

# ICM<sup>2</sup>TS International Conference on Mobile and Miniaturized THz Systems

Day	Session	Time	Title	Authors	Affiliation of first author	
Sunday	Two-dimensional Nanomaterials for Terahertz Applications Chair: Amine El Moutaouakil Room: Nakhla 9+10	10:30 - 10:54	Electrically Tunable Dual-Band THz Metamaterial Absorber With Near-Unity Absorption	Omnia Samy; Amine El Moutaouakil	United Arab Emirates University, United Arab Emirates	
		10:54 - 11:18	Graphene and GaN 2D Plasmonic Nanostructures for THz Filters, Detectors and Amplifiers	Pavlo Sai; Vadym Korotyeyev; Grzegorz Cywinski; Maksym Dub; Sergey Romyantsev; Wojciech Knap	CENTERA - Center for Terahertz Technology Research and Applications, Poland	
		11:18 - 11:42	Cyclotron Emission From Dirac Electrons in HgCdTe Alloys for Tunable THz Sources	Dmytro B. But; Dmitry Yavorskiy; Christophe Consejo; Yuri Ivonyak; Wojciech Knap; Frederic Teppe	CENTERA Laboratory, Institute of High Pressure Physics PAS, Poland & V. Ye. Lashkaryov Institute of Semiconductor Physics NASU, Ukraine	
		11:42 - 12:06	Strong Terahertz Nonlinearity in GaN-Based Two-Dimensional Plasmonic Structures	Pavlo Sai; Vadym Korotyeyev; Jeong Woo Han; Dmytro B. But; Maksym Dub; Serhii Kukhtaruk; Stephan Winnerl; Wojciech Knap; Martin Mittendorf	Institute of High Pressure Physics PAS, Poland	
		12:06 - 12:30	On the Design of Conical-Helix Antenna Using Nanostructure for Terahertz Communication	Rheyuniarto Sahlendar Asthan; Zulfi Zulfi; Achmad Munir	Institut Teknologi Sumatera, Indonesia & Institut Teknologi Bandung, Indonesia	
Monday	SAR Processing and its Applications at THz Frequencies Chairs: Mats Pettersson and Aman Batra Room: Nakhla 9+10	08:00 - 08:24	Utilization of SAR Backprojection in the Analysis of Downscaled Structures in the D-Frequency Band	Milton Albinson; Axel Forsbrand; Jakob Helmersson; Philip Primetta; Yevhen Ivanenko	Blekinge Institute of Technology, Sweden	
		08:24 - 08:48	Experimental Results of Local Backprojection for Monostatic THz SAR Imaging	Yevhen Ivanenko; Aman Batra; Vu Viet Thuy; Mats I. Pettersson; Thomas Kaiser	Blekinge Institute of Technology, Sweden	
		08:48 - 09:12	Synthetic Aperture Radar at Terahertz Frequencies for Material Defect Detection	Vu Viet Thuy; Yevhen Ivanenko; Mats Pettersson; Vanja Lindberg; Aman Batra; Thomas Kaiser; Mats I. Pettersson	Blekinge Institute of Technology, Sweden	
		09:12 - 09:36	THz SAR Assisted NLoS Passive Tag Identification	Ali Alhaj Abbas; Aman Batra; and Thomas Kaiser	University of Duisburg-Essen, Germany	
			09:36 - 10:00	Demonstration of Millimeter Wave Radar Sensing in Fire and Smoky Environments	Aman Batra; Andreas Prokscha; Thorsten Schultze; Michael Wiemeler; Diana Göhringer; Thomas Kaiser	University of Duisburg-Essen, Germany
	THz Electronic and Photonic Technology Chair: Andreas Stöhr Room: Nakhla 11	08:00-08:20	Optoelectronic Photomixing Terahertz Receivers Based on Transition Metal-Doped InGaAs	Milan Deumer; Simon Nellen; Steffen Breuer; Shahram Keyvaninia; Lars Liebermeister; Martin Schell; Robert Kohlhaas	Heinrich-Hertz-Institut, HHI, Germany	
		08:20-08:40	A SiGe D-Band Frequency Tripler Utilizing a Single-Sideband Mixer	Stephan Hauptmeier; Justin Romstadt; Jan Schoepfel; Ahmad Zaben; Klaus Aufinger; Nils Pohl	Ruhr-University Bochum, Germany	
		08:40-09:00	Increment in Output Power of Resonant-Tunneling-Diode Terahertz Oscillator With Long-Cavity Resonator	Hiroki Tanaka; Safumi Suzuki	Tokyo Tech, Japan	
		09:00-09:20	Transmission Characteristics of Dielectric Waveguide in System-On-Chip	Wenbo Liu; Peian Li; Jianjun Ma	Beijing Institute of Technology, China	
		09:20-09:40	Design and RF Characterization of Manufacturable Flip-Chip Transition Targeting D-Band	Christian Preuss; Erika Mikov; Nils Weimann	University of Duisburg-Essen, Germany	
		09:40-10:00	Photonic-Integrated Frequency-Domain Terahertz Spectrometer	Lauri Schwenson; Florian Walter; Simon Nellen; Lars Liebermeister; Shahram Keyvaninia; Martin Schell; Robert Kohlhaas	Fraunhofer Heinrich Hertz Institute, Germany	
	Computing Algorithms and Architectures for THz Systems Chair: Diana Göhringer Room: Nakhla 9+10	10:30-11:00	Implementation Aspects of RLL Encoding for Zero-Crossing Modulation Based Wideband Communications	Daniel Swist; Simon Friedrich; Emil Matus; Meik Dörpinghaus; Gerhard P. Fettweis	TU Dresden, Germany	
		11:00-11:30	Reflex-Based Wire-Rate Traffic Steering and Dynamic Service Relocation in Smart Edge Network Interface Cards (SENIC)	Marco Liess; Thomas Wild; Andreas Herkersdorf	Technical University of Munich, Germany	
		11:30-12:00	Framework for Efficient Exploration of Polar Code Decoders in THz Communication Systems	Claus Kestel; Lucas Johannsen; Norbert Wehn	RPTU Kaiserslautern-Landau, Germany	
			12:00-12:30	Towards Adaptive RISC-V Based Systems for Non-Terrestrial Sub-THz Communication	Hendrik Borchert; Markus Ulbricht; Marko Andjelkovic; Diana Goehring; Milos Krstic	Leibniz Institute for High Performance Microelectronics (IHP), Germany
	Compact Optoelectronic THz Systems Chairs: Jan Balzer, Sascha Preu, Clara Saraceno Room: Nakhla 11	10:30 - 10:50	RF-Modulated Frequency Combs From THz Quantum Cascade Ring Lasers	M. Jaidl; Sascha Preu; Juraj Darmo; Dominik Theiner; Aaron M Andrews; Karl Unterrainer	Vienna University of Technology, Austria	
		10:50-11:10	Compact Mode Locked Laser Diode Driven Terahertz Time Domain Spectroscopy System	Vladyslav Cherniak; Tobias Kubiczek; Kevin Kolpatzek; Jan C Balzer	University of Duisburg Essen, Germany	
		11:10-11:30	Photonic Sources for Compact CW-THz Systems	Niklas Schulz; Nils Surkamp; Lisa C. Kreuzer; Carsten Brenner; Martin Hofmann	Ruhr University Bochum, Germany	
		11:30-11:50	RF Phase Arrays for the Millimeter/Terahertz Range Enabled by Photonics	Guillermo Carpintero; Daniel Headland; Asrin Piroutiniya; Kalliopi Spanidou; Luis Gonzalez Guerrero; Muhsin Ali; Christos Tsokos; Hercules Avramopoulos; Zerihun Tegegne; Garrit Schwanke; Milan Deumer; Sebastian Lauck; Lars Liebermeister; Robert Kohlhaas	Universidad Carlos III de Madrid, Spain	
11:50 - 12:10		THz Path Miniaturization in THz-TDS	Valentin Meier; Marc Nicollerat; Joseph Moerschell; Christoph Ellert	HES-SO, Switzerland		
12:10 - 12:30		Sampling Concepts for Photonic THz Homodyne Systems	Lisa C. Kreuzer; Niklas Schulz; Nils Surkamp; Carsten Brenner; Martin Hofmann	Ruhr University Bochum, Germany		

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Tuesday	THz Communications Chair: Thomas Kürner Room: Nakhla 11	08:00 - 08:25	Setting the Scene for THz Communications: Recent Progress in Regulation and Standardisation	Thomas Kürner	Technische Universität Braunschweig, Germany
		08:25 - 09:10	Session Keynote: Towards extreme band communication	Mohamed-Slim Alouini	King Abdullah University of Science and Technology (KAUST), Saudi Arabia
		09:10 - 09:35	Outdoor THz Radio Units Towards Dependable High-Speed Wireless Transmission	Tetsuya Kawanishi	Waseda University & National Institute of Information and Communications Technology, Japan
		09:35 - 10:00	How to Build a Multi-Kilometer Terabit-Per-Second Sub-Terahertz Wireless Backhaul	Duschia M Bodet; Josep M Jornet	Northeastern University, USA
	Reconfigurable Intelligent Surfaces Technologies and Applications: from GHz to THz Chairs: Aydin Sezgin, Alejandro Jimenez-Saez Room: Nakhla 9+10	10:30 - 10:50	Digital-Coding Reconfigurable Metasurface for THz Anomalous Reflections Based on Liquid Crystal	Ehsan Farokhipour; Andreas Rennings; Daniel Erni	University of Duisburg Essen, Germany
		10:50-11:10	URLLC Networks Enabled by STAR-RIS, Rate Splitting, and Multiple Antennas	Eduard A Jorswieck; Mohammad Soleymani; Ignacio Santamaria; Jesús Gutiérrez	Technische Universität Braunschweig, Germany
		11:10-11:30	Towards Terahertz Liquid Crystal Reconfigurable Intelligent Surface Based on Defected Delay Lines	Robin Neuder; Marc Späth; Alejandro Jiménez-Sáez	Technical University Darmstadt, Germany
		11:30-12:30	Panel Discussion	Eduard A Jorswieck, Alejandro Jimenez-Saez, Aydin Sezgin	
	THz Monitoring for Life Sciences Chairs: Daniel Erni, Elsa Kirchner, Mandana Jalali, Fawad Sheikh, Andreas Prokscha Room: Nakhla 11	10:30 - 10:50	Plant Water Content Monitoring Using Miniaturized THz RTD Oscillators and Detectors	Pooya Alibeigloo; Christian Preuss; Enes Mutlu; Fawad Sheikh; Yamen Zantah; Andreas Prokscha; Jonas Watermann; Jonathan Abts; Robin Kress; Simone Clochiatti; Thomas Kaiser; Nils Weimann	University of Duisburg-Essen, Germany
		10:50-11:10	Coaxial Cable-Based Near-Field Probing in a Cylindrical Positioning Setup for Plant Stem Monitoring Using Millimeter Waves	Chen Wu; Marvin Degen; Benedikt Sievert; Jan Taro Svejda; Daniel Erni; Andreas Rennings	University of Duisburg-Essen, Germany
		11:10-11:30	Terahertz Radar Cross Section Measurement and Digital Twin Simulation for Advanced Insect Monitoring	Basem Aqlan; Tobias Kubiczek; Jan C. Balzer	University of Duisburg-Essen, Germany
		11:30-11:50	Towards a Validation System for a THz Graphene-Based Epidermal Electronics System	Sabisan Santhakumaran; Elsa A. Kirchner	University of Duisburg-Essen, Germany
		11:50 - 12:10	Terahertz Remote Respiration Rate Monitoring	Svenja Nicola Kobel; Yamen Zantah; Andreas Prokscha; Christian Wiede; Gerd vom Bögel; Thomas Kaiser; Karsten Seidl	Fraunhofer Institute for Microelectronic Circuits and Systems (IMS), Germany
		12:10 - 12:30	Terahertz Dosimetry in European Honey Bees	Fawad Sheikh; Pieterjan De Boose; Felipe Oliveira Ribas; Dien Lessy; Andreas Prokscha; Aman Batra; Arno Thielens; Thomas Kaiser	University of Duisburg-Essen, Germany

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Wednesday	Beamforming for THz Sensing and Communications Chairs: Andreas Czylik, Kevin Kolpatzek Room: Nakhla 9+10	08:00 - 08:30	A Compact Fan-Beam Steering Antenna With Omnidirectional Coverage in the 300 GHz Range	Ryoma Sonoyama; Masahiko Inami; Yasuaki Monnai	The University of Tokyo, Japan
		08:30 - 09:00	Performance Analysis of 8-Element Antenna Arrays With Nonuniform Distributions for Beamforming at THz Frequencies	Nabil Alchami; Kevin Kolpatzek; Andreas Czylik	University of Duisburg-Essen, Germany
		09:00 - 09:30	Static Thinning of Large Linear Antenna Arrays Using a Genetic Algorithm for THz Frequencies	Nabil Alchami; Akram Najjar; Mohammed El-absi; Thomas Kaiser; and Andreas Czylik	University of Duisburg-Essen, Germany
		09:30 - 10:00	Ultra-Broadband Terahertz Beamsteering Based on a Photonic Phased Array	Lars Liebermeister; Garrit Schwanke; Simon Nellen; Tianwen Qian; Sebastian Lauck; David De Felipe; Moritz Kleinert; Milan Deumer; Norbert Keil; Martin Schell; Robert Kohlhaas	Fraunhofer Heinrich Hertz Institute for Telecommunications, Germany
	THz Identification and Localization (Part 1) Chairs: Ali Alhaj Abbas, Mohammed El-Absi, Maher Khaliel Room: Nakhla 11	08:00 - 08:20	Multilayer Chipless THz Tag for Identification	Simone Genovesi; Filippo Costa; Giuliano Manara	University of Pisa, Italy
		08:20 - 08:40	Modulation Backscattering Communication with Applications to Augmented RFID Systems	Maher Khaliel; Feng Zheng; Thomas Kaiser; and Ahmed El-Awamry	University of Duisburg-Essen, Germany
		08:40 - 09:00	Coded Corner Reflector for Angular Sensing	Ali Alhaj Abbas; Thomas Kaiser	University of Duisburg-Essen, Germany
		09:00 - 10:00	Session Keynote Speech: Wireless identification and sensing with chipless RFID tags	Simone Genovesi	University of Pisa, Italy
	THz in vivo Communications Chairs: Christian Wietfeld and Andreas Prokscha Room: Nakhla 9+10	10:30 - 11:00	The Potentials of Using Terahertz Technology in Revolutionizing the Future of Heart Health Care	Samar Elmaadawy; Isaac Chan; Josep M Jornet	Northeastern University, USA
		11:00 - 11:30	Non-Contact Ultrasound Sensing Platform Towards In-Vivo Applications Based on Terahertz Photoacoustic Effect and Laser Vibrometry	Yunao Zheng; Yasuaki Monnai	The University of Tokyo, Japan
		11:30 - 12:30	Session Keynote Speech: Exploring Non-Contact Ultrasound Technology Based on Terahertz Photoacoustic Effect	Yasuaki Monnai	The University of Tokyo, Japan
	THz Identification and Localization (Part 2) Chairs: Ali Alhaj Abbas, Mohammed El-Absi, Maher Khaliel Room: Nakhla 11	10:30 - 11:30	Session Keynote Speech: Flexible, Wearable, Disposable Wireless Communication and Sensing Systems Through Additive Manufacturing	Atif Shamim	King Abdullah University of Science and Technology (KAUST), Saudi Arabia
		11:30-11:50	Leveraging the Extended Kalman Filter to Minimize Infrastructure in THz RFID Systems for Indoor Sub-Millimeter Tracking Accuracy	Amani Atiani; Mohammed El-Absi; Thomas Kaiser	University of Duisburg-Essen, Germany
		11:50-12:10	Motion Modulation Backscattering of Linear Chipless RFID Tags: THz Measurements	Eunji Choi; Maher Khaliel Ahmed; Yamen Zantah; Han Vinck; Thomas Kaiser; Ahmed El-Awamry	University of Duisburg-Essen, Germany
		12:10-12:30	First Steps Towards a Chipless, Passive THz-based Epidermal Electronics Concept	Lars Leander Schaberg; Tobias Kubiczek; Sabisan Santhakumaran; Roman Burkard; Wolfgang Mertin; Franziska Muckel; Gerd Bacher; Anna Lena Schall-Giesecke; D. Neumaier; Jan C. Balzer; Elsa Andrea Kirchner; and Niels Benson	University of Duisburg-Essen, Germany