Swedish Microwave Days

KTH Royal Institute of Technology
May 23rd–25th 2023

KTH VETENSKAP OCH KONST

Smartare Elektroniksystem
ELECTRONIC COMPONENTS & SYSTEMS

PROGRAM BOOK

Table of Contents

Sponsors

Platinum

COMSOL

MYTEK

SAAB

ERICSSON

Gold

MVG Microwave Vision Group

Signal Solutions

HUAWEI

COMMSCOPE®

kaelus

cadence®

SONY

OEM ELECTRONICS

FOCUS MICROWAVES GROUP

Silver

ALTAIR

Maury Microwave

APWAVES

CellMax

AMTELE Communication

NW Northern Waves

PCTEL

Organizers

The Swedish Microwave Days 2023 are organized by **KTH** in cooperation with **Smartare Elektroniksystem**.

Supportive Institutions

Program Overview

Time	Room A	Room B	Room C	Room D	Poster Area
Tuesday, May 23					
08:00-09:00	Registration				
09:00-09:20	Opening				
09:20-09:40	Vinnova - Smartare Elektroniksystem				
09:40-10:15	Tu_K1 - Ericsson				
10:15-10:45	Coffee Break and Exhibition				
10:45-12:25	Tu_FS_A1 - Swedish Radar SMEs	Tu_B1 - THz Technology Part I	Tu_C1 - Computational Electromagnetics Part I	Workshop I - COMSOL	
12:25-13:00	Tu_K2 - Anja Skrivervik				
13:00-14:00	Lunch and Exhibition				
14:00-15:40	Tu_FS_A2 - Radio Science Activities (URSI)	Tu_B2 - Electromagnetic Measurements Part I	Tu_C2 - Microwave Amplifiers Part I	Workshop II - ALTAIR	
15:40-16:10	Coffee Break and Exhibition				
16:10-17:50	Tu_FS_A3 - THz Technology	Tu_B3 - Advanced Microwave Technology Part I	Tu_C3 - Active Components	Workshop III - Women in Antennas and Microwave Engineering	
18:30-21:30	Welcome Ceremony				

Wednesday, May 24					
08:30-10:10	We_A1 - Radar	We_B1 - Computational Electromagnetics Part II	We_C1 - Reflector and Reflectarray	We_D1 - Electromagnetic Wave Propagation	
10:10-10:40	Coffee Break and Exhibition				
10:40-11:15	We_K1 - SAAB				
11:15-12:55	We_FS_A2- SyMat	We_B2 - Microwave Amplifiers Part II	We_C2 - Advanced Antenna Technology Part I	Workshop IV - Cadence	
12:55-13:55	Lunch and Exhibition				

Program Overview

Time	Room A	Room B	Room C	Room D	Poster Area
Wednesday, May 24					
13:55-14:30	We_K2 - COMSOL				
14:30-15:05	We_K3 - TMYTEK				
15:05-15:35	Coffee Break and Exhibition				
15:35-16:10	We_K4 - Jay Guo				
16:10-17:50	We_A3 - THz Technology Part II	We_B3 - Array Antennas	We_C3 - Advanced Microwave Technology Part II	We_D2 - Electromagnetic Measurements Part II	Best Student Award - Poster
18:30-21:30	Conference Dinner				

Thursday, May 25					
08:30-10:10	Th_A1 - Beamforming	Th_B1 - Active Circuits	Th_C1 - Millimeter Wave Antennas and Components	Th_D1 - Advanced Microwave Components	
10:10-10:40	Coffee Break and Exhibition				
10:40-12:20	Th_A2 - THz Technology Part III	Th_B2 - Advanced Antenna Technology Part II	Th_C2 - Electromagnetic Theory	Early Career Activities	
12:20-12:40	Closing				
12:40-13:40	Lunch and Exhibition				

Keynote Speakers

Prof. Bo Göransson

Ericsson AB, Stockholm, Sweden
KTH Royal Institute of Technology, Stockholm, Sweden

Tuesday 23 May 2023: Keynote session [**Tu_K1**]
Room A
09:40-10:15

The role of antenna systems in 3, 4 and 5G, and what is coming next

Biography

Bo Göransson received the M.Sc. degree in applied physics and electrical engineering from Linköping University, Sweden, in 1991, and the Ph.D. degree in array signal processing from the KTH Royal Institute of Technology, Stockholm, Sweden, in 1997. He joined Ericsson in 1998, where he has been working with research and standardization of 3G, 4G, and 5G physical layer, with special interest for MIMO and beamforming technologies. He is currently the Senior Expert in Multi Antenna Systems and Architectures with Ericsson, and an Adjunct Professor with the KTH Royal Institute of Technology. He holds more than 150 patents (issued and pending). He received the Ericsson Inventor of the Year Award in 2012.

Synopsis

The importance for more advanced antenna systems have increased over the last generations of mobile communications. In 3G different forms of diversity solutions was introduced. MIMO solutions was a core functionality in 4G, while massive MIMO was native for 5G. While low and midband frequencies was the main target for 3G and 4G, 5G extended this to higher midbands and mmWave frequencies. In next generation this will be expanded to cover both centimetric as well as subTHz frequency ranges. Here we will discuss the advancements done over the generations, but also an outlook on key challenges for 6G in the area of wideband radio and antenna systems.

Keynote Speakers

Prof. Anja Skrivervik

École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
Lund University, Lund, Sweden

Tuesday 23 May 2023: Keynote session [**Tu_K2**]
Room A
12:25-13:00

How far are we from closed form In-, On, and Off-Body link budget approximations?

Biography

Anja Skrivervik obtained her Master degree in electrical engineering degree from Ecole Polytechnique Fédérale de Lausanne (EPFL) in 1986, and her PhD, also in electrical engineering, from the same institution in 1992, for which she received the Latsis award. After a stay at the University of Rennes as an invited Research Fellow and two years in the industry, she returned part time to EPFL as an Assistant Professor in 1996, and is now a Professeur Titulaire at this institution, where she is the head of the Microwave and Antenna Group. She is also a visiting Professor at the University of Lund. Her research activities include electrically small antennas, antennas in biological media, periodic structures, reflect- and transmitarrays, and numerical techniques for electromagnetics. She is author or co-author of more than 200 peer reviewed scientific publications. Her teaching activities include courses on microwaves and antennas, and she teaches at Bachelor, Master and PhD levels. She was director of the EE section form 1996-2000, and is currently the director of the EE doctoral school at EPFL.

She is very active in European collaboration and European projects. She was the chairperson of the Swiss URSI until 2012, is a Board member of the European School on Antennas and is frequently requested to review research programs and centers in Europe. She is a member of the board of directors of the European Association on Antennas and Propagation (EurAAP) since 2017. She has been the general Chair of the Loughborough Antenna and Propagation Conference in 2015, Vice-Chair and Technical Program Committee-Chair of EuCAP 2016 conference and financial chair of EuCAP 2017 to EuCAP 2022.

Synopsis

Link budgets have been used since early radio days as a convenient tool to obtain a first idea of the feasibility of a link. They also provide useful information about the power levels included. This presentation will catalogue and explain the difficulties linked to the establishment of link budgets for In-, On, and Off- Body links. Existing initial solutions for near field losses, reflection at interfaces and In-Body propagation will be presented. Moreover, the impact of the electric size of the host body will be discussed.

Keynote Speakers

Prof. Sten E. Gunnarsson

SAAB AB, Järfälla, Sweden
Chalmers University of Technology, Gothenburg, Sweden

Lic. Johan Malmström

SAAB AB, Järfälla, Sweden

Wednesday 24 May 2023: Keynote session [**We_K1**]
Room A
10:40-11:15

Microwave and Antenna Activities at Saab Surveillance

Biography

Sten E. Gunnarsson received the M.Sc. degree in electrical engineering from the Lund University of Technology, Lund, Sweden, in 2003. He received the Ph.D. degree in mm-wave MMIC design and the Docent degree in Microwave Electronics, both from Chalmers University of Technology, Göteborg, Sweden in 2008 and 2016, respectively. Gunnarsson is currently appointed Specialist within Microwave Design at SAAB AB, Järfälla, Sweden. He is also an Adjunct Professor with the Microwave Electronics Laboratory, Department of Microtechnology and Nanoscience (MC2), Chalmers University of Technology, Sweden.

Johan Malmström received the M.Sc. degree in electrical engineering from the KTH Royal Institute of Technology, Stockholm, Sweden, in 2003. He was working in industry with electromagnetic engineering and signal processing, since 2013 at Saab in close collaboration with academia. In 2017 he received the Licentiate degree in electromagnetic theory from KTH Royal Institute of Technology. Malmström is currently appointed Specialist within Antenna Technology at Saab AB, Järfälla, Sweden. He also acts as an R&T leader at Saab in Järfälla, coordinating internal development and external research.

Synopsis

Microwave and Antenna technology are vital for most of Saab's products and therefore also for the safety of many of our customers and the people and societies they protect. In this talk, we will focus on the Business Area Surveillance which host e.g. Saab's Radar and Electronic Warfare (EW) portfolio where high performance Microwave and Antenna units are of utmost importance. An overview of our products will be shown together with a technical outlook into the future.

Keynote Speakers

Mr. Björn Zaar

KTH Royal Institute of Technology, Stockholm, Sweden

Wednesday 24 May 2023: Keynote session [**We_K2**]
Room A
13:55-14:30

Modeling of RF heating in fusion plasmas with iterative addition of non-local effects

Biography

Björn Zaar has a BSc in engineering physics and an MSc in electrophysics from KTH Royal Institute of Technology in Stockholm, Sweden. He is currently a PhD student in the Division for Fusion Plasma Physics at the same university, where he is researching the modeling of RF heating in fusion plasmas. In particular, his research focuses on how to treat spatially dispersive effects in the ion cyclotron range of frequencies.

Synopsis

Modelling the propagation and dissipation of waves in the ion cyclotron range of frequencies (ICRF) in fusion plasmas is challenging in two respects. Firstly because of the sheer size of such a 3D wave problem for a realistic reactor geometry. Secondly due to spatial dispersion, which arises when the length scales of the wave field and particle motion are comparable. Spatial dispersion turns the wave equation into an integro-differential equation that is non-trivial to represent using local discretization techniques, like finite elements.

In this talk, we will explore how we can tackle the problem with memory efficient modeling in 2.5D axisymmetry in COMSOL Multiphysics® and adding the non-local effects to the finite element model iteratively using Anderson acceleration. This retains memory efficiency and geometrical fidelity of the finite element method, while modeling plasma dynamics coupled to Maxwell's equations. The non-local effects are evaluated in MATLAB® and added to the COMSOL Multiphysics® model using LiveLink™ for MATLAB®.

Keynote Speakers

Mr. Vincent Lee

TMY Technology Inc., Taiwan

Wednesday 24 May 2023: Keynote session [**We_K3**]
Room A
14:30-15:05

The Challenges of mmWave Technology in 5G/B5G and Satellite Communication

Biography

Vincent Lee has been with TMY Technology Inc., the world's leading provider of 5G/SATCOM beamforming solutions, since 2019. He works closely with European universities, delivering cutting-edge 5G mmWave prototyping platforms for antenna verification and wireless communication. Vincent's deep understanding of the industry's complexities and trends, combined with his commitment to expanding internet access using TMY's state-of-the-art technology, makes him a valuable asset to the company's mission. Vincent's leadership and sales abilities have contributed to the growth and success of TMY Technology Inc., earning him respect in the industry.

Synopsis

The difficulties of designing phased array antenna in the mmWave band and how TMYTEK overcome these challenges. We are experiencing today rapid changes in information due to new technologies such as the metaverse, quantum computers, 5G, LEO, and autonomous vehicles. mmWave technology is the key infrastructure that will be the most critical in the present and the future to support those applications and turn them into a reality. Although the available bandwidth of mmWave frequencies is promising, the propagation characteristics are significantly different from microwave frequency bands regarding path loss. TMYTEK provides millimeter-wave advances in 5G/B5G and satellite communication applications. Design, materials, manufacturing, and testing are all covered by this one-stop-shop solution. By revolutionizing the mmWave RF front-end with novel devices, designing ready-to-use beamformers and redesigning the OTA testing approach, TMYTEK enables industrial inventions to reach the market faster.

Keynote Speakers

Prof. Jay Guo

University of Technology Sydney, Sydney, Australia

Wednesday 24 May 2023: Keynote session [**We_K4**]
Room A
15:35-16:10

A New Paradigm in Analogue Multibeam Antennas Employing Generalized Joined Coupler Matrix

Biography

Jay Guo (Fellow, IEEE) received the bachelor's and master's degrees from Xidian University, Xi'an, China, in 1982 and 1984, respectively, and the Ph.D. degree from Xian Jiaotong University, Xi'an, in 1987.

Prof. Guo is a fellow of the Australian Academy of Engineering and Technology and was a member of the College of Experts of Australian Research Council (ARC) from 2016 to 2018. He has received a number of the most prestigious Australian national awards, including the Engineering Excellence Awards in 2007 and 2012 and the CSIRO Chairmans Medal in 2007 and 2012. He was named one of the most influential engineers in Australia in 2014 and 2015, and one of the top researchers across all fields in Australia in 2020 and 2021, respectively. Together with his students and postdocs, he received numerous best paper awards. He has chaired numerous international conferences and served as a guest editor for a number of IEEE publications. He was the Chair for the International Steering Committee, the International Symposium on Antennas and Propagation from 2019 to 2021. He has been the International Advisory Committee Chair for IEEE VTC2017, the General Chair for ISAP2022, ISAP2015, iWAT2014, and WPMC'2014, and the TPC Chair for 2010 IEEE WCNC and 2012 and 2007 IEEE ISCIT. He served as the Guest Editor for special issues on "Low-Cost Wide-Angle Beam Scanning Antennas," "Antennas for Satellite Communications," and "Antennas and Propagation Aspects of 60-90GHz Wireless Communications," all in IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, special issue on "Communications Challenges and Dynamics for Unmanned Autonomous Vehicles," IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS (JSAC), and special issue on "5G for Mission Critical Machine Communication," IEEE Network Magazine.

Synopsis

In this talk, we present an overview on a new type of feed networks for multibeam antennas, known as the generalized joined coupler (GJC) matrix. A salient feature of the GJC matrix is that the same phase shifters can be used for tuning each beam, and different beams can be steered independently. Different configurations of the GJC matrix and the theories for designing the GJC matrix are discussed. The low cost and low energy features of the GJC matrix make it attractive for future wireless communications systems such as 6G.

Organizing Committee

General Chair

Oscar Quevedo-Teruel
KTH

Submission and Program Organizers

Stefano Markidis
KTH

Mingzheng Chen
KTH

Francisco Mesa
Universidad de Sevilla

Local Organizing Committee

Lars Jonsson
KTH

Sarah Clendinning
KTH

Mariana Dalarsson
KTH

Student Awards

Astrid Algaba-Brazalez
Ericsson AB

Guido Valerio
Sorbonne Université

Focused Sessions Organizer

Joachim Oberhammer
KTH

Organizers of the SMWD2023 Special Issue in the EuMA IJMWT

Sarah Clendinning
KTH

Simon He
Chalmers

Dragos Dancila
Uppsala University

Exhibitors and Sponsors

Claes Beckman
KTH

Oskar Zetterström
KTH

Mats Nilsson
KTH

Early Career Activities

Oskar Zetterström
KTH

Davide Comite
Sapienza Università di Roma

Christos Kolitsidas
Ericsson AB

Women-in-Engineering Workshop

Pilar Castillo-Tapia
KTH

SNRV Liason

Martin Norgren
KTH

Daniel Sjöberg
Lund University

IEEE Liason

Mats Gustafsson
Lund University

Organizing Committee

EurAAP Liason

Sophie Grunfelder
The Hague

EuMA Liason

Daryna Pesina
IRE NASU

KTH Event Organizer

Emma Lindberg Borg
KTH

Technical Advisors

Gunnar Malm
KTH

Saul Rodriguez Duenas
KTH

Stefan G. Andersson
Ericsson AB

Kristoffer Andersson
Ericsson AB

Sten Gunnarsson
SAAB

Mathias Thorsell
SAAB

Jian Yang
Chalmers

Ashraf Uz Zaman
Chalmers

Thomas Ryslander
Chalmers

Christian Fager
Chalmers

Jan Stake
Chalmers

Marianna Ivashina
Chalmers

Mats Gustafsson
Lund University

Dragos Dancila
Uppsala University

Volunteers

Qiao Chen
KTH

Hairu Wang
KTH

Wenfu Fu
KTH

Freysteinn Viðarsson
KTH

Núria Flores-Espinosa
KTH

Ashray Ugle
KTH

Martin Petek
Politecnico di Torino

Ludovica Tognolatti
Roma 3

Rocio Chueca
University of Zaragoza

Tuesday 23 May

09:00-09:40	**Room A: Opening Ceremony**	
09:40-10:15	**Room A: Keynote Session**	**Tu_K1**
10:15-10:45	**Coffee Break and Exhibition**	
10:45-12:25	**Sessions and Workshop**	
Room A:	**Swedish Radar SMEs**	**Tu_FS_A1**
Room B:	**THz Technology Part I**	**Tu_B1**
Room C:	**Computational Electromagnetics Part I**	**Tu_C1**
Room D:	**Workshop I: COMSOL**	
12:25-13:00	**Room A: Keynote Session**	**Tu_K2**
13:00-14:00	**Lunch and Exhibition**	
14:00-15:40	**Sessions and Workshop**	
Room A:	**Radio Science Activities (URSI)**	**Tu_FS_A2**
Room B:	**Electromagnetic Measurements Part I**	**Tu_B2**
Room C:	**Microwave Amplifiers Part I**	**Tu_C2**
Room D:	**Workshop II: ALTAIR**	
15:40-16:10	**Coffee Break and Exhibition**	
16:10-17:50	**Sessions and Workshop**	
Room A:	**THz Technology**	**Tu_FS_A3**
Room B:	**Advanced Microwave Technology Part I**	**Tu_B3**
Room C:	**Active Components**	**Tu_C3**
Room D:	**Workshop III: Women in Engineering**	
18:30-21:30	**Welcome Ceremony**	

Keynote Session Tu_K1

Room A **Chair:** *Oscar Quevedo-Teruel*

09:40-10:15 - The role of antenna systems in 3, 4 and 5G, and what is coming next

Bo Göransson
Ericsson AB, Stockholm, Sweden
KTH Royal Institute of Technology, Stockholm, Sweden

The importance for more advanced antenna systems have increased over the last generations of mobile communications. In 3G different forms of diversity solutions was introduced. MIMO solutions was a core functionality in 4G, while massive MIMO was native for 5G. While low and midband frequencies was the main target for 3G and 4G, 5G extended this to higher midbands and mmWave frequencies. In next generation this will be expanded to cover both centimetric as well as subTHz frequency ranges. Here we will discuss the advancements done over the generations, but also an outlook on key challenges for 6G in the area of wideband radio and antenna systems.

Focused Session Tu_FS_A1
Swedish Radar SMEs

Room A **Chair:** *Joachim Oberhammer*

10:45-11:05 - Multichannel Radar for Vehicle and Stationary Applications
Johan Wettergren
Sensrad AB & Qamcom Research and Technology

11:05-11:25 - GIP test for Automotive FMCW interference Detection and Suppression
Thomas Pernstål
SafeRadar Research

11:25-11:45 - Efficient mmWave radar system design - from picoseconds to years
Erik Månsson
Acconeer

11:45-12:05 - Reliable surveillance with video & radar fusion
Andreas Glatz
Axis

12:05-12:25 - Detecting Low-Density "invisible" foreign matter in Food Production
Joakim Nilsson
Food Radar Systems

Session Tu_B1
THz Technology Part I

Room B **Chair:** *Astrid Algaba-Brazalez*

10:45-11:05 - Characterisation of resonant tunnelling diodes up to 1100 GHz
Patrik Blomberg, *Josip Vukusic, Jan Stake*
Chalmers University of Technology, Sweden

11:05-11:25 - Channel Bounding modeling for THz Communication
A. Madannejad, *J. Oberhammer*
KTH Royal Institute of Technology, Sweden

11:25-11:45 - Ultra-wideband graphene-based absorbers for THz integrated waveguide systems
Nikolaos Xenidis[1], *James Campion*[1, 3], *Serguei Smirnov*[1], *Aleksandra Przewłoka*[2, 4], *Aleksandra Krajewska*[2], *Piotr A. Drozdz*[2], *Albert Nasibulin*[4, 5], *Joachim Oberhammer*[1], *Dmitri Lioubtchenko*[1, 2]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Institute of High Pressure Physics PAS, Poland*
[3]*TeraSi AB, Sweden*
[4]*Military University of Technology, Poland*
[4]*Aalto University, Finland*
[5]*Skolkovo Insititute of Science and Technology, Russia*

11:45-12:05 - Self-aligned InGaAs composite channel MOSFET with f_T = 207 GHz
Navya Sri Garigapati, *Erik Lind*
Lund University, Sweden

Session Tu_C1
Computational Electromagnetics Part I

Room C **Chair:** *Dragos Dancila*

10:45-11:05 - An Accelerated Finite Element-Boundary Integral Code Developed using Open Source Software
Niklas Wingren, *Daniel Sjöberg*
Lund University, Sweden

11:05-11:25 - Integrating Antenna and Wireless Connectivity Simulation to Accelerate Product Design and Testing
Jordi Soler Castany
Altair Engineering Inc., United States

11:25-11:45 - Phase Field Simulations of Ferroelectric Materials Using Open Source Software
D. Sjöberg
Lund University, Sweden

11:45-12:05 - Modelling and Optimisation of a Relativistic Magnetron with Transparent Cathode with TE_{11}-mode Emission of Microwaves
David Sawert[1, 2], *Pablo Vallejos*[2], *Frans Nyberg*[2], *Dragos Dancila*[1, 3], *Tomas Hurtig*[2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Swedish Defence Research Agency, Sweden*
[3]*Department of Electrical Engineering, Uppsala University, Sweden*

Workshop I
COMSOL EM Simulation

Room D 10:45-12:25

If you are in the process of designing or characterizing an antenna and want to find out how you can model its properties, this workshop is for you. The COMSOL Multiphysics® simulation platform together with the add-on RF Module offers functionality for simulating antennas of all types and sizes, and for any range of frequencies. Using the software, you can calculate performance indicators such as impedance, directivity, far-field radiation pattern, efficiency, gain, VSWR, and S-parameters.

During the workshop, we will cover simulations of antennas in arrays, interaction with radomes and reflectors, and wireless power transfer. The presentation will include a demo of a double-ridged horn antenna and time for questions. The workshop will last for 1 hour and 40 minutes.

Keynote Session Tu_K2

Room A **Chair:** *Davide Comite*

12:25-13:00 - How far are we from closed form In-, On-, and Off-Body link budget approximations

Anja Skrivervik
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
Lund University, Lund, Sweden

Link budgets have been used since early radio days as a convenient tool to obtain a first idea of the feasibility of a link. They also provide useful information about the power levels included. This presentation will catalogue and explain the difficulties linked to the establishment of link budgets for In-, On, and Off- Body links. Existing initial solutions for near field losses, reflection at interfaces and In-Body propagation will be presented. Moreover, the impact of the electric size of the host body will be discussed.

Focused Session Tu_FS_A2
Radio Science Activities (URSI)

Room A **Chair:** *Daniel Sjöberg; Martin Norgren*

14:00-14:20 - Radio Museums in Sweden
Joakim F. Johansson
The Swedish National Committee for Radio Science

14:20-14:40 - Update of the Information Brochure on Mobile Communication and Health by the Swedish National Committee for Radio Science
Jonna Wilén[1], *Jimmy Estenberg*[2], *Kjell Hansson Mild*[1], *Tommy Ljunggren*[3], *Mats-Olof Mattsson*[4], *Daniel Sjöberg*[5], *and Christer Törnevik*[6]
[1]*Umeå Universitet*
[2]*Scientific secretary of the Scientific Council on Electromagnetic field and health at the Swedish Radiation Safety Authority*
[3]*Ljunggren Consulting Team*
[4]*SciProof International AB och Strömstad Akademi*
[5]*Lunds Tekniska Högskola*
[6]*Ericsson AB*

14:40-15:00 - EISCAT_3D, the new Arctic radar for space weather research
Ingemar Häggström
EISCAT Scientific Association, Sweden

15:00-15:20 - Women in Radio Science – WIRS Chapter Sweden
Jonna Wilen[1], *Mariana Dalarsson*[2], ***Asta Pellinen-Wannberg***[1,3]
[1]*Umeå University, Sweden*
[2]*KTH Royal Institute of Technology, Sweden*
[3]*The Swedish Institute of Space Physics*

Session Tu_B2
Electromagnetic Measurements Part I

Room B **Chair:** *Yasin Alekajbaf*

14:00-14:20 - Measuring Extinction and Monostatic Radar Cross-Sections of Low-Scattering Antennas
Alexandros Pallaris[1], *Rasmus E. Jacobsen*[2], *Daniel Sjöberg*[1]
[1]*Lund University, Sweden*
[2]*Technical University of Denmark, Denmark*

14:20-14:40 - Microwave system to assess muscle quality using chained machine learning models
Viktor Mattsson, *Mauricio D. Perez, Robin Augustine*
Uppsala University, Sweden

14:40-15:00 - Low Loss L-band Feed Assembly
Mikael Öhgren, *Joakim Johansson, Patrik Dimming*
Beyond Gravity Sweden AB

15:00-15:20 - Introduction to Load Pull Measurements
Dirk Faber
Maury Microwave Corporation, United States

15:20-15:40 - Adaptive Control of Microwave Power During Microwave Sintering
S. Murali[1], *K. Pelckmans*[1, 2], *D. Pelikan*[1], *Y. Alekajbaf*[2], *D. Dancila*[1, 2, 3]
[1]*Percy Roc AB, Sweden*
[2]*Department of Physics and Astronomy, Uppsala University, Sweden*
[3]*Department of Electrical Engineering, Uppsala University, Sweden*

Session Tu_C2
Microwave Amplifiers Part I

Room C **Chair:** *Stefan Andersson*

14:00-14:20 - D-band LNA in Vertical III-V Nanowire Technology
Tobias Tired[1], *Lars-Erik Wernersson*[2], *Stefan Andersson*[3]
[1]*NordAmps AB, Sweden*
[2]*Lund University, Sweden*
[3]*Ericsson AB, Sweden*

14:20-14:40 - Wideband Active Load-Modulated Amplification Using A Non-reciprocal Combiner: A Novel RF-input Circulator Load Modulated Power Amplifier Architecture
Han Zhou, Haojie Chang, ***Christian Fager***
Chalmers University of Technology, Sweden

14:40-15:00 - InP HEMT Cryogenic Ultra-Low Power Low-Noise Amplifiers
Yin Zeng[1], *Jörgen Stenarson*[2], *Peter Sobis*[1, 2], *Niklas Wadefalk*[2], *Jan Grahn*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Low Noise Factory AB, Sweden*

15:00-15:20 - Epitaxial Optimization of the InP HEMT for Cryogenic Low-Noise Amplifiers
Junjie Li[1], *Johan Bergsten*[2], *Arsalan Pourkabirian*[2], *Niklas Wadefalk*[2], *Jan Grahn*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Low Noise Factory AB, Sweden*

Workshop II
ALTAIR FEKO EM Simulation

Room D 14:00-15:40

Using simulation to predict, analyze, optimize, and plan the coverage given by radio and radar systems is key to reduce development times and costs. Altair FEKO offers, thanks to WinProp and WRAP technologies, highly accurate and fast wave propagation models as well as radio network planning modules for almost every standard incl. 5G, allowing the users to perform the radio and radar coverage planning in arbitrary environments including large-scale terrain, built-up, industrial and indoor scenarios.

This workshop will cover simulation strategies for radio and radar networks in complex environments. Examples which are presented during the workshop will include the following ones:

- Planning of 5G private networks in mixed outdoor/indoor environments.
- Evaluation of the installed antenna performance by virtual test drives and flights.
- Effects of interference and jamming on the radio/radar coverage incl. co-existence analysis of radio networks.

Focused Session Tu_FS_A3
THz Technology

Room A **Chair:** *Joachim Oberhammer*

16:10-16:30 - Integrated supra-THz electronics
Jan Stake
Chalmers University of Technology, Sweden

16:30-16:50 - THz Receivers: From Weather Satellites to 6G Communications
Jeffrey Hessler
Virginia Diodes, Inc., United States

16:50-17:10 - Exploring life sciences with terahertz electronics
Helena Rodilla
Chalmers University of Technology, Sweden

17:10-17:30 - Terahertz Technology and Applications at AAC Omnisys (AAC CLYDE SPACE)
Olivier Auriacombe
AAC-Clydespace/Omnisys

17:30-17:50 - Silicon-micromachined THz systems – enabling the large-scale exploitation of the THz frequency spectrum?
Joachim Oberhammer
KTH Royal Institute of Technology

Session Tu_B3
Advanced Microwave Technology Part I

Room B **Chair:** *Qiao Chen*

16:10-16:30 - Vacuum Electron Device Technology: Key of the Clean and Safe Energy Generation (SDG-7) for Climate Stabilization (SDG-13)
Anshu S. Singh[1], *Dragos Dancila*[1, 2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Department of Electrical Engineering, Uppsala University, Sweden*

16:30-16:50 - Quality Monitoring of Mineral and Synthetic Oils Using a High Q-Factor Single-Mode Resonance Cavity and Kajfez' Algorithm at 2.45 GHz
Y. Alekajbaf[1], *M. Coman*[1], *P. Szaniawski*[1], *Dragos Dancila*[1, 2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Department of Electrical Engineering, Uppsala University, Sweden*

16:50-17:10 - A Contactless Feeding Design Using MetaCoax Coupler
Prabhat Khanal[1], *Jian Yang*[1], *Sadegh Mansouri Moghaddam*[2], *Alireza Bagheri*[2], *Xinxin Yang*[2]
[1]*Chalmers University of Technology, Sweden*
[2]*Gapwaves AB, Sweden*

17:10-17:30 - RanLOS vehicular measurement system for 3-6 GHz
Madeleine Schilliger Kildal[1], *Jan Carlsson*[1, 2], *Louice Rosdahl*[1]
[1]*RanLOS AB, Sweden*
[2]*Provinn AB, Sweden*

17:30-17:50 - Attenuation of Electromagnetic waves in Plasma in Ku band
M.Rezaei Golghand, *S.U.Abbas Shah, A. Madannejad, J. Oberhammer*
KTH Royal Institute of Technology, Sweden

Session Tu_C3
Active Components

Room C **Chair:** *Anette Löfstrand*

16:10-16:30 - ASM-HEMT DC Geometry Scaling Development
***Fadi Zaki**, Lucas Iogna-Prat, Hassan Saleh1, Gregory U'Ren*
X-Fab France, France

16:30-16:50 - A High-Efficiency Ka-Band Active Frequency Doubler MMIC in 150 nm GaN HEMT Technology
***Rob Vissers**, Herbert Zirath, Gregor Lasser*
Chalmers University of Technology, Sweden

16:50-17:10 - Multi-physics measurements under realistic load pull conditions
***Richard Bannister**[1], Koen Buisman[1, 2]*
[1]University of Surrey, UK
[2]Chalmers University of Technology, Sweden

17:10-17:30 - High-Speed Vertical InGaAs Nanowire Transistor Technology for RF BEOL Integration
***Marcus E. Sandberg**, Anette Löfstrand, Lars Ohlsson Fhager*
Lund University, Sweden

17:30-17:50 - E/W-Band GaN MMICs for RF Sensing and Wireless Communication
***Robert Malmqvist**[1], Rolf Jonsson[1], Mingquan Bao[2], Kristoffer Andersson[2]*
[1]Swedish Defence Research Agency (FOI), Sweden
[2]Ericsson AB, Sweden

Workshop III
Women in Antennas and Microwave Engineering

Room D 16:10-17:50

The EurAAP working group for Women in Antennas and Propagation (WiAP) will organize a workshop during the conference. The workshop will consist on:

- A talk given by Katerina Galitskaya (Radientum Oy) on “Building a personal brand as a woman in engineering”. This talk is sponsored by the EurAAP Women in Antennas and Propagation (WiAP) working group.
- A talk given by Ana Peláez Pérez (Televes) on "Evolution of women in engineering. New opportunities in the digital age." This talk is sponsored by the European Microwave Association (EuMA).
- An open discussion where all attendees will be welcomed to address their concerns and/or ideas to strenghen the presence of women in our community.

The main objective of the EurAAP WiAP working group is to increase the presence of women in the antennas and propagation society. This is done by encouraging and supporting young women to pursue a career in this topic and by raising awareness about the barriers that prevent the integration of women in our community.

EuMA, the European Microwave Association, is a non-profit organization working to foster connections within the microwave community and raise public understanding of the benefits of microwave research and technology by pursuing educational, training, and research initiatives. We aim to give European engineers and scientists in the micro- and millimeter-wave field a unified voice and ensure full recognition of microwaves as a vital industrial and research area by the European Commission.

Wednesday 24 May

08:30-10:10	**Sessions**	
Room A:	**Radar**	**We_A1**
Room B:	**Computational Electromagnetics Part II**	**We_B1**
Room C:	**Reflector and Reflectarray**	**We_C1**
Room D:	**Electromagnetic Wave Propagation**	**We_D1**
10:10-10:40	**Coffee Break and Exhibition**	
10:40-11:15	**Room A: Keynote Session**	**We_K1**
11:15-12:55	**Sessions and Workshop**	
Room A:	**SyMat**	**We_FS_A2**
Room B:	**Microwave Amplifiers Part II**	**We_B2**
Room C:	**Advanced Antenna Technology Part I**	**We_C2**
Room D:	**Workshop IV: Cadence**	
12:55-13:55	**Lunch and Exhibition**	
13:55-14:30	**Room A: Keynote Session**	**We_K2**
14:30-15:05	**Room A: Keynote Session**	**We_K3**
15:05-15:35	**Coffee Break and Exhibition**	
15:35-16:10	**Room A: Keynote Session**	**We_K4**
16:10-17:50	**Sessions and Posters**	
Room A:	**THz Technology Part II**	**We_A3**
Room B:	**Array Antennas**	**We_B3**
Room C:	**Advanced Microwave Technology Part II**	**We_C3**
Room D:	**Electromagnetic Measurements Part II**	**We_D2**
Poster Area:	**Best Student Award Posters**	
18:30-21:30	**Conference Dinner**	

Session We_A1
Radar

Room A **Chair:** *Victor Pettersson*

08:30-08:50 - Automotive In-Cabin Object Detection and Passenger Monitoring with Sub-THz Radar System
Sining An[1], *Victor Pettersson*[2], *Armin Karimi*[3], *Joachim Oberhammer*[3], *Zhongxia Simon He*[1], *Herbert Zirath*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Veoneer Sweden AB, Sweden*
[3]*KTH Royal Institute of Technology, Sweden*

08:50-09:10 - Structurally Fuselage-Integrated Wide-Scanning Array Antenna
Prabhat Khanal[1], *Jian Yang*[1], *Ruoshan Luo*[2], *Per Hallander*[2], *Mussie Gebretnsae*[2]
[1]*Chalmers University of Technology, Sweden*
[2]*Saab AB, Sweden*

09:10-09:30 - THz SAR Image Autofocusing based on the Integration of Compressed Sensing into the Backprojection Process
Yevhen Ivanenko, *Viet T. Vu, Mats I. Pettersson*
Blekinge Institute of Technology, Sweden

09:30-09:50 - Silicon-Micromachined THz Radar Frontend
Armin Karimi, *Umer Shah, Joachim Oberhammer*
KTH Royal Institute of Technology, Sweden

09:50-10:10 - Single Layer Dual Circularly Polarized Series-fed Gap Waveguide Based Slot Array for 77 GHz Automotive Radar
Zhaorui Zang, *Ashraf Uz Zaman, Jian Yang*
Chalmers University of Technology, Sweden

Session We_B1
Computational Electromagnetics Part II

Room B **Chair:** *Mats Gustafsson*

08:30-08:50 - Degrees of Freedom and Characteristic Modes
Mats Gustafsson
Lund University, Sweden

08:50-09:10 - Multimodal Transfer Matrix Approach for the analysis of glide symmetric dielectric/magnetic structures
Ludovica Tognolatti[1], *Francisco Mesa*[2], *Paolo Baccarelli*[1], *Giuseppe Schettini*[1], *Oscar Quevedo-Teruel*[3]
[1]*Roma Tre University, Italy*
[2]*Universidad de Sevilla, Spain*
[3]*KTH Royal Institute of Technology, Sweden*

09:10-09:30 - Numerical Analysis of Glide-Symmetric Metasurfaces with Integral Equations
M. Petek[1], *J. Rivero*[1], *J. A. Tobon Vasquez*[1], *G. Valerio*[2, 3], *O. Quevedo-Teruel*[4], *F. Vipiana*[1]
[1]*Politecnico di Torino, Italy*
[2]*Sorbonne Université, France*
[3]*Université Paris-Saclay, France*
[4]*KTH Royal Institute of Technology, Sweden*

09:30-09:50 - Deep Neural Networks for the Modelling of Passive Microwave Devices
Simon Stenmark, *Thomas Rylander, Tomas McKelvey*
Chalmers University of Technology, Sweden

09:50-10:10 - Hybrid Solver in Automotive Antenna Simulations
Katerina Galitskaya
Radientum

Session We_C1
Reflector and Reflectarray

Room C **Chair:** *Ashraf Uz Zaman*

08:30-08:50 - Integrating Half-Lens Antennas with a Reflectarray
S. Clendinning[1], *O. Zetterstrom*[1], *F. Mesa*[2], *O. Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Universidad de Seville, Spain*

08:50-09:10 - Enhancement of WPT Performance Using Intelligent Reflecting Surfaces
Romans Kusnins[1], ***Anna Litvinenko***[2], *Janis Eidaks*[1], *Ruslans Babajans*[1], *Darja Cirjulina*[1]
[1]*Institute of Radioelectronics, Riga Technical University, Latvia*
[2]*SpacESPro Lab, Riga Technical University, Latvia*

09:10-09:30 - Reflector-based Broadband Antennas offering low profile
Sambhav Malhotra, *Florian Irnstorfer, Georg Fischer*
FAU Erlangen-Nürnberg, Germany

09:30-09:50 - A 50 dBi Dual-reflector E-Band Antenna for 5G Backhaulings with Beam Steering Function
Enlin Wang[1], *Sam Agneessens*[2], *Marcus Hasselblad*[3], *Ashraf Uz Zaman*[1], *Jian Yang*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Ericsson AB, Sweden*
[3]*Gapwaves AB, Sweden*

09:50-10:10 - Optimized Design and Implementation of a Blended Rolled Edge Reflector CATR
Marc Dirix[1], *Stuart F. Gregson*[2, 3], ***Sergiy Pivnenko***[1]
[1]*Antenna Systems Solutions, Spain*
[2]*Next Phase Measurements LLC, USA*
[3]*Queen Mary University London, UK*

Session We_D1
Electromagnetic Wave Propagation

Room D **Chair:** *Jian Yang*

08:30-08:50 - Geodesic *H*-plane Horn Antennas
Mingzheng Chen[1], *Francisco Mesa*[2], *Oscar Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Universidad de Sevilla, Spain*

08:50-09:10 - Frequency Selective Surfaces on Multi-glazed Windows
R. Chueca, *R. Alcain, C. Heras, I. Salinas*
University of Zaragoza, Spain

09:10-09:30 - Terahertz Photonic Scheme Based on a Black Phosphorus-DBR Structure for Biosensing
Emir Aznakaev[1], *Victor Zadorozhnii*[2]
[1]*National Aviation University, Ukraine*
[2]*Taras Shevchenko National University of Kyiv, Ukraine*

09:30-09:50 - Comparisons of Absorbed power density and Incident Power Density for EMF exposure in the near-field at 10–90 GHz
Ming Yao[1], *Kun Li*[2], *Shuai Zhang*[1]
1Aalborg University, Denmark
2Kagawa University, Japan

09:50-10:10 - Dispersion Diagram Analysis of a Two-Dimensional Dielectric Hexagonal Periodic Structure
Oskar Zetterstrom[1], *Shiyi Yang*[1], *Francisco Mesa*[2], *Oscar Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Universidad de Sevilla, Spain*

Keynote Session We_K1

Room A **Chair:** *Astrid Algaba-Brazalez*

10:40-11:15 - Microwave and Antenna Activities at Saab Surveillance

Sten E. Gunnarsson
SAAB AB, Järfälla, Sweden
Chalmers University of Technology, Gothenburg, Sweden

Johan Malmström
SAAB AB, Järfälla, Sweden

Microwave and Antenna technology are vital for most of Saab's products and therefore also for the safety of many of our customers and the people and societies they protect. In this talk, we will focus on the Business Area Surveillance which host e.g. Saab's Radar and Electronic Warfare (EW) portfolio where high performance Microwave and Antenna units are of utmost importance. An overview of our products will be shown together with a technical outlook into the future.

Focused Session We_FS_A2
SyMat

Room A **Chair:** *Guido Valerio*

11:15-11:35 - Closed-Form Homogenization of Glide-Symmetric Metasurfaces
Guido Valerio[1, 2], *Boris Fischer*[1, 2]
[1]*Sorbonne Université, France*
[2]*Université Paris-Saclay, France*

11:35-11:55 - Overview of research on metalenses and geodesic lenses for 5G/6G applications in Ericsson
Astrid Algaba-Brazález[1], *Lars Manholm*[1], *Martin Johansson*[1], *Oscar Quevedo-Teruel*[2]
[1]*Ericsson AB, Sweden*
[2]*KTH Royal Institute of Technology, Sweden*

11:55-12:15 - All-Metal THz Leaky-Wave Antennas
Davide Comite[1], *Dejian Zhang*[2], *Xiaojiao Deng*[2], *Xiaoping Zheng*[2], *Paolo Baccarelli*[3], *Paolo Burghignoli*[1]
[1]*Sapienza University of Rome, Italy*
[2]*Tsinghua University, China*
[3]*Roma Tre University, Italy*

12:15-12:35 - The Examination of Finite Dimensions Impact on the Sensing Performance of Terahertz Metamaterial Absorber
Ana Tatović[1], *Milka Potrebić Ivaniš*[2], *Dejan Tošić*[2]
[1]*Faculty of Technical Sciences Čačak, Serbia*
[2]*School of Electrical Engineering, Serbia*

12:35-12:55 - On the use of the transfer matrix method for radiating periodic structures
Francisco Mesa[1], *Guido Valerio*[2, 3], *Oscar Quevedo-Teruel*[4], *David R. Jackson*[5]
[1]*Universidad de Sevilla, Spain*
[2]*Sorbonne Université, France*
[3]*Université Paris-Saclay, France*
[4]*KTH Royal Institute of Technology, Sweden*
[5]*University of Houston, USA*

Session We_B2
Microwave Amplifiers Part II

Room B **Chair:** *Christian Fager*

11:15-11:35 - Low Power and High Linear, 28 GHz Low Noise Amplifier Designed in 22nm FDSOI Technology
Marzieh Mollaalipouramir, *Herbert Zirath, Christian Fager*
Chalmers University of Technology, Sweden

11:35-11:55 - Preliminary Conceptual Design of the 400 kW Solid-State Power Amplifier Station for ESS
*Seyed Alireza Mohadeskasaee[1], **Dragos Dancila**[1, 2]*
[1]Department of Physics and Astronomy, Uppsala University, Sweden
[2]Department of Electrical Engineering, Uppsala University, Sweden

11:55-12:15 - Preliminary Results of Envelope Tracking Linearization of Solid-State RF Power Amplifiers for Efficient Superconducting Cavity Charging
*Long Hoang Duc[1], **Dragos Dancila**[1, 2]*
[1]Department of Physics and Astronomy, Uppsala University, Sweden
[2]Department of Electrical Engineering, Uppsala University, Sweden

12:15-12:35 - Behavioral Modeling and Harmonic Balance Analysis of Microwave Parametric Amplifiers for Quantum Computing
Daryoush Shiri[1], *Pavan Telluri[2], Hampus Renberg Nilsson[1], Anita Fadavi Roudsari[1], Vitaly Shumeiko[1], Christian Fager[1], Per Delsing[1]*
[1]Chalmers University of Technology, Sweden
[2]Eindhoven University of Technology, The Netherlands

12:35-12:55 - Dynamic Gate Bias to Improve PAE of Power Amplifiers with Telecommunications Signals
Göksu Kaval[1, 2], *Gregor Lasser[1], Marcus Gavell[2], Christian Fager[1]*
[1]Chalmers University of Technology, Sweden
[2]Gotmic AB, Sweden

Session We_C2
Advanced Antenna Technology Part I

Room C **Chair:** *Lars Manholm*

11:15-11:35 - A W-Band Open-Ended Waveguide Element Focal-Plane-Array for Backhaul Reflector Antennas
Viktor S. Chernikov[1], Artem R. Vilenskiy[1], Sam Agneessens[2], Lars Manholm[2], ***Marianna V. Ivashina***[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Ericsson Research, Sweden*

11:35-11:55 - Combination of Array Antennas and Dielectric Lenses for 6G Communication Systems
Hairu Wang[1], *Pilar Castillo-Tapia[1], Astrid Algaba-Brazález[2], Lars Manholm[2], Martin Johansson[2], Oscar Quevedo-Teruel[1]*
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Ericsson AB, Sweden*

11:55-12:15 - Low-Cost and High-Performance Leaky-Wave Antennas
Sailing He, ***Wenfu Fu***
KTH Royal Institute of Technology, Sweden

12:15-12:35 - High Gain and Fixed Broadside Leaky Wave Antenna with Quasi-Optical Feed for D-Band Communication
Usman Shehryar*, Ashraf Uz Zaman, Jian Yang*
Chalmers University of Technology, Sweden

12:35-12:55 - Q-factor Bounds for Microstrip Patch Antennas
Ben A. P. Nel[1], *Anja K. Skrivervik[1, 2], Mats Gustafsson[1]*
[1]*Lund University, Sweden*
[2]*École Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

Workshop IV
Cadence EM Design and Analysis

Room D 11:15-12:55

cadence®

- **Advanced Antenna Design and Integration Through Circuit/EM Co-Simulation**

This presentation explores recent developments in mmWave technology from the perspective of EM simulation, in situ circuit simulation, phased-array synthesis, and RF PCB design. It will discuss system requirements that drive antenna/front-end architectural decisions for mmWave applications, antenna optimization, and array configuration and generation. It will also present the use of RF system design software for link budget analysis. In addition to antenna/antenna array design and simulation considerations, this talk will examine the integration of the array with front-end beam steering electronics through RF routing and its simulation with front-end circuitry and feed network before transferring to the PCB layout editor.

Attendees will learn how best-in-class RF design, manufacturing, and EM system signoff combine to support PCB-based array development and integration with the IC through the PCB system level from within a comprehensive front-to-back workflow from Cadence. Multiple design examples will be presented.

- **Use of EM Field Solver to Simulate 50GHz PCB on Correlation to Measurements**

This presentation explores the influence of the field solver numerical solution space on measurement correlation for PCB applications. The underlying challenge is that for EM simulation, we are almost always forced to simulate only a small subset of what is being measured, and thus we are forced to introduce artificial field boundaries into the numerical modeling. Potentially, this can cause miscorrelation of the structures being characterized and neglect system-wide coupling effects from other signals, the power delivery, and EMI effects. As system speeds increase, these effects must be considered and quantified.

To examine this topic, an IEEE P370-compliant test platform will be used. The presentation explores the effects of field solver boundary truncation and boundary conditions. It will give practical guidelines for improving correlation to measurements, both with respect to measurement and simulation strategy. This paper is relevant to everyone using 3D EM solvers.

Keynote Session We_K2

Room A **Chair:** *Thomas Rylander*

13:55-14:30 - Modeling of RF heating in fusion plasmas with iterative addition of non-local effects

Björn Zaar
KTH Royal Institute of Technology, Sweden

Modelling the propagation and dissipation of waves in the ion cyclotron range of frequencies (ICRF) in fusion plasmas is challenging in two respects. Firstly because of the sheer size of such a 3D wave problem for a realistic reactor geometry. Secondly due to spatial dispersion, which arises when the length scales of the wave field and particle motion are comparable. Spatial dispersion turns the wave equation into an integro-differential equation that is non-trivial to represent using local discretization techniques, like finite elements.

In this talk, we will explore how we can tackle the problem with memory efficient modeling in 2.5D axisymmetry in COMSOL Multiphysics® and adding the non-local effects to the finite element model iteratively using Anderson acceleration. This retains memory efficiency and geometrical fidelity of the finite element method, while modeling plasma dynamics coupled to Maxwell's equations. The non-local effects are evaluated in MATLAB® and added to the COMSOL Multiphysics® model using LiveLink™ for MATLAB®.

Keynote Session We_K3

Room A **Chair:** *Sten Gunnarsson*

14:30-15:05 - The Challenges of mmWave Technology in 5G/B5G and Satellite Communication

Vincent Lee
TMY Technology Inc., Taiwan

The difficulties of designing phased array antenna in the mmWave band and how TMYTEK overcome these challenges. We are experiencing today rapid changes in information due to new technologies such as the metaverse, quantum computers, 5G, LEO, and autonomous vehicles. mmWave technology is the key infrastructure that will be the most critical in the present and the future to support those applications and turn them into a reality. Although the available bandwidth of mmWave frequencies is promising, the propagation characteristics are significantly different from microwave frequency bands regarding path loss. TMYTEK provides millimeter-wave advances in 5G/B5G and satellite communication applications. Design, materials, manufacturing, and testing are all covered by this one-stop-shop solution. By revolutionizing the mmWave RF front-end with novel devices, designing ready-to-use beamformers and redesigning the OTA testing approach, TMYTEK enables industrial inventions to reach the market faster.

Keynote Session We_K4

Room A **Chair:** *Oscar Quevedo-Teruel*

15:35-16:10 - A New Paradigm in Analogue Multibeam Antennas Employing Generalized Joined Coupler Matrix

Jay Guo
University of Technology Sydney, Australia

In this talk, we present an overview on a new type of feed networks for multibeam antennas, known as the generalized joined coupler (GJC) matrix. A salient feature of the GJC matrix is that the same phase shifters can be used for tuning each beam, and different beams can be steered independently. Different configurations of the GJC matrix and the theories for designing the GJC matrix are discussed. The low cost and low energy features of the GJC matrix make it attractive for future wireless communications systems such as 6G.

Session We_A3
THz Technology Part II

Room A **Chair:** *Pilar Castillo-Tapia*

16:10-16:30 - Preliminary Design investigation of 300 GHz Micro-Magnetron
Anshu S. Singh[1], *Dragos Dancila*[1, 2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Department of Electrical Engineering, Uppsala University, Sweden*

16:30-16:50 - Recent Achievements in Silicon-Micromachined THz Filters at KTH
Oleksandr Glubokov, *Mohammad Mehrabi Gohari, Joachim Oberhammer*
KTH Royal Institute of Technology, Sweden

Session We_B3
Array Antennas

Room B **Chair:** *Lars Jonsson*

16:10-16:30 - Investigation of Trade-Off Between Bandwidth and Sidelobe Level for Convex Optimization of Arrays
Harald Hultin[1, 2], *Henrik Frid*[1], *B. L. G. Jonsson*[2]
[1]*Saab AB, Sweden*
[2]*KTH Royal Institute of Technology, Sweden*

16:30-16:50 - Dual-Polarized 3:1 Bandwidth Antenna Array with Inverted BoR Elements
Matti Kuosmanen[1, 2], *Sten E. Gunnarsson*[3], *Johan Malmström*[3], *Jari Holopainen*[1], *Juha Ala-Laurinaho*[1], *Ville Viikari*[1]
[1]*Aalto University, Finland*
[2]*Saab Finland Oy, Finland*
[3]*Saab AB, Sweden*

16:50-17:10 - A mm-Wave Array Antenna for Dual-Band Dual-Polarized 5G Test Systems
Johan Wettergren[1], *Xinxin Yang*[1], *Per Landin*[2]
[1]*Qamcom Research and Technology, Sweden*
[2]*Ericsson AB, Sweden*

17:10-17:30 - Modelling Full Duplex Antenna Array Systems for SatCom Applications
T van der Spuy[1], *MT Behrens*[1], *R Maaskant*[1], *M Ivashina*[1], *L Nyström*[2]
[1]*Chalmers University of Technology, Sweden*
[2]*Satcube AB, Sweden*

17:30-17:50 - On a Method to Quantify the Far-Field Uncertainty of Array Antennas with Respect to Uncertainties of Antenna Current Densities
B. L. G. Jonsson[1], *Harald Hultin*[1, 2]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Saab AB, Sweden*

Session We_C3
Advanced Microwave Technology Part II

Room C **Chair:** *José Rico-Fernández*

16:10-16:30 - Additive Manufacturing for Microwave Components: Present and Future
José Rico-Fernández
Northern Waves AB, Sweden

16:30-16:50 - Preparation for Megawatt-range Trials at 3 GHz: A Preliminary Study of Rocks Comminution with Very High Pulsed Microwave Power
Y. Alekajbaf[1], *D. Dancila*[1, 2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Department of Electrical Engineering, Uppsala University, Sweden*

16:50-17:10 - Efficient and Sustainable CFRP Manufacturing through Microwave-Based Curing for Advanced Control Exposure Optimization
Y. Alekajbaf[1], *S. Murali*[2], *D. Dancila*[1, 2, 3]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Percy Roc AB, Sweden*
[3]*Department of Electrical Engineering, Uppsala University, Sweden*

17:10-17:30 - A Dielectric Rod Antenna for Medical Diagnosis
Seyed Moein Pishnamaz, *Xuezhi Zeng, Mikael Persson, Andreas Fhager*
Chalmers University of Technology, Sweden

17:30-17:50 - Compensation for too wide Antenna when using Helmholtz coils
Per Westerlund, *Babak Sadeghi*
Luleå University of Technology, Sweden

Session We_D2
Electromagnetic Measurements Part II

Room D **Chair:** *Marianna V. Ivashina*

16:10-16:30 - Characterizing transmitting phased array antenna elements using a metasurface and IR camera
Johan Lundgren[1], *Torleif Martin*[1, 2, 3], *Marzieh Zabihipour*[4]
[1]*Lund University, Sweden*
[2]*Qamcom Research & Technology, Sweden*
[3]*ReQuTech AB, Sweden*
[4]*Linköping University, Sweden*

16:30-16:50 - RIS Unit Cell with Continuous Amplitude and Phase Control for Millimeter-Wave OTA Measurement Platforms
Yuqing Zhu[1], *Artem Vilenskiy*[1], *Oleg Iupikov*[1], *Pavlo Krasov*[1], *Thomas Emanuelsson*[2, 3], *Gregor Lasser*[2], *Marianna Ivashina*[1]
[1]*Department of Electrical Engineering, Chalmers University of Technology, Sweden*
[2]*Department of Microtechnology and Nanoscience, Chalmers University of Technology, Sweden*
[3]*Ericsson AB, Sweden*

16:50-17:10 - Whole-body SAR measurements of millimeter wave base station in a reverberation chamber
Jens Eilers Bischoff, *Paramananda Joshi, Davide Colombi, Bo Xu, Christer Törnevik*
Ericsson AB, Sweden

17:10-17:30 - Resistivity Measurement of Metal Surfaces to Track Down Dislocations Caused by High Field
M. Coman[1], *M. Jacewicz*[1], *D. Dancila*[1, 2]
[1]*Department of Physics and Astronomy, Uppsala University, Sweden*
[2]*Department of Electrical Engineering, Uppsala University, Sweden*

17:30-17:50 - Wideband Operation of the Hybrid OTA Measurement Chamber
Oleg A. Iupikov[1], *Pavlo S. Krasov*[1], *Rob Maaskant*[1], *Jonas Friden*[2], *Marianna V. Ivashina*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Ericsson AB, Sweden*

Poster Session
Microwave Student Award

Poster Area **Chair:** *Sarah Clendinning*

16:10-17:50 - Design of H-Band SiGe Chip-to-Waveguide Packaging
Haojie Chang, *Zhongxia Simon He, Herbert Zirath*
Chalmers University of Technology, Sweden

16:10-17:50 - Silicon-Micromachined THz Radar Frontend
Armin Karimi, *Umer Shah, Joachim Oberhammer*
KTH Royal Institute of Technology, Sweden

16:10-17:50 - InP HEMT Cryogenic Ultra-Low Power Low-Noise Amplifiers
Yin Zeng[1], *Jörgen Stenarson*[2], *Peter Sobis*[1, 2], *Niklas Wadefalk*[2], *Jan Grahn*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Low Noise Factory AB, Sweden*

16:10-17:50 - Deep Neural Networks for the Modelling of Passive Microwave Devices
Simon Stenmark, *Thomas Rylander, Tomas McKelvey*
Chalmers University of Technology, Sweden

16:10-17:50 - High-Speed Vertical InGaAs Nanowire Transistor Technology for RF BEOL Integration
Marcus E. Sandberg, *Anette Löfstrand, Lars Ohlsson Fhager*
Lund University, Sweden

Poster Session
Antenna and Propagation Student Award

Poster Area **Chair:** *Sarah Clendinning*

16:10-17:50 - Frequency Selective Surfaces on Multi-glazed Windows
***R. Chueca**, R. Alcain, C. Heras, I. Salinas*
University of Zaragoza, Spain

16:10-17:50 - Structurally Fuselage-Integrated Wide-Scanning Array Antenna
***Prabhat Khanal**[1], Jian Yang[1], Ruoshan Luo[2], Per Hallander[2], Mussie Gebretnsae[2]*
[1]Chalmers University of Technology, Sweden
[2]Saab AB, Sweden

16:10-17:50 - Dual-polarized geodesic lens antenna in the sub-THz regime
***Wenfu Fu**[1], Qiao Chen[1], Kun Zhao[2], Oscar Quevedo-Teruel[1]*
[1]KTH Royal Institute of Technology, Sweden
[2]Aalborg University, Denmark

16:10-17:50 - A 50 dBi Dual-reflector E-Band Antenna for 5G Backhaulings with Beam Steering Function
***Enlin Wang**[1], Sam Agneessens[2], Marcus Hasselblad[3], Ashraf Uz Zaman[1], Jian Yang[1]*
[1]Chalmers University of Technology, Sweden
[2]Ericsson AB, Sweden
[3]Gapwaves AB, Sweden

16:10-17:50 - Dispersion Diagram Analysis of a Two-Dimensional Dielectric Hexagonal Periodic Structure
***Oskar Zetterstrom**[1], Shiyi Yang[1], Francisco Mesa[2], Oscar Quevedo-Teruel[1]*
[1]KTH Royal Institute of Technology, Sweden
[2]Universidad de Sevilla, Spain

Thursday 25 May

08:30-10:10	**Sessions**	
Room A:	**Beamforming**	**Th_A1**
Room B:	**Active Circuits**	**Th_B1**
Room C:	**Millimeter Wave Antennas and Components**	**Th_C1**
Room D:	**Advanced Microwave Components**	**Th_D1**
10:10-10:40	**Coffee Break and Exhibition**	
10:40-12:20	**Sessions and Early Career Activities**	
Room A:	**THz Technology Part III**	**Th_A2**
Room B:	**Advanced Antenna Technology Part II**	**Th_B2**
Room C:	**Electromagnetic Theory**	**Th_C2**
Room D:	**Early Career Activities**	
12:20-12:40	**Room A: Closing**	
12:40-13:40	**Lunch and Exhibition**	

Session Th_A1
Beamforming

Room A **Chair:** *Mingzheng Chen*

08:30-08:50 - Design of a Gap Waveguide Based Unit Cell for 1-D Beam Scanning Application at W-band
Mu Fang, *Jian Yang, Ashraf Uz Zaman*
Chalmers University of Technology, Sweden

08:50-09:10 - Geodesic Generalized Luneburg Lens Antenna with High Beam Crossover Gain
O. Zetterstrom[1], *P. Arnberg*[2], *A. Algaba-Brazalez*[3], *L. Manholm*[3], *M. Johansson*[3], *O. Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Saab AB, Sweden*
[3]*Ericsson AB, Sweden*

09:10-09:30 - System-level Beam-steering Performance of the Quasi-optical Feed Linear Array based on Gap Waveguide Technology at 100 GHz
Yingqi Zhang, *Artem R. Vilenskiy, and Marianna V. Ivashina*
Chalmers University of Technology, Sweden

09:30-09:50 - A Loaded Tapered Slot Antenna Featuring Stable Wide-Beamwidth in Wide Band
Fan Zhang[1], *Jian Yang*[2]
[1]*Xidian University, China*
[2]*Chalmers University of Technology, Sweden*

09:50-10:10 - Self-Interference Mitigation in Full-Duplex Beamformed Antenna Arrays
Mustafa Ayebe[1], *Rob Maaskant*[1], *Sten E. Gunnarson*[2], *Henrik Holter*[3], *Johan Malmström*[2], *Carlo Bencivenni*[4], *Marianna Ivashina*[1]
[1]*Chalmers University of Technology, Sweden*
[2]*Saab AB, Sweden*
[3]*Ericsson AB, Sweden*
[4]*Gapwaves AB, Sweden*

Session Th_B1
Active Circuits

Room B **Chair:** *Sajjad Ahmed*

08:30-08:50 - Advancements in Vectorial Harmonic Load Pull Measurements for mmWave Device Characterization and Compact Model Verification
***Sajjad Ahmed**, Karthik Nakkala, Suhas Illath Veetil*
Focus Microwaves Inc., Canada

08:50-09:10 - Curtailed Hardware Impairments Compensation for Low-Cost MIMO Transmitters using Sample Selection Technique
***Shipra**, Meenakshi Rawat*
Indian Institute of Technology, India

09:10-09:30 - RF PA predistortion using Non-Linear RF-DACs
***Victor Åberg**, Han Zhou, Christian Fager, Lars Svensson*
Chalmers University of Technology, Sweden

09:30-09:50 - Design and Performance Evaluation of a 750MHz High-Efficiency Amplifier using Gallium Nitride Transistor
***Seyed Alireza Mohadeskasaei**[1], Dragos Dancila[1, 2]*
[1]Department of Physics and Astronomy, Uppsala University, Sweden
[2]Department of Electrical Engineering, Uppsala University, Sweden

09:50-10:10 - A High-Power 300W Class-AB RF power Amplifier
***Seyed Alireza Mohadeskasaei**[1], Dragos Dancila[1, 2]*
[1]Department of Physics and Astronomy, Uppsala University, Sweden
[2]Department of Electrical Engineering, Uppsala University, Sweden

Session Th_C1
Millimeter Wave Antennas and Components

Room C **Chair:** *Qiao Chen*

08:30-08:50 - Ka-Band High Gain Circular Polarized Antenna Based on Gap Waveguide Technology
Raha Roosefid[1], *Ashraf Uz Zaman*[1], *Jian Yang*[1], *Lukas Nyström*[2], *Sadegh Mansouri*[3]
[1]*Chalmers University of Technology, Sweden*
[2]*Satcube, Sweden*
[3]*Gapwaves AB, Sweden*

08:50-09:10 - Gapwaves Waveguide Antenna Solutions for Automotive Applications
Carlo Bencivenni, *Abolfazl Haddadi, Abbas Vosoogh, Marcus Hasselblad*
Gapwaves AB, Sweden

09:10-09:30 - Compact Fully Metallic Polarizer Integrated in a Geodesic Luneburg Lens Antenna
Freysteinn Viðar Viðarsson[1], *Oskar Zetterstrom*[1], *Astrid Algaba-Brazález*[2], *Nelson J. G. Fonseca*[3], *Martin Johansson*[2], *Lars Manholm*[2], *Oscar Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Ericsson AB, Sweden*
[3]*European Space Agency, The Netherlands*

Session Th_D1
Advanced Microwave Components

Room D **Chair:** *Tian-Wei Huang*

08:30-08:50 - Microstrip Low-Pass Filter Based Picosecond Pulse Expansion for PPM demodulation
*Janis Semenako[1], **Tatjana Solovjova**[1], Janis Eidaks[1], Sandis Spolitis[2], Arturs Aboltins[1]*
[1]Institute of Radioelectronics, Riga Technical University, Latvia
[2]Institute of Telecommunications, Riga Technical University, Latvia

08:50-09:10 - Ku-band Circulators Manufactured by LTCC Technology
***Camilla Kärnfelt**[1], Norbert Parker[2], Vincent Laur[2], Richard Lebourgeois[3]*
[1]IMT Atlantique, France
[2]Université de Bretagne Occidentale, France
[3]THALES Research & Technology, France

09:10-09:30 - The High Spectral Resolution Airborne Microwave Sounder (HiSRAMS) – Technical Description
***Olivier Auriacombe**[1], Mikael Krus[1], Natalia Bliankinshtein[2], Lei Liu[4], Philip Gabriel[3], Shiqi Xu[2], Mengistu Wolde[2], Yi Huang[4], Jean-Christophe Angevain[2, 5]*
[1]Omnisys Instruments AB, Sweden
[2]Flight Research Laboratory, National Research Council Canada, Canada
[3]Horizon Science and Technology, Canada
[4]McGill University, Canada
[5]European Space Agency, The Netherlands

09:30-09:50 - Substrate-Less Vertical Chip-to-Waveguide Transition for W-Band Array Antenna Integration
***Juan-Luis Albadalejo-Lijarcio**[1, 2], Abbas Vosoogh[1], Vessen Vassilev[2], Jian Yang[2], Thomas Emanuelsson[3], Ingmar Andersson[3], Ashraf Uz Zaman[2]*
[1]Gapwaves AB, Sweden
[2]Chalmers University of Technology, Sweden
[3]Ericsson AB, Sweden

09:50-10:10 - A V-band Passive Modulator with High IRR for Low-Power Sensing Applications
***Tian-Wei Huang**[1], Kai-Jie Chuang[1], Yen-Wei Chang[1], Yi-Cheng Huang[1], Chen Chien[1, 2], Jeng-Han Tsai[3]*
[1]National Taiwan University, Taiwan
[2]Astronomy and Astrophysics, Academia Sinica, Taiwan.
[3]National Taiwan Normal University, Taiwan

Session Th_A2
THz Technology Part III

Room A **Chair:** *Kun Zhao*

10:40-11:00 - Design of H-Band SiGe Chip-to-Waveguide Packaging
Haojie Chang, *Zhongxia Simon He, Herbert Zirath*
Chalmers University of Technology, Sweden

11:00-11:20 - Tolerance Analysis of Horn Antennas for Robust Supra-THz Design
Andre G. Koj[1], *Jan Stake*[1], *Divya Jayasankar*[1, 2]
[1]*Chalmers University of Technology, Sweden*
[2]*Research Institutes of Sweden, Sweden*

11:20-11:40 - Sub-THz Single-Pole-Single-Thru Microelectromechanical Switch
Armin Karimi, *Umer Shah, Joachim Oberhammer*
KTH Royal Institute of Technology, Sweden

11:40-12:00 - Dual-polarized geodesic lens antenna in the sub-THz regime
Wenfu Fu[1], *Qiao Chen*[1], *Kun Zhao*[2], *Oscar Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Aalborg University, Denmark*

Session Th_B2
Advanced Antenna Technology Part II

Room B **Chair:** *Francisco Pizarro*

10:40-11:00 - Study on Multi-Hop Wireless Power Transfer Node
*Janis Eidaks[1], **Anna Litvinenko**[2], Romans Kusnins[1], Ruslans Babajans[1], Darja Cirjulina[1]*
[1]Institute of Radioelectronics, Riga Technical University, Latvia
[2]SpacESPro Lab, Riga Technical University, Latvia

11:00-11:20 - Fat-layer intra-body communication
***Ted Johansson**, Pramod Rangaiah, Johan Engstrand, Mauricio Perez, Robin Augustine*
Uppsala University, Sweden

11:20-11:40 - 3D-printed Dielectric Resonator Antennas with Circular Polarization Using Parasitic Helix and Twist Structure
*S. Diaz[1], A. Avila[1], M. Diaz[2], E. Rajo-Iglesias[3], **F. Pizarro**[1]*
[1]Pontificia Universidad Católica de Valparaíso, Chile
[2]University of Chile, Chile
[3]University Carlos III of Madrid, Spain

11:40-12:00 - Distributed MIMO Testbeds using 1-Bit Radio-over-Fiber Fronthaul
*Lise Aabel[1, 2], **Frida Olofsson**[1], Husileng Bao[1]*
[1]Chalmers University of Technology, Sweden
[2]Ericsson AB, Sweden

Session Th_C2
Electromagnetic Theory

Room C **Chair:** *Mattias Gustafsson*

10:40-11:00 - Advanced behavioral modeling of RF/Microwave circuits for active antenna system simulation
Saabe W, *Mazière C, Ouardirhi Z, Gasseling T*
AMCAD engineering, France

11:00-11:20 - Generalized Double-Layer Lenses with Rotational Symmetry
Qiao Chen, *Oscar Quevedo-Teruel*
KTH Royal Institute of Technology, Sweden

11:20-11:40 - Nonlinear Signal Distortions in Contacts of Rough Conductors
Amir Dayan[1], Yi Huang[1], Mattias Gustafsson[2], Torbjörn Olsson[3], ***Alex Schuchinsky***[1]
[1]*University of Liverpool, UK*
[2]*Huawei Technologies Sweden AB, R&D Centre, Gothenburg, Sweden*
[3]*Huawei Technologies Sweden AB, R&D Centre, Kista, Sweden*

11:40-12:00 - Efficiency estimation in additive-manufactured geodesic lens antennas using a ray-tracing technique
Pilar Castillo-Tapia[1], *Jose Rico-Fernández[2], Sarah Clendinning[1], Francisco Mesa[3], Oscar Quevedo-Teruel*[1]
[1]*KTH Royal Institute of Technology, Sweden*
[2]*Northern Waves AB, Sweden*
[3]*Universidad de Sevilla, Spain*

12:00-12:20 - Algorithm for Calculating the Sensory Effect of a Three-Layer Optical Scheme by the Matrix Transfer Method
Emir Aznakaev[1], *Anatol Suprun[2], Liudmyla Shmeleva[2]*
[1]*National Aviation University, Ukraine*
[2]*Taras Shevchenko National University of Kyiv, Ukraine*

Early Career Activities

EurAAP working group for Early Careers in Antennas and Propagation (ECAP)

Room D 10:40-12:20

ECAP is a new working group of EurAAP that strives to benefit and increase the involvement of early career members in the organization. ECAP also provides a platform for people in the early stages of their career (industry and academia) to develop their networks and gain visibility. The ECAP working group is an entry point for young professionals to familiarize themselves with the operations of EurAAP, which is essential for the long-term development of EurAAP.

ECAP is the organizer of this recruitment event where early careers can meet with companies to discuss future opportunities. The exhibitors of this event are:

Comsol	Huawei	OEM Electronics	Signal solutions
Ericsson	Amtele	Altair	EuMA
SAAB	Gapwaves	Kaelus	EurAAP
Cellmax	MVG	PCTEL	

Please feel free to attend this event!

Venue

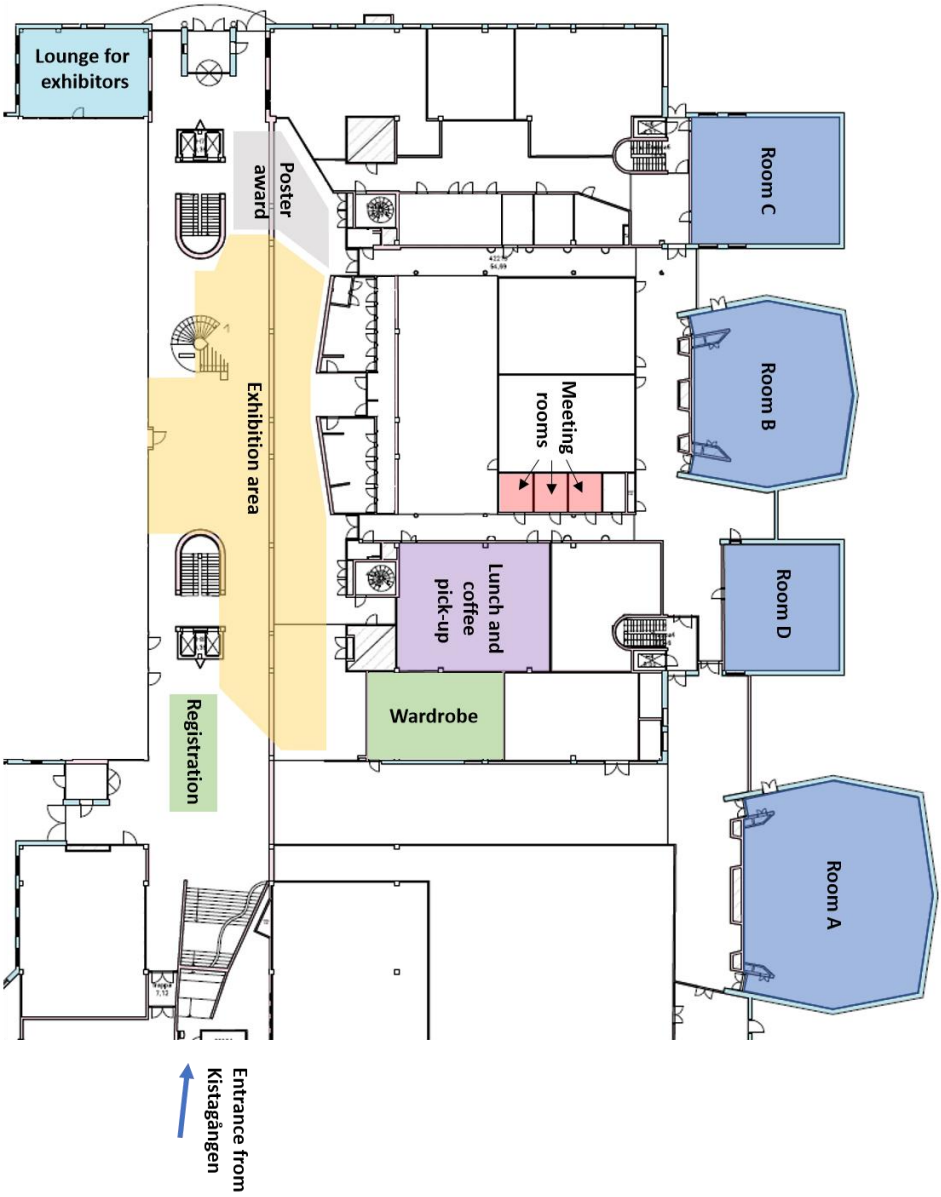
The Swedish Microwave Days 2023 is held in the **Electrum** building, in the campus of Kista, at KTH Royal Institute of Technology.

The address is **Kistagången 16, 164 40 Kista, Sweden**.

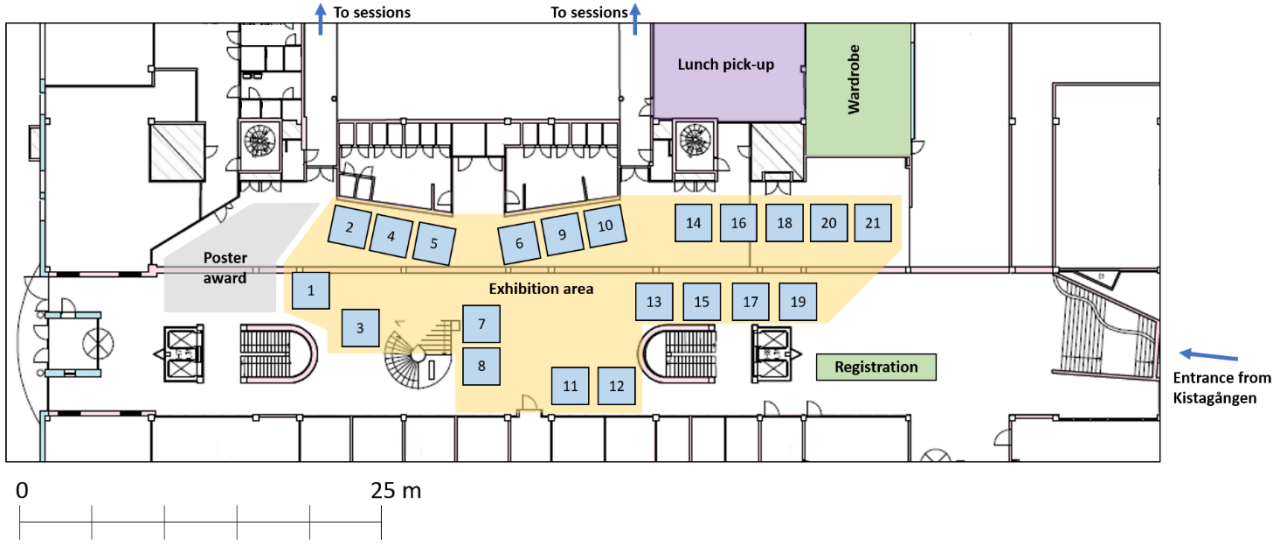
View of Electrum building:

View of the rooms in Electrum:

Maps of the Venue
Floor layout

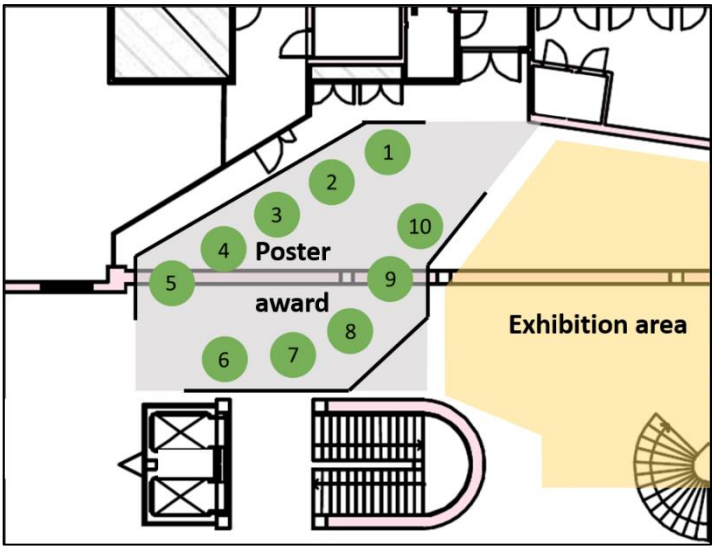


Exhibition Area



1. Kaelus
2. Signal Solutions and Focus Microwaves
3. PCTEL
4. Northern Waves
5. MVG
6. TMYTEK
7. COMSOL
8. Huawei
9. Cadence
10. Gapwaves
11. Ericsson
12. SAAB
13. OEM Electronics
14. EuMA
15. Commscope
16. EurAAP
17. Sony
18. Cellmax
19. Amtele
20. Altair
21. Maury Microwave

Poster Area



Microwave Student Award Nominees

1. Design of H-Band SiGe Chip-to-Waveguide Packaging
Haojie Chang, Zhongxia Simon He, Herbert Zirath

2. Silicon-Micromachined THz Radar Frontend
Armin Karimi, Umer Shah, Joachim Oberhammer

3. InP HEMT Cryogenic Ultra-Low Power Low-Noise Amplifiers
Yin Zeng, Jörgen Stenarson, Peter Sobis, Niklas Wadefalk, Jan Grahn

4. Deep Neural Networks for the Modelling of Passive Microwave Devices
Simon Stenmark ,Thomas Rylander, Tomas McKelvey

5. High-Speed Vertical InGaAs Nanowire Transistor Technology for RF BEOL Integration
Marcus E. Sandberg, Anette Löfstrand, Lars Ohlsson Fhager

Antenna and Propagation Student Award Nominees

6. Frequency Selective Surfaces on Multi-glazed Windows
R. Chueca, R. Alcain, C. Heras, I. Salinas

7. Structurally Fuselage-Integrated Wide-Scanning Array Antenna
Prabhat Khanal, Jian Yang, Ruoshan Luo, Per Hallander, Mussie Gebretnsae

8. Dual-polarized geodesic lens antenna in the sub-THz regime
Wenfu Fu, Qiao Chen, Kun Zhao, Oscar Quevedo-Teruel

9. A 50 dBi Dual-reflector E-Band Antenna for 5G Backhaulings
with Beam Steering Function
Enlin Wang, Sam Agneessens, Marcus Hasselblad, Ashraf Uz Zaman, Jian Yang

10. Dispersion Diagram Analysis of a Two-Dimensional Dielectric Hexagonal Periodic Structure
Oskar Zetterstrom, Shiyi Yang, Francisco Mesa, Oscar Quevedo-Teruel

Welcome Ceremony

Tuesday 23rd May 18:00

During the first day of the conference, we will have a networking event in the **Vasa Museum**. The Vasa Museum is a maritime museum in Stockholm, Sweden. Located on the island of Djurgården, the museum displays the only almost fully intact 17th-century ship that has ever been salvaged, the 64-gun warship Vasa that sank on her maiden voyage in 1628.

The museum is located in **Galärvarvsvägen 14, Djurgården**. At **18:30**, when the museum is closed for visitors, we will have the unique opportunity to mingle in the museum in a private event. Light snack and drinks will be served in a standing event.

There are many ways you can get to the museum. If you have signed up to take the bus arranged by the conference, we meet outside the conference venue at 17.45. If you take public transport, you can take:

- the tram *Spårväg City line 7* to the stop *Nordiska museet/Vasamuseet*
- Bus 67 to *Nordiska museet/Vasamuseet*
- Buses 69 or 76 to *Djurgårdsbron*
- the red metro line to *Karlaplan* from where it is a 10-minute walk or bus 67

Conference Dinner

Wednesday 24th May 18:00

We will have our gala dinner in the **Royal College of Music,** located in Östermalm, close to the main campus of KTH. We will eat in "the Cave", which is a concert hall with magnificent ambience. The dinner will start with a standing welcome reception at **18.30** in the lobby, with some jazz-music in the background. At **19.30**, we will eat a two-course dinner with some more music acts. During the dinner, the winners of the student paper awards will be announced.

The address is **Valhallavägen 105, 115 51 Stockholm**.

There are many ways you can get to the museum. If you have signed up to take the bus arranged by the conference, we meet outside the conference venue at 17.45. If you take public transport, you can take:

- The red metro line to *Stadion*
- Bus 4 to *Musikhögskolan*

COMSOL

MYTEK

SAAB

ERICSSON

SMWD 2023