



German THz Conference

2017 · Bochum

March 29 – 31, Bochum, Germany

Contact: Prof. Dr. Martin Hofmann · Lehrstuhl für Photonik und Terahertztechnologie
· Fakultät für Elektrotechnik und Informationstechnik · Ruhr Universität Bochum ·
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Agenda

Wednesday, March 29, 2017

- 12:45 – 13:00 **Opening**
- 13:00 – 13:30 **Invited Talk: Peter Uhd Jepsen (DTU, Lyngby, Denmark)**
“THz-induced electron emission and impact ionization”
- 13:30 – 14:30 **Microscopy and Imaging**
- 14:30 – 15:00 **Coffee Break**
- 15:00 – 15:30 **Invited Talk: Manfred Helm (HZDR, Dresden, Germany)**
“THz spectroscopy of solids with a free electron laser”
- 15:30 – 16:30 **High Power Sources**
- 16:30 – 18:30 **Poster Session**
- 18:30 – 19:30 **DTZ Annual Meeting**

Thursday, March 30, 2017

- 09:00 – 09:30 **Invited Talk: Edmund Linfield (UL, Leeds, United Kingdom)**
“Terahertz quantum cascade lasers – from systems to applications”
- 09:30 – 10:15 **Quantum Cascade Lasers**
- 10:15 – 10:45 **Coffee Break**
- 10:45 – 11:15 **Invited Talk: Tadao Nagatsuma (Osaka University, Japan)**
“Terahertz Communications: Photonics vs. Electronics”
- 11:15 – 12:30 **Industry and Applications**
- 12:30 – 14:00 **Lunch Break**

- 14:00 – 14:30** **Invited Talk: Tobias Kampfrath (FHI, Berlin, Germany)**
“The thinner, the better: broadband terahertz emitters made of spintronic metal films”
- 14:30 – 15:45** **Spectroscopy I**
- 15:45 – 16:15** **Coffee Break**
- 16:15 – 16:45** **Invited Talk: Carlo Sirtori (MPQ, Paris, France)**
“Metamaterials for THz detectors”
- 16:45 – 18:00** **Detectors and Sources**
- 19:00** **Conference Dinner**

Friday, March 31, 2017

- 08:30 – 09:00** **Invited Talk: Franz Kärtner (DESY, Hamburg, Germany)**
“THz Accelerators”
- 09:00 – 10:15** **THz Systems**
- 10:15 – 10:45** **Coffee Break**
- 10:45 – 11:15** **Invited Talk: Mackillo Kira (Univ. Michigan, USA)**
“Terahertz-field controlled quasiparticle collisions and interferences”
- 11:15 – 12:30** **Spectroscopy II**
- 12:30 – 13:00** **Closing**

Microscopy and Imaging

13:30 – 14:30, Wednesday, March 29, 2017

13:30 – 13:45

Towards time-resolved nanoscopy with NIR to deep THz radiation

F. Kuschewski¹, S.C. Kehr¹, H.-G. v. Ribbeck¹, J. Döring¹, S. Kovalev², N. Awari², S. Winnerl², B. Green²,

M. Gensch² and L.M. Eng¹

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13:45 – 14:00

Super-Resolution Near-Field Imaging Based on Sensors Fully-Integrated in Silicon Technology

Philipp Hillger, Janusz Grzyb and Ullrich Pfeiffer

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14:00 – 14:15

Compressive Imaging Using an Optically Controllable 0.35 THz Single-Pixel Camera

Sven Augustin, Heinz-Wilhelm Hübers

Humboldt Universität zu Berlin & German Aerospace Center (DLR), Berlin, Germany

Peter Jung

Technical University Berlin, Berlin, Germany

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14:15 – 14:30

Digital Beamforming Algorithms for 3D Terahertz Imaging with Sparse Line Arrays

Bessem Baccouche, Patrick Agostini and Fabian Friederich

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High Power Sources

15:30 – 16:30, Wednesday, March 29, 2017

15:30 – 15:45

Milli joule class THz pulse generation during high-power laser-matter interaction

Amrutha Gopal

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15:45 – 16:00

Characterization of the high-power terahertz radiation generated during laser matter interaction

Abel Woldegeorgis and Amrutha Gopal

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16:00 – 16:15

TELBE: High-field High-repetition-rate user facility for coherent THz control of Matter

S. Kovalev¹, B. Green¹, N. Awari¹, A.S. Fisher², N. Stojanovic³, M. Gensch¹

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16:15 – 16:30

Single-shot high repetition rate THz diagnostics

Erik Bründermann

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Quantum Cascade Lasers

09:30 – 10:15, Thursday, March 30, 2017

9:30 – 9:45

Absolute frequency measurement of a mode-locked THz quantum cascade laser using 10 GHz femtosecond dual comb sampling

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9:45 – 10:00

Local Oscillator for a 4.7-THz Multi-Pixel Heterodyne Receiver Based on a Quantum-Cascade Laser

H. Richter¹, N. Rothbart¹, M. Wienold^{1,2}, L. Schrottke³, K. Biermann³, H. T. Grahn³, and H.-W. Hübers^{1,2}

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10:00 – 10:15

Terahertz Gas Spectroscopy based on External Optical Feedback in a Quantum-Cascade Laser

T. Hagelschuer¹, M. Wienold^{1,2}, H. Richter¹, L. Schrottke³, K. Biermann³, H. T. Grahn³ and H.-W. Hübers^{1,2}

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Industry and Applications

11:15 – 12:30, Thursday, March 30, 2017

11:15 – 11:30

Off-line 59 Gb/s and Real-Time HDTV Transmission Using a High-Capacity CRoF THz Link

M. Freire Hermelo, M. Steeg and A. Stöhr

ZHO / Optoelectronics, University of Duisburg-Essen, Duisburg, Germany

P.-T. (Boris) Shih and A. Ng'oma

Science and Technology Dept., Corning Incorporated, NY, USA

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11:30 – 11:45

Compact Sources and Receivers for Terahertz Applications

Thomas W. Crowe, Jeffrey L. Hesler, Eric Bryerton

Virginia Diodes, Inc., Charlottesville, VA 22902, USA

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11:45 – 12:00

Terahertz Thickness Measurements for Real Industrial Applications: From Automotive Paints to Aerospace Industry

S. Krimi and R. Beigang

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12:00 – 12:15

THz Spectrometers with ErAs: In(Al)GaAs Photoconductors

Mario Mendez Aller, Anuar Fernandez Olvera and Sascha Preu

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Justin Norman and Arthur C. Gossard,

UC Santa Barbara, USA

Hong Lu

Nanjing University, China

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12:15 – 12:30

THz chipless RFID tags for Localization

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M. Wiemeler, T. Kaiser

Institute of Digital Signal Processing, University of Duisburg-Essen, Duisburg, Germany

G. vom Bögel, F. Meyer, A. Grabmaier

Transponder Systems and Applications

Fraunhofer Institute for Microelectronic Circuits and Systems

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Spectroscopy I

14:30 – 15:45, Thursday, March 30, 2017

14:30 – 14:45

Collective effects in an array of meta-atoms

M. Wenclawiak, K. Unterrainer and J. Darmo

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14:45 – 15:00

THz-phonon dynamics in methylammonium lead halide perovskites

Heejae Kim, Enrique Cánovas, Melike Karakus, Zoltán Mics, Maksim Grechko, Dmitry

Turchinovich, Sapun Parekh, Johannes Hunger and Mischa Bonn

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15:00 – 15:15

Ultrafast switching of interface polaritons in black phosphorus heterostructures

F. Mooshammer¹, M. A. Huber¹, M. Plankl¹, L. Viti², F. Sandner¹, L. Z. Kastne¹, T. Frank¹, J.

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15:15 – 15:30

Novel relativistic plasma excitations in a two-dimensional electron system

P.A. Gusikhin^{1,2}, V.M. Muravev^{1,2}, I.V. Andreev^{1,2}, I.V. Kukushkin^{1,2}

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15:30 – 15:45

Phase sensitive detection of hyperglycemic states in animal models using mm-wave spectroscopy

Fabian Dornuf, Bernhard Hils, Viktor Krozer

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Detectors and Sources

16:45 – 18:00, Thursday, March 30, 2017

16:45 – 17:00

Detection of Thermal Radiation with CMOS THz Focal Plane Arrays

Stefan Malz, Ritesh Jain and Ullrich R. Pfeiffer

IHCT, University of Wuppertal, Rainer-Gruenter-Str. 21, D-42119 Wuppertal, Germany

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17:00 – 17:15

Plenoptic Sensing with a CMOS THz Camera

Ritesh Jain, Janusz Grzyb and Ullrich R. Pfeiffer

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17:15 – 17:30

Two-Color Laser for THz Generation with High Speed Photodiodes

Yinghui Hu¹, Beshar Khani², Carsten Brenner¹, Vitaly Rymanov², Andreas Stöhr² and Martin R. Hofmann¹

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17:30 – 17:45

Comparison and responsivity improvement of horn- and lens-coupled large area field-effect transistors

Stefan Regensburger and Sascha Preu

Department of Electrical Engineering, Technische Universität Darmstadt, Germany

Stephan Winnerl and J. Michael Klopff

Helmholtz-Zentrum, Dresden-Rossendorf, Germany

Hong Lu, Peter G. Burke and Arthur C. Gossard

Materials Department, Univ. of California, Santa Barbara, USA

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17:45 – 18:00

Efficient spintronic terahertz emitters based on epitaxial grown Fe/Pt layer structures

M. Klos^{1,2}, G. Torosyan², S. Krimi¹, S. Keller¹, E. Th. Papaioannou¹ and R. Beigang^{1,2}

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²Photonic Center Kaiserslautern, Kaiserslautern, Germany

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THz Systems

09:00 – 10:15, Friday, March 31, 2017

9:00 – 9:15

THz Material Characterization using FMCW-Radar

Jan Barowski and Ilona Rolfes

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9:15 – 9:30

A Mode-Locked Semiconductor Laser Based Asynchronous Sampling Terahertz Spectroscopy System

Benjamin Döpke¹, Yinghui Hu¹, Nils Suhrkamp¹, Carsten Brenner¹, Andreas Klehr², Götz Erbert², Günther Tränkle², Martin R. Hofmann¹

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²Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik im Forschungsverband Berlin e.V., Berlin, Germany

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9:30 – 9:45

High-Resolution Monostatic FMCW Radar Module at 240 GHz in SiGe HBT Technology

J. Grzyb, U. R. Pfeiffer

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9:45 – 10:00

Gas Sensing around 245GHz with a SiGe Transmit/Receive System

N. Rothbart^{1,2}, K. Schmalz³, J. Borngräber³, D. Kissinger³ and H.-W. Hübers^{1,2}

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10:00 – 10:15

THz-Metrology of Time-Domain-Spectroscopy

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Spectroscopy II

11:15 – 12:30, Friday, March 31, 2017

11:15 – 11:30

Understanding Solvation by using Theoretical THz Spectroscopy

Alexander Esser, Harald Forbert and Dominik Marx

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11:30 – 11:45

Non-Linear Terahertz Spectroscopy in Liquid Phase

Janne Savolainen¹, Saima Ahmed², Andrey Shalit² and Peter Hamm²

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11:45 – 12:00

THz nonlinear optics in Landau-quantized graphene

J. C. König-Otto, A.Pashkin, H. Schneider, M. Helm, S.Winnerl

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Y. Wang, A.Belyanin, Texas A&M University, College Station, Texas 77843-4242, USA

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12:00 – 12:15

Nonlinear dynamics of acceptor impurities in semiconductors driven by intense THz fields

Fanqi Meng, Mark D. Thomson and Hartmut G. Roskos

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12:15 – 12:30

Dynamics of Charge-Density-Wave Phase Excitations using Optical-Pump Terahertz

Probe Spectroscopy

M. D. Thomson, K. Rabia, F. Meng and H. G. Roskos

Physikalisches Institut, J. W. Goethe-Universität Frankfurt am Main, Germany

M. Bykov and S. van Smaalen

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Poster Session

16:30 – 18:30, Wednesday, March 29, 2017

THz Resonances of Water Molecules around Hydrophilic and Hydrophobic Groups of Trimethylamine N-oxide

Sho Imoto, Harald Forbert, Dominik Marx

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Enhancing the performance of THz QTDS systems

Mikhail Mikerov, Arno Rehn, Martin Koch and Jan C. Balzer

Faculty of Physics and Material Sciences Center

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Terahertz radiation induced edge currents in graphene manipulated by an external magnetic field

J. Pernul, H. Plank, A. Sandner, J. Eroms, D. Weiss and S.D. Ganichev

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Magnetic quantum ratchet effect in CdTe and (Cd,Mn)Te quantum wells

S. Hubmann¹, P. Faltermeier¹, J. Unverzagt¹, A. Pfaller¹, Z. Adamus², G. Karczewski², T.

Wojtowicz², V.V. Bel'kov³, L.E. Golub³, E.L. Ivchenko³, G.V. Budkin³, V.V. Popov⁴, D.V. Fateev⁴, D.

Weiss¹ and S.D. Ganichev¹

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THz spectroscopy of glycine: Spectral changes upon titration with HCl and NaOH

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Linking Viscosity and TD THz Spectra in Polyether Solvation

Sarah Schäfer, Hanna Wirtz, Claudius Hoberg, Janne Savolainen and Martina Havenith
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Terahertz Spectroscopy of the Model Peptide N-Acetyl-Leucine Amide

Hanna Wirtz, Sarah Schäfer, Claudius Hoberg, Janne Savolainen and Martina Havenith
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Multiple harmonics in the two-dimensional spectrum of a terahertz quantum cascade laser

Sergej Markmann¹, Hanond Nong¹, Shovon Pal^{1,2}, Tobias Fobbe^{1,2}, Negar Hekmat¹, Paul Dean³, Lianhe Li³, Edmund H. Linfield³, A. Giles Davies³, Jérôme Tignon⁴, Sukhdeep Dhillon⁴, Andreas D. Wieck² and Nathan Jukam¹

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Generation of multiple octaves from a terahertz quantum cascade laser via four-wave mixing

Tobias Fobbe^{1,2}, Sergej Markmann¹, Shovon Pal^{1,2,3}, Hanond Nong¹, Rüdiger Schott², Felix Fobbe⁴, Negar Hekmat^{1,2}, Yingjun Han⁵, Jingxuan Zhu⁵, Lianhe Li⁵, Paul Dean⁵, Edmund H. Linfield⁵, A. Giles Davies⁵, Andreas D. Wieck² and Nathan Jukam¹

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Outdoor measurements with THz QTDS (Bringing THz technology from the laboratory to the field)

Ralf Gente¹, Arno Rehn¹, Thorsten Probst¹, Eva-Maria Stübling¹, Enrique Castro Camus², Jan C. Balzer¹, Martin Koch¹

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Mass anisotropy in germanium revealed by terahertz spectroscopy

M. Stein, C. Lammers, P.H. Richter, P. Springer, S. W. Koch, M. Kira and M. Koch

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Ionization of excitons by strong THz pulses in bulk germanium

Christian Lammers, Markus Stein, Philipp-Henrik Richter and Martin Koch

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Aerosol printed THz metamaterial with angle dependent resonance

Lorenz Maximilian Schneider¹, David Jahn¹, Ralf Eckstein^{2,3}, Uli Lemmer^{2,3}, Norman Born¹, Jan C. Balzer¹, Martin Koch¹

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Terahertz Biophotonics activity at IEMN-CNRS

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Terahertz Spectroscopy of Aged Epoxy Polymers

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Dielectric spectroscopy of liquid samples by measuring the capacitance of a broken transmission line

Fabian Dornuf, Viktor Krozer

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Generation of Terahertz radiation with monolithically integrated dual mode Distributed Bragg Reflector semiconductor diode laser

Jared O. Gwaro, Carsten Brenner, Martin R. Hofmann

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Bernd Sumpf, Andreas Klehr and Jörg Fricke

Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik Gustav-Kirchhoff-Str. 4, 12489 Berlin, Germany

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Stability and Precision Enhancement of Terahertz Time-Domain Spectroscopy Systems by Interferometry-Aided Delay Lines

Daniel Molter¹, Manuel Trierweiler¹, Frank Ellrich¹, Joachim Jonuscheit¹ and Georg von Freymann^{1,2}

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Intermolecular Mode Coupling: Insight from Nonlinear THz Spectroscopy of Liquids

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Hydration of alcohols measured by THz-FTIR and THz-TDS

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Towards Nonlinear THz Spectroscopy in Liquid Phase

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Effects of Hydrophobicity on the Low Frequency Spectrum of Model Peptides in Water

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We look forward to seeing You in March, 2017 in Bochum!

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