kuhn and H. Krenner) and in Wrocław (P. Machnikowski) allowed us to continue the series again with two workshops, OPON 2024 in Wrocław and now OPON 2025 in Münster.

Like its predecessors, the 8th OPON Workshop in 2025 follows the general idea of a topically focused, compact two-and-a-half-day event with a good balance of invited and contributed talks and an opportunity to present the whole scope of activities of each research group in the form of posters. We are glad that again almost all of our invitations have been accepted and that most of the speakers are bringing students or young researchers from their groups to the workshop. In this way the participation displays again a good mixture of experienced researchers, young researchers on the assistant professor or post-doctoral level as well as PhD and MSc students. With the format of the workshop without parallel sessions and with posters displayed during the entire workshop there should be ample time for discussions in these two-and-a-half days.

The topics of the talks and posters again cover a broad range of aspects, both theoretical and experimental, in the field of semiconductor nanostructures. Just to name a few of these aspects: The material systems under investigation range from quantum well and quantum dot structures based on technologically mature III-V semiconductors to magnetic semiconductors, perovskites and a broad spectrum of van der Waals materials and heterostructures thereof. Experimental techniques cover the whole spectrum from growth, sample preparation and characterization to measurements using a variety of different spectroscopic methods. Theoretical studies range from exciton and spin physics in solid state systems to quantum optics and quantum thermal machines.

The Workshop is organized by the Institute of Solid State Theory and the Institute of Physics of the University of Münster in collaboration with the Institute of Theoretical Physics of Wrocław University of Science and Technology. We are grateful to the Alexander von Humboldt Foundation and the International Office of the University of Münster for financial support.

We would like to thank you for your participation in the workshop and wish you a good time in Münster and many fruitful discussions during the workshop.

The Program Committee:
Vollrath Martin Axt,
Joanna Jadczak,
Piotr Kossacki,
Hubert Krenner,
Tilmann Kuhn,
Paweł Machnikowski,
Doris Reiter.

Practical Information

The workshop will take place in the Physics Department of the University of Münster (building IG 1, Wilhelm-Klemm-Str. 10, 48149 Münster). The oral presentations will be given in the lecture hall HS 2. The conference desk is located in the lobby area in front of the lecture hall on the 1st floor.

The poster session will be held on Wednesday afternoon, 16:00 - 18:00 h. The poster space is located in the lobby area outside the lecture hall. We invite the presenting authors to hang their posters on the first day of the conference in the morning. We kindly ask participants displaying posters to remove them during the last coffee break of the workshop on Friday. Material for attaching the posters to the poster boards will be provided at the conference desk.

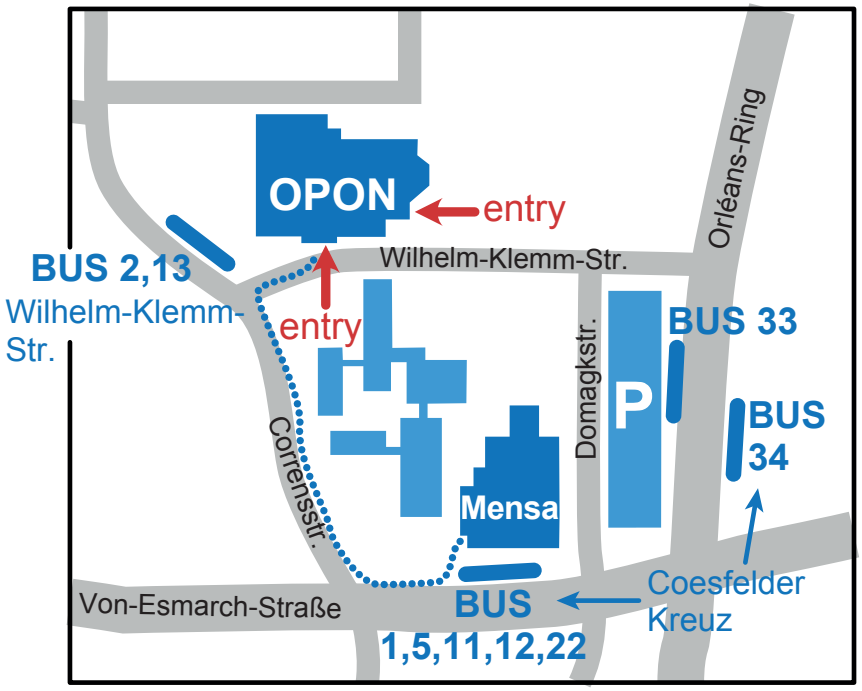
Coffee breaks are provided free of charge for all participants during the three days of the workshop. They will be organized in the lobby area (near the poster space). Lunches will be served at the Mensa am Ring, (Domagkstr. 61, 48149 Münster). Participants from outside Münster will receive lunch vouchers at registration. Participants from Münster are kindly asked to use their own MensaCard.

The members of the local groups will be happy to help you if you encounter any problem.

The Organizing Committee:

Daniel Ebbeler
Daniel Groll
Hubert Krenner
Tilmann Kuhn
Sandra Lühn
Jutta Marquardt
Emeline Nysten
Anja Vocke
Matthias Weiß
Daniel Wigger

Getting around



Bus lines from the train station and the city center to the bus stop **Wilhelm-Klemm-Straße**:

- **2** to Alte Sternwarte
- **13** to Technologiepark

Bus lines from the train station and the city center to the bus stop **P+R Coesfelder Kreuz**:

- **1** to Roxel
- **5** to Nienberge
- **11** to Gievenbeck Dieckmannstraße
- **12** to Gievenbeck Rüschhausweg
- **22** to Gievenbeck Heekweg
- **33** Ringlinie
- **34** Ringlinie

Conference Program

Wednesday, 12 February 2025

08:45 – 09:00 Registration

09:00 – 09:15 Opening session

Session We A: *Quantum light sources*

Chair: Hubert Krenner

09:15 – 09:45 We A-1 (invited)

T. Heindel

Institute for Solid State Physics, Technische Universität Berlin, Germany

Advances in quantum light generation for quantum networking

09:45 – 10:15 We A-2 (invited)

A. Ghosh[1], M. Kosik[1], M. Pelc[1], M. M. Müller[2], D. Dams[2], C. Rockstuhl[2], A. Babaze[3], A. Ayuela[4], G. W. Bryant[5] and **K. Słowik**[1]

[1] *Institute of Physics, Nicolaus Copernicus University in Toruń, Poland,* [2] *Institute of Theoretical Solid State Physics, Karlsruhe Institute of Technology, Germany,* [3] *Institute of University of the Basque Country, Leoia, Spain,* [4] *Centro de Fisica de Materiales and Donostia International Physics Center, San Sebastian, Spain,* [5] *Joint Quantum Institute, University of Maryland and National Institute of Standards and Technology, MD, USA*

Quantum Nanophotonics with Low-Dimensional Structures: Interfacing Quantum Optics and Material Science

10:15 – 10:30 We A-3

P. C. A. Hagen[1], J. Y. Yan[2], M. Cygorek[3], D. E. Reiter[3], F. Liu[2] and V. M. Axt[1]

[1] *Theoretische Physik III, University Bayreuth, Germany,* [2] *State Key Laboratory of Extreme Photonics and Instrumentation, College of Information Science and Electronic Engineering, Zhejiang University, China,* [3] *Condensed Matter Theory, TU Dortmund, Germany*

Dichromatic Two-Photon Excitation with Large Frequency Difference

10:30 – 11:00 Coffee Break

Session We B: *Optical spectroscopy*

Chair: Iris Niehues

11:00 – 11:30 We B-1 (invited)

G. Herink

Ultrafast Dynamics – Experimental Physics VIII, University of Bayreuth, Germany

Insights from strong-field multi-color interactions: Lightwave microscopy and multi-exciton manipulation at Terahertz frequencies

11:30 – 12:00 We B-2 (invited)

M. Baranowski[1], J. J. P. Thompson[2,3], M. Dyksik[1], A. Nowok[1,5], K. Galkowski[1], M. A. Loi[5], M. Zacharias[6], G. Volonakis[7], S. D. Stranks[8], J. Even[6], M. Maczka[9], R. Nicholas[10], E. Malic[2] and P. Płochocka[4]

[1]*Wroclaw University of Science and Technology, Wroclaw, Poland,* [2]*Department of Physics, Philipps-Universität Marburg, Germany,* [3]*Department of Materials Science and Metallurgy, University of Cambridge, UK,* [4]*Laboratoire National des Champs Magnetiques Intenses, Toulouse, France,* [5]*Zernike Institute for Advanced Materials, University of Groningen, Netherlands,* [6]*Univ. Rennes, INSA Rennes, CNRS, Institut FOTON - UMR 6082, Rennes, France,* [7]*Univ Rennes, ENSCR, INSA Rennes, CNRS, ISCR - UMR 6226, Rennes, France,* [8]*Cavendish Laboratory, University of Cambridge, Cambridge, UK,* [9]*Institute of Low Temperature and Structure Research, Wroclaw, Poland,* [10]*Department of Physics, Clarendon Laboratory, University of Oxford, UK*

Exciton-phonon coupling: Unraveling the Driving Force Behind Metal-Halide Perovskite Optical Response

12:00 – 12:15 We B-3

P. Steeger[1], M. Adnan[1], T. Deilmann[2], X. Li[3], S. Müller[4], K. Skrzynska[5], M. Hanfland[4], E. Kolesnikov[3], J. Kösters[6], T. Block[6], R. Schmidt[1], I. Kupenko[3], C. Sanchez-Valle[3], G. Prakash[7], S. Michaelis de Vasconcellos[1] and R. Bratschitsch[1]

[1]*Institute of Physics and Center for Nanotechnology, University of Münster, Germany,* [2]*Institute of Solid State Theory, University of Münster, Germany,* [3]*Institute of Mineralogy, University of Münster, Germany,* [4]*European Synchrotron Radiation Facility, Grenoble, France,* [5]*Faculty of Natural Sciences, Institute of Earth Sciences, University of Silesia, Sosnowiec, Poland,* [6]*Institut für Anorganische und Analytische Chemie, University of Münster, Germany,* [7]*Nanophotonics Lab, Department of Physics, Indian Institute of Technology Delhi, New Delhi, India*

Band gap hysteresis of a two-dimensional inorganic-organic hybrid perovskite under high pressure

12:15 – 12:30 We B-4

P. Bhattacharjee and H. J. Krenner

Physics Institute, University of Münster, Germany

Acousto-optoelectric effect in organic-inorganic semiconductor systems

12:30 – 14:00 Lunch

Session We C: *Quantum dots*

Chair: Matthias Weiß

14:00 – 14:30 We C-1 (invited)

R. J. Warburton

Department of Physics, University of Basel, Switzerland

A semiconductor quantum dot in an open microcavity

14:30 – 15:00 We C-2 (invited)

M. Gawełczyk

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Spin physics in droplet-etched GaAs quantum dots

15:00 – 15:15 We C-3

P. Mudi[1], A. Barua[1], K. Gaur[1], S. Wijitpatima[1], S. Tripathi[1], J. Ritzmann[2], A. D. Wieck[2], S. Rodt[1], A. Ludwig[2] and S. Reitzenstein[1]

[1]*Institut für Festkörperphysik, Technische Universität Berlin, Germany,* [2]*Lehrstuhl für Angewandte Festkörperphysik, Ruhr-Universität Bochum, Germany*

Suppressing Charge Noise in GaAs Droplet-Etched Quantum Dots through External Electric Field Control in Voltage-Tunable Circular Bragg Gratings

15:15 – 15:30 We C-4

R. A. Bogaczewicz and P. Machnikowski

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Precision of the acoustic control of single photon scattering with semiconductor quantum dots

15:30 – 16:00 Coffee Break

Session We P: *Posters*

16:00 – 18:00 **Poster Session**

Thursday, 13 February 2025

Session Th A: *Transition metal dichalcogenides*

Chair: Daniel Wigger

09:00 – 09:30 Th A-1 (invited)

A. Koulas-Simos[1], C. C. Palekar[1], K. Gaur[1], I. Limame[1], C.-W. Shih[1], B. L. T. Rosa[1], C.-Z. Ning[2] and S. Reitzenstein[1]

[1] *Institute of Solid State Physics, Technical University of Berlin, Germany,* [2] *College of Integrated Circuits and Optoelectronic Chips, Shenzhen Technology University, China*

High-β monolayer-based lasers with spontaneously formed photonic-defect microcavities

09:30 – 10:00 Th A-2 (invited)

T. Deilmann

Institute of Solid State Theory, University of Münster, Germany

Optical properties of interlayer excitons in electric and magnetic fields

10:00 – 10:15 Th A-3

E. D. S. Nysten, F. M. Ehring, M. Weiß, B. Mayer, U. Wurstbauer and H. J. Krenner

Institute of Physics, University of Münster, Germany

Acousto-optoelectric Spectroscopy on Transition Metal Dichalcogenides with Surface Acoustic Waves

10:15 – 10:30 Th A-4

E. Pruszyńska-Karbownik[1], D. Yavorskiy[2], T. Stefaniuk[1], T. Fąs[1], T. Czyszanowski[3], W. Pacuski[1] and J. Suffczyński[1]

[1] *Faculty of Physics, University of Warsaw, Warsaw, Poland,* [2] *Institute of Physics, Polish Academy of Sciences, Warsaw, Poland,* [3] *Institute of Physics, Łódź University of Technology, Łódź, Poland*

Subwavelength gratings made of molybdenum diselenide

10:30 – 11:00 Coffee Break

Session Th B: *Excitons*

Chair: Piotr Kossacki

11:00 – 11:30 Th B-1 (invited)

M. Bieniek

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Fine Structure of Excitons in Gated 2D TMD's Heterostructures

11:30 – 12:00 Th B-2 (invited)

D. Thureja[1,2], T. Smoleński[1], X. Lu[1], T. Taniguchi[3], K. Watanabe[4], M. Kroner[1], A. Imamoğlu[1] and **J. Kasprzak**[5,6]

[1] *Institute for Quantum Electronics, ETH Zurich, Switzerland,* [2] *Optical Materials Engineering Laboratory, Department of Mechanical and Process Engineering, ETH Zurich, Switzerland,* [3] *International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Japan,* [4] *Research Center for Functional Materials, National Institute for Materials Science, Tsukuba, Japan,* [5] *Université Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, France,* [6] *Japanese-French Laboratory for Semiconductor physics and Technology (J-FAST), CNRS–Université Grenoble Alpes–Grenoble INP–University of Tsukuba, Tsukuba, Japan*

Electronically tunable exciton confinement in a $MoSe_2$ monolayer probed with nonlinear spectroscopy

12:00 – 12:15 Th B-3

H. Mittenzwey[1], A. Kumar[2], K. Bolotin[2], M. Selig[1] and A. Knorr[1]

[1] *Technische Universität Berlin, Institut für Theoretische Physik, Nichtlineare Optik und Quantenelektronik, Germany,* [2] *Freie Universität Berlin, Department of Physics, Germany*

Interlayer-Field-Induced Spin Relaxation of Excitons in a $MoSe_2/MoS_2$ Heterostructure

12:15 – 12:30 Th B-4

J. Heckötter, M. Harati, B. Panda, S. Siegeroth, J. Rütter and M. Aßmann

Experimentelle Physik 2a, Technische Universität Dortmund, Germany

Two-dimensional Fourier transform spectroscopy of Rydberg excitons in Cu_2O

12:30 – 14:00 Lunch

Session Th C: *Excitons, polaritons and magneto-excitons*

Chair: Doris Reiter

14:00 – 14:30 Th C-1 (invited)

M. Aßmann

Experimentelle Physik 2, Technische Universität Dortmund, Germany

Quantum Coherence of Polariton Condensates

14:30 – 15:00 Th C-2 (invited)

H. Mittenzwey and **A. Knorr**

Nichtlineare Optik und Quantenelektronik, Institut für Theoretische Physik, Technische Universität Berlin, Germany

Exciton-Bloch-equation approach to study the competition of exciton-exciton and exciton-light interaction

15:00 – 15:15 Th C-3

M. Śmiertka[1], K. Posmyk[2], P. Peksa[2], K. Widaj[1], O. Janikowska[1], A. Surrente[1], M. Dyksik[1], M. Baranowski[1], S. Acharya[5], F. Dirnberger[6], Z. Sofer[4] and P. Płochocka[2]

[1] *Faculty of Fundamental Problems of Technology, Wrocław University Of Science and Technology, Poland,* [2] *Laboratoire National des Champs Magnétiques Intenses, EMFL, CNRS UPR 3228, Toulouse, France,* [4] *Department of Inorganic Chemistry, University of Chemistry and Technology Prague, Czech Republic,* [5] *National Renewable Energy Laboratory, Golden, Colorado, USA,* [6] *Institute of Applied Physics and Würzburg-Dresden Cluster of Excellence, TU Dresden, Germany*

Magnetic Excitons in 2D Semiconductor CrSBr

15:15 – 15:30 Th C-4

R. Komar[1], A. Łopion[1], M. Raczyński[1], M. Rybak[1], T. Woźniak[1], M. Birowska[1], K. Mosina[2], A. Soll[2], Z. Sofer[2], C. Faugeras[3], W. Pacuski[1], M. Goryca[1], P. Kossacki[1] and **T. Kazimierczuk**[1]

[1] *Faculty of Physics, University of Warsaw, Warsaw, Poland,* [2] *Department of Inorganic Chemistry, University of Chemistry and Technology Prague, Czechia,* [3] *LNCMI-CNRS (UJF, UPS, INSA), Grenoble, France*

Colossal field-induced energy shift of higher-energy excitons in CrSBr

15:30 – 16:00 Coffee Break

Session Th D: *Single-photon sources*

Chair: Steffen Michaelis de Vasconcellos

16:00 – 16:30 Th D-1 (invited)

A. Musiał

Laboratory for Optical Spectroscopy of Nanostructures, Department of Experimental Physics, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland

Quantum dot-based non-classical light sources emitting at telecom C-band

16:30 – 17:00 Th D-2 (invited)

E. Semenova[1,2]

[1] *NanoPhoton - Center for Nanophotonics, Technical University of Denmark, Kongens Lyngby, Denmark,* [2] *Department of Electrical and Photonics Engineering, Technical University of Denmark, Kongens Lyngby, Denmark*

From Quantum Dots to Quantum Networks: Scalable Photonic Devices Operating in the Telecom C-Band

17:00 – 17:15 Th D-3

D. Groll[1], D. Wigger[2], T. Kuhn[1] and P. Machnikowski[3]

[1] *Institute of Solid State Theory, University of Münster, Germany,* [2] *Department of Physics, University of Münster, Germany,* [3] *Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland*

Impact of acousto-optical double dressing on resonance fluorescence spectra

17:15 – 17:30 Th D-4

E. Żuberek[1], J. Olejnik[1], J. Debus[2], C.-H. Ho[3], K. Watanabe[4], T. Taniguchi[4], L. Bryja[1] and J. Jadczak[1]

[1] *Department of Experimental Physics, Wrocław University of Science and Technology, Poland,* [2] *Department of Physics, TU Dortmund University, Germany,* [3] *Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taiwan,* [4] *National Institute for Materials Science, Tsukuba, Japan*

Photon upconversion of defect-bound excitons in hBN-encapsulated MoS_2 monolayer

Friday, 14 February 2025

Session Fr A: *van der Waals materials*

Chair: Emeline Nysten

09:00 – 09:30 Fr A-1 (invited)

H. Lambers, N.-L. Bathen, N. Saigal, V. Antic and **U. Wurstbauer**

Institute of Physics and Center for Soft Nanoscience (SoN), University of Münster, Germany

Collective excitations, moiré minibands and twist disorder in van der Waals structures

09:30 – 10:00 Fr A-2 (invited)

W. Pacuski

Faculty of Physics, University of Warsaw, Poland

Spectroscopy and epitaxy of 2D materials on hBN

10:00 – 10:15 Fr A-3

J. W. Jung[1], H. S. Choi[1], Y. J. Lee[1], Y. Kim[2], T. Taniguchi[3], K. Watanabe[4], M. Y. Choi[5], J. H. Jang[5], H. S. Chung[5], D. Kim[1], Y. Kim[1] and C. H. Cho[1]

[1]*Department of Physics and Chemistry, Daegu Gyeongbuk Institute of Science and Technology, (DGIST), Daegu, South Korea,* [2]*School of Physics, Korea Institute for Advanced Study (KIAS), Seoul, South Korea,* [3]*International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Japan,* [4]*Research Center for Functional Materials, National Institute for Materials Science, Tsukuba, Japan,* [5]*Electron Microscopy and Spectroscopy Team, Korea Basic Science Institute, Daejeon, South Korea*

Defect Passivation of Two-Dimensional Semiconductors by Fixating Chemisorbed Oxygen Molecules via h-BN Encapsulations

10:15 – 10:30 Fr A-4

I. Niehues[1], D. Wigger[2], K. Kaltenecker[3], A. Klein-Hitpass[1], P. Roelli[4], A. K. Dąbrowska[5], K. Ludwiczak[5], P. Tatarczak[5], J. O. Becker[1], R. Schmidt[1], M. Schnell[4,6], J. Binder[5], A. Wysmołek[5] and R. Hillenbrand[4,6,7]

[1]*Institute of Physics, University of Münster, Germany,* [2]*Department of Physics, University of Münster, Germany,* [3]*Chair in Hybrid Nanosystems, Nano-Institute Munich, Department of Physics, Ludwig-Maximilians-Universität München, Germany,* [4]*CIC nanoGUNE BRTA, Spain,* [5]*Faculty of Physics, University of Warsaw, Poland,* [6]*IKERBASQUE, Basque Foundation for Science, Spain,* [7]*Department of Electricity and Electronics, UPV/EHU, Spain*

Tip-enhanced and tip-assisted PL of individual color centers in hBN

10:30 – 11:00 Coffee Break

Session Fr B: *Many-body and cooperative phenomena*

Chair: Paweł Machnikowski

11:00 – 11:30 Fr B-1 (invited)

I. D'Amico

School of Physics, Engineering and Technology, The University of York, United Kingdom

Many-body interactions in quantum thermal machines and batteries

11:30 – 11:45 Fr B-2

J. Wiercinski[1], M. Cygorek[2] and E. M. Gauger[1]

[1] *SUPA, Institute of Photonics and Quantum Sciences, Heriot-Watt University, Edinburgh, United Kingdom,* [2] *Condensed Matter Theory, Department of Physics, TU Dortmund, Germany*

Cooperative emission from self-assembled quantum dots

11:45 – 12:00 Fr B-3

N. E. Kopteva, A. Greilich, V. L. Korenev and M. Bayer

Experimental Physics 2, TU Dortmund, Germany

Nonlinear dynamics of an electron-nuclear spin system in periodically driven time crystal

12:00 – 12:15 Closing session

12:15 – 14:00 Lunch

Poster Session

We P-1 **B. Mayer**, F. Ehring, M. Weiß, H. J. Krenner, U. Wurstbauer and E. D. S. Nysten

Institute of Physics, University of Münster, Germany

Surface acoustic wave-controlled photocurrent in few-layer WSe_2

We P-2 **L. Nimmesgern**[1], M. Cygorek[2], D. E. Reiter[2] and V. M. Axt[1]

[1] *Theoretical Physics III, University of Bayreuth, Germany,* [2] *Condensed Matter Theory, Department of Physics, TU Dortmund, Germany*

Dynamical control of photon number wave packets in a microcavity

We P-3 **A. Penkała**[1], M. Mendoza Delgado[2], C. Popov[2] and P. Podemski[1]

[1] *Department of Experimental Physics, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland,* [2] *Institute of Nanostructure Technologies and Analytics (INA), Center for Interdisciplinary Nanostructure Science and Technology (CINSaT), University of Kassel, Germany*

Optical properties of NV color centers in diamond nanopillars

We P-4 **K. Jürgens**[1], D. Wigger[2] and T. Kuhn[1]

[1] *Institute of Solid State Theory, University of Münster, Germany,* [2] *Department of Physics, University of Münster, Germany*

Theory of phonon sidebands in the absorption spectra of moiré exciton-polaritons

We P-5 **J. Kim** and K. Kyhm

Department of Optics & Cogno-Mechatronics Engineering, Pusan National University, Republic of Korea

Refractive Index of $CsPbBr_3$ nanocrystal with effective medium approximations

We P-6 **T. Gzyl**[1], P. Mrowiński[1], G. Bucci[2], V. Zannier[2], A. Musiał[1], L. Sorba[2], W. Rudno-Rudziński[1] and G. Sęk[1]

[1] *Department of Experimental Physics, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland,* [2] *NEST Istituto Nanoscienze CNR and Scuola Normale Superiore, Pisa, Italy*

Designing geometry of zinc blende InP nanowires with InAsP QDs for efficient emission extraction in telecom spectral range

We P-7 **C. Ruiz**[1,2], P. Wyborski[1], M. Xiong[1,2], B. Munkhbat[1], P. Holewa[1,2] and E. Semenova[1,2]

[1] *DTU Electro, Technical University of Denmark, Denmark,* [2] *NanoPhoton – Center for Nanophotonics, Technical University of Denmark, Denmark*

Deterministic fabrication of quantum dots operating at telecom C-band

We P-8 **C. C. Palekar**[1], P. E. Faria Junior[2], B. Rosa[1], F. B. Sousa[3], L. M. Malard[3], J. Fabian[2] and S. Reitzenstein[1]

[1] *Institute of Solid State Physics, Technische Universität Berlin, Germany,* [2] *Institute for Theoretical Physics, University of Regensburg, Germany,* [3] *Departamento de Física, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil*

Twist angle dependent enhancement of interlayer exciton emission in twisted $WSe_2/WSe_2/MoSe_2$ heterotrilayers

We P-9 **P.-M. Piel**[1], J.-H. Larusch[1], A. Łopion[1], N.-L. Bathen[1], S. Schaper[1], Z. Sofer[2] and U. Wurstbauer[1]

[1] *Institute of Physics, Muenster University, Germany,* [2] *Department of Inorganic Chemistry, University of Chemistry and Technology Prague, Czech Republic*

Strong anisotropy behavior of the 2D magnetic semiconductor CrSBr

We P-10 **M. Raczyński**, J. Kucharek, A. Rodek, K. Oreszczuk, R. Bożek, T. Kazimierczuk, W. Pacuski and P. Kossacki

Division of Solid State Physics, Institute of Experimental Physics, Faculty of Physics, University of Warsaw, Poland

Systematic study of Photoluminescence Response from the MBE–grown $MoSe_2$ Monolayers – Towards the Performance of the Exfoliated Samples

We P-11 **T. K. Bracht**[1,2], F. Kappe[3], M. Cygorek[2], Y. Karli[3], V. Remesh[3], V. M. Axt[4], G. Weihs[3] and D. E. Reiter[2]

[1] *Institute of Solid State Theory, University of Münster, Germany,* [2] *Condensed Matter Theory, TU Dortmund, Germany,* [3] *Institut für Experimentalphysik, Universität Innsbruck, Austria,* [4] *Theoretische Physik III, Universität Bayreuth, Germany*

Time-bin entangled photons from dark states in semiconductor quantum dots

We P-12 **V. Senthiappan Vellaiappan Uthayasurian**[1], P. Steeger[1], J.-H. Graalmann[2], R. Schmidt[1], P. Marauhn[2], M.-C. Heissenbüttel[2], J. Nellesen[2], I. Kupenko[3], C. Sanchez-Valle[3], S. Michaelis de Vasconcellos[1], M. Rohlfing[2] and R. Bratschitsch[1]

[1] *Institute of Physics and Center for Nanotechnology, University of Münster, Germany,* [2] *Institute of Solid State Theory, University of Münster, Germany,* [3] *Institute of Mineralogy, University of Münster, Germany*

Intra- and interlayer excitons in 2H-MoS_2 bilayers under pressure

We P-13 **K. Kawa**[1,2,3] and T. Novotný[2]

[1] *FZU—Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic,* [2] *Department of Condensed Matter Physics, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic,* [3] *Institute of Theoretical Physics, Wrocław University of Science and Technology, Wrocław, Poland*

Two-mode bosonic autonomous entanglement engine

We P-14 **J. M. Kaspari**[1], K. Boos[2], S. K. Kim[2], F. Sbresny[2],T. K. Bracht[1], K. Müller[2] and D. E. Reiter[1]

[1] *Condensed Matter Theory, TU Dortmund, Germany,* [2] *Walter Schottky Institut, TUM School of Computation, Information and Technology, and MCQST, Technische Universität München, Garching, Germany*

Theoretical insights into dynamically dressed states via nonlinear optical signals

We P-15 **A. Kirchhoff**, T. Deilmann, P. Krüger and M. Rohlfing

Institute of Solid State Theory, University of Münster, Germany

Diversity of defect-related excitons in hBN from ab initio calculations

We P-16 **J. Rosiński**[1] M. Gawełczyk[1], P. Machnikowski[1], M. Weiß[2] and H. J. Krenner[2]

[1] *Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland,* [2] *Institute of Physics, University of Münster, Germany*

Mechanisms of quantum dot coupling to elastic waves in phononic crystal waveguides

We P-17 **N. D. Kewitz**[1], D. A. Vajner[1], M. von Helversen[1], S. C. Wein[2], Y. Karli[2], F. Kappe[3], V. Remesh[3], S. F. Covre da Silva[4,5], A. Rastelli[4], G. Weihs[3], C. Anton-Solanas[6] and T. Heindel[1]

[1] *Institute of Solid State Physics, Technische Universität Berlin, Germany,* [2] *Quandela, Massy, France,* [3] *Institut für Experimentalphysik, Universität Innsbruck, Austria,* [4] *Institute of Semiconductor and Solid State Physics, Johannes Kepler University Linz, Austria,* [5] *Universidade Estadual de Campinas, Instituto de Física Gleb Wataghin, Campinas, Brazil,* [6] *Departamento de Física de Materiales, Instituto Nicolás Cabrera, Instituto de Física de la Materia Condensada, Universidad Autónoma de Madrid, Spain*

Exploring Photon-Number-Encoded High-dimensional Entanglement from a Sequentially Excited Quantum Three-Level System

We P-18 **S. Walfort**[1], N. Holle[1], J. Vehndel[1], D. T. Yimam[2], N. Vollmar[1], B. J. Kooi[2] and M. Salinga[1]

[1] *Institute of Materials Physics, University of Münster, Germany,* [2] *Zernike Institute for Advanced Materials, University of Groningen, Netherlands*

The photoinduced response of antimony from femtoseconds to minutes

We P-19 **J. Usik** and M. Gawełczyk

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Impact of various noise types on indistinguishability of photons from a quantum dot

We P-20 **T. Buskasper**[1,2,3], J. Bufe[1,2,3], M. B. Malik[1,2,3], D. Lemli[1,2,3] and C. Schuck[1,2,3]

[1] *Department for Quantum Technology, University of Münster, Germany,* [2] *Center for NanoTechnology (CeNTech), University of Münster, Germany,* [3] *Center for Soft Nanoscience (SoN), University of Münster, Germany*

Controlling non-volatile shifts of high-Q resonances for nanobeam photonic crystal cavities

We P-21 **A. K. Szczerba**[1], B. Tronowicz[1], J. Kucharek[1], R. Bożek[1], T. Taniguchi[2], K. Watanabe[3] and W. Pacuski[1]

[1] *Faculty of Physics, University of Warsaw, Poland,* [2] *Research Center for Materials Nanoarchitectonics, National Institute for Materials Science, Japan,* [3] *Research Center for Electronic and Optical Materials, National Institute for Materials Science, Japan*

Optical Properties of $MoSe_2$ in Heterostructures with MgSe/ZnSe Grown by Molecular Beam Epitaxy

We P-22 **N. Spitzner**, E. D. S. Nysten, M. Weiß and H. J. Krenner

Institute of Physics, University of Münster, Germany

Design and analysis of a phononic and photonic hybrid platform with numerical simulations

We P-23 **M. Kuniej**, P. Machnikowski and M. Gawełczyk

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Hybrid acousto-optical swing-up state control in quantum dots

We P-24 D. A. Vajner[1], **K. Kaymazlar**[1], F. Drauschke[2], L. Rickert[1], M. v. Helversen[1], S. Li[3], Z. Nui[3], A. Pappa[2,4] and T. Heindel[1]

[1] *Institute of Solid State Physics, Technische Universität Berlin, Germany,* [2] *Electrical Engineering and Computer Science Department, Technische Universität Berlin, Germany,* [3] *Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China,* [4] *Fraunhofer Institute for Open Communication Systems – FOKUS, Technische Universität Berlin, Germany*

Experimental Quantum Strong Coin Flipping using a Deterministic Single Photon Source

We P-25 **E. Fox**[1], M. Herrera[2], F. Schmidt-Kaler[3] and I. D'Amico[4]

[1,4]*School of Physics, Engineering and Technology, University of York, UK,* [2]*Facultad de Ingeniería y Ciencias Básicas, Universidad Autónoma de Occidente, Cali, Colombia,* [3]*QUANTUM, Institut für Physik, Universität Mainz, Germany*

Harnessing Nth-Root Gates for Energy Storage

We P-26 **A. Ghosh**[1], A. Babaze[2], D. Damns[3], G. Bryant[4], A. Ayuela[2], C. Rockstuhl[3,5], M. Pelc[1] and K. Słowik[1]

[1]*Institute of Physics, Nicolaus Copernicus University in Torun, Poland,* [2]*Materials Physics Center, CSIC-UPV/EHU, Spain,* [3]*Institute of Theoretical Solid State Physics, Karlsruhe Institute of Technology, Germany,* [4]*Joint Quantum Institute, University of Maryland and National Institute of Standards and Technology, USA,* [5]*Institute of Nanotechnology, Karlsruhe Institute of Technology, Germany*

Spontaneous emission of dipolar adatoms near SSH chains

We P-27 **S. Michaelis de Vasconcellos** , B. Carey, N. K. Wessling, P. Steeger, R. Schmidt, A. Arora and R. Bratschitsch

[1]*Institute of Physics and Center for Nanotechnology, University of Münster, Germany* [2]*Department of Physics, Indian Institute of Science Education and Research, Pune, India*

Faraday rotation in two-dimensional semiconductors

We P-28 **E. Olbińska** and M. Gawełczyk

Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland

Impact of interactions in an optically active gate-defined quantum dot

We P-29 **M.-C. Heißenbüttel**[1], P.-M. Piel[2], J. Klein[3], T. Deilmann[1], U. Wurstbauer[2] and M. Rohlfing[1]

[1]*Institute of Solid State Theory, University of Münster, Germany,* [2]*Institute of Physics, University of Münster, Germany,* [3]*Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA*

Quadratic optical response to a magnetic field: The layered magnet CrSBr

We P-30 **N. Dalla**[1], P. Kulboka[1], M. Kobecki[1], J. Misiak[1], T. Kazimierczuk[1], P. Kossacki[1], P. Prystawko[2], H. Turyski[2] and T. Jakubczyk[1]

[1]*University of Warsaw, Poland,* [2]*Institute of High Pressure Physics "Unipress", Polish Academy of Sciences, Warsaw, Poland*

Optical study of Single-Photon Emitters in GaN with improved spectral stability

We P-31 **N. Holle**[1], 1, J. Vehndel[1], S. Walfort[1], R. Mazzarello[2] and M. Salinga[1]

[1]*Institute of Materials Physics, University of Münster, Germany,* [2]*Department of Physics, Sapienza Università di Roma, Italy*

Tuning optical properties of phase change materials

We P-32 **R. Matysiak**[1,2], M. Peil[3], J. Hilska[3], T. Hakkarainen[3,4], A. Musiał[1] and M. Gawełczyk[2]

[1]*Department of Experimental Physics, Wrocław University of Science and Technology, Poland,* [2]*Institute of Theoretical Physics, Wrocław University of Science and Technology, Poland,* [3]*Optoelectronics Research Centre, Physics Unit, Tampere University, Finland,* [4]*Tampere Institute for Advanced Study, Tampere University, Finland*

Simulations of Electronic and Optical Properties of Nanohole Droplet-Etched InGaSb/AlGaSb Quantum Dots

We P-33 **J. Graalmann**[1], P. Steeger[2], R. Bratschitsch[2] and M. Rohlfing[1]

[1]*Institute of Solid State Theory, University of Münster, Germany,* [2]*Institute of Physics and Center for Nanotechnology, University of Münster, Germany*

Optical excitations in 2H-MoS_2 bilayers under pressure

We P-34 **M. Kobecki**, T. Jakubczyk, W. Pacuski and P. Kossacki

Institute of Experimental Physics, Faculty of Physics, University of Warsaw, Poland

Optical Generation of Coherent High-Frequency Acoustic Phonons in Semiconductor Nanostructures

We P-35 **E. Vinnemeier**[1], S. Schaper[1], M. Ayachi[2], V. Humbert[2], J. Villegas[2] and U. Wurstbauer[1]

[1] *Institute of Physics, University of Münster, Germany,* [2] *Institute Laboratoire Albert Fert, CNRS, Thales, Université Paris-Saclay, Palaiseau, France*

Optical Modulation in high-TC Josephson Junctions towards Energy-Efficient Neuromorphic Systems

We P-36 **P. Szott**[1], S. Tripathi[2], S. Gorantla[3], F. Laudani[2], K. Gaur[2], S. Rodt[2], A. Musiał[1], W. Rudno-Rudziński[1], S. Reitzenstein[2] and G. Sęk[1]

[1] *Department of Experimental Physics, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology, Poland,* [2] *Institute of Solid State Physics, Technical University of Berlin, Germany,* [3] *Łukasiewicz Research Network – PORT Polish Center for Technology Development, Wrocław, Poland*

Growth and characterization of atypical InGaAs/GaAs quantum dots optimized for room temperature emission in the 935-955 nm range for laser-based water vapor detection

We P-37 **D. Schwab** and N. Doltsinis

Institute of Solid State Theory, University of Münster, Germany

Piezochromism of Pt(II) and Pd(II) based OLED materials

We P-38 **Q. W. Richter**[1], J. M. Kaspari[1], T. K. Bracht[1], L. Yatsenko[2], A. Rauschenbeutel[3] and D. E. Reiter[1]

[1] *Condensed Matter Theory, Department of Physics, TU Dortmund, Germany,* [2] *Institute of Physics, National Academy of Science of Ukraine, Kyiv, Ukraine,* [3] *Department of Physics, Humboldt-Universität zu Berlin, Germany*

Few-Photon SUPER: Quantum emitter inversion via two off-resonant photon modes

We P-39 **J. Henz**[1], S. Rajabpour[2], A. Vera[2], A. Jain[2], J. A. Robinson[2], S. Y. Quek[3] and U. Wurstbauer[1]

[1] *Institute of Physics, University of Münster, Germany,* [2] *MatSE; Center for 2DLM, PennState University, USA,* [3] *Centre for Advanced 2D Materials, Nation University of Singapore, Singapore*

Spectroscopic imaging ellipsometry at cryogenic temperatures: A structural phase change in a 2D polar metal

Schedule OPON 2025