

Plenary Joint GHz/AntennEMB opening session
Thursday May 24 09:00-10:45 (E:A)

Time:	Title:
09:00-09:15	Welcome
09:15-10:00	Some considerations on antennas radiating into lossy media Anja Skrivervik Ecole Polytechnique Fédérale de Lausanne
10:00-10:45	5G Base Stations on mm-wave Frequencies Martin Hansson Ericsson, Lund

GHz Sessions
Thursday May 24 11:15-13:00

Session: Active and Passive Devices I (E:A)

11:15-11:30	Advanced Millimetre-Wave Waveguide Components Enabled by Silicon Micromachining Adrian Gomez-Torrent, Umer Shah KTH Royal Institute of Technology
11:30-11:45	Fabrication of Tunnel Field-Effect Transistors Abinaya Krishnaraja, Elvedin Memisevic, Markus Hellenbrand et al. Lund University
11:45-12:00	RF Characterisation of Vertical III-V Nanowire Tunnel FETs Markus Hellenbrand, Elvedin Memisevic, Johannes Svensson et al. Lund University, EIT
12:00-12:15	Electro-Thermal Memory of GaN HEMTs Mattias Thorsell, Johan Bergsten, Anna Malmros et al. Microwave Electronics Laboratory, MC2, Chalmers
12:15-12:30	Graphene field-effect transistors for high frequency applications Muhammad Asad, Marlene Bonmann, Xinxin Yang et al. Chalmers University of Technology
12:30-12:45	Micromachined Cavity Resonator Sensor for on Chip Material Characterisation at 260 GHz Dragos Dancila ¹ , Bernhard Beuerle ² , Umer Shah ² et. al. ¹ Microwave group, Division of Solid-State Electronics, Uppsala University. ² Micro and Nanosystems, Royal Institute of Technology
12:45-13:00	Planar Goubau Line for THz on-Wafer Biosensing Juan Cabello-Sánchez, Helena Rodilla, Vladimir Drakinskiy et al. Chalmers Tekniska Högskola

Session: mm-wave circuits (E:B)

11:15-11:30	E-band Upconverting Transmitter Using X6 Multiplier Dhecha Nopchinda ¹ , Zhongxia He ¹ , Göran Granström ² et al. ¹ Chalmers University of Technology, ² Gotmic AB
11:30-11:45	InP HEMT Design for Cryogenic Low Noise Amplifiers E. Cha ¹ , G. Moschetti ² , N. Wadefalk ² et al. ¹ GigaHertz Centre, Chalmers University of Technology, Gothenburg, ² Sweden Low Noise Factory AB, Gothenburg, ³ Sweden RISE Research Institute of Sweden, Borås, Sweden
11:45-12:00	An InP DHBT G-band 140-220 GHz Low Noise Amplifier with 80 GHz bandwidth for high data rate communication and sensor applications Herbert Zirath, Vessen Vassilev Chalmers University
12:00-12:15	Characterization of Graphene FET based 200 GHz Mixer and 1 GHz Amplifier Integrated on a Si Substrate Marlene Bonmann, Michael Andersson, Yaxin Zhang et al. Chalmers University of Technology
12:15-12:30	An 85-GHz Digitally Controlled Oscillator Utilizing a Novel Frequency Fine-Tuning Technique Rikard Gannedahl, Johan Holmstedt Electrical and Information Technology, Lund University
12:30-12:45	Two mm-wave VCOs in 28-nm UTBB FD-SOI CMOS Therese Forsberg, Johan Wernehag Markus Törmänen et al. Department of Electrical and Information Technology, Lund University

AntennEMB Session: (E:1406)

Thursday May 24 11:15-13:00

- 11:15-11:30 **Leaky Wave Antenna at 300 GHz in KTH's Micromachined Waveguide Technology**
Dragos Dancila, Bernhard Beuerle, Umer Shah
Uppsala University, Royal Institute of Technology,
- 11:30-11:45 **Recent Progress and Challenges of EMF Compliance of 5G Cellular Equipment**
Bo Xu, Davide Colombi, Zhinong Ying
- 11:45-12:00 **A Novel Design Procedure for Waveguide Slot Arrays**
Johan Wettergren, Per Magnusson, Erik Silfverswärd
RUAG Space AB. Bluetest AB
- 12:00-12:15 **Dense Patch Antenna Array with VCSEL based Interconnections for Future 5G Cellular Applications**
Zhongxia Simon He, Tamas Lengyel, Yang Jian
Chalmers
- 12:15-12:30 **Some Important Antenna Design Aspects for the 5th Generation mmWave User Device**
Zhinong Ying, Kun Zhao, Bo Xu
Sony, Ericsson AB
- 12:45-13:00 **Integrated Active Doherty Antenna Transmitter**
Marianna Ivashina, Christian Fager, Rob Maaskant
Chalmers

GHz Sessions

Thursday May 24 14:00-15:45

Session: Active and Passive Devices II (E:A)

- 14:00-14:15 **Drain current saturation in graphene field-effect transistors for high frequency applications**
Marlene Bonmann, Muhammad Asad, Xinxin Yang et al.
Chalmers University of Technology
- 14:15-14:30 **Optically Controlled Dielectric Rod Waveguides with Carbon Nanotube Thin Layers for Terahertz Wave Applications**
Dmitri V. Lioubtchenko, Serguei Smirnov, Ilya Anoshkin et al.
KTH Royal Institute of Technology
- 14:30-14:45 **InGaAs Nanowire MOSFETs for high-frequency applications**
Fredrik Lindelöw, Lasse Södergren, Erik Lind
Lunds Universitet
- 15:00-15:15 **Multilayer Micromachined Dual-Mode Elliptic Cavities Filter With Axial Feeding at 270 GHz**
Oleksandr Glubokov, Xinghai Zhao, James Campion et al.
KTH Royal Institute of Technology
- 15:15-15:30 **Magnetic Influence on Cryogenic InP HEMT LNAs**
Isabel Harrysson Rodrigues, Arsalan Pourkabirian, Jan Grahn
Chalmers University of Technology
- 15:30-15:45 **A revolutionary GaN-on-SiC heteroepitaxy for high-frequency power transistors**
Jr-Tai Chen et al.
SweGaN AB, Sweden, Department of Microtechnology and Nanoscience, Chalmers University of Technology.

Session: Communication Systems (E:B)

- 14:00-14:15 **An 8-bit, 800MS/s redundantly scaled SAR ADC**
Victor Åberg, Christian Fager, Lars Svensson
Chalmers University of Technology
- 14:15-14:30 **High-Speed High-Accuracy Time-Interleaved SAR ADC for 5G Radio Base Stations**
^{1,2}Siyu Tan, ¹Pietro Andreani, ²Mattias Palm et al.
¹Department of Electrical and Information Technology, Lund University, ²Ericsson Research
- 14:30-14:45 **A 40 Gbps PAM-4 RF-DAC with 1.2 pJ/bit Energy Efficiency**
Frida Strömbeck, Zhongxia Simon He, Herbert Zirath
Chalmers University of Technology
- 15:00-15:15 **Towards Long-Range Backscatter Communication with TunnelDiode Reflection Amplifier**
¹Gustav Eriksson, ²Ambuj Varshney, ¹Dragos Dancila et al.
¹Microwavegroup, Division of Solid-State Electronics, Uppsala University. ²Department of Information Technology, Uppsala University

- 15:15-15:30 **Two Tunable Integrated Duplexer Architectures**
¹Imad ud Din, ¹Stefan Andersson, ^{1,2}Henrik Sjöland et al.
¹Ericsson AB, ²Lund University
- 15:30-15:45 **An All-Digital Polar PWM Transmitter**
¹Muhammad Touqir Pasha, ^{1,2}Muhammad Fahim Ul Haque, ³Jahanzab Ahmad et al.
¹Department of Electrical Engineering, Linköping University, ²Department of Electronic Engineering, NED University of Engineering and Technology, Karachi, Pakistan, ³Intel Corporation, High Wycombe, United Kingdom

AntennEMB Session: (E:1406)
Thursday May 24 14:00-15:45

- 14:00-14:15 **Application of Higher-Order MLFMM for Efficient Monostatic RCS Calculation**
Peter Meincke
TICRA, Denmark
- 14:15-14:30 **On a Helmholtz transmission problem in planar domains with corners**
Anders Karlsson, Johan Helsing, Lund University
- 14:30-14:45 **On bandwidth of embedded antennas, a case study of the optimal position**
Lars Jonsson
KTH Royal Institute of Technology
- 15:00-15:15 **Bounds on the absorption in lossy surrounding media**
Sven Nordebo
Linnaeus University
- 15:15-15:30 **Perturbation approach to the reflection of modes from a deformed end surface in a PEC waveguide**
Martin Norgren, Fatemeh Ghasemifard
KTH
- 15:30-15:45 **Fast Analysis of Large Finite Electrically Interconnected Antenna Arrays using CEM One**
Bo Strand, Emil Kieri, Erik Abenius
ESI Group

GHz Sessions
Thursday May 24 16:10-17:10

Session: Packaging (E:A)

- 16:10-16:25 **Antenna in Package (AiP) for 5G mmWave systems**
¹Bengt Madeberg, ²Konstantinos Prionidis, Mark Holm
¹Huawei Technologies Sweden AB, ²Provinn AB
- 16:25-16:40 **Topology optimization of microwave components with minimum-size control**
Emadeldeen Hassan, Eddie Wadbro, Linus Hägg et al.
Department of Computing Science, Umeå University
- 16:40-16:55 **Compact Millimetre-Wave Integration Concept for Future Wireless and Sensor Systems**
¹K. Rasilainen, ^{1,2}M. Thorsell, ¹K. Buisman et al.
¹Chalmers University of Technology, ²SAAB AB, ³Ericsson AB
- 16:55-17:10 **Enabling Millimeter-Wave High Power Generation with Wide-Band Spatially Distributed TE₁₀ Excitation**
¹Artem Roev, ¹Rob Maaskant, ¹Marianna Ivashina et al.
¹Chalmers University of Technology, ²SAAB AB

Session: Radars and Sensors (E:B)

- 16:10-16:25 **Multi-Port Front-End and DSP Co-Design for Vital Signs Detector**
Adriana Serban, Qin-Zhong Ye et al.
ITN-Communication Electronics, Linköping University, Campus Norrköping
- 16:25-16:40 **Homodyne Detection Based System for Continuous Glucose Monitoring**
Lars Haulin, Dragos Dancila
Microwave group, Division of Solid-State Electronics, Uppsala University
- 16:40-16:55 **Continuous Complex Permittivity Extraction of Water-Glucose Solutions with a Resonant Microwave Cavity at 300 MHz**
Matthias Carlsson, Gustav Eriksson, Jens Ljungberg et al.
Microwave group, Division of Solid-State Electronics, Uppsala University

16:55-17:10 **Multi-Path Suppression for Millimeter-Wave Reflectrometry**
Sebastian Heunisch, Lars Ohlsson, Lars-Erik Wernersson
Lund University

AntennEMB: Poster Session Thursday May 24 16.10-17:10

- 16:10-17:10 **A Ka-Band Active Integrated Antenna for 5G Applications: Initial Design Flow**
Wan-Chun Liao, Rob Maaskant, Thomas Emanuelsson, Marianna Ivashina
Chalmers
- 16:10-17:10 **Effect of the Fat Thickness Variation on In-Body Microwave Propagation**
Noor Badariah Asan, Mauricio Perez, Jacob Velander
Uppsala University
- 16:10-17:10 **User Body Impact on User Equipment Antennas and Channel Characteristics in 5G Communication Systems**
Kun Zhao, Carl Gustafson, Qingbi Liao
Sony Mobile Communications
- 16:10-17:10 **Micromachined 140 GHz Planar Gap Waveguide Array Antenna for Line of Sight (LOS) MIMO Backhaul Links**
S.Farjana, A.U.zaman, P.Enoksson
Chalmers
- 16:10-17:10 **Electromagnetically Coupled Multilayer Patch Antenna for 60 GHz Communications**
Imran Aziz
Uppsala University
- 16:10-17:10 **Low Cost Aperture Coupled Patch Antenna Design**
A. Gustafsson, T. Boman, D. Axelsson
FOI Swedish Defence Research Agency, Cinside
- 16:10-17:10 **A Study on Phased Array Antennas for Long Range Detection VHF Radar**
Jakob Helander, Daniel Sjöberg
Lund University
- 16:10-17:10 **Multifilar Helix Antenna with High Isoflux Gain and Low Cross-Polarization**
Patrik Dimming, Joakim Johansson
RUAG Space
- 16:10-17:10 **Combined Optimisation of Feed Chains and Large Reflectors**
Peter
TICRA
- 16:10-17:10 **Partial Element Equivalent Circuit Simulations of Electromagnetic Field Propagation through Magneto-Dielectric Slabs**
Andreas Hartman, Sweden Giulio Antonini, Università degli Studi dell
Luleå University of Technology
- 16:10-17:10 **Volume Integral Equation Formulation for Microwave Tomography**
Michael Mattes
Technical University of Denmark (DTU)
- 16:10-17:10 **Perfectly matched layers for the finite element method with higher-order basis functions**
Thomas Rylander
Chalmers
- 16:10-17:10 **RCS-calculation methodology tested on a scale model fighter aircraft**
Magnus Gustavsson, Åsa Andersson, Rolf Jonsson
FOI
- 16:10-17:10 **Using Convex Optimization to Compensate for Radome Effects in Monopulse Arrays**
Henrik Frid
Saab and KTH
- 16:10-17:10 **Multiple scattering by a collection of randomly located obstacles distributed in a dielectric slab**
Niklas Wellander and Gerhard Kristensson
Swedish Defence Research Agency (FOI) , Lund University
- 16:10-17:10 **Design and Characterization of Circular Polarization Selective Structures**
Johan Lundgren, Andreas Ericsson, Daniel Sjöberg
Lund University, Ticra
- 16:10-17:10 **TE-wave propagation in a graded waveguide structure**
Mariana Dalarsson, Sven Nordebo
Linnaeus University

Thursday May 24 17:15-18:00 (E:A)

17:15-18:00 **Efforts in superconducting quantum computing enabled by microwave technology**
Jonathan Burnett
Chalmers University of Technology

Plenary Joint GHz/AntennEMB session

Friday May 25 09:15-10:00 (E:A)

9:15-10:00 **Gap Waveguide Technology in Real Life**
Thomas Emanuelsson
Chalmers University of Technology and Gapwaves

GHz Sessions, Friday May 25 10:30-12:00

Session: Active and Passive Devices III (E:A)

10:30-10:45 **CMOS Integration Based on All-III-V Materials**
Adam Jönsson, Johannes Svensson, Lars-Erik Wernersson
Lund University, Electrical and Information Technology

10:45-11:00 **Low-Loss Hollow and Silicon-Core Micromachined Waveguide Technologies Above 100 GHz**
James Campion, Bernhard Beuerle, Aleksandr Krivovitca et al.
KTH Royal Institute of Technology

11:00-11:15 **Comparison among Microstrip, Covered Microstrip and Inverted Microstrip Gap Waveguide in Losses based on Variational Method**
Jinlin Liu, Jian Yang, Ashraf Uz Zaman
Chalmers University of Technology

11:15-11:30 **Low-Loss Micromachined Waveguide Power Divider and Hybrid Coupler for mm-Wave and THz Systems**
¹Robert Malmqvist, ¹Andreas Gustafsson, ¹Jan Svedin et al.
¹Swedish Defence Research Agency (FOI), ²Royal Institute of Technology (KTH)

11:30-11:45 **Thru-Reflect-Line for Nanowire MOSFET Calibration**
Stefan Andric, Lars Ohlsson, Lars-Erik Wernersson
Department of Electrical and Information Technology, Lund University

11:45-12:00 **Homodyne detection in graphene FET power detectors**
Xinxin Yang, Andrei Vorobiev, and Jan Stake
Chalmers University of Technology

Session: 5G Systems

10:30-10:45 **LO system for 5G mmW Antenna Array Systems**
Christian Elgaard, Tony Pålsson, Henrik Sjöland et al.
Ericsson Research AB

10:45-11:00 **MATE, Chalmers' millimeter-wave MIMO testbed towards 100 Gbit/s**
Koen Buisman, Thomas Eriksson
Chalmers University of Technology

11:00-11:15 **Smart Bowtie - A UWB mm-Wave Array for 5G Communication Systems**
Jian Yang, Sadegh Mansouri Moghaddam, Ashraf Zaman et al.
Chalmers University of Technology

11:15-11:30 **Compensation of Hardware Impairments in MATE, the Chalmers mmWave MIMO Testbed**
Mohammad Hossein Moghaddam, Koen Buisman, Thomas Eriksson et al.
Chalmers University of Technology

11:30-11:45 **On the Impact of Colored Transmitter Noise on Millimeter Wave MIMO Systems**
Sina Rezaei Aghdam, Thomas Eriksson
Department of Electrical Engineering, Chalmers University of Technology

11:45-12:00 **Link Performance Characterization of D-band Radios**
¹Mikael Hörberg, ¹Yinggang Li, Vessen Vassilev² et al.
¹Antenna and Microwave HW Research Center, Ericsson Research, Ericsson AB, ²Microwave Electronics Laboratory, MC2, Chalmers University of Technology

AntennEMB Session: (E:1406), Friday May 25 10:30-12:00

10:30-10:45 **60 GHz Dual-polarized Probe for Spherical Near-Field and Power Flow Diagnostics for a Standard Gain Horn**
Paula Irina Muntianu, Olav Breinbjerg
Technical University of Denmark

10:45-11:00 **A Numerical Analysis of the Random-LOS Measurement Accuracy for Vehicle Applications**
Madeleine Schilliger Kildal, Jan Carlsson, Andrés Alayón Glazunov,
Chalmers, Provinn AB, University of Twente

- 11:00-11:15 **SAR-ISAR blending using a combination of L1 and L2-minimization methods**
Christer Larsson, Johan Jersblad
Saab Dynamics and Lund University, Saab Barracuda
- 11:15-11:30 **Microwave technology for detecting abdominal bleeding**
Stefan Candefjord
Chalmers
- 11:30-11:45 **Channel Hardening in Massive MIMO - A Measurement Based Analysis**
Sara Gunnarsson, Liesbet Van der Perre, Fredrik Tufvesson
Lund University, KU Leuven
- 11:45-12:00 **Comparative Study of Planar and Spherical Phaseless Nearfield Antenna Measurements**
Javier Fernández Álvarez, Olav Breinbjerg
DTU

GHz Sessions, Friday May 25 13:30-14:45

Session: RF Systems (E:A)

- 13:30-13:45 **A Flexible Multi-Gbps Transmitter Using Ultra-High Speed Sigma-Delta-over-Fiber**
Ibrahim Can Sezgin, Thomas Eriksson, Johan Gustavsson et al.
Chalmers University of Technology
- 13:45-14:00 **GaN for Microwave Radio Links**
David Gustafsson, Kristoffer Anderson, Jonas Hansryd
Ericsson AB
- 14:00-14:15 **DEEP INTEGRATION: Fusing Antennas and Electronics**
Rob Maaskant
Chalmers & TU/e
- 14:15-14:30 **Digital predistortion with bandwidth limitations for a 28 nm WLAN 802.11ac transmitter**
¹Ted Johansson, ¹Oscar Morales Chacón, ²Thomas Flink
¹Linköping University, ²Catena Wireless Electronics AB
- 14:30-14:45 **Measurement technique of parameters of transmission lines with spatially-spaced connectors**
¹Vladimir Guba, ²Aleksandr A. Savin, ³Olesia N. Bykova et al.
¹Copper Mountain Technologies USA, ²Tomsk State University of Control Systems and Radio Electronics, ³NPK TAIR

Session: Power Amplifiers (E:B)

- 13:30-13:45 **Optimal Power Consumption during the Charging of Superconducting Cavities using Drain Voltage Modulation of Solid State Power Amplifiers**
Long Hoang Duc, Anirban Bhattacharyya, Jörgen Olsson et al.
Microwave group, Division of Solid-State Electronics, Uppsala University
- 13:45-14:00 **Design, fabrication and measurement of 1kW Class-E amplifier at 100 MHz**
Stefan Book, Long Hoang Duc, Dragos Dancila
Solid state electronics, Uppsala University
- 14:00-14:15 **Harmonic Tuning of Mixed-Mode Outphasing Amplifiers**
¹Paolo Enrico de Falco, ²Konstantinos Mimis, ²Souheil Ben Smida et al.
¹Telecommunication Research Laboratory, Toshiba Research Europe Limited, Bristol, UK, ²Communication Systems and Networks Laboratory, University of Bristol, Bristol, UK
- 14:15-14:30 **Load Modulated Balanced Amplifier with Doherty-like Driving**
¹William Hallberg, ²Prathamesh Pednekar, ¹Christian Fager
¹Chalmers University of Technology, ²University of Colorado, Boulder, CO, USA
- 14:30-14:45 **Implementation of a Highly Efficient Solid State RF Power Source for Superconducting Cavities**
Long Hoang Duc, Anirban Bhattacharyya, Jorgen Olsson et al.
Microwave group, Division of Solid-State Electronics, Uppsala University

AntennEMB: Poster Session, Friday May 25 13:30-14:45

- 13:30-14:45 **On stored energies of thin periodic antennas and scatterers**
Andrei Ludvig-Osipov, B. L. G. Jonsson
KTH Royal Institute of Technology
- 13:30-14:45 **A Case Study for Antenna Current Optimization Problems with Quadric Constraints**
Shuai Shi, B. L. G. Jonsson
KTH Royal Institute of Technology

- 13:30-14:45 **Novel Harmonic Suppressed Miniaturized FSS for UWB Low Signature Sensor Integration**
Alireza Kazemzadeh
Altair Engineering AB
- 13:30-14:45 **Low-Dispersive All-Metal High-Symmetric Metasurfaces**
Fatemeh Ghasemifard, Martin Norgren, Oscar Quevedo-Teruel
KTH Royal Institute of Technology
- 13:30-14:45 **Optimization and Experimental Verification of Dual Band Circular Polarization Selective Structures**
Andreas Ericsson, Johan Lundgren, Daniel Sjöberg
Ticra, Lunds Universitet
- 13:30-14:45 **Thermal Tuning of a Microwave Water-Based Metasurface**
Rasmus Elkjaer Jacobsen, Samel Arslanagić
Technical University of Denmark
- 13:30-14:45 **Saab Antenna Test Range Overview**
Bengt Svensson, Christer Larsson, Lars-Gunnar Huss
Saab AB
- 13:30-14:45 **A TEM-cell for electromagnetic characterization**
Torleif Martin, Ronny Gunnarsson, Edward Lindenholst
Saab, Lund university
- 13:30-14:45 **A New Analytical Model for Microstrip Multi-layer Split-Ring-Resonator based Sensor for Biomedical Applications**
Viktor Mattsson, Mauricio Perez, Robin Augustine
Uppsala Universitet
- 13:30-14:45 **A Simulation Study of a Self Learning Haemorrhagic Detection Algorithm**
Andreas Fhager, Stefan Candefjord, Mikael Persson
Chalmers, MedTech West
- 13:30-14:45 **Gesture recognition using a cheap FMCW radar system interfaced with a machine learning algorithm**
Daniel Sjöberg
Lund University
- 13:30-14:45 **Physical Bounds for new Antenna types and Environments**
Casimir Ehrenborg, Mats Gustafsson
Lund University
- 13:30-14:45 **Monitoring healing progression after craniosynostosis-based craniotomy with a non-invasive microwave approach: An overview**
Syaiful Redzwan, Jacob Velander, etal
Uppsala University
- 13:30-14:45 **Direct metal laser sintering printed millimeter and submillimeter waveguides**
Max Holmberg, Dragos Dancila, Anders Rydberg
Uppsala University
- 13:30-14:45 **On plasmonic resonances in layered waveguide structures**
Yevhen Ivanenko, Mariana Dalarsson, Sven Nordebo
Linnaeus University
- 13:30-14:45 **A Planar Dual-Polarized Ultra-Wideband Millimeter-Wave Array Antenna**
Sadegh Mansouri Moghaddam, Jian Yang, Andrés Alayón Glazunov
Chalmers

Plenary Joint GHz/AntennEMB closing session, Friday May 25 15:15-16:15 (E:A)

- 15:15-16:00 **The status of the European Spallation Source**
Mats Lindroos
European Spallation Source (ESS)
- 16:00-16:15 Closing remarks