ICEAA - IEEE APWC 25

International Conference on Electromagnetics in Advanced Applications

IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications

SEPTEMBER 8-12, 2025
PALERMO, ITALY

ICEAA - IEEE APWC

SEPTEMBER 8-12, 2025
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ORGANIZED BY

POLITECNICO DI TORINO

IN COOPERATION WITH

UNIVERSITÀ DI PALERMO, Italy

IEEE Antennas and Propagation Society

URSI, the International Union of Radio Science

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welcome to the conference

On behalf of the Steering Committee, of the Organizing Committee and of the Scientific Committee, we are glad to welcome all participants to the twenty-sixth edition of ICEAA, the International Conference on Electromagnetics in Advanced Applications, and to the fourteenth edition of IEEE APWC, the IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications. These two conferences share a common organization, registration fee, submission site, workshops and short courses, and social events.

The 2025 edition of ICEAA and IEEE APWC is organized by the Politecnico di Torino in cooperation with the Università di Palermo, Italy, with the principal cosponsorship of the IEEE Antennas and Propagation Society and the technical cosponsorship of the International Union of Radio Science (URSI).

The combination of these Conferences has a wide scope which includes all kinds of advanced applications in Electromagnetics and new technology developments. Altogether the two conferences feature 60 sessions including 41 special sessions organized by renowned experts. About 500 papers are scheduled, out of the 724 submitted. As in previous editions invited papers will be presented at the Conferences, giving recent information on the state of the art and new technologies.

We also welcome two Distinguished Lecturers, Dr. Paul Cannon, University of Birmingham, UK, and Prof. Francesco P. Andriulli, Politecnico di Torino, Italy, who will be presenting plenary lectures at the Conferences.

On Monday afternoon, September 8, a free half-day Short Course on "Microwave inversion methods and measurement systems for medical imaging and image-guided treatment monitoring" will be given by Prof. Mahta Moghaddam, University of Southern California (USC), Los Angeles, USA.

On Thursday morning, September 11, a free half-day Short Course on "Reflectarray and transmitarray antennas: theory, designs, and applications" will be given by Prof. Atef Z. Elsherbeni, Colorado School of Mines, USA.

On Friday morning, September 12, a free half-day Short Course on "Advanced Antenna Modeling and Simulation Techniques" will be given by Dr. CJ Reddy, Vice President Business Development Electromagnetics for Americas, Altair Engineering, Inc. USA, AP-S President Elect 2025.

The Conferences are held at the "NH Palermo Hotel", Foro Italico Umberto I, 22/B, Palermo, Italy. The NH Palermo hotel is in the prettiest part of the city, set between the botanical gardens and the castle. It looks out on the Gulf of Palermo and is just a short walk from the city centre.

Don't miss the opportunity to visit Palermo and its surroundings: we are sure you will enjoy them.

We look forward to seeing you in Palermo in September.

Roberto D. Graglia
Chairman of the ICEAA - IEEE APWC Organizing Committee

Piergiorgio L.E. Uslenghi
Chairman of the ICEAA - IEEE APWC Scientific Committee

Guido Ala
Chairman of the ICEAA - IEEE APWC Local Organizing Committee

general information

DATES AND LOCATION

The conferences (combined ICEAA and IEEE APWC) will be held from 8th to 12th of September 2025, at the NH Palermo Hotel, Foro Italico Umberto I, 22/B, 90133 Palermo, Italy.

OFFICIAL LANGUAGE

The official language is English. No simultaneous translation will be provided.

PROCEEDINGS

Each registered participant will obtain access for download to an electronic version of the Conference Proceedings via the conference's online portal.

ON SITE REGISTRATION FEE

The ICEAA and the IEEE APWC, share a common organization, registration fee, submission site and social events. The registration fee varies depending on number of papers presented, IEEE affiliation, and early or regular time of registration. Students up to the age of 30 enjoy a discounted rate. Full registration is required of all participants, including members of the Conference Committees, Session Chairs and Authors. A registration for each paper has been required from the corresponding author, for the paper to be included in the technical program. The registration fee includes attendance to all sessions, luncheons, coffee breaks, Welcome Cocktail, and possibility of downloading the Conference Proceedings from the conference portal.

REGISTRATION DESK

The registration desk will be located in the conference centre (ground floor) of the NH Palermo Hotel. Accompanying persons and late registrants may register, or pre-registrants may pick up conference materials, from Monday to Friday at the following times: 8:00÷17:30.

MEALS AND REFRESHMENTS

Fixed-menu luncheons (from Monday to Thursday) and coffee breaks are included in the registration fee. See staff at the Registration Desk for directions during the Conference.

WELCOME COCKTAIL

The Welcome Reception will be held on Monday, September 8 2025 at the Botanical Garden, Via Lincoln 2, Palermo, at 7.15 pm. This event is included in the registration fee.

BANQUET

The Conference Dinner and the Award Ceremony will be held on Tuesday 9 September 2025 at Villa Chiaramonte Bordonaro, Via delle Croci n.21/a, Palermo, at 7.30 pm. This is a ticketed event with a limited number of places, so please book early to avoid disappointment. Additional tickets can be purchased at the Registration Desk. The winners of the 2025 ICEAA - IEEE APWC Awards will be announced at the Conference Dinner.

AUDIOVISUAL EQUIPMENT

Each meeting room will be equipped with a notebook. The presenting authors will not be allowed to use their personal computer for presentation; only the computers of the meeting rooms can be used for presentation. Authors' presentation files should be in either PowerPoint or PDF format. You must make sure that your presentation contains all the fonts and any auxiliary or multimedia files needed, and that these files are copied onto the session room computer.

Please ensure that your presentation is loaded before the beginning of the first session of the day or during lunch breaks for afternoon sessions.

INTERNET CONNECTION

The Conference Centre features WI-FI Internet access.

MESSAGES

During the Conference, messages may be directed to participants via Email to:
iceaa@seleneweb.com or iceaa25@iceaa.polito.it

Messages will be posted in front of the Registration desk.

HOTEL ACCOMMODATIONS

It is advisable to make an early reservation because hotels are subject to availability. Several hotel rooms have been booked for the duration of the Conference at the NH Palermo Hotel, but capacity is limited. For those wishing to stay in Palermo, we recommend making a reservation well in advance because hotels in Palermo are generally fully booked if you book shortly before your arrival.

TOURS & ACTIVITIES

For the latest information on the Accompanying Person Programme and other Social Events please check www.iceaa-offshore.org/ or refer to the Conference registration desk.

OJAP SPECIAL ISSUE OF ICEAA-APWC 2025 CONFERENCE PAPERS

Authors will be invited to submit an extended version of their ICEAA-APWC 2025 conference paper to the IEEE Open Journal of Antennas and Propagation (OJAP) for possible publication in a special issue of IEEE OJAP dedicated to ICEAA-APWC 2025.

OJAP is the gold fully open access journal of the IEEE Antennas and Propagation Society, which is committed to catalyzing technical innovation through accelerated scientific publication, based on rigorous peer review, barrier-free access, and maximum visibility. Papers for this special issue will be subject to OJAP's usual peer review process.

USEFUL CONTACTS

FOR TECHNICAL AND SCIENTIFIC ASPECTS:

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For logistics aspects and hotel reservation during the Conference,
please see staff at the Registration Desk

ICEAA - IEEE APWC 2025 Young Scientist Award

A certificate and a prize of 800 Euro will be awarded to the young scientist (aged not more than thirty-six as of June 30, 2025) who presents and has authored the best ICEAA or IEEE APWC paper in terms of content and impact on Electromagnetics. The ICEAA – IEEE APWC Scientific Committee reserves the right to make no award if there are no papers of sufficient quality.
In case of eligible coauthors who are registered participants at ICEAA - IEEE APWC, each awardee will receive a certificate and the cash award will be shared equally among them. The winner(s) of the ICEAA - IEEE APWC 2025 Young Scientist Award will be announced at the Conference Dinner on Tuesday evening, September 9, 2025. Since the award announcement and presentation are made at the Conference Dinner, all candidates are expected to attend it.

ICEAA 2025 Industrial Engineering Paper Award

A certificate and a prize of 500 Euro will be awarded to the authors of the most innovative paper in terms of practical, industrial engineering related to the fields of antennas, electromagnetics and propagation. In case of eligible co-authors who are registered participants at ICEAA, each awardee will receive a certificate, and the cash award will be shared equally among them. Since the award announcement and presentation are made at the ICEAA - IEEE APWC Conference Dinner, all candidates are expected to attend it.

Special Award Poster Session

The finalists of the ICEAA IEEE-APWC 2025 Award and the ICEAA Industrial Engineering Paper Award present their papers also in the special poster session scheduled from Monday September 8 to Tuesday September 9 near the conference secretariat. The Finalists must be present at their poster station for discussion during coffee breaks and during the last 30 minutes of the lunch break.

Monday Morning, September 8, 2025
H 10:20-11:20

Solar Superstorms. A storm is a tea cup, or a global risk for societies and economies? 2025 update

Abstract

Rarely occurring solar superstorms generate X-rays and solar radio bursts, accelerate solar particles to relativistic velocities and cause major perturbations to the solar wind. These environmental changes can cause detrimental effects to the electricity grid, satellites, avionics, air passengers, signals from satellite navigation systems, mobile telephones and more. They have consequently been identified as a risk to the world economy and society. This paper will review their impact on a variety of engineered systems and will identify ways to prepare for these low probability but randomly occurring events.

Explosive eruptions of energy from the Sun that cause minor solar storms on Earth are relatively common events. In contrast, extremely large events (superstorms) occur very occasionally – perhaps once every century or two. Most superstorms miss the Earth, travelling harmlessly into space. Of those that do travel towards the Earth, only half interact with the Earth's environment and cause damage. Since the start of the space age, there has been no true solar superstorm and consequently our understanding is limited. There have, however, been a number of near misses and these have caused major technological damage, for example the 1989 collapse of part of the Canadian electricity grid. A superstorm which occurred in 1859, now referred to as the 'Carrington event' is the largest for which we have measurements; and even in this case the measurements are limited to perturbations of the geomagnetic field. How often superstorms occur and whether the above are representative of the long term risk is not known and is the subject of important current research. The general consensus is that a solar superstorm is inevitable, a matter not of 'if' but 'when?'. One contemporary view is that a Carrington-level event will occur within a period of 250 years with a confidence of ~95% and within a period of 50 years with a confidence of ~50%, but these figures should be interpreted with considerable care.

Mitigation of solar superstorms necessitates a number of technology-specific approaches which boil down to engineering out as much risk as is reasonably possible, and then adopting operational strategies, based on scientific understanding, to deal with the residual risk. In order to achieve the latter, space and terrestrial sensors are required to monitor the storm progress from its early stages as enhanced activity on the Sun through to its impact on Earth. Forecasting a solar storm is a challenge, but there are growing efforts to improve those techniques. Irrespective of forecasting ability, space and terrestrial sensors of the Sun and the near space environment provide critical space situational awareness, an ability to undertake post-event analysis, and the infrastructure to improve our understanding of this environment.

This lecture will explore a number of current and emerging technologies and demonstrate that global society and economies are indeed vulnerable to a solar superstorm, and that in a 'perfect storm', a number of these technologies will be simultaneously affected thereby exacerbating the impact. Mitigating and maintaining an awareness of the individual and linked risks over the long term is a challenge for both government and for asset owners.

Paul Cannon

Space Environment and Radio Engineering

School of Engineering
University of Birmingham

Biography

Paul Cannon OBE, FREng, FURSI, FIET, FISC, MAGU, BSc, MSc, PhD is a physicist and an electronic engineer who works at the interface of the two disciplines. He is an emeritus professor at the University of Birmingham in the UK but spent the majority of his working life in government research laboratories and industry. Since joining the University of Birmingham in 2013, he has been a regular advisor to government departments and science advisors. His leadership of studies and authorship of reports on extreme space weather have guided the development of government policy in both Australia and the UK.

He was elected a Fellow of the Royal Academy of Engineering in 2003, appointed to the Order of the British Empire (OBE) in 2014 and served as the President of the International Union of Radio Science (URSI) from 2014 to 2017. In 2023 he was awarded the Rawer Gold Medal by URSI.

Dr. Cannon has made numerous contributions to radio science and space weather especially in the fields of ionospheric radio propagation and measurement and real-time modelling of the ionosphere. He has specialised in combining knowledge of radio systems with knowledge of the ionospheric medium and radio propagation to develop new and novel science and engineering solutions.

Paul's research has had long lasting significance on a number of occasions. For example, his instrumentation has been used operationally by the UK Armed Forces and his measurements of the HF propagation channel underpinned the development of the robust HF communications modem standard used throughout NATO. He now works as co-investigator of two of the UK Space Weather Instrumentation, Measurement, Modelling and Risk (SWIMMR) projects and is co-investigator of a project developing a new Over the Horizon Radar (OTHR) architecture, based on his patent.

Monday Morning, September 8, 2025
H 11:20-12:20

Current Trends and Open Grand Challenges in Computational Electromagnetics for High-Resolution Neuroimaging

Abstract

Brain and neuroactivity are inarguably characterized by a stunning complexity: several billion neurons at the microscopic level matched by strongly varying and fuzzy-behaving material properties at the macroscopic level. This notwithstanding, the challenge of brain analysis, mapping, imaging, and modeling has been embraced by many multidisciplinary scientific communities worldwide, it has been targeted by two of the largest funding schemes in the United States and Europe, and it has become a very popular topic of both Earth and Brain hemispheres.

Complexity, however, calls for complexity and it is not surprising that every discipline that tackles its own share of the "brain challenge" is obliged to show-off the best of its arsenal. Modern neuroimaging tools are computationally intensive devices where a large part of the imaging process is underpinned by advanced tools in the physical modeling of brain electric propagation. Innovations in computational methods as well as in advanced modeling tools and strategies are the focus of several cross-disciplinary research efforts in computational physics and engineering. When it comes to Computational Electromagnetics this arsenal is peculiarly rich! This is especially true when the target is functional neuroimaging: the mapping and modeling of the electro-chemical neuroactivity and of the associated brain connectivity.

This talk will present some of the most recent strategies and advances in the field of Computationally Empowered Neuroimaging strategies, i.e. technologies for brain diagnostics, therapy, and interaction where computational power, advanced algorithmics, and ad-hoc platforms have paved the way for exciting new discoveries, therapeutic advances, and impactful applications. Current trends and open Grand Challenges will be delineated together with past achievements and current research efforts.

Without over-indulging in technicalities, this talk will present recent discoveries at the theoretical and experimental level always in combination with their promising applications in diagnostics, mind-machine interfaces, and immersive neurofeedback.

Francesco P. Andriulli

Electrical engineering

Full Professor – Politecnico di Torino, Turin, Italy

Biography

Francesco P. Andriulli received the Laurea in electrical engineering from the Politecnico di Torino, Italy, in 2004, the MSc in electrical engineering and computer science from the University of Illinois at Chicago in 2004, and the PhD in electrical engineering from the University of Michigan at Ann Arbor in 2008. From 2008 to 2010 he was a Research Associate with the Politecnico di Torino. From 2010 to 2017 he was an Associate Professor (2010-2014) and then Full Professor with the École Nationale Supérieure Mines-Télécom Atlantique (IMT Atlantique), Brest, France. Since 2017 he has been a Full Professor with the Politecnico di Torino, Turin, Italy. His research interests are in computational electromagnetics including frequency- and time-domain integral equation solvers, well-conditioned formulations, fast solvers, low-frequency electromagnetic analyses, and modeling techniques for antennas, wireless components, microwave circuits, and biomedical applications with a special focus on brain imaging.

Prof. Andriulli received several best paper awards at conferences and symposia (URSI NA 2007, IEEE AP-S 2008, ICEAA IEEE-APWC 2015) also in co-authorship with his students and collaborators (ICEAA IEEE-APWC 2021, EMTS 2016, URSI-DE Meeting 2014, ICEAA 2009) with whom received also a second prize conference paper (URSI GASS 2014), a third prize conference paper (IEEE-APS 2018), seven honorable mention conference papers (ICEAA 2011, URSI/IEEE-APS 2013, 4 in URSI/IEEE-APS 2022, URSI/IEEE-APS 2023) and other three finalist conference papers (URSI/IEEE-APS 2012, URSI/IEEE-APS 2007, URSI/IEEE-APS 2006, URSI/IEEE-APS 2022)). Moreover, he received the 2014 IEEE AP-S Donald G. Dudley Jr. Undergraduate Teaching Award, the triennium 2014-2016 URSI Issac Koga Gold Medal, and the 2015 L. B. Felsen Award for Excellence in Electrodynamics.

Prof. Andriulli is a Fellow of the IEEE and of the International Union of Radio Science (URSI), and a member of Eta Kappa Nu, Tau Beta Pi, and Phi Kappa Phi. He is the Editor-in-Chief of the IEEE Antennas and Propagation Magazine, he serves as a Track Editor for the IEEE Transactions on Antennas and Propagation, and as an Associate Editor of URSI Radio Science Letters. He served as an Associate Editor for the IEEE Antennas and Wireless Propagation Letters, IEEE Access, and IET-MAP.

free short course / 1

Monday, September 8, 2025
H 14:20–18:00 - room 6 Ruggero

Microwave Inversion Methods and Measurement Systems for Medical Imaging and Image-Guided Treatment Monitoring

Abstract

Microwave imaging has long been recognized as a viable approach for medical applications. Nonlinear electromagnetic inverse scattering methods are the key enablers of such applications. These imaging systems are essentially multistatic (or tomographic) radars, allowing for noninvasive and non-ionizing diagnostics and treatment monitoring. In this short course, we provide a detailed look at both computational methods and measurement systems for high-resolution 3D imaging for these medical applications. We go beyond the traditional diagnostic imaging and consider the use of microwave imaging for near-real-time intra-operative thermal therapy monitoring, which has been a clinical gap when delivering Radio frequency (RF) ablation and hyperthermia treatments. For delivering thermal therapies, a persistent challenge is monitoring the temporal and spatial progression of heat deposition to prevent under- or over-treatment. Given the strong dependence of the permittivity of both healthy and malignant biological tissue on temperature, the efficacy of microwave imaging for monitoring of thermal treatments has gained much attention in the past several years.

In this course, the following topics will be presented:

- Underlying principles of multi-frequency multistatic microwave inverse scattering for medical imaging
- Computational approaches: simulation setups, observational trade space, and optimal channel combination selection
- Experimental measurement systems: antenna design, multi-channel absolute calibration, matching fluid design, switching system
- Thermal therapy monitoring enabled by tracking changes in dielectric constant
- Near-real-time imaging of thermal therapy via differential imaging
- Experimental benchmarking and animal model experiments

We will show that by using progressively accelerated inverse scattering methods for estimating tissue dielectric constant, we are able to map the temperature of the 3D treatment domain in near-real time. Several results will be discussed that show successful retrieval of dielectric constant and temperature fields with a precision of 1°C and spatial resolution of sub-cm at a refresh rate of about 1 frame per second, which has the promise of making this technology realistically useful in a clinical setting.

Prof. Mahta Moghaddam

Electrical and Computer Engineering,

Viterbi School of Engineering,
University of Southern California
(USC), Los Angeles, USA

Biography

Mahta Moghaddam is Distinguished Professor and Ming Hsieh Endowed Chair in Electrical and Computer Engineering at the Viterbi School of Engineering, University of Southern California (USC), Los Angeles, CA, USA. She currently serves as the Viterbi School Vice Dean for Research and Co-Chair of the USC President's Working Group on Sustainability. Prior to USC she was at the University of Michigan (2003-2011) and NASA Jet Propulsion Laboratory (JPL, 1991-2003). She received the B.S. degree in 1986 from the University of Kansas, Lawrence, Kansas with highest distinction, and the M.S. and Ph.D. degrees in 1989 and 1991, respectively, from the University of Illinois at Urbana-Champaign, all in Electrical and Computer Engineering. Prof. Moghaddam's expertise is in microwave sensing for environmental and biomedical applications. She was Systems Engineer for the Cassini Radar and served as Science Chair of the JPL Team X (Advanced Mission Studies Team). Her most recent research interests include the development of multistatic radar instrument and measurement technologies, including software-defined radar, for subsurface characterization, development of forward and inverse scattering techniques for random and heterogeneous media for tracking water resources, and transforming concepts of radar remote sensing to medical imaging and therapy systems. She and her team have long been involved in developing microwave imaging systems for intra-operative near-real-time imaging of thermal therapies. They have shown the utility of multi-static multi-frequency microwave imaging for tracking thermal treatments in live animal models.

Prof. Moghaddam is a member of the Science Team of the NASA Cyclones Global Navigation Satellite System (CYGNSS) mission, and the NASA Arctic Boreal Vulnerability Experiment (ABoVE). She was the principal investigator of the AirMOSS NASA Earth Ventures 1 mission. She is a Fellow of IEEE and a member of the National Academy of Engineering.

free short course / 2

Thursday, September 11, 2025
H 9:00-12:40 - room 6 Ruggero

Reflectarray and Transmitarray Antennas: Theory, Designs, and Applications

Abstract

Reflectarrays and transmitarrays have emerged as the new generation of high-gain antennas which have attracted an increasing interest in the antenna/electromagnetic community because of their low-profile, low-mass, and low-cost features. These antennas are a hybrid design, which combines the many favorable features of reflectors, lens, and printed arrays, and offer many notable advantages over traditional reflectors and lens high-gain antennas. The advantages of reflectarrays and transmitarrays make them very desirable for various communication systems, especially those with mobile platforms. Their applications in space exploration, satellite communications, remote sensing, and radar systems are also on the rise, and will continue to increase in the future.

The aim of this short course is to present a comprehensive overview of reflectarrays and transmitarrays system design and state-of-the-art technology.

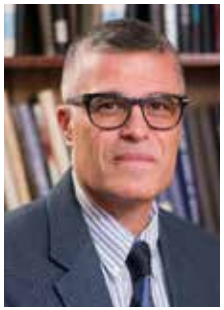
Specifically, the following topics will be addressed:

- An overview of the reflectarray and transmitarray antennas research history, including various implementations and state-of-the-art.
- Basic theories for design and analysis of reflectarray and transmitarray antennas, which will help in building up the fundamental capabilities for related research.
- Design procedures for a wide range of diversified applications, such as broadband design, multi-band operation, multi-beam performance, beam-scanning system.

Recent design and reconfiguration using pixelated reflectarray antennas.

Illustrative examples for several designs that can serve as good references for attendees.

In summary, the presentation will provide the fundamental capabilities and skills required for a researcher interested in the field of reflectarray and transmitarray antennas.



Prof. Atef Z. Elsherbeni

Electrical Engineering Department, Colorado School of Mines, USA

Biography

Atef Z. Elsherbeni received an honor B.Sc. degree in Electronics and Communications, an honor B.Sc. degree in Applied Physics, and a M.Eng. degree in Electrical Engineering, all from Cairo University, Cairo, Egypt, in 1976, 1979, and 1982, respectively, and a Ph.D. degree in Electrical Engineering from Manitoba University, Winnipeg, Manitoba, Canada, in 1987. He started his engineering career as a part time Software and System Design Engineer from March 1980 to December 1982 at the Automated Data System Center, Cairo, Egypt. From January to August 1987, he was a Post-Doctoral Fellow at Manitoba University. Dr. Elsherbeni joined the faculty at the University of Mississippi in August 1987 as an Assistant Professor of Electrical Engineering. He advanced to the rank of Associate Professor in July 1991, and to the rank of Professor in July 1997. He was the Associate Dean of the College of Engineering for Research and Graduate Programs from July 2009 to July 2013 at the University of Mississippi. He then joined the Electrical Engineering and Computer Science (EECS) Department at Colorado School of Mines in August 2013 as the Dobelman Distinguished Chair Professor. He was appointed the Interim Department Head for EECS from 2015 to 2016 and from 2016 to 2018 he was the Electrical Engineering Department Head. He spent a sabbatical term in 1996 at the Electrical Engineering Department, University of California at Los Angeles (UCLA) and was a visiting Professor at Magdeburg University during the summer of 2005 and at Tampere University of Technology in Finland during the summer of 2007. In 2009 he was selected as Finland Distinguished Professor by the Academy of Finland and TEKES.

Dr. Elsherbeni is an IEEE Life Fellow and ACES Fellow. He is the Editor-in-Chief for ACES Journal, and a past Associate Editor to the Radio Science Journal. He was the Chair of the Engineering and Physics Division of the Mississippi Academy of Science, the Chair of the Educational Activity Committee for IEEE Region 3 Section, and the general Chair for the 2014 APS-URSI Symposium and the President of ACES Society from 2013 to 2015. Dr. Elsherbeni is selected as Distinguished Lecturer for IEEE Antennas and Propagation Society for 2020-2023. He is also the recipient of the 2023 IEEE APS Harington-Mittra Award for his contribution to computational electromagnetics with hardware acceleration.

free short course / 3

Friday, September 12, 2025
H 9:00-12:40 - room 6 Ruggero

Advanced Antenna Modeling and Simulation Techniques

Abstract

Now-a-days antennas have become an integral and important part of almost any wireless communication system. In the field of antenna engineering, theoretical analysis is of paramount importance in understanding the basics of the antenna radiation characteristics. While the basic concept of antennas is well known, closed form, exact analytical solutions to many antenna problems are not practical and impossible in many cases. Advances in electromagnetic (EM) simulations have significantly impacted the antenna design process by providing exact solutions by solving Maxwell's equations using numerical methods. It is a common practice now in academia and industry to use various commercially available EM simulation tools for antenna design process. In this short course, we will introduce basics of antenna modeling and simulation process with pros and cons of various numerical methods, such as Method of Moments (MoM), Multilevel Fast Multipole Method (MLFMM), Finite Element Method (FEM), Finite Difference Time Domain (FDTD), Physical Optics (PO), Ray Lunching Geometrical Optics (RL-GO), and Uniform Theory of Diffraction (UTD). We will then discuss modeling and simulation of various antenna types, starting from simple configurations such as dipoles and loops and eventually leading to more complicated and practical designs such as microstrip patches and high-gain reflector antennas.

Dr. CJ Reddy

Vice President of Business Development – Electromagnetics (Americas), Altair, USA

2025 IEEE AP-S President-Elect

Biography

Dr. C.J. Reddy is Vice President, Business Development-Electromagnetics for Americas at Altair Engineering, Inc. Dr. Reddy was awarded the Natural Sciences and Engineering Research Council (NSERC) of Canada Visiting Fellowship to work at Communications Research Center in Ottawa during 1991-1993 and was awarded the US National Research Council (NRC) Resident Research Associateship in 1993 to work at NASA Langley Research Center in Hampton, Virginia. He also worked as Research Professor at Hampton University from 1995 to 2000. Dr. Reddy was the President of Applied EM, Inc (2000-2017) where he led several Phase I and Phase II SBIR projects for the DoD and NASA. He was also the President of EM Software & Systems (USA) Inc (2002-2014) and led the marketing of the EM Simulation tool, Feko in North America. EM Software & Systems (USA) Inc was acquired by Altair in 2014.

Dr. Reddy is a Fellow of IEEE, Fellow of ACES (Applied Computational Electromagnetics Society) and a Fellow of AMTA (Antenna Measurement Techniques Association). Dr. Reddy is a co-author of the book, "Antenna Analysis and Design Using FEKO Electromagnetic Simulation Software," published in June 2014 by SciTech Publishing (now part of IET). Dr. Reddy served as an Associate Editor for IEEE Open Journal of Antennas of Propagation and IEEE Transactions on Antennas and Propagation. He served as the Chair of IEEE Antennas and Propagation Society (AP-S) Young Professionals Committee during 2021-2024 and served on the AP-S AdCom during 2023-2024. Dr. Reddy is appointed to IEEE Fellows Committee by IEEE Board of Directors for the terms 2020-2021 and 2022-2023. Currently, Dr. Reddy is serving as the 2025 IEEE AP-S President-Elect. Dr. Reddy is inducted into IEEE Heritage Circle by the IEEE Foundation for establishing the "IEEE AP-S CJ Reddy Travel Grant for Graduate Students."

IEEE AP-S Industrial panel

Wednesday, September 10, 2025
H 14:20–16:40 - room 6 Ruggero

Industry meets Academy: igniting innovation in electromagnetics

This industrial panel brings together experts from both industry and academia to examine recent advancements, emerging trends, and key challenges within the electromagnetic community. The session aims to facilitate high-level discourse on collaborative research initiatives, technology transfer mechanisms, and practical implementations. Participants will gain comprehensive insights into effective strategies for bridging the divide between foundational research and industrial application, thereby fostering enhanced partnerships and driving innovation in this rapidly evolving field

Contact: Roberto Flamini, robertoflamini.rf@gmail.com

Organizer:
IEEE AP-S Industrial Initiatives Committee

Chair:
Jiang Zhu
Meta, Menlo Park, USA

Vice Chair:
Roberto Flamini
Huawei, Milan, Italy

Monday 8

Coffee breaks
10:40-11:00 and 16:20-16:40

Lunch break
13:00-14:20

Award special poster session
10:40-11:00 / 13:50-14:20 / 16:20-16:40

ROOM 1 FEDERICO

09:00-10:00
FORMAL OPENING

PLENARY LECTURES

10:20-11:20
Solar Superstorms. A storm is a tea cup, or a global risk for societies and economies?
Paul Cannon

11:20-12:20
Current Trends and Open Grand Challenges in Computational Electromagnetics for High-Resolution Neuroimaging
Francesco P. Andriulli

ROOM 1 FEDERICO

14.20-15.20
SESSION 01 ICEAA
Recent advancement of electromagnetic theory
Organized by H. Shirai
Chairs: H. Shirai

15.20-18.00
SESSION 02 ICEAA
Electromagnetic theory
Chairs: E. Heyman, H. Shirai

18.00-18.40
SESSION 02A ICEAA
Modern problems of mathematical and computational electromagnetics and their advanced applications
Organized by M.N. Georgieva-Grosse, G.N. Georgiev
Chairs: M.N. Georgieva-Grosse, G.N. Georgiev

ROOM 2 ENRICO

14.20-17.40
SESSION 03 ICEAA
EMC/EMI/EMP - ICEAA
Chairs: R. L. Gardner, A. Monorchio

17.40-18.40
SESSION 04 ICEAA
Frontiers in bioelectromagnetic research: methods, models, and applications
Organized by F. Apollonio, M. Liberti
Chairs: F. Apollonio, M. Liberti

ROOM 3 ANGELICA

14.20-17.20
SESSION 05 ICEAA
New paradigm and strategies for inverse scattering problems
Organized by M.T. Bevacqua, L.Di Donato, P. Mojabi
Chairs: M.T. Bevacqua, L.Di Donato, P. Mojabi

17.20-18.40
SESSION 06 ICEAA
Radar and Imaging techniques
Chairs: I. Akduman, L.Di Donato

ROOM 4 GUGLIELMO

14.20-16.20
SESSION 07 IEEE APWC
Innovative multi-antenna techniques for 6G wireless networks
Organized by G. Alfano, D.G. Riviello
Chairs: D.G. Riviello, M. Perrone

16.40-18.40
SESSION 08 ICEAA
Computational Electromagnetics
Chairs: P.L. Cordel, A. Z. Elsherbeni

ROOM 5 BASILE

14.20-18.40
SESSION 09 ICEAA
Quantum electromagnetics – From photonics to quantum computing
Organized by A. Boag, G. Gradoni
Chairs:A. Boag, G. Gradoni

ROOM 6 RUGGERO

14:20 – 18:00
FREE SHORT COURSE / 1
Microwave Inversion Methods and Measurement Systems for Medical Imaging and Image-Guided Treatment Monitoring
Prof. Mahta Moghaddam

Tuesday 9

Coffee breaks
10:40-11:00 and 16:20-16:40

Lunch break
13:00-14:20

Award special poster session
10:40-11:00 / 13:50-14:20 / 16:20-16:40

ROOM 1 FEDERICO

8.20-9.20
SESSION 10 IEEE APWC
RFID technologies
Chairs: I. Bakri, A. Boag

9.20-11.40
SESSION 11 ICEAA
Fast computational methods
Organized by A. Boag
Chair: A. Boag

11.40-17.20
SESSION 12 ICEAA
Novel mathematical methods in electromagnetics
Organized by K. Kobayashi, G. Lombardi, Y. Shestopalov
Chairs: K. Kobayashi, G. Lombardi, Y. Shestopalov

ROOM 2 ENRICO

8.20-15.20
SESSION 13 ICEAA
Microwave antennas, components and devices
Chairs: X. Gao, S.K. Khamas

15.40-18.00
SESSION 14 IEEE APWC
Communication satellite antennas
Chairs: D. de Villiers, P. Tognolatti

ROOM 3 ANGELICA

8.20-10.20
SESSION 15 IEEE APWC
Antennas and wireless systems
Chairs: D. Segovia-Vargas, M. Salazar-Palma

11.00-12.40
SESSION 16 IEEE APWC
Propagation models
Chairs: W. Keusgen, E. Plouhinec

14.20-16.00
SESSION 17 ICEAA
Management of electromagnetic scattering for wireless and radar applications
Organized by A. Boag, P. Ginzburg
Chairs: A. Boag, P. Ginzburg

16.40-18.00
SESSION 18 ICEAA
Scattering methods in complex environments
Organized by C. Ponti, L. Tognolatti, G. Schettini
Chairs: C. Ponti, L. Tognolatti, G. Schettini

ROOM 4 GUGLIELMO

8.20-10.40
SESSION 19 ICEAA
Emerging approaches, future trends, and applications of electromagnetic inverse scattering
Organized by A. Randazzo, A. Massa, M. Salucci
Chairs: A. Randazzo, A. Massa, M. Salucci

11.00-12.40
SESSION 20 ICEAA
Analysis design and applications of GRIN media and metalenses
Organized by S. Maci, M. Albani
Chairs: S. Maci, M. Albani

14.20-17.20
SESSION 21 ICEAA
Electromagnetic models and geophysical products for microwave signal-of-opportunity reflectometry
Organized by J. Campbell, D. Comite, M. Moghaddam
Chairs: J. Campbell, D. Comite, M. Moghaddam

ROOM 5 BASILE

9.00-17.20
SESSION 22 ICEAA
Natural and stimulated emissions and related phenomena in space and astrophysical plasmas
Organized by G. Ganguli
Chair: D. Baker, A. Sen

ROOM 6 RUGGERO

8.40-10.40
SESSION 23 ICEAA
Electromagnetics in biomedical applications: advances in nervous system stimulation
Organized by G. Bonmassar, A. Paffi, L. Golestani Rad
Chairs: G. Bonmassar, A. Paffi, L. Golestani Rad

11.00-15.40
SESSION 24 ICEAA
Electromagnetic applications to biomedicine
Chairs: R. L. Gardner, C. Pisano

15.40-17.40
SESSION 25 ICEAA
Technologies for mm waves and photonics
Chairs: R. L. Gardner, P. Pirinoli

Wednesday 10

Coffee breaks
10:40-11:00 and 16:20-16:40

Lunch break
13:00-14:20

ROOM 1 FEDERICO

8.20-10.00
SESSION 26 ICEAA
Nonlinear media, resonances, and inverse problems
Organized by Y. Shestopalov
Chairs: L. Beilina

10.00-18.20
SESSION 27 ICEAA
Numerical methods in electromagnetics
Organized by R.D. Graglia, D.R. Wilton
Chairs: R.D. Graglia, D.R. Wilton

ROOM 2 ENRICO

8.20-15.20
SESSION 28 ICEAA
Advances in radio astronomy antennas and systems
Organized by D. de Villiers, R. Lehmensiek, D. Davidson, P. Bolli
Chairs: D. de Villiers, R. Lehmensiek, D. Davidson, P. Bolli

15.20-18.20
SESSION 29 ICEAA
Advanced modeling techniques for the space plasma electromagnetic environment
Organized by W. Scales
Chairs: W. Scales

ROOM 3 ANGELICA

8.40-13.00
SESSION 30 ICEAA
Metasurfaces with symmetry properties
Organized by R. Kastner, R. Shavit
Chairs: R. Kastner, R. Shavit

14.20-18.40
SESSION 31 ICEAA
Scattering and radiation engineering with metastructures: fundamentals and applications
Organized by A. Monti, F. Bilotti
Chairs: A. Monti, F. Bilotti

ROOM 4 GUGLIELMO

8.20-10.40
SESSION 32 IEEE APWC
Signal processing antennas and systems
Chairs: A. Saleem, A. Toccafondi

11.00-16.20
SESSION 33 ICEAA/IEEE APWC
Artificial intelligence and novel optimization techniques applied to electromagnetics
Organized by F. de Flaviis
Chairs: F. de Flaviis, L. Katehi

16.40-18.40
SESSION 34 IEEE APWC
AI in electromagnetic applications
Chairs: F. de Flaviis, L. Katehi

ROOM 5 BASILE

8.20-10.00
SESSION 35 ICEAA
Model order reduction in electromagnetics
Organized by R. Torchio
Chairs: R. Torchio

10.00-12.20
SESSION 36 ICEAA
Electromagnetic modeling of devices and circuits
Chairs: P. Schulz, E. Simsek

12.20-18.40
SESSION 37 ICEAA
Simulation and diagnostics of space plasma phenomena in the laboratory
Organized by W.E. Amatucci, E. Scime
Chairs: W.E. Amatucci, E. Scime

ROOM 6 RUGGERO

14:20 – 16:40
IEEE AP-S INDUSTRIAL PANEL
Industry meets Academy: igniting innovation in electromagnetics
Organized by IEEE AP-S Industrial Initiatives Committee
Chair: Jiang Zhu
Vice Chair; Roberto Flamini

Thursday 11

Coffee breaks
10:40-11:00 and 16:20-16:40

Lunch break
13:00-14:20

ROOM 1 FEDERICO

8.20-10.00
SESSION 38 IEEE APWC
Smart antennas and arrays
Chairs: R. Asfour, H. Nakano

10.00-18.20
SESSION 39 IEEE APWC
Wide/multiband antennas and innovative antenna technology
Organized by H. Nakano
Chairs: H. Nakano, R. Tamas

ROOM 2 ENRICO

8.20-12.20
SESSION 40 ICEAA
Antennas and electromagnetic systems with periodic and quasi-periodic structures
Organized by L. Matekovits, K. Esselle
Chairs: L. Matekovits, K. Esselle

12.20-18.40
SESSION 41 ICEAA
Metamaterials and metasurfaces
Chairs: F. Costa, C. A. Downing

ROOM 3 ANGELICA

8.20-10.20
SESSION 42 ICEAA
mmWave sensors and devices
Organized by C. Baer, C. Schulz
Chairs: C. Baer, C. Schulz

10.20-15.20
SESSION 43 ICEAA
Dielectric waveguides and polymer microwave fiber technology
Organized by C. Baer, C. Schulz
Chairs: C. Baer, C. Schulz

15.20-18.40
SESSION 44 ICEAA/IEEE APWC
Recent advances in measurement techniques for spatially distributed electromagnetic fields
Organized by O. Breinbjerg
Chairs: O. Breinbjerg

ROOM 4 GUGLIELMO

8.20-15.40
SESSION 45 ICEAA
Electromagnetic sensing and imaging technologies for health applications
Organized by L. Crocco, R. Cruz Conceição, F. Vipiana
Chairs: L. Crocco, R. Cruz Conceição, F. Vipiana

15.40-18.40
SESSION 46 ICEAA
Fast and efficient solvers and stable discretizations
Organized by F. Andriulli
Chairs: F. Andriulli

ROOM 5 BASILE

8.20-10.00
SESSION 47 ICEAA
Beam methods and phenomena in the frequency and time domains
Organized by T. Melamed
Chairs: T. Melamed

10.00-11.40
SESSION 48 ICEAA
EM protection in intelligent transportation systems
Organized by Y. Wen
Chairs: Y. Wen

11.40-13.00
SESSION 49 ICEAA
Mathematical advances in electromagnetics
Organized by P.D. Smith, E. Vynogradova
Chairs: P.D. Smith, E. Vynogradova

14.20-18.20
SESSION 50 ICEAA
Remote sensing techniques and models for monitoring the impact of natural events on the Earth system
Organized by G. De Franceschi, V. Romano, S. Scollo
Chairs: G. De Franceschi, V. Romano, S. Scollo

ROOM 6 RUGGERO

9.00-12.40
FREE SHORT COURSE / 2
Reflectarray and Transmitarray Antennas: Theory, Designs, and Applications
Prof. Atef Z. Elsherbeni

Friday 12

ROOM 1 FEDERICO

8.20-10.40
SESSION 51 ICEAA
Advances in time and frequency domain methods
Organized by F. Erden, H.A. Ülkü, E. Basaran
Chairs: F. Erden, H.A. Ülkü, E. Basaran

11.00-13.00
SESSION 52 ICEAA
Electromagnetic measurements
Chairs: S.G. Ballaera, M. Zahner

ROOM 2 ENRICO

8.20-12.40
SESSION 53 ICEAA
Reconfigurable Metasurfaces: Theory, Design and Applications
Organized by G. Manara, F. Costa
Chairs: G. Manara, F. Costa

ROOM 3 ANGELICA

8.40-10.40
SESSION 54 ICEAA
Method of moments for array-related problems
Organized by C. Craeye, M. Botha
Chairs: C. Craeye, M. Botha

11.00-13.00
SESSION 55 ICEAA
Numerical methods for transient wave scattering
Organized by A. Zuccotti, K. Cools
Chairs: A. Zuccotti, K. Cools

Coffee break
10:40-11:00

ROOM 4 GUGLIELMO

8.20-9.40
SESSION 56 ICEAA
Modeling and characterization of thin film, ferroelectric and phase-change materials for RF devices
Organized by L. Pierantoni, D. Mencarelli
Chairs: L. Pierantoni, D. Mencarelli

9.40-13.00
SESSION 57 IEEE APWC
Wireless communications
Chairs: C. M. Andras, D. Lee

ROOM 5 BASILE

8.20-9.40
SESSION 58 ICEAA
Advanced electromagnetic technologies for biomedical applications
Organized by T. Nagaoka
Chairs: T. Nagaoka

9.40-13.00
SESSION 59 ICEAA
Antennas
Chairs: Y.W. Chen, P. Pinho

ROOM 6 RUGGERO

9.00-12.40
FREE SHORT COURSE / 3
Advanced Antenna Modeling and Simulation Techniques
Dr. CJ Reddy

MONDAY 8

Monday, September 8 - room 1 Federico

09:00-10:00

Formal Opening

Plenary lectures

10:20-11:20

Solar Superstorms. A storm is a tea cup, or a global risk for societies and economies? 2025 update

Paul Cannon
Space Environment and Radio Engineering, School of Engineering
University of Birmingham, UK

11:20-12:20

Current Trends and Open Grand Challenges in Computational Electromagnetics for High-Resolution Neuroimaging

Francesco P. Andriulli
Electrical engineering, Full Professor – Politecnico di Torino, Italy

Monday, September 8 - H 14:20-15:20 - room 1 Federico

session 01 **ICEAA**

Recent advancement of electromagnetic theory

Organized by H. Shirai
Chair: H. Shirai

14:20 -14:40

COMPARISON OF THE EDGE DIFFRACTION COEFFICIENTS FOR DIELECTRIC WEDGES
H. Shirai, D.M. Nguyen, Chuo University, Japan

14:40-15:00

A STUDY ON THE ERRORS OF ESTIMATES OBTAINED FROM SCATTERER INFORMATION ESTIMATION METHOD
K. Goto, T. Kawano, R. Seito, M. Kitaguchi,The National Defense Academy of Japan, Japan

15:00-15:20

AN EFFICIENT RCS DATA GENERATION STRATEGY BASED ON DIVIDE AND INTERPOLATION FOR SAR IMAGE SIMULATIONS
H. Suenobu, Mitsubishi Electric Corporation, Japan; K. Nishimoto, Mitsubishi Electric Corporation, Japan; Y. Inasawa, Mitsubishi Electric Corporation, Japan

Monday, September 8 - 1 H 5:20-18:00 - room 1 Federico

session 02 **ICEAA**

Electromagnetic theory

Chairs: E. Heyman, H. Shirai

15:20-15:40

COMPLEX-SOURCE BEAM DIFFRACTION BY A SURFACE OF IMPEDANCE DISCONTINUITY: EXACT AND UNIFORM ASYMPTOTIC SOLUTIONS
M. Katsav, E. Heyman, Tel Aviv University, Israel

15:40-16:00

TOWARDS AN ALL-OPTICAL ANALOG EXPERIMENT OF LIGHT MODULATION BY GRAVITATIONAL WAVES
S. F. Koufidis, Imperial College London, United Kingdom; M. W. McCall, Imperial College London, United Kingdom

16:00-16:20

A SPACETIME ENERGY-DENSITY APPROACH TO CIRCUIT MODELING OF CYLINDRICAL EM STRUCTURES: CAPACITIVE, INDUCTIVE, AND MUTUAL COUPLING EFFECTS
A.Pirisi, Politecnico di Milano, Italy; R. E. Zich, Politecnico di Milano, Italy

16:40-17:00

CLOSED-FORM EXPRESSION FOR THE RADIATION OF AN ARBITRARILY-ORIENTED STOCHASTIC ELEMENTARY DIPOLE
E.M.Djelloul, ENAC, France; A. Chabory, ENAC, France; C. Morlaas, ENAC, France; R. Douvenot, ENAC, France

17:00-17:20

ESTIMATING ELECTRIC FIELDS FROM B1 MAPS IN CIRCULAR AND ELLIPTIC CYLINDERS WITH DEEP LEARNING
G.Carluccio, University Federico II of Napoli, Italy; E. Montin, New York University, United States; C. M. Collins, New York University, United States; R. Lattanzi, New York University, United States; D. Riccio, University Federico II of Napoli, Italy; G. Ruello, University Federico II of Napoli, Italy

17:20-17:40

IMPACT OF THE REACTIVE ATTENUATION CONSTANT IN THE EFFICIENCY OF UNIFORM/QUASI-UNIFORM LEAKY-WAVE ANTENNAS RADIATING AT BROADSIDE
M. Poveda-Garcia, Technical University of Cartagena, Spain; A. Algaba-Brazalez, Technical University of Cartagena, Spain; D. Comite, Sapienza University of Rome, Italy; J. L. Gomez-Tornero, Technical University of Cartagena, Spain

17:40-18:00

OPTIMUM HIGH-PERMITTIVITY MATERIALS WITH PARALLEL IMAGING APPLICATIONS IN MRI
G. Carluccio, University Federico II of Napoli, Italy; V. Miranda, University Federico II of Napoli, Italy; C. M. Collins, New York University, United States; D. Riccio, University Federico II of Napoli, Italy; G. Ruello, University Federico II of Napoli, Italy

Monday, September 8 - H 18:00-18:40 - room 1 Federico

session 02 a **ICEAA**

Modern problems of mathematical and computational electromagnetics and their advanced applications

Organized by M.N. Georgieva-Grosse, G.N. Georgiev
Chairs: M.N. Georgieva-Grosse, G.N. Georgiev

18:00-18:20

CALCULATION OF TM MODES OF AN OPEN CYLINDRICAL RESONATOR LOCATED INSIDE A COAXIAL INFINITE WAVEGUIDE USING THE WIENER-HOPF METHOD

S.Sautbekov, Al-Farabi Kazakh National University, Kazakhstan; G. Bairova, Al-Farabi Kazakh National University, Kazakhstan; M. Sautbekova, Kazakh-British Technical University, Kazakhstan; G. Alkina, Al-Farabi Kazakh National University, Kazakhstan

18:20-18:40

PHASE BEHAVIOUR OF AN ANISOTROPIC RADIALLY STRATIFIED CIRCULAR WAVEGUIDE

M. N. Georgieva-Grosse, Consulting and Researcher in Physics, Mathematics and Computer Sciences, Bulgaria; G. N. Georgiev, Consulting and Researcher in Physics, Mathematics and Computer Sciences, Bulgaria

Monday, September 8 - H 14:20-17:40 - room 2 Enrico

session 03 **ICEAA**

EMC/EMI/EMP

Chairs: R. L. Gardner, A. Monorchio

14:20-14:40

RF EFFECTS AND COUPLING SIMULATION FOR ELECTRONIC SYSTEMS

R.L. Gardner, Consultant, United States

14:40-15:00

ANTI-ACTIVE DECEPTION JAMMING BASED ON ADAPTIVE LIKELIHOOD RATIO TEST IN DISTRIBUTED RADAR SYSTEM

K.L.Yang, Beijing Jiaotong University, China; M.J. Wang, Beijing Jiaotong University, China; Y.H. Wen, Beijing Jiaotong University, China

15:00-15:20

A COST-EFFECTIVE METHOD FOR RADIATED HPM TESTING OF CMOS CIRCUITS IN A GTEM CELL

S. Haydon, Curtin University, Australia; A.T. Sutinjo, Curtin University, Australia; J. Cook, Curtin University, Australia

15:20-15:40

HUMAN HEAD EXPOSURE TO BLUETOOTH FREQUENCY - THERMAL RESPONSE

H. Dodig, Faculty of Maritime Studies, University of Split, Croatia, Croatia; K. Vidak, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia, Croatia; M. .kiljo, Faculty of Electrical Engineering, Mechanical Engineering and NavalArchitecture, University of Split, Croatia, Croatia; D. Poljak, Facultyof Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia, Croatia

15:40-16:00

A NOTE ON DIFFERENT SOURCE MODELS FOR DIPOLE ANTENNAS IN GHZ FREQUENCY RANGE

D. Poljak, University of Split, FESB, Croatia; V. Doric, University of Split, FESB, Croatia

16:00-16:20

A GRAPH-THEORY-BASED SPECTRUM ALLOCATION METHOD FOR EMI MITIGATION

F. Feng, Beihang University (BUAA), China; D.Y. Wang, Beihang University (BUAA), China; H.J. Xv, Beihang University (BUAA), China; M. Guan, Beihang University (BUAA), China; M.Y. Li, Beihang University (BUAA), China; A.X. Chen, Beihang University (BUAA), China

16:40-17:00

HUMAN HEAD EXPOSURE TO BLUETOOTH FREQUENCY - ELECTROMAGNETIC DOSIMETRY

K. Vidjak, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture,Universityof Split, Croatia;M. .kiljo, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia; V. Doric, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia; D. Poljak, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia

17:00-17:20

5G VS 6G: ADVANCES IN CELLULAR PLANNING AND THEIR IMPACT ON POPULATION EXPOSURE

P. Usai, Dip. Ingegneria dell'Informazione - University of Pisa, Italy; D. Brizi, Dip. Ingegneria dell'Informazione - University of Pisa, Italy; A. Monorchio, Dip. Ingegneria dell'Informazione - University of Pisa, Italy

17:20-17:40

SHIELDING EFFECTIVENESS OF METAL PLATES WITH APERTURES: SIMULATION AND ANALYTICAL MODEL IN REVERBERATION CHAMBERS

M.U. Imtiaz, Eindhoven University of Technology, Netherlands; R. Serra, Eindhoven University of Technology, Netherlands

Monday, September 8 - H 17:40-18:40 - room 2 Enrico

session 04 **ICEAA**

Frontiers in bioelectromagnetic research: methods, models, and applications

Organized by F. Apollonio, M. Liberti
Chairs: F. Apollonio, M. Liberti

17:40-18:00

5G EXPOSURE AND CANCER IN ANIMAL STUDIES: UPDATE OF SYSTEMATIC REVIEWS META-ANALYSIS ON SKIN DATA

L.A. Ardoino, ENEA, Italy; R.P. Pinto, ENEA, Italy

18:00-18:20

COMPUTATIONAL ELECTROMAGNETIC EXPOSURE ASSESSMENT OF AUGMENTED REALITY SMART GLASSES OPERATING AT 26 GHZ

L. Bellosono, Sapienza University of Rome; Italian National Institute of Health, Italy; M. Colella, Sapienza University of Rome, Italy; S. D'Agostino, Sapienza University of Rome, Italy; G.M. Contessa, Italian National Institute of Health, Italy; A. Polichetti, Italian National Institute of Health, Italy; M. Liberti, Sapienza University of Rome, Italy; F. Apollonio, Sapienza University of Rome, Italy

18:20-18:40

EFFECTS OF 3.5 GHZ RF-EMF ON TRPM8 ION CHANNEL: A COMPUTATIONAL STUDY

C. Pisano, Sapienza University of Rome, Italy; L. Caramazza, Sapienza University of Rome, Italy; L. Ferri, Sapienza University of Rome, Italy; N. Alvieri, Sapienza University of Rome, Italy; P. Marracino, Rise Technology S.r.l., L.re Paolo Toscanelli 170, Rome, Italy; F. Del Signore, Sapienza University of Rome, Italy; M. Liberti, Sapienza University of Rome, Italy; F. Apollonio, Sapienza University of Rome, Italy

Monday, September 8 - H 14:20-17:20 - room 3 Angelica

session 05 **ICEAA**

New paradigm and strategies for inverse scattering problems

Organized by M.T. Bevacqua, L.Di Donato, P. Mojabi
Chairs: M.T. Bevacqua, L.Di Donato, P. Mojabi

14:20-14:40

A WIDEBAND S-DOMAIN ALGORITHM FOR MICROWAVE IMAGING WITHIN RESONANT CHAMBERS USING DISPERSIVE EIGENFUNCTION EXPANSIONS

A. Attar, University of Manitoba, Canada; J. LoVetri, University of Manitoba, Canada

14:40-15:00

INVESTIGATION OF MICROWAVE QUANTITATIVE IMAGING VS. MACHINE LEARNING FOR SHOULDER INJURY DETECTION

C. Migliaccio, Université Ce d'Azur, France; S. Borzooei, Université Ce d'Azur, France; V. Dolean, Eindhoven University, Netherlands; P.H. Tournier, Sorbonne Université, France; H. Roussel, Sorbonne Université, France; N. Joachimowicz, Sorbonne Université, France

15:00-15:20

INDOOR LOCALIZATION OF MOVING TARGETS USING OPPORTUNISTIC SENSORS

A. Dell'Aversano, Department of Engineering, Università degli Studi della Campania Luigi Vanvitelli, Italy; E. Akbari Sekehravani, IREA-CNR, Italy; L. Crocco, IREA-CNR, Italy; R. Solimene, Department of Engineering, Università degli Studi della Campania Luigi Vanvitelli, Italy; R. Scapaticci, IREA-CNR, Italy

15:20-15:40

SENSOR DEPLOYMENT IN MM-NEAR FIELD MONOSTATIC RADAR IMAGING

M. Del Prete, Università degli Studi della Campania, Italy; M.A. Maisto, Università degli Studi della Campania, Italy; R. Solimene, Università degli Studi della Campania, Italy

15:40-16:00

RECONSTRUCTION OF OBJECTS AT CELL SCALE FROM MICROSCOPE IMAGES WITH INVERSE SCATTERING ALGORITHM

Y. Qin, UiT The Arctic University of Norway, Norway; Y. Zhong, UiT The Arctic University of Norway, Norway; K. Agarwal, UiT The Arctic University of Norway, Norway

16:00-16:20

PRELIMINARY INVESTIGATION ON INVERSE SCATTERING-BASED DESIGN OF DIELECTRIC SUPERSTRATES FOR BEAM SHAPING

A. Ciociola, Università degli studi della campania "L.Vanvitelli", Italy; R. Solimene, Università degli studi della campania "L.Vanvitelli", Italy

16:40-17:00

IMPROVING OBJECT CLASSIFICATION ACCURACY FROM ELECTROMAGNETIC DATA USING ATTENTION MECHANISMS

E. Simsek, H. R. Manyam, University of Maryland Baltimore County, United States

17:00- 17:20

NOVEL EFFECTIVE POSSIBILITIES IN 2D INVERSE SCATTERING THROUGH THE VIRTUAL EXPERIMENTS PARADIGM

M. Bevacqua, Universita Mediterranea di Reggio Calabria, Italy; T. Isernia, Universita Mediterranea di Reggio Calabria, Italy; L. Di Donato, Università di Catania, Italy

Monday, September 8 - H 17:20-18:40 - room 3 Angelica

session 06 **ICEAA**

Radar and Imaging techniques

Chairs: I. Akduman, L.Di Donato

17:20-17:40

IMAGING OF PAYLOAD DRONE USING MILLIMETER-WAVE MIMO RADAR WITH SAR PROCESSING

Y. Igarashi, National Defense Academy of Japan, Japan; K. Ogawa, National Defense Academy of Japan, Japan; R. Nakamura, National Defense Academy of Japan, Japan

17:40-18:00

CALIBRATION OF A MIMO RADAR FOR 3-D NEAR-FIELD SCATTERING IMAGERY

T. J. Liu, School of Electronic and Information Engineering, Beihang University, China; B. L. Zhao, School of Electronic and Information Engineering, Beihang University, China; X. J. Xu, School of Electronic and Information Engineering, Beihang University, China

18:00-18:20

WIDE-BAND ANTENNA DESIGN FOR SUB-SURFACE MICROWAVE IMAGING

S. Joof, Istanbul Technical University, Turkey; M. Çayen, Istanbul Technical University, Turkey; H. Sahintk, Yildiz Technical University, Turkey; I. Akduman, Istanbul Technical University, Turkey

18:20-18:40

ISAR ALGORITHM FOR DETECTING TARGET SCATTERS: AN ENHANCED RANGE-DOPPLER APPROACH WITH INTERFERENCE SUPPRESSION

T. Chellan, Stellenbosch University, South Africa; L.L. Grootboom, Stellenbosch University, South Africa

Monday, September 8 - H 14:20-16:20 - room 4 Guglielmo

session 07 **IEEE APWC**

Innovative multi-antenna techniques for 6G wireless networks

Organized by G. Alfano, D.G. Riviello
Chairs: D.G. Riviello, M. Perrone

14:20-14:40

PERFORMANCE ANALYSIS OF CODED SLOTTED ALOHA IN A CELL-FREE SCENARIO USING STOCHASTIC GEOMETRY

L. Valentini, University of Bologna, Italy; E. Paolini, University of Bologna, Italy; M. Chiani, University of Bologna, Italy

14:40-15:00

ENERGY-EFFICIENT MIMO COMMUNICATION ASSISTED BY METASURFACES WITH GLOBAL REFLECTION CONSTRAINTS

A. I. Tunali, CNIT, Italy; R. K. Fotock, University of Cassino and Southern Lazio, Italy, Italy; A. Zappone, University of Cassino and Southern Lazio, Italy, Italy; G. Taricco, Politecnico di Torino, Italy; H. A. Cirpan, Istanbul Technical University, Turkey

15:00-15:20

AI-ASSISTED DOA ESTIMATION FOR MIMO RADAR APPLICATIONS

I. Bari, Military Technological College, Oman; S.U. Rehman, National University of Computer & Emerging Sciences, Peshawar Campus, Pakistan; S. Mir, National University of Computer & Emerging Sciences, Peshawar Campus, Pakistan; B. Hussain, SICOYA, Germany; M.M. Khan, National University of Computer & Emerging Sciences, Peshawar Campus, Pakistan; Y.Y.O. AlBalushi, Military Technological College, Oman

15:20-15:40

JOINT GRAPH-BASED USER SCHEDULING WITH LFOV BEAMFORMING DESIGN FOR B5G/6G NTN SYSTEMS

M.R. Dakkak, University of Bologna, Italy; D.G. Riviello, CNR-IEIIT, Consiglio Nazionale delle Ricerche, Italy; A. Guidotti, National Inter-University Consortium for Telecommunications (CNIT), Italy; A. Vanelli-Coralli, University of Bologna, Italy

15:40-16:00

EXPERIMENTAL VERIFICATION OF THE SUB-THZ CHANNEL MODEL WITH APPLICATION TO IRS-AIDED COMMUNICATIONS

F. Paonessa, National Research Council, Italy; D. G. Riviello, National Research Council, Italy; M. Riaz, Politecnico di Torino, Italy; A. Tarable, National Research Council, Italy; A. Nordio, National Research Council, Italy; G. Virone, National Research Council, Italy

16:00-16:20

SOFTWARE-DEFINED RADIO EXPERIMENTAL SETUP FOR MULTI-ANTENNA SPECTRUM SENSING ALGORITHMS

D.G. Riviello, CNR-IEIIT, Italy; G. Alfano, University of Cassino and Southern Lazio, Italy

Monday, September 8 - H 16:40-18:40 - room 4 Guglielmo

session 08 **ICEAA**

Computational Electromagnetics

Chairs: P.L. Cordel, A. Z. Elsherbeni

16:40-17:00

MATCHED WAVEGUIDE PORTS IN PMCHWT FORMULATION

P. Soudais, Dassault Aviation, France

17:00-17:20

HUMAN SKIN THICKNESS EFFECT ON ABSORBED POWER DENSITY FOR FREQUENCIES FROM 10 TO 100 GHZ

F. Kaburcuk, Sivas University of Science and Technology, Turkey; A. Z. Elsherbeni, Colorado School of Mines, United States

17:20-17:40

A NEURAL NETWORK EMBEDDABLE ALGORITHM BASED ON INHERENT CHARACTERISTIC PARAMETERS FOR RCS CALCULATION OF 3D OBJECTS

B. L. Zhao, School of Electronics and Information Engineering, Beihang University, China; T. J. Liu, School of Electronics and Information Engineering, Beihang University, China; X. J. Xu, School of Electronics and Information Engineering, Beihang University, China

17:40-18:00

A NONUNIFORM MESHING SCHEME FOR A FDTD IN SPHERICAL COORDINATES

S. B. Perry, Auburn University, United States; W. C. Snider, Auburn University, United States

18:00-18:20

SEMI-ANALYTICAL COMPUTATION OF THE DIFFRACTION COEFFICIENTS FOR ARBITRARILY SHAPED SEMI-INFINITE CONES

I. Sarigiannidis, Sorbonne, France; M. Casaletti, Sorbonne Universite, France; M. Albani, University of Siena, Italy

18:20-18:40

TIME-DOMAIN DUAL SURFACE ELECTRIC FIELD INTEGRAL EQUATION

P.L. Cordel, Thales DMS, France; F.P. Andriulli, Politecnico di Torino, Italy

Monday, September 8 - H 14:20-18:40 - room 5 Basile

session 09 **ICEAA**

Quantum electromagnetics – From photonics to quantum computing

Organized by A. Boag, G. Gradoni
Chairs: A. Boag , G. Gradoni

14:20-14:40

THE BISTABILITY PHASE DIAGRAM FOR QUANTUM DOT SUPERCRYSTALS SUBJECT TO CONTINUOUS RADIATION

I. Neuhart, Michigan State University, United States; C. Piermarocchi, Michigan State University, United States; C. L. Baldwin, Michigan State University, United States

14:40-15:00

LAYERED FERROELECTRICITY: FROM GEOMETRIC MEASURES TO FIRST-PRINCIPLES CALCULATIONS

O. Hod, Tel Aviv University, Israel

15:00-15:20

LOCALIZATION METHODS FOR THE EFFICIENT CALCULATION OF FOCK EXCHANGE IN LARGE NANOSTRUCTURES.

R. T. Ahdoot, Tel Aviv University, Israel; A. Boag, Tel Aviv University, Israel; A. Natan, Tel Aviv University, Israel

15:20-15:40

QUANTUM HAMILTONIAN SIMULATION OF TIME-DOMAIN ELECTROMAGNETIC FIELDS

E. Colella, University of Surrey, United Kingdom; L. Bastianelli, Universita Politecnica delle Marche, Italy; V. Mariani Primiani, Universita Politecnica delle Marche, Italy; F. Moglie, Universita Politecnica delle Marche, Italy; G. Gradoni, University of Surrey, United Kingdom

15:40-16:00

CHARACTERISTIC MODES OF QUANTUM LIGHT FOR APPLICATIONS IN QUANTUM METROLOGY
A.Boag, Tel Aviv University, Israel; I. Levie, Tel Aviv University, Israel; D. Mogilevtsev, National Academy of Sciences of Belarus, Belarus; G. Slepyan, Tel Aviv University, Israel

16:00-16:20

A THEORETICAL PROPOSAL FOR A UNIFIED MODELING APPROACH FOR SUPERCONDUCTING PARAMETRIC AMPLIFIERS
Y. Yuan, Technical University of Munich, Germany; O. Asirim, Technical University of Munich, Germany; M. Haider, Technical University of Munich, Germany; C. Jirauschek, Technical University of Munich, Germany

16:40-17:00

A REVIEW OF RF AND MICROWAVE MEASUREMENT STRATEGIES FOR CHARACTERIZING CRYO-CMOS TECHNOLOGIES IN QUANTUM COMPUTING
M. Stanley, National Physical Laboratory, United Kingdom; M. Celep, National Physical Laboratory, United Kingdom; X. Shang, National Physical Laboratory, United Kingdom; N. Ridler, National Physical Laboratory, United Kingdom

17:00-17:20

OPTIMIZATION OF SPACE-TIME CODING METASURFACE BY A QUANTUM ANNEALING-INSPIRED ALGORITHM
S. S. A. Yuan, Y. Jiang, W. E. I. Sha, Zhejiang University, China

17:20-17:40

THE HIDDEN VARIABLES IN THE FUTURE OF QUANTUM COMPUTING IN 6G
R. Bassoli, Technische Universität Dresden, Germany

17:40-18:00

SEMICLASSICAL MODELING OF PLASMONIC NANOSTRUCTURES IN THE QUANTUM REGIME
P.Y.Chen, University of Illinois Chicago, United States

18:00-18:20

ON A VOLUME INTEGRAL EQUATION APPROACH TOWARDS THE ELECTRONIC SPILL-OUTS IN CANONICALLY SHAPED DEEP-NANOMETRIC TOPOLOGIES
X.Z. Zheng, KU Leuven, Belgium

18:20-18:40

A SURFACE INTEGRAL EQUATION APPROACH FOR THE NONLOCAL HYDRODYNAMIC RESPONSE FROM DEEP-NANOMETRIC ARBITRARILY SHAPED SCATTERERS
H.W. Zhang, Beijing Institute of Technology, China; X.Z. Zheng, KU Leuven, Belgium; X.Q. Sheng, Beijing Institute of Technology, China

TUESDAY 9

Tuesday, September 9 - H 08:20-09:20 - room 1 Federico

session 10 **IEEE APWC**

RFID technologies

Chairs: I. Bakri, A. Boag

08:20-08:40

ENHANCING HIGH-FREQUENCY RFID SENSING THROUGH PEDOT-ENABLED TECHNOLOGIES
G. A. Casula, Department of Electrical and Electronic Engineering, Italy; P. Cosseddu, Department of Electrical and Electronic Engineering, Italy; A. Mascia, Department of Electrical and Electronic Engineering, Italy; G. Sforazzini, Department of Chemical and Geological Sciences, Italy; G. Montisci, Department of Electrical and Electronic Engineering, Italy; G. Mura, Department of Electrical and Electronic Engineering, Italy; E. Mattana, Department of Electrical and Electronic Engineering, Italy; P. Maxia, INAF—Osservatorio Astronomico di Cagliari, Italy

08:40-09:00

UNDERWATER UHF RFID TAG FOR TRACKING OF PEBBLES OR SIMILAR THINGS
F. Ferretti, A. Di Carlofelice, E. DiGiampaolo, P. Tognolatti, Universita' degli Studi dell'Aquila, Italy

09:00-09:20

CHIPLESS RFID MULTI-READER SYSTEM UTILIZING SPATIAL DIVERSITY AND COMBINING TECHIQUE
I. Bakri, RheinMain University of Applied Sciences, Germany; M. El Hadidy, RheinMain University of Applied Sciences, Germany

Tuesday, September 9 - H 09:20-11:40 - room 1 Federico

session 11 **ICEAA**

Fast computational methods

Organized by A. Boag
Chair: A. Boag

09:20-09:40

SUBSPACE PROJECTION METHODS FOR INTERPOLATION AND SELF-CORRECTING SOLUTION OF MULTIPLE RIGHT-HAND SIDES IN MOM SCATTERING PROBLEMS
A. Gomez-Rodriguez, Universidad de Extremadura, Spain; V.F. Martin, Universidad Rey Juan Carlos, Spain; L. Landesa, Universidad de Extremadura, Spain; F. Obelleiro, Universidad de Vigo, Spain; J.M. Taboada, Universidad de Extremadura, Spain

09:40-10:00

MEASUREMENT-COMPUTATION FUSION WITH NEAR-FIELD-BASED SOURCE RECONSTRUCTION AND ITS APPLICATIONS IN COMPUTATIONAL ELECTROMAGNETICS
H. Zhao, UESTC, China; J. Hu, UESTC, China

10:00-10:20

A BEAM PROPAGATION ALGORITHM FOR UWB LONG-RANGE PROPAGATION IN GUIDING ENVIRONMENTS

T. Paley, Tel Aviv University, Israel; E. Heyman, Tel Aviv University, Israel; A. Boag, Tel Aviv University, Israel

10:20-10:40

BEAM SUMMATION ALGORITHM FOR UWB-ANALYSIS OF SCATTERING FROM LARGE SMOOTH OBJECTS IN INHOMOGENEOUS PROPAGATION CHANNEL

P. Chopde, Tel Aviv University, Israel; E. Heyman, Tel Aviv University, Israel; A. Boag, Tel Aviv University, Israel

11:00-11:20

DIRECT SOLVER FOR SYSTEMS OF HYPERSINGULAR INTEGRAL EQUATIONS IN ELASTO-ACOUSTICS

E. Chernokozhin, Tel Aviv University, Israel; A. Boag, Tel Aviv University, Israel

11:20-11:40

SPECTRAL ANALYSIS OF DISCRETIZED BOUNDARY INTEGRAL OPERATORS IN 3D: A HIGH-FREQUENCY PERSPECTIVE

V. Giunzioni, Politecnico di Torino, Italy; A. Merlini, IMT Atlantique, France; F.P. Andriulli, Politecnico di Torino, Italy

Tuesday, September 9 - H 11:40-17:20 - room 1 Federico

session 12 **ICEAA**

Novel mathematical methods in electromagnetics

Organized by K. Kobayashi, G. Lombardi, Y. Shestopalov
Chairs: K. Kobayashi, G. Lombardi, Y. Shestopalov

11:40-12:00

HELICOIDAL MODES IN COAXIAL LINES WITH CONCAVE POLYGONAL CROSS-SECTION

P.L.E. Uslenghi, University of Illinois Chicago, United States

12:00-12:20

NOISE TOLERANCE OF SCATTERER INFORMATION ESTIMATION METHOD USING THE NUMERICAL DATA OF BACKWARD TRANSIENT SCATTERING WAVES

K. Goto, T. Kawano, M. Kitaguchi, R. Seito, The National Defense Academy of Japan, Japan

12:20-12:40

HOW SHALL WE UPGRADE THE RAY ASYMPTOTE TO THE EXACT SOLUTION

B.V. Budaev, University of California at Berkeley, United States

12:40-13:00

EVALUATION OF THE MAXIMUM REFLECTION DIRECTION OF A RIS FOR VARYING INCIDENCE ANGLES

L. H. W. Loeser, Technische Universität Braunschweig, Germany; T. Kürner, Technische Universität Braunschweig, Germany

14:20-14:40

A NUMERICAL AND ANALYTICAL STUDY OF THE ELECTRIC FIELDS EXCITED IN CYLINDRICAL CAVITIES WITH MULTIPLE LONGITUDINAL APERTURES

S. E. Dogan, The Ohio State University, United States; J. T. Johnson, The Ohio State University, United States; R. J. Burkholder, The Ohio State University, United States

14:40-15:00

NYSTRÖM DISCRETIZATION OF AN INTEGRAL EQUATION BASED ELECTROMAGNETIC SCATTERING FORMULATION FOR COMPOSITE STRUCTURES

B. Hofmann, University of Southern California, United States; C. Sideris, University of Southern California, United States

15:00-15:20

TOWARDS BOUNDARY ELEMENT METHODS FOR RESISTIVE BOUNDARY CONDITIONS COMPATIBLE WITH THE GLOBAL MULTI-TRACE AND MULTI-SCREEN FRAMEWORKS

J. Prakash, Ghent University, Belgium; K. Cools, Ghent University, Belgium

15:20-15:40

A LEAKY-WAVE APPROACH TO DIRECTIVE RADIATION IN 3-D DIELECTRIC WOODPILE LATTICES

A. Romano, Roma Tre University, Italy; V. Jandieri, University of Duisburg-Essen, Germany; L. Tognolatti, Roma Tre University, Italy; G. Valerio, Sorbonne Universitè, France; P. Baccarelli, Roma Tre University, Italy

15:40-16:00

RADAR CROSS SECTION ANALYSIS OF THE TWO CANONICAL, PARALLEL-PLATE WAVEGUIDE CAVITIES WITH THREE-LAYER MATERIAL LOADING

K.W. He, Chuo University, Japan; K. Kobayashi, Chuo University, Japan

16:00-16:20

ANALYTICAL STUDY OF A PTD WAVEGUIDE REALIZED BY BED OF NAILS METASURFACES

X. Mitsalas, University of Siena, Italy; N. Castro, University Carlos III of Madrid, Spain; E. Rajo-Iglesias, University Carlos III of Madrid, Spain; S. Maci, University fo Siena, Italy

16:40-17:00

TRANSMISSIVE METASURFACES FOR BEAM-STEERING APPLICATIONS

A. Monti, Roma Ter University, Italy; S. Vellucci, Niccolò Cusano University, Italy; M. Barbuto, Roma Tre University, Italy; A. Toscano, Roma Tre University, Italy; F. Bilotti, Roma Tre Universiy, Italy

17:00-17:20

THE REGULARIZED WIENER-HOPF METHOD APPLIED TO EM SCATTERING PROBLEMS INVOLVING ENTIRE UNKNOWNS

V. Daniele, Politecnico di Torino, Italy; G. Lombardi, Politecnico di Torino, Italy

Tuesday, September 9 - H 08:20-15:20 - room 2 Enrico

session 13 **ICEAA**

Microwave antennas, components and devices

Chairs: X. Gao, S.K. Khamas

08:20-08:40

FRACTAL ANTENNA DESIGN AND ANALYSIS IN ANSYS-HFSS: A JULIA SCRIPT-BASED APPROACH

M. Tamer, TUBITAK Defense Industries Research and Development Institute, Ankara, Turkey, Turkey; G. Kalender, Department of Electrical-Electronics Engineering, University ofDokuz Eylül, Izmir, Turkey, Turkey; S. Günel, Department of Electrical-Electronics Engineering, University of Dokuz Eylül, Izmir, Turkey, Turkey; E. Y. Zoral, Department of Electrical-Electronics Engineering, University of Dokuz Eylül, Izmir, Turkey, Turkey

08:40-09:00

A NOVEL SLOT-COUPLED MICROSTRIP ANTENNA FOR WIDE-ANGLE SCANNING PHASED ARRAYS

J.T. Ma, Southeast University, China; Z.X. Cao, Southeast University, China

09:00-09:20

DESIGN AND PERFORMANCE STUDY OF VIA INTERCONNECTION STRUCTURES IN MULTILAYER FLEXIBLE LCP CIRCUITS

X. Gao, southeast university, China; W.B. Wang, southeast university, China; Z.X. Cao, southeast university, China

09:20-09:40

MEASUREMENTS OF SLOT-FED CIRCULARLY POLARIZED LAYERED CYLINDRICAL DRA FOR X-BAND APPLICATIONS

W. Albakosh, University of Sheffield, United Kingdom; R. Asfour, University of Essex, United Kingdom; M. Alsabah, Al-Farahidi University, Iraq; S.K. Khamas, University of Sheffield, United Kingdom

09:40-10:00

DUAL BAND FREQUENCY RECONFIGURABLE X-BAND RECTANGULAR DIELECTRIC RESONATOR ANTENNA

A. Soltan, University of Sheffield, United Kingdom; R. Asfour, University of Essex, United Kingdom; M. Alsabah, Al-Farahidi University, Iraq; S.K. Khamas, University of Sheffield, United Kingdom

10:00-10:20

FILTENNA BASED ON A RIDGED WAVEGUIDE FILTER INTEGRATED WITH A VIVALDI ANTENNA FOR 5G APPLICATIONS

L. Bodenstein, Stellenbosch University, South Africa; P. Meyer, Stellenbosch University, South Africa

10:20-10:40

DUAL BAND DUAL RADIATION PATTERN MM-WAVE HEMISPHERICAL DRA FOR ON-BODY COMMUNICATION

T.S. Abdou, Electrical and Electronic Eng., Higher Inst. of Eng, Libyan Arab Jamahiriya; R. Asfour, Essex University, United Kingdom; D. Mirshekar-Syahkal, Essex University, United Kingdom; M. Alsabah, Medical Technical College, Al-Farahidi University, Iraq; S.K. Khams, University of Sheffield, United Kingdom;

11:00-11:20

COMPACT 6X6 NOLEN MATRIX WITH LUMPED ELEMENTS IN UHF BAND

C. Ramos, Universitàt Politècnica de Valencia, Spain; M. Baquero, Universitàt Poitècnica de Valencia, Spain; F. Carrera-Suárez, Escuela Politécnica Nacional, Ecuador

11:20-11:40

A REFLECTIONLESS BANDPASS FILTER USING LTCC TECHNOLOGY

K.D. Xu, University of Alcala, Spain; A. Liu, Xi'an Jiaotong University, China; D.X. Wang, Xi'an Jiaotong University, China

11:40-12:00

PRINTED BIDIRECTIONAL STRETCH ANTENNA SENSOR

M. Fawaz, The university of Kent, United Kingdom; S. Philips, The university of Kent, United Kingdom; R. Horne, The university of Kent, United Kingdom; B. Sanz-Izquierdo, The university of Kent, United Kingdom

12:00-12:20

HYBRID RF ANTENNA-SOLAR CELL FOR GROUND-BASED SPACE SOLAR POWER SYSTEMS

J. T. Kabangu, University of Kent, United Kingdom; H. Wang, Beijing University of Posts and Telecommunications, China; Z. Chen, Beijing University of Posts and Telecommunications, China; S. Phillips, University of Kent, United Kingdom; B. SANZ-IZQUIERDO, University of Kent, United Kingdom; J.C. Batchelor, University of Kent, United Kingdom

12:20-12:40

DESIGN AND EVALUATION OF POLARIZATION SWITCHING REFLECTIVE ELECTROMAGNETIC SURFACES ACROSS MICROWAVE TO TERAHERTZ BANDS

D.A. Nurmantris, Institut Teknologi Bandung, Indonesia; Z. Zulfi, Institut Teknologi Bandung, Indonesia; A. Munir, Institut Teknologi Bandung, Indonesia

12:40-13:00

COMPARATIVE INVESTIGATION ON FEEDING TECHNIQUE USAGE FOR IMPROVING CHARACTERISTICS OF SPIRAL RESONATOR ANTENNA

Y. Tan, University of Pakuan, Indonesia; M.F. Maulana, Universitas Sangga Buana, Indonesia; D.A. Nurmantris, Institut Teknologi Bandung, Indonesia; T. Firmansyah, Universitas Sultan Ageng Tirtayasa, Indonesia; M. Yunus, University of Pakuan, Indonesia; A. Munir, Institut Teknologi Bandung, Indonesia

14:20-14:40

25W GAN POWER AMPLIFIER FOR 7.9-8.4 GHZ RADAR AND COMMUNICATION APPLICATIONS

T. H. Ergin, Yeditepe University, Turkey; E. Polat, Yeditepe University, Turkey; I. Sisman, Profen Communication Technologies, Turkey

14:40-15:00

DESIGN AND OPTIMIZATION OF A LOW-LOSS KA-BAND ROTARY JOINT FOR SOTM APPLICATIONS

B. Ilgaz, Yeditepe University, Turkey; I. Sisman, Profen Communication Technologies, Turkey; T. Haykir Ergin, Yeditepe University, Turkey

15:00-15:20

COMPACT DUAL-CAVITY HORN ANTENNA FOR KU-BAND SATCOM SYSTEMS

S. Sarikazal, Yeditepe University, Turkey; B. ILGAZ, Yeditepe University, Turkey; I. Sisman, Yeditepe University, Turkey; T. Haykir Ergin, Yeditepe University, Turkey

Tuesday, September 9 - H 15:40-18:00 - room 2 Enrico

session 14 **IEEE APWC**

Communication satellite antennas

Chairs: D. de Villiers, P. Tognolatti

15:40-16:00

K/KA DUAL-BAND DUAL-POLARIZATION FEED SYSTEM FOR COMPACT TRANSMIT-ARRAY SOTM ANTENNAS

S. A. Matos, Instituto de Telecomunicacoes, Instituto Universitário de Lisboa (ISCTE-IUL), Portugal; P. Naseri, University of Toronto, Canada; J. Felicio, Instituto deTelecomunicações, Instituto Superior Técnico, Portugal; J.R. Costa, Instituto de Telecomunicacoes, Instituto Universitário de Lisboa (ISCTE-IUL), Portugal; C. A. Fernandes,Instituto de Telecomunicações, Instituto Superior Técnico, Portugal; N. J. G. Fonseca, 3SPACE Innovation, France

16:00-16:20

PHASED ANTENNA ARRAY CONCEPT FOR FLEXIBLE SATELLITE COMMUNICATIONS IN KA-BAND

A. Di Carlofelice, E. DiGiampaolo, P. Tognolatti, Universita' degli Studi dell'Aquila, Italy; L. Pascali, Planetek Italia, Bari, Italy; L. Amoruso, Planetek Italia, Bari, Italy; E. Arnieri, Univ. of Calabria, Italy; g. Amendola, Univ. of Calabria, Rende, Italy; L. Boccia, Univ. of Calabria, Rende, Italy; S. Moscato, SIAE Microelettronica, Cologno Monzese, Italy; A. Fonte, SIAE Microelettronica, Cologno Monzese, Italy; M. Oldoni, Politecnico di Milano, Milano, Italy

16:40-17:00

COMPACT, DUAL CIRCULARLY POLARIZED SATELLITE HORN ANTENNA AND FEED NETWORK COVERING FULL SATCOM KA-BAND

S. Oksay, Ozyegin University, Turkey; A. Akgiray, Ozyegin University, Turkey

17:00-17:20

BROADBAND SINUOUS ANTENNA DESIGN FOR 3U/6U CUBESAT APPLICATIONS

E. Polat, Yeditepe University, Turkey; I. Sisman, Profen Communication Technologies, Turkey; T. Haykir Ergin, Yeditepe University, Turkey

17:20-17:40

DUAL-CIRCULARLY POLARIZED X-BAND ISOFLUX ANTENNA FOR LEO PAYLOAD TELEMETRY APPLICATIONS

B. Ilgaz, Yeditepe University, Turkey; I. Sisman, Profen Communication Technologies, Turkey; T. Haykir Ergin, Yeditepe University, Turkey

17:40-18:00

DUAL POLARIZED APERTURE FED ANTENNA FOR SUB6 GHZ 5G APPLICATIONS

S. Sarikazal, Yeditepe University, Turkey; I. Sisman, Profen Communication Technologies, Turkey; T. Haykir Ergin, Yeditepe University, Turkey

Tuesday, September 9 - H 08:20-10:20 - room 3 Angelica

session 15 **IEEE APWC**

Antennas and wireless systems

Chairs: D. Segovia-Vargas, M. Salazar-Palma

08:20-08:40

HIGH POWER SYMMETRICAL SWITCH TOPOLOGY FOR DIRECT ANTENNA MODULATED (DAM) TRANSMITTERS

J.P. Santos, NAVAIR, United States; K.D. Bhakta, NAVAIR, United States; Y.E. Wang, UCLA, United States

08:40-09:00

A COPLANAR SUPER WIDE-BAND MONOPOLE ANTENNA BASED ON VOLCANO SMOKE RADIATOR

J.A. Ortiz-Fuentes, UC3M, Spain; J. Silva-Montero, MCOMM, Mexico; G. Galvan-Tejada, Cinvestav, Mexico; K.A. Abdalmalak, UC3M, Spain; M. Salazar-Palma, UC3M, Spain; D. Segovia-Vargas, UC3M, Spain

09:00-09:20

DESIGN AND ANALYSIS OF A METASURFACE ENHANCED WIDEBAND ANTENNA FOR POLARIZATION CONVERSION AND RCS REDUCTION

T. Islam, North Carolina A&T State U, United States; A. Eroglu, State University of New York Polytechnic, United States

09:20-09:40

IMPROVEMENT OF A 2X2 PORT SUPER WIDEBAND MIMO ANTENNA WITH A VOLCANO SMOKE GROUND PLANE

J.A. Ortiz-Fuentes, UC3M, Spain; K.A. Abdalmalak, UC3M, Spain; M. Salazar-Palma, UC3M, Spain; D. Segovia-Vargas, UC3M, Spain

09:40-10:00

EXPLORING FEASIBILITY AND EFFICIENCY OF A WPT SYSTEM COMPRISING A FLAT SPIRAL COIL NESTED WITHIN A LARGE HELICAL COIL

M. Joler, University of Rijeka, Faculty of Engineering, Croatia

10:00-10:20

DESIGN OF A WIRELESSLY POWERED S-BAND BACKSCATTER EDGE SENSING PLATFORM

C. J. Sands, Franklin W. Olin College of Engineering, United States; C. Goenka, Franklin W. Olin College of Engineering, United States

Tuesday, September 9 - H 11:00-12:40 - room 3 Angelica

session 16 **IEEE APWC**

Propagation models

Chairs: W. Keusgen, E. Plouhinec

11:00-11:20

HUMAN BODY SHADOWING MODELING BASED ON ROTATABLE SCREENS AND UNIFORM THEORY OF DIFFRACTION

E. Plouhinec, CReC Saint-Cyr/IETR, France; B. Uguen, IETR UMR CNRS 6164, University of Rennes, France

11:20-11:40

CHALLENGES AND POTENTIAL APPROACHES IN PROPAGATION MODELING OF HIGH FREQUENCIES FOR 6G NETWORKS

E. Greenberg, Rafael, Israel; E. Klodzh, Rafael, Israel

11:40-12:00

OPTIMISED VIA DESIGN AND MODELING FOR A RADIO ASTRONOMY RECEIVER

M.A. Johnston, South African Radio Astronomy Observatory, South Africa; E. Theunissen, South African Radio Astronomy Observatory, South Africa; J. Malan, South African Radio Astronomy Observatory, South Africa

12:00-12:20

DEEP LEARNING APPROACH TO LINE OF SIGHT DETECTION IN URBAN ENVIRONMENTS

M. Hossein zadeh, University of Bologna, Italy; M. Barbiroli, University of Bologna, Italy; F. Fuschini, University of Bologna, Italy

12:20-12:40

INSTANTANEOUS DIRECTIONAL CHANNEL MEASUREMENTS AT 14 GHZ AND 160 GHZ VIA A VIRTUAL CIRCULAR ARRAY

W. Keusgen, Technical University of Berlin, Germany; T. Eichler, Rohde & Schwarz, Germany

Tuesday, September 9 - H 14:20-16:00 . room 3 Angelica

session 17 **ICEAA**

Management of electromagnetic scattering for wireless and radar applications

Organized by A. Boag, P. Ginzburg
Chairs: A. Boag, P. Ginzburg

14:20-14:40

A 1-BIT SHAPE-MORPHING UNIT CELL DESIGN FOR PHOTOTHERMALLY RECONFIGURABLE REFLECTARRAYS

B.A. Scott, University of Exeter, United Kingdom; F. Burton, British Telecom, United Kingdom; K.E. Evans, University of Exeter, United Kingdom; A.W. Powell, University of Exeter, United Kingdom

14:40-15:00

PERMITTIVITY MODE EXPANSIONS FOR THERMAL EMISSION CALCULATIONS FROM NON-ISOTHERMAL SYSTEMS

P. Chen, Ben-Gurion University, Israel; C. Khandekar, Purdue University, United States; Z. Jacob, Purdue University, United States; Y. Sivan, Ben-Gurion University, Israel

15:00-15:20

ADVANCING RADAR TECHNOLOGY: HIGH-RESOLUTION CHAIN HOME RADAR ON OPTICAL FIBER

T.S. Salgals, Riga Technical university (RTU), Latvia; D.V. Vovchuk, Riga Technical University (RTU), Latvia; M.P. Parfjonovs, Riga Technical University (RTU), Latvia; N.M. Muracova, Riga Technical University (RTU), Latvia; P.G. Ginzburg, Tel Aviv University (TAU), Israel; V.B. Bobrovs, Riga Technical University (RTU), Latvia

15:20-15:40

ADVANCED METASURFACES FOR NEXT-GENERATION WIRELESS COMMUNICATION NETWORKS

S. K. R. Vuyyuru, Aalto University, Finland; R. Valkonen, Nokia Bell Labs, Finland; D. H. Kwon, University of Massachusetts Amherst, United States; V. S. Asadchy, S. A. Tretyakov, Aalto University, Finland

15:40-16:00

SUPERSCATTERERS ON A TARGET FOR TAILORING COLLECTIVE ELECTROMAGNETIC RESPONSES

P. Ginzburg, D. Vovchuk, S. Geyman, A. Mikhailovskaya, M. Tsukerman, K. Grotov, TA. Kharchevskii, A. Machnev, D. Kolchanov, D. Dobrykh, Tel Aviv University, Israel

Tuesday, September 9 - H 16:40-18:00 - room 3 Angelica

session 18 **ICEAA**

Scattering methods in complex environments

Organized by C. Ponti, L. Tognolatti, G. Schettini
Chairs: C. Ponti, L. Tognolatti, G. Schettini

16:40-17:00

SCATTERING FROM CYLINDERS IN ∏/N PEC DIHEDRAL CORNERS: AN EFFECTIVE APPROACH

R. Abdullin, University Mediterranea of Reggio Calabria, Italy; G.M. Battaglia, University Mediterranea of Reggio Calabria, Italy; L. Crocco, IREA-CNR, Italy; A.F. Morabito, University Mediterranea of Reggio Calabria, Italy; T. Isernia, University Mediterranea of Reggio Calabria, Italy; R. Palmeri, University Mediterranea of Reggio Calabria, Italy

17:00-17:20

A STUDY ON SPECTRAL-DOMAIN APPROACH TO PLANE ELECTROMAGNETIC WAVE SCATTERING BY FINITE-PERIODIC LAMELLAR GRATING

K. Watanabe, Fukuoka Institute of Technology, Japan

17:20-17:40

ELECTROMAGNETIC MODELLING FOR NON-DESTRUCTIVE DIAGNOSTICS OF OLIVE TREES

A. Fedeli, University of Genoa, Italy; G. D'Agostino, University of Genoa, Italy; A.A. Casazza, University of Genoa, Italy; M. Omki, University of Genoa, Italy; A. Randazzo, University of Genoa, Italy

17:40-18:00

VNA-BASED REAL-TIME GROUND PENETRATING RADAR IMAGING FOR UNMANNED AERIAL VEHICLES

A. Salari, University of Illinois Chicago, United States; A. Ravanrooy, Droneasure, LLC, United States; G. Esposito, Institute for Electromagnetic Sensing of the Environment, National Research Council of Italy, Italy; I. Catapano, Institute for Electromagnetic Sensing of the Environment, National Research Council of Italy, Italy; F. Soldovieri, Institute for Electromagnetic Sensing of the Environment, National Research Council of Italy, Italy; D. Erricolo, University of Illinois Chicago, United States

Tuesday, September 9 - H 08:20-10:40 - room 4 Guglielmo

session 19 **ICEAA**

Emerging approaches, future trends, and applications of electromagnetic inverse scattering

Organized by A. Randazzo, A. Massa, M. Salucci
Chairs: A. Randazzo, A. Massa, M. Salucci

08:20-08:40

INVESTIGATING THE REGULARIZATION PROPERTIES OF THE VIRTUAL VESELAGO LENS FOR INVERSE PROBLEMS

J. LoVetri, University of Manitoba, Canada; M.T. Bevacqua, Università degli Studi Mediterranea di Reggio Calabria, Italy; V. Okhmatovski, University of Manitoba, Canada; T. Isernia, Università degli Studi Mediterranea di Reggio Calabria, Italy

08:40-09:00

ON THE EXPLOITATION OF DEEP REINFORCEMENT LEARNING FOR MICROWAVE INVERSE SCATTERING

P. Rosatti, Eledia@UniTN - DICAM, Italy; A. Benoni, Eledia@UniTN - DICAM, Italy; M. Salucci, Eledia@UniTN - DICAM, Italy; A. Massa, Eledia@UniTN - DICAM, Italy

09:00-09:20

PRELIMINARY ANALYSIS OF A MICROWAVE IMAGING SYSTEM FOR DETECTING INCLUSIONS IN NON-PLANAR HOSTING MEDIA

A. Cuccaro, University of Calabria, Italy; A. Fedeli, University of Genoa, Italy; R. Marcelli, Institute for Microelectronics and Microsystems, National Research Council of Italy, Italy; C. Ponti, Roma Tre University, Italy; E. Proietti, Institute for Microelectronics and Microsystems, National Research Council of Italy, Italy; A. Randazzo, University of Genoa, Italy; G. Schettini, Roma Tre University, Italy; R. Solimene, University of Campania "Luigi Vanvitelli", Italy

09:20-09:40

A NEW TWO-STEP QUANTITATIVE MICROWAVE IMAGING APPROACH BASED ON THE CONTRACTION INTEGRAL EQUATION

M. T. Bevacqua, Università Mediterranea di Reggio Calabria, Italy; T. Isernia, Università Mediterranea di Reggio Calabria, Italy; L. Crocco, CNR-IREA, National Research Council of Italy, Italy

09:40-10:00

A WIGNER-BASED MIGRATION TECHNIQUE FOR TARGET DETECTION AND LOCALIZATION

D. Santagata, Università degli Studi della Campania "Luigi Vanvitelli", Italy; M. A. Maisto, Università degli Studi della Campania "Luigi Vanvitelli", Italy; R. Solimene, Università degli Studi della Campania "Luigi Vanvitelli", Italy

10:00-10:20

AI-DRIVEN METHOD FOR WIDEBAND GPR MICROWAVE IMAGING OF BURIED SCATTERERS

P. Rosatti, Eledia@UniTN - DICAM, Italy; M. Salucci, Eledia@UniTN - DICAM, Italy; A. Massa, Eledia@UniTN - DICAM, Italy

10:20-10:40

USING SPHERICAL HARMONICS TO MODEL MUTUAL COUPLING EFFECTS ON EMBEDDED ELEMENT PATTERNS

T. Dash, Delft University of Technology, Netherlands; N.B. Onat, Delft University of Technology, Netherlands; Y. Aslan, Delft University of Technology, Netherlands; A. Yarovoy, Delft University of Technology, Netherlands

Tuesday, September 9 - H 11:00-12:40 - room 4 Guglielmo

session 20 **ICEAA**

Analysis design and applications of GRIN media and metalenses

Organized by S. Maci, M. Albani
Chairs: S. Maci, M. Albani

11:00-11:20

OVERVIEW OF LENS ANTENNAS FROM TRANSFORMATION OPTICS

Y. Hao, Queen Mary University of London, United Kingdom

11:20-11:40

INNOVATIVE FABRICATION TECHNIQUES FOR TRANSMITARRAY AND PRINTED LENS ANTENNAS

Y. Rahmat-Samii, University of California at Los Angeles (UCLA), United States

11:40-12:00

FOLDED META-OPTICS FOR COMPACT SUBMILLIMETER-WAVE RADIOMETRIC INSTRUMENTS

T. Thuroczy, M. Robin, O. de Sagazan, X. Morvan, R. Sauleau, D. González Ovejero, Institut d'Électronique et des Technologies du numéRique, IETR - UMR CNRS 6164, France

12:00-12:20

AN EXPLICIT GO-BASED INVERSION APPROACH FOR DESIGNING INHOMOGENEOUS DIELECTRIC LENS ANTENNAS

I. Gashi, University of Siena, Italy; S. Maci, University of Siena, Italy; M. Albani, University of Siena, Italy

12:20-12:40

PRIOR KNOWLEDGE IN DEEP LEARNING-ENABLED GENERATIVE DESIGN OF METALENS ANTENNAS

Z. N. Chen, National University of Singapore, Singapore; P. Liu, National University of Singapore, Singapore; Y. Lyu, National University of Singapore, Singapore

Tuesday, September 9 - H 14:20-17:20 - room 4 Guglielmo

session 21 **ICEAA**

Electromagnetic models and geophysical products for microwave signal-of-opportunity reflectometry

Organized by J. Campbell, D. Comite, M. Moghaddam
Chairs: J. Campbell, D. Comite, M. Moghaddam

14:20-14:40

ADVANCED CIRCULATION MODEL STORM SURGE PREDICTIONS INFORMED BY CYGNSS MEASUREMENTS

M. M. Al-Khaldi, The Ohio State University, United States; J. T. Johnson, The Ohio State University, United States; E. J. Kubatko, The Ohio State University, United States; A. Sines, The Ohio State University, United States; S. Nepal, The Ohio State University, United States

14:40-15:00

DETECTION AND ANALYSIS OF GPS L1 BAND RADIO FREQUENCY INTERFERENCE USING SPACEBORNE GLOBAL NAVIGATION SATELLITE SYSTEM REFLECTOMETRY RECEIVERS

M. M. Al-Khaldi, The Ohio State University, United States; J. T. Johnson, The Ohio State Universit, United States

15:00-15:20

IONOSPHERIC DELAYS IN PRETTY MISSION DATA: AN OPPORTUNITY TO STUDY IONOSPHERIC F-LAYER STRUCTURE

M. Semmling, Institute for Solar-Terrestrial Physics DLR-SO, Germany; M. Moreno, Institute for Solar-Terrestrial Physics DLR-SO, Germany; F. Zus, Helmholtz Centre for Geosciences GFZ, Germany; J. Wickert, Helmholtz Centre for Geosciences GFZ, Germany; A. Dielacher, Beyond Gravity Austria BGA, Austria; H. Nahavandchi, Norwegian Univ. of Science and Technology NTNU, Norway

15:20-15:40

POLARIMETRIC GNSS-R FOR SEA ICE MONITORING: PREPARING FOR ESA HYDROGNSS

G. González, Institute of Space Sciences (ICE-CSIC, IEEC), Spain; E. Cardellach, Institute of Space Sciences (ICE-CSIC, IEEC), Spain; W. Li, Institute of Space Sciences (ICECSIC, IEEC), Spain

15:40-16:00

JOINT RETRIEVAL OF SOIL MOISTURE AND VEGETATION PROPERTIES FROM GNSS-R OBSERVATIONS: A PRELIMINARY STUDY

A. Melebari, University of Southern California, United States; M. Moghaddam, University of Southern California, United States

16:00-16:20

INVERSION OF REMOTE RENSING SYNTHETIC DATA FOR ESSENTIAL CLIMATE VARIABLES CHARACTERIZATION

A. Veneri, Sapienza University, Italy; P. Burghignoli, Sapienza University, Italy; D. Comite, Sapienza University, Italy

16:40-17:00

TOWARDS ASSIMILATION OF GNSS-R LAND OBSERVABLES IN NWP MODELS: PROTOTYPE FORWARD OPERATOR

E. Cardellach, Institute of Space Sciences (ICE-CSIC, IEEC), Spain; J. Peng, Institute of Space Sciences (ICE-CSIC, IEEC), Spain

17:00-17:20

INTEGRATION OF GNSS-R DELAY-DOPPLER MAPS INTO A LAND DATA ASSIMILATION SYSTEM

J.D. Campbell, University of Southern California, United States; A. Kannan, University of Southern California, United States; M. Moghaddam, University of Southern California, United States; C.S. Ruf, University of Michigan, United States

Tuesday, September 9 - H 09:00-17:20 - room 5 Basile

session 22 **ICEAA**

Natural and stimulated emissions and related phenomena in space and astrophysical plasmas

Organized by G. Ganguli
Chair: D. Baker, A. Sen

09:00-09:40

ENSURING A SUSTAINABLE FUTURE IN LOW EARTH ORBIT

D.N. Baker, LASP, University of Colorado Boulder, United States

09:40-10:00

EFFECT OF DEBRIS CHARGING DYNAMICS ON THE FORMATION OF PRECURSOR ION ACOUSTIC SOLITONS

A. Sen, Institute for Plasma Research, India; A. Mir, Institute for Plasma Research, India; P. Bandyopadhyay, Institute for Plasma Research, India; S. Tiwari, Indian Institute of Technology Jammu, India; C. Crabtree, Naval Research Laboratory, United States; G. Ganguli, Naval Research Laboratory, United States

10:00-10:20

THEORY AND SIMULATION OF ELECTROMAGNETIC NONLINEAR STRUCTURES PRODUCED BY CHARGED ORBITAL DEBRIS

C. E. Crabtree, US Naval Research Laboratory, United States; A. R. Soto-Chavez, US Naval Research Laboratory, United States; G. Ganguli, US Naval Research Laboratory, United States; E. M. Tejero, US Naval Research Laboratory, United States; W. Amatucci, US Naval Research Laboratory, United States; A. Sen, Institute for Plasma Research, India

10:20-10:40

PLASMA WAVES GENERATED BY RESIDENT SPACE OBJECTS: THEORY AND OBSERVATION

S. Thaller, I. Collett, Orion Space Solutions , United States; J. Hughes, NWRA, United States; C. Nasr, A. Newheart, R. Kelly, R. Patel, J. Wilson, Orion Space Solutions , United States; N. Re, B. Tatman, Advanced Space, United States; Y. Kasahara, S. Matsuda, Kanazawa University, Japan; F. Tsuchiya, A. Kumamoto, Tohoku University, Japan; A. Matsuoka, Kyoto University, Japan; M. Teramoto, Kyushu Institute for Technology, Japan; T. Hori, Nagoya University, Japan; I. Shinohara, JAXA, Japan; Y. Miyoshi, A. Shinbori, K. Yamamoto, Nagoya University, Japan

11:00-11:20

ION LANDAU DAMPING OF ION ACOUSTIC SOLITONS USING PARTICLE-IN-CELL SIMULATIONS

A. Sam, Stanford University, United States; A. Fletcher, NASA, United States; C. Crabtree, US Naval Research Laboratory, United States; S. Elschot, Stanford University, United States

11:20-11:40

PLASMA SIGNATURES OF ORBITAL DEBRIS IN LEO

G.L. Delzanno, P.A. Resendiz Lira, J. C. Holmes, S. Janhunen, D. Svyatsky, Los Alamos National Laboratory, United States

11:40-12:00

CHARACTERIZATION OF PLASMA STRUCTURES PRODUCED BY ORBITAL SPACE DEBRIS

W. Scales, Virginia Tech, United States; M. Idso, University of Washington, Seattle, United States; B. Srinivasan, University of Washington, Seattle, United States

12:00-12:20

MODELING THE EVOLUTION OF PLASMA-FRAGMENTS CLOUDS FROM HYPERVELOCITY IMPACTS FOR REMOTE CHARACTERIZATION OF SMALL SPACE DEBRIS

Y. Zhang,N. O. Renno, C. Li, M. Akhavan-Tafti, T. Atilaw, Department of Climate & Space Sciences and Engineering, University of Michigan, Ann Arbor, United States

12:20-12:40

USING HYPERVELOCITY IMPACT SIGNALS TO TRACK AND CHARACTERIZE SPACE DEBRIS

N. O. Renno, University of Michigan, United States; Y. Zhang, University of Michigan, United States; T. Atilaw, University of Michigan, United States; M. Akhavan-Tafti, University of Michigan, United States; R. Backhus, University of Michigan, United States

12:40-13:00

STIMULATED EMISSION IN SPACE PLASMA

R. Bingham, STFC Rutherford Appleton Laboratory, United Kingdom

14:20-14:40

LINEAR AND NONLINEAR WAVE PROPAGATION IN PLASMA - A QUANTUM COMPUTING PERSPECTIVE

A. K. Ram, Massachusetts Institute of Technology, United States; E. Koukoutsis, National Technical University of Athens, Greece; G. Vahala, William & Mary, United States; M. Soe, Rogers State University, United States; K. Hizanidis, National Technical University of Athens, Greece; L. Vahala, Old Dominion University, United States

14:40-15:00

THE LOWER IONOSPHERIC RESPONSE TO THE GREAT AMERICAN SOLAR ECLIPSE (APRIL 8, 2024) FROM OBSERVATION BY THE VLF RECEIVERS NETWORK DEPLOYED ACROSS THE TOTALITY PATH

O.V. Agapitov, SSL, UC Berkeley, United States; M. Golkowski, University of Colorado Denver, United States

15:00-15:20

CROSS-SCALE RADIATION BELT MODELING: FROM GLOBAL STORMTIME EVOLUTION TO LOCAL WAVE-PARTICLE INTERACTIONS

A. Ukhorskiy, JHU/APL, United States;A.T. Michael, K. Sorathia, V.G. Merkin, Johns Hopkins University, Laurel, MD, USA; J. Albert, X. Shen, W. Li, Air Force Research Laboratory, Albuquerque, NM, USA;R.M. Millan, Dartmouth College, Hanover, NH, USA

15:20-15:40

CHARACTERISTICS OF ENERGETIC ELECTRON PRECIPITATION: PROBING MAGNETOSPHERIC PROCESSES

R.M. Millan, Dartmouth College, United States; K.A. Cantwell, Dartmouth College, United States; L. Gan, Boston University, United States; A.Y. Ukhorskiy, Johns Hopkins Applied Physics Lab, United States

15:40-16:00

UNDERSTANDING STORMTIME GEOSPACE AS A COMPLEX SYSTEM: RECENT PROGRESS FROM THE CENTER FOR GEOSPACE STORMS

K. Sorathia, JHUAPL, United States; V. Merkin, JHUAPL, United States; K. Pham, NCAR, United States; D. Lin, NCAR, United States; S. Bao, Rice University, United States; A. Sciola, JHUAPL, United States; A. Michael, JHUAPL, United States; M. Wiltberger, NCAR, United States

16:00-16:20

RADIO AND PLASMA WAVE EMISSIONS FROM JUPITER: QUASILINEAR ANALYSIS OF JUNO SPACECRAFT DATA

P. H. Yoon, University of Maryland College Park, United States

16:40-17:00

WEAK TURBULENCE ANALYSIS ON DYNAMIC SPECTRA OF SOLAR RADIO EMISSIONS

L. F. Ziebell, Universidade Federal do Rio Grande do Sul, Brazil; M. Lazar, KU Leuven and Ruhr University Bochum, Belgium; P. H. Yoon, University of Maryland, United States; R. A. López, Comisión Chilena de Energi´a Nuclear and Universidad Andres Bello, Chile; S. Poedts, University of Maria Curie-Sklodowska and KU Leuven, Belgium

17:00-17:20

PLASMA WAVE CONVERSION PROCESSES IN SPACE ENVIRONMENTS: NEW INSIGHTS INTO SOLAR FLARE PHYSICS

A. R. Soto-Chavez, US Naval Research Laboratory, United States; C. Crabtree, US Naval Research Laboratory, United States; G. Ganguli, US Naval Research Laboratory, United States

Tuesday, September 9 - H 08:40-10:40 - room 6 Ruggero

session 23 **ICEAA**

Electromagnetics in biomedical applications: advances in nervous system stimulation

Organized by G. Bonmassar, A. Paffi, L. Golestani Rad
Chairs: G. Bonmassar, A. Paffi, L. Golestani Rad

08:40-09:00

NERVE RESPONSE SIMULATIONS IN ELECTROMAGNETIC MODELING AND DESIGN OF MRI GRADIENT COILS

M. Davids, V. Klein, B. Guerin, L.L. Wald, Massachusetts General Hospital, United States;

09:00-09:20

SENSITIVITY ANALYSIS OF A 300 MHZ TWISTED PAIR RF COIL FOR CAPTURING CONDUCTIVITY CHANGES IN A DYNAMIC ANTHROPOMORPHIC HEAD PHANTOM

Y. Qian, Northwestern University, United States; P.P. Sanpitak, Northwestern University, United States; L.I. Navarro de Lara, Massachusetts General Hospital, United States; L.L. Wald, Harvard Medical School, United States; M.G. Bright, Northwestern University, United States; L. Golestanirad, Northwestern University, United States

09:20-09:40

PULSED ELECTRIC FIELDS FOR REGENERATION OF INJURED SPINAL CORD: MULTIPHYSIC AND MULTISCALE MODELING OF VIRTUAL STEM CELLS

S. Fontana, Sapienza University of Rome, Italy; A. Paffi, Sapienza University of Rome, Italy; L. Caramazza, Sapienza University of Rome, Italy; M. Colella, Sapienza University of Rome, Italy; N. Dolciotti, Sapienza University of Rome, Italy; F. Apollonio, Sapienza University of Rome, Italy; M. Liberti, Sapienza University of Rome, Italy

09:40-10:00

PHYSICS-INFORMED NEURAL NETWORKS FOR EFFICIENT ELECTRIC FIELD MODELLING IN DEEP BRAIN STIMULATION

T. Almeev, University of Rostock, Germany; J.P. Payonk, University of Rostock, Germany; S. Spors, University of Rostock, Germany; U. van Rienen, University of Rostock, Germany

10:00-10:20

HIGH-FREQUENCY TRANS-SPINAL MAGNETIC STIMULATION (HF-TSMS) FOR CHRONIC NEUROPATHIC PAIN TREATMENT: A NUMERICAL OPTIMIZATION STUDY IN A PORCINE MODEL

F. Marturano, Massachusetts General Hospital, Harvard Medical School, United States; C. Z. Cooley, Massachusetts General Hospital, Harvard Medical School, United States; G. Bonmassar, Massachusetts General Hospital, Harvard Medical School, United States

10:20-10:40

THEORETICAL DISTANCE CONSTRAINTS IN MULTI-SITE SHORT-PULSED MICROSCOPIC MAGNETIC STIMULATION: HOW CLOSE IS TOO CLOSE?

G. Bonmassar, Harvard Medical School, United States

Tuesday, September 9 - H 11:00-15:40 - room 6 Ruggero

session 24 **ICEAA**

Electromagnetic applications to biomedicine

Chairs: R. L. Gardner, C. Pisano

11:00-11:20

RF COUPLING AND EFFECTS SIMULATION FOR BIOLOGICAL SYSTEMS

R. L. Gardner, Consultant, United States

11:20-11:40

H1N2 SWINE FLU INACTIVATION IN AEROSOL BY MEANS OF RADIATED MICROWAVES

M. Losardo, Elettronica SpA, Italy; P. Bia, Elettronica SpA, Italy; A. Manna, Elettronica SpA, Italy; G.P. Privitera, University of Pisa, Italy; S. Brusaferro, University of Udine, Italy

11:40-12:00

SENSING AND WIRELESS POWERING PERFORMANCE ASSESSMENT OF MAGNETIC RESONANCE-BASED BIOELECTRONIC SENSORS

I.V. Soares, Electrical & Electronic Engineering, School of Engineering, University of Galway, Ireland; M. Farooq, Electrical & Electronic Engineering, School of Engineering, University of Galway, Ireland; M.J. Krasny, Electrical & Electronic Engineering, School of Engineering, University of Galway, Ireland; M. O'Halloran, School of Medicine, University of Galway, Ireland; A. Elahi, Electrical & Electronic Engineering, School of Engineering, University of Galway, Ireland

12:00-12:20

FLEXIBLE SLOTTED PATCH ANTENNA FOR NON-INVASIVE DETECTION OF BLOOD GLUCOSE

B. Tlili, Rochester Institute of Technology, Dubai, United Arab Emirates; N. R. Rishani, Rochester Institute of Technology, Dubai, United Arab Emirates; M. Keshkar, Rochester Institute of Technology, Dubai, United Arab Emirates; F. Fatani, King Abdullah University of Science and Technology (KAUST), Saudi Arabia; M. Vaseem, King Abdullah University of Science and Technology (KAUST), Saudi Arabia; A. Shamim, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

12:20-12:40

HIGHLY ANISOTROPIC UNIT CELLS FOR EEG HEAD PHANTOMS

P. Kadera, Brno University of Technology, Czech Republic; J. Lacik, Brno University of Technology, Czech Republic

12:40-13:00

TRACKING ELBOW ANGLES WITH PRINTED DIPOLE ANTENNAS THROUGH THE PASSIVE EXTRACTION OF S11 PARAMETER AND RESONANT FREQUENCY: A PILOT STUDY

J. Seignard,CNRS, University Grenoble Alpes, France; M. Petit, University of Applied Sciences Western Switzerland, HES-SO University of Applied Sciences and Arts Western Switzerland, Switzerland; F. Moissenet, Geneva University Hospital and University of Geneva, Switzerland; J. Beaulieu, Faculty of Medicine and Trauma Surgery, Switzerland; D. Bechevet, University of Applied Sciences Western Switzerland, Switzerland; G. Déprès, Fedrigoni, France; N. Reverdy-Bruas, CNRS, Fedrigoni, CNRS, University Grenoble Alpes, France;

14:20-14:40

MICRODOSIMETRY OF 3D VIRTUAL STEM CELLS INSIDE AN ELECTRO-PULSED BIOHYBRID DEVICE FOR SPINAL CORD REGENERATION

S. Fontana, Sapienza, University of Rome, Italy; N. Dolciotti, Sapienza, University of Rome, Italy; L. Caramazza, Sapienza, University of Rome, Italy; M. Colella, Sapienza, University of Rome, Italy; A. Paffi, Sapienza, University of Rome, Italy; V. Moreno Manzano, Centro de Investigacion Principe Felipe, Spain; F. M. Andre, CNRS, Universite´ Paris- Saclay, Gustave Roussy, France; L. Mir, CNRS, Universite´ Paris-Saclay, Gustave Roussy, France; C. Consales, Division of Health Protection Technologies, ENEA, Italy; F. Apollonio, Sapienza, University of Rome, Italy; M. Liberti, Sapienza, University of Rome, Italy

14:40-15:00

MODELING ELECTROPORATION DYNAMICS IN LIPOSOMES AND CELLS EXPOSED TO NANOSECOND PULSED ELECTRIC FIELDS FOR OPTIMIZED DRUG DELIVERY

C. Pisano, Sapienza University of Rome, Italy; L. Caramazza, Sapienza University of Rome, Italy; V. Isoldi, Sapienza University of Rome, Italy; G. Risca, Sapienza University of Rome, Italy; A. Paffi, Sapienza University of Rome, Italy; F. Apollonio, Sapienza University of Rome, Italy; M. Liberti, Sapienza University of Rome, Italy

15:00-15:20

DEEP LEARNING-ENABLED RECONSTRUCTION OF ELECTRICAL CONDUCTIVITY AND TRANSCRANIAL ELECTROMAGNETIC FIELD DISTRIBUTIONS

R. J. Sadleir, Arizona State University, United States; S. Z. K. Sajib, Arizona State University, United States; M. L. Manning, Arizona State University, United States

15:20-15:40

WIRELESS RETINA STIMULATION WITH MAGNETOELECTRIC NANOPARTICLES

H. Mokhtari Dowlatabad, USC, USA; V. Pustovalov, E. Zhang, ETH Zurich, Switzerland; S.T. Ege Iserl, K.K. Gokoffski, M.S. Humayun, USC, USA; S. Khizroev, University of Miami, USA; S. Pané, ETH Zurich, Switzerland; G. Lazzi, USC, USA

Tuesday, September 9 - H 15:40-17:40 - room 6 Ruggero

session 25 **ICEAA**

Technologies for mm waves and photonics

Chairs: R. L. Gardner, P. Pirinoli

15:40-16:00

PHOTONIC-ASSISTED RF SELF-INTERFERENCE CANCELLATION UTILIZING OPTICAL FREQUENCY COMB FOR AMPLITUDE AND ARRIVAL TIME MATCHING

R.G. Feng, Y.M. Tian, Y.H. Song, M.L. Yang, Y.C. Wang, X.Y. Zhang, S.G. Xie, School of Electronic Information Engineering,Beihang University , Beijing, China

16:00-16:20

RADIO FREQUENCY SIGNAL SENSING METHOD BASED ON WIDEBAND LIGHT SOURCE ELECTRO-OPTIC MODULATION AND OPTICAL INTEGRATOR

Y.H. Song, Beihang University, China; X.Y. Zhang, Beihang University, China; Q.W. Zhang, Beihang University, China; Y.M. Tian, Beihang University, China

16:40-17:00

HIGH-PERFORMANCE MILLIMETER-WAVE NOTCH FILTERS FOR FUSION PLASMA DIAGNOSTICS

L. Jing, Huazhong University of Science and Technology, China; D.H. Xia, Huazhong University of Science and Technology, China

17:00-17:20

OPTIMIZATION-BASED DESIGN OF DIELECTRIC-ONLY TRANSPARENT SMART ELECTROMAGNETIC SURFACES

L. Bricco, M. Beccaria, S. Ayaz, P. Pirinoli, Politecnico di Torino, Italy

17:20-17:40

LINE WAVES IN PLASMONIC-DIELECTRIC MULTIPORT NETWORKS FOR NANOPHOTONIC INTERCONNECTS

I.L. Ruiz, Universidad Nacional de Colombia, Colombia; S. Asadulina, ITMO University, Russian Federation; J.D. Baena, Universidad Nacional de Colombia, Colombia

WEDNESDAY 10

Wednesday, September 10 - H 08:20-10:00 - room 1 Federico

session 26 **ICEAA**

Nonlinear media, resonances, and inverse problems

Organized by Y. Shestopalov
Chair: L. Beilina

08:20- 08:40

RADIATIVE HEAT TRANSFER THROUGH NARROW GAPS

B. Budaev, University of California at Berkeley, United States

08:40-09:00

INVERSE PROBLEMS AND QUALITATIVE THEORY OF THREE-DIMENSIONAL POLYNOMIAL DYNAMICAL SYSTEMS

Y.V. Shestopalov, Russian Technological University MIREA, Moscow, Russian Federation; A.H. Shakhverdiev, Russian State Geological Prospecting University, Moscow, Russian Federation

09:00-09:20

A METHOD OF DAMPING WAVEGUIDE EIGENMODES IN SOLVING AXISYMMETRIC DIFFRACTION PROBLEMS

S. S. Sautbekov, Al-Farabi Kazakh National University, Kazakhstan; Y. V. Shestopalov, Institute of Information Technologies, Russian Technological University, Russian Federation; M. S. Sautbekova, Kazakh-British Technical University, Kazakhstan; G. K. Alkina, Al-Farabi Kazakh National University, Kazakhstan; G. D. Bairova, Al-Farabi Kazakh National University, Kazakhstan

09:20-09:40

FINITE ELEMENT 3D MODELS OF MELANOMA GROWTH AND TIME-DEPENDENT BACKSCATTERED DATA FOR DIELECTRIC PROPERTIES OF MELANOMA AT 6 GHZ

E. Lindström, L. Beilina, University of Gothenburg, Chalmers University of Technology, Sweden

09:40-10:00

RECONSTRUCTING THE DIELECTRIC PROPERTIES OF MELANOMA IN 3D USING REAL-LIFE MELANOMA MODEL

G. Kyhn, Chalmers University of Technology and University of Gothenburg, Sweden; E. Lindström, Chalmers University of Technology and University of Gothenburg, Sweden; L. Beilina, Chalmers University of Technology and University of Gothenburg, Sweden

Wednesday, September 10 - H 10:00-18:20 - room 1 Federico

session 27 **ICEAA**

Numerical methods in electromagnetics

Organized by R.D. Graglia, D.R. Wilton
Chairs: R.D. Graglia, D.R. Wilton

10:00-10:20

A HYBRID TIME-FREQUENCY APPROACH FOR BROADBAND MODELING OF HIGHLY RESONANT MICROWAVE AND RF DEVICES

J.M. Jin, University of Illinois at Urbana-Champaign, United States; K.D. Zhang, Apple Inc., United States

10:20-10:40

EXTENDING THE MPIE GALERKIN MOM THIN WIRE FORMULATION TO INCLUDE CURVILINEAR WIRES

D.B. Davidson, Curtin University, Australia; D.R. Wilton, University of Houston, United States

11:00-11:20

ADVANTAGES AND FDTD INTEGRATION OF FOCUSED BEAMS FOR RCS COMPUTATIONS

J. Diener, Colorado School of Mines, United States; A. Elsherbeni, Colorado School of Mines, United States; V. Demir, Northern Illinois University, United States

11:20-11:40

SIMPLIFIED ANALYTIC EXPRESSIONS FOR THE LINE INTEGRALS OVER PERIMETERS OF A PAIR OF TRIANGULAR FACETS IN THE LAPLACIAN REPRESENTATION OF ITHE LAYERED MEDIUM GREEN FUNCTIONS

E. Bleszynski, monopole research, United States; M. Bleaszynski, monopole research, United States; T. Jaroszewicz, monopole research, United States; W.A. Johnson, consultant, United States; J. Rivero, Laboratorio Antenne e Compatibilità Elettromagnetica, Istituto Superiore Mario Boella, Italy; F. Vipiana, Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino, Italy; D. Wilton, Dept. of Electrical and Computer Engineering, University of Houston, United States

11:40-12:00

COMPARISON OF MOM SOLVERS FOR ANALYSING WIRE COUPLING

W.R. Dommisse, Stellenbosch University, South Africa; M.M. Botha, Stellenbosch University, South Africa; T. Rylander, Chalmers University of Technology, Sweden; J. Carlsson, Provinn AB, Sweden

12:00-12:20

HANDLING THE SHAPE-DEPENDENT PROBLEM IN THE NUMERICAL EVALUATION OF 2D AND 3D NEARLY SINGULAR INTEGRALS

M. D. Zhu, Xidian University, Xi'an, Shaanxi 710071, China, China

12:20-12:40

INVESTIGATION OF A LOCAL REFINEMENT STRATEGY FOR A B-SPLINE BASED DISCRETIZATION OF THE ELECTRIC FIELD INTEGRAL EQUATION

M. Mirmohammadsadeghi, Technical University of Munich, Germany; B. Hofmann, University of Southern California, United States; T.F. Eibert, Technical University of Munich, Germany; S.B. Adrian, Universität Rostock, Germany

12:40-13:00

A DATA-DRIVEN FRAMEWORK FOR 3D SHAPE RECONSTRUCTION FROM PHASELESS SCATTERING DATA
T. Crane, The Ohio State University, United States; D. Dikbayir, Michigan State University, United States; M. Nadeem, The Ohio State University, United States; H. M. Aktulga, Michigan State University, United States; N. V. Nair, Applied Research Associates, United States; B. Shanker, The Ohio State University, United States

14:20-14:40

LOW-FREQUENCY SOLUTION OF ELECTRIC FIELD INTEGRAL EQUATION BASED ON NYSTROM DISCRETIZATION
S.J. He, Tongji University, China; S.R. Wang, Tongji University, China; M.S. Tong, Tongji University, China

14:40-15:00

APPLICATIONS OF MPIE BASED THEORY OF CHARACTERISTIC MODES
C. F. Wang, Nanjing University of Science and Technology, China; Z. H. Ning, Nanjing University of Science and Technology, China; M. Li, Nanjing University of Science and Technology, China; J. Gu, Nanjing University of Science and Technology, China; D. Z. Ding, Nanjing University of Science and Technology, China

15:00-15:20

DEGREES OF FREEDOM AND SHADOW AREA WITH APPLICATIONS IN WIRELESS COMMUNICATION, INVERSE SCATTERING, AND NUMERICS
M. Gustafsson, Lund University, Sweden

15:20-15:40

FAST AND ACCURATE MESHLESS EM ANALYSIS OF SMALL DEFECTS IN A MOM SCHEME
A. Mazzinghi, University of Florence, Italy; A. Mori, IDS Ingegneria dei Sistemi, Italy; M. Bercigli, IDS Ingegneria dei Sistemi, Italy; M. Bandinelli, IDS Ingegneria dei Sistemi Spa, Italy; A. Freni, University of Florence, Italy

15:40-16:00

HIERARCHICAL GRID-ROBUST DISCRETIZATION OF THE ELECTRIC-FIELD INTEGRAL EQUATION BY THE METHOD OF MOMENTS
E. Ubeda, Universitat Politècnica de Catalunya (UPC), Spain; J. M. Rius, Universitat Politècnica de Catalunya (UPC), Spain

16:00-16:20

ON A RESONANCE-FREE RAPIDLY CONVERGING SINGLE-TRACE METHOD FOR THE TRANSMISSION PROBLEM
K. Cools, Ghent University, Belgium

16:40-17:00

A NEW PIVOTING HEURISTIC FOR THE CONSTRUCTION OF H^2-MATRICES
J. M. Tetzner, Universität Rostock, Germany; S.B. Adrian, Universität Rostock, Germany

17:00-17:20

EFFECTIVE 3D EM SIMULATION OF ELECTRICALLY LARGE COSITE SCENARIOS
B. M. Ninkovic, , T.S. Milosevic, M.M. Stevanetic, J.E. Music, B.M. Kolundzija, WIPL-D d.o.o., Serbia

17:20-17:40

ON THE USE OF HUYGENS' ENCAPSULATION FOR CONFIDENTIAL ELECTROMAGNETIC MODELLING
V.F. Martin, Universidad Rey Juan Carlos, Spain; A. Gomez-Rodriguez, Universidad de Extremadura, Spain; M. Parejo, EM3WORKS, Spain; L. Landesa, Universidad de Extremadura, Spain; M.G. Araujo, Universidad de Vigo, Spain; F. Obelleiro, University of Vigo, Spain; J.M. Taboada, University of Extremadura, Spain

17:40-18:00

ASSESSING THE IMPACT OF QUADRATURE ACCURACY IN TEST INTEGRALS FOR FIELD INTEGRAL EQUATIONS
V.F. Martin, Universidad Rey Juan Carlos, Spain; J. Rivero, Politecnico di Torino, Italy; D.R. Wilton, University of Houston, United States; W.A. Johnson, Consultant, United States; F. Vipiana, Politecnico di Torino, Italy

18:00-18:20

EVOLUTION OF PYRAMIDAL ELEMENTS FROM LOW ORDER TO HIGHER ARBITRARY ORDER
R.D. Graglia, Politecnico di Torino, Italy

Wednesday, September 10 - H 08:20-15:20 - room 2 Enrico

session 28 **ICEAA**

Advances in radio astronomy antennas and systems

Organized by D. de Villiers, R. Lehmensiek, D. Davidson, P. Bolli
Chairs: D. de Villiers, R. Lehmensiek, D. Davidson, P. Bolli

08:20-08:40

CHARACTERISTIC CURRENT MODE ANALYSIS FOR AN ARRAY OF MUTUALLY COUPLED IDENTICAL ANTENNAS
J. Cumner, University of Cambridge, United Kingdom; O.S.D. O'Hara, University of Cambridge, United Kingdom; Q. Gueuning, University of Cambridge, United Kingdom; D. Anstey, University of Cambridge, United Kingdom; A. Brown, Queen Mary, University of London, United Kingdom; F. Dulwich, University of Cambridge, United Kingdom; A. Faulkner, University of Cambridge, United Kingdom; E. de Lera Acedo, University of Cambridge, United Kingdom

08:40-09:00

SUBARRAYS FOR PHASED APERTURE ARRAYS RADIO TELESCOPES
P. Di Ninni, National Institute for Astrophysics, Italy; T. D. Carozzi, Onsala Space Observatory, Sweden; G. Comoretto, National Institute for Astrophysics, Italy

09:00-09:20

EFFICIENT STORAGE OF EMBEDDED ELEMENT PATTERNS FOR THE SKA-LOW RADIO TELESCOPE
D.B. Davidson, Curtin University, Australia; A.T. Sutinjo, Curtin University, Australia

09:20-09:40

EMBEDDED ELEMENT LENGTH OF RECEIVING ANTENNAS
T.D. Carozzi, Onsala Space Observatory, Chalmers Uni, Sweden, Sweden

09:40-10:00

DETERMINING UNIFORM PLANAR ARRAY MUTUAL COUPLING TERMS THROUGH MULTI-EXPONENTIAL ANALYSIS
J. Gilmore, Stellenbosch University, South Africa

10:00-10:20

A DUAL LINEARLY-POLARIZED ACTIVE CROSS-DIPOLE ANTENNA FOR RADIO ASTRONOMY

M. Ansari, Space and Astronomy, CSIRO, Australia; A. Dunning, Space and Astronomy, CSIRO, Australia; K. Bannister, Space and Astronomy, CSIRO, Australia; Y. Chung, Space and Astronomy, CSIRO, Australia; J. Pathikulangara, Space and Astronomy, CSIRO, Australia

10:20-10:40

A WIDEBAND PROPOSAL FOR SKA-MID BAND 345 FEED PACKAGE

A. Dunning, J. Athimannil, M. Bowen, S. Castillo, Y. Chen, Y. Chung, P. Doherty, D.B. Hayman, J. Kanapathippillai, S. Mackay, P. Roush, S. Severs, K.W. Smart, S.L. Smith, CSIRO Space and Astronomy, Australia

11:00-11:20

BAND 5B RECEIVER ALLOWING FOR ENHANCED OBSERVATIONS AT FREQUENCY 8.3-15.4 GHZ WITH THE MEERKAT RADIO TELESCOPE

M.G. Labate, INAF, Italy; P. Bolli, INAF, Italy; S. Celliers, SARAO, South Africa; U. Di Giammatteo, INAF, Italy; S. Heyminck, Max Planck Institute for Radio Astronomy, Germany; C. Kasemann, Max Planck Institute for Radio Astronomy, Germany; S. Malan, SARAO, South Africa; C. Trigilio, INAF, Italy; G. Umana, INAF, Italy; G. Wieching, Max Planck Institute for Radio Astronomy, Germany

11:20-11:40

DSA-2000 ANTENNA SYSTEM CHARACTERIZATION AND DESIGN OVERVIEW

J. Flygare, Caltech Owen's Valley Radio Observatory, United States

11:40-12:00

A QUAD-RIDGE FEED HORN FOR NGVLA COVERING AN OCTAVE BANDWIDTH

D. Henke, National Research Council Canada, Canada; R. Lehmensiek, National Radio Astronomy Observatory, United States; N. Tasouji, University of Victoria, Canada; S. Salem Hesari, National Research Council Canada, Canada; L.B.G. Knee, National Research Council Canada, Canada

12:00-12:20

PRELIMINARY BASELINE ANTENNA DESIGN FOR THE BLACK HOLE EXPLORER (BHEX) MISSION

R. Lehmensiek, NRAO, United States; T.K. Sridharan, NRAO, South Africa

12:20-12:40

DICHROIC DUAL-ANGLE REFRACTOR: MULTI-CELL HUYGENS' METASURFACE-BASED CIRCUIT APPROXIMATION

G. Kyriakou, University of Rome La Sapienza, Italy; G. Pisano, University of Rome La Sapienza, Italy

12:40-13:00

TOWARDS AN UPDATED FEED ANTENNA FOR THE HIRAX TELESCOPE

M. Crews, Stellenbosch University, South Africa; S. Gaddam, University of KwaZulu-Natal, South Africa; D.I.L. De Villiers, Stellenbosch University, South Africa; K. Moodley, University of KwaZulu-Natal, South Africa

14:20-14:40

ANTENNA SIMULATION VERIFICATION FOR LOW-FREQUENCY RADIO ASTRONOMY

L. Kalkman, Eindhoven University of Technology (TU/e), Netherlands; D.S. Prinsloo, Netherlands Institute for Radio Astronomy (ASTRON), Netherlands; M.J. Arts, Netherlands Institute for Radio Astronomy (ASTRON), Netherlands

14:40-15:00

BALUN CIRCUIT MODELLING FOR GLOBAL 21-CM EXPERIMENTS

G.V.C. Allen, Stellenbosch University, South Africa; D.I.L. de Villiers, Stellenbosch University, South Africa; S. Pegwal, Stellenbosch University, South Africa

15:00-15:20

A PRELIMINARY STUDY FOR A COMPENSATED LARGE SPHERICAL REFLECTOR ANTENNA USING SUB-REFLECTARRAYS

L. Olmi, R. Nesti, INAF, Italy

Wednesday, September 10 - H 15:20-18:20 - room 2 Enrico

session 29 **ICEAA**

Advanced modeling techniques for the space plasma electromagnetic environment

Organized by W. Scales
Chairs: W. Scales

15:20-15:40

ADVANCEMENTS IN MAGNETOSPHERE-IONOSPHERE-THERMOSPHERE SIMULATIONS: PRELIMINARY FINDINGS FROM OPENGGCM AND AROTHRON COUPLING

B. Ferdousi, Air Force Research Laboratory, United States; J. V. Eccles, Space Dynamic Laboratory, United States; M. David, Space Dynamic Laboratory,, United States; J. Raeder, University of New Hampshire, United States; S. Kavosi, Air Force Research Laboratory, United States, J. Holmes, Air Force Research Laboratory, United States;

15:40-16:00

GLOBAL MODELING OF THE MESOSCALE BUILDUP OF THE RING CURRENT AND ITS ROLE IN MAGNETOSPHERE-IONOSPHERE COUPLING

K. Sorathia, JHUAPL, United States; D. Lin, NCAR, United States; A. Sciola, JHUAPL, United States; S. Bao, Rice University, United States; A. Michael, JHUAPL, United States; K. Pham, NCAR, United States; M. Wiltberger, NCAR, United States; V. Merkin, JHUAPL, United States

16:00-16:20

ADVANCES IN AURORAL CONDUCTANCE MODELING USING THE SPACE WEATHER MODELING FRAMEWORK

D. T. Welling, University of Michigan, United States; A. Gottesman, University of Michigan, United States; P. Dredger, University of Michigan, United States; A. Mukhopadhyay, University of Michigan, United States

16:40-17:00

ELECTROMAGNETIC WAVES AND THEIR EFFECTS ON ENERGETIC ELECTRONS IN THE INNER-MAGNETOSPHERE

D. Wang, Y. Y. Shprits, Gfz German Research Centre For Geosciences, Germany

17:00-17:20

AI-DRIVEN ADVANCES IN PHYSICAL INSIGHTS: EXPLORING THE NEAR-EARTH SPACE ENVIRONMENT

X.N. Chu, Laboratory for Atmospheric and Space Physics, United States; J. Bortnik, Q.L. Ma, D. Ma, Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, CA, USA, United States; N. Maruyama, L. Jia, E. McPherson, J. Mallina, Laboratory for Atmospheric and Space Physics, United States; W. Li, X. C. Shen, Center for Space Physics, Boston University, Boston, MA, USA, United States; D. Malaspina, Laboratory for Atmospheric and Space Physics, United States; S. Huang, Center for Space Physics, Boston University, Boston, MA, USA, United States

17:20-17:40

THOMSON SCATTERING FORWARD MODEL FOR NON-MAXWELLIAN PLASMAS

C. R. Skolar, New Jersey Institute of Technology, United States; W. J. Longley, New Jersey Institute of Technology, United States; L. V. Goodwin, New Jersey Institute of Technology, United States

17:40-18:00

MAGE SIMULATIONS OF THERMOSPHERE AND IONOSPHERE RESPONSES TO SUBAURORAL POLARIZATION STREAMS (SAPS)

W. Wang, HAO/NCAR, United States; D. Lin, HAO/NCAR, United States; K. Pham, HAO/NCAR, United States; V. Merkin, APL, Johns Hopkins Unviersty, United States

18:00-18:20

KINETIC MODELING OF THE MAGNETOSPHERE - GLOBAL HYBRID SIMULATION

Y. Lin, Auburn University, United States

Wednesday, September 10 - H 08:40-13:00 - room 3 Angelica

session 30 **ICEAA**

Metasurfaces with symmetry properties

Organized by R. Kastner, R. Shavit
Chairs: R. Kastner, R. Shavit

08:40-09:00

PERMITTIVITY MODE EXPANSIONS FOR METASURFACE DESIGN

G. Rosolen, Mons University, Belgium; S. Rao, Ben-Gurion University, Israel; Y. Sivan, Ben-Gurion University, Israel

09:00-09:20

ZERO-REFLECTION FUNNELING AND SCULPTING OF OPTICAL WAVES THROUGH NON-MAGNETIC METASURFACES

N. Mohammadi Estakhri, Chapman University, United States; N. M. Estakhri, Chapman University, United States

09:20-09:40

MODAL ANALYSIS OF LEAKY MODES SUPPORTED BY PLANAR METALLIC COMPLEX SHAPED CORRUGATIONS

B. Ambrogi, Sapienza University of Rome, Italy; G. Flaviani, Sapienza University of Rome, Italy; Y. Tong, Sorbonne Universite, CNRS, Laboratoire GeePs, France; G. Valerio, Sorbonne Universite, CNRS, Laboratoire GeePs, France; D. Comite, Sapienza University of Rome, Italy

09:40-10:00

A RADIAL GLIDE-SYMMETRIC CORRUGATED SECTORIAL LEAKY-WAVE ANTENNA

M. Perrone, Politecnico di Torino, Italy; J. Sarrazin, Sorbonne Université, France; G. Valerio, Sorbonne Université, France; G. Lombardi, Politecnico di Torino, Italy

10:00-10:20

DYNAMIC PHASE MODULATION OF THZ GUIDED WAVES USING MEMS-INTEGRATED VALLEY PHOTONIC CRYSTALS

H. Zaravashan, University of Surrey, United Kingdom; S.E. Hosseininejad, University of Surrey, United Kingdom; A.M. Bagheri, University of Surrey, United Kingdom; G. Gradoni, University of Surrey, United Kingdom; M. Khalily, University of Surrey, United Kingdom

10:20-10:40

DIRECTIONS OF REFLECTION AND POLARIZATION IN PTD- SYMMETRIC STRUCTURES IN RESPONSE TO ARBITRARY INCIDENT ANGLES

R. Geva, Tel Aviv University, Israel; M. G. Silveirinha, University of Lisbon, Portugal; R. Kastner, Tel Aviv University, Israel

11:00-11:20

PTD-SYMMETRIC DOUBLE EDGE LINE

N. Castro, University Carlos III of Madrid, Spain; E. Martini, University of Siena, Italy; S. Maci, University of Siena, Italy; E. Rajo-Iglesias, University Carlos III of Madrid, Spain

11:20-11:40

ANALYSIS OF A RECTANGULAR METALLIC CAVITY WITH METASURFACE WALLS

R. Shavit, Ben-Gurion University of the Negev, Israel

11:40-12:00

MODULAR SYNTHESIS OF DUAL-BAND METAGRATINGS FOR CO-DIRECTED ANOMALOUS REFLECTION

A. Pikalov, Technion - Israel Institute of Technology, Israel; A. Epstein, Technion - Israel Institute of Technology, Israel

12:00-12:20

RECONFIGURABLE SPATIAL POWER SPLITTER USING SINGLE LAYER CYLINDRICAL PLASMA DISCHARGES

M.G.H. Alijani, Roma Tre University, Italy; A. Monti, Roma Tre University, Italy; S. Vellucci, Niccolò Cusano University, Italy; M. Barbuto, Roma Tre University, Italy; A. Toscano, Roma Tre University, Italy; F. Bilotti, Roma Tre University, Italy

12:20-12:40

FROM CHIRAL TO OMEGA RESPONSE: SYMMETRY BREAKING IN BIANISOTROPIC KNOT-PARTICLES

N. Goshen, Tel Aviv University, Israel; Y. Mazor, Tel Aviv University, Israel

12:40-13:00

OVERCOMING THE UNIFORMITY DEFECTS IN TWO-DIMENSIONAL BEAM-MULTIPLIERS VIA DAMMANN METASURFACES

R.P. Chaudhary, Ben-Gurion University of the Negev, Israel; R. Gutin, Ben-Gurion University of the Negev, Israel; A. Reiner, Ben-Gurion University of the Negev, Israel; N. Shitrit, Ben-Gurion University of the Negev, Israel

Wednesday, September 10 - H 14:20-18:40 - room 3 Angelica

session 31 **ICEAA**

Scattering and radiation engineering with metastructures: fundamentals and applications

Organized by A. Monti, F. Bilotti
Chairs: A. Monti, F. Bilotti

14:20-14:40

SUPERDIRECTIVE AND UNIDIRECTIONAL SPHERICAL DIELECTRIC LENS ANTENNAS

S. Arslanagic, Technical University of Denmark, Denmark; A.T. Birch, Technical University of Denmark, Denmark; R.W. Ziolkowski, University of Arizona, United States

14:40-15:00

DESIGN OF A METASURFACE LUNEBURG LENS FOR 2-D WAVEFRONT SHAPING

A.U. Khan, University of Catania, Italy; F. Anfuso, University of Catania, Italy; S.C. Pavone, University of Catania, Italy; G. Sorbello, University of Catania, Italy

15:00-15:20

ENABLING 2-D ANGULAR SIGNAL ROUTING IN SMART RADIO ENVIRONMENTS THROUGH SURFACE-WAVE-BASED METASURFACE DESIGN

T. Arshed, University of Siena, Italy; S. Maci, University of Siena, Italy; E. Martini, University of Siena, Italy

15:20-15:40

EMERGING SOLUTIONS AND DESIGN PARADIGMS FOR ELECTROMAGNETIC WAVE MANIPULATION USING EM SKINS

G. Oliveri, Eledia@UniTN - DICAM, Italy; M. Salucci, Eledia@UniTN - DICAM, Italy; G. Gottardi, Eledia@UniTN - DICAM, Italy; A. Salas, Eledia@UniTN - DICAM, Italy; A. Massa, Eledia@UniTN - DICAM, Italy

15:40-16:00

BOOSTING DATA ENCODING INTO PASSIVE METASTRUCTURES USING MACHINE LEARNING PREDICTIVE MODELS

Y. Zhao, College of Information and Communication Engineering, Harbin Engineering University, Harbin, China, China; S. Genovesi, University of Pisa, Italy; T. Jang, College of Information and Communication Engineering, Harbin Engineering University, Harbin, China, China; G. Manara, Dipartimento di Ingegneria dell'Informazione, Università di Pisa, Italy; F. Costa, Dipartimento di Ingegneria dell'Informazione, Università di Pisa, Italy

16:00-16:20

DUAL-BAND TRANSMITARRAY ARCHITECTURE FOR LOW-PROFILE DESIGN

R. De Marco, University of Calabria, Italy; A. Bordbar, University of Calabria, Italy; M. Gokdemir, University of Calabria, Italy; E. Arnieri, University of Calabria, Italy; G. Amendola, University of Calabria, Italy; L. Boccia, University of Calabria, Italy

16:40-17:00

MODAL ANALYSIS OF A CENTER-SYMMETRIC LINE WAVEGUIDE

M. Madji, Sapienza University of Rome, Italy; P. Baccarelli, Roma Tre University, Italy; A. Monti, Roma Tre University, Italy; A. Toscano, Roma Tre University, Italy; F. Bilotti, Roma Tre University, Italy; P. Burghignoli, Sapienza University of Rome, Italy

17:00-17:20

PARAMETRIC MODEL ORDER REDUCTION FOR FAST DIELECTRIC MATERIAL AND FREQUENCY SWEEP IN HUYGENS METASURFACES

M. Ortega, Universidad Politecnica de Madrid, Spain; C. Iglesias-Tesouro, Universidad Politecnica de Madrid, Spain; C. Taboada, Universidad Politecnica de Madrid, Spain; R. Medeiros, Universidad Politecnica de Madrid, Spain; V. de la Rubia, Universidad Politecnica de Madrid, Spain

17:20-17:40

SCATTERING MATRIX EXTRACTION OF OBJECTS WITH NON-CANONICAL SHAPES

R. Palmeri, University Mediterranea of Reggio Calabria, Italy; R. Abdullin, University Mediterranea of Reggio Calabria, Italy; G.M. Battaglia, University Mediterranea of Reggio Calabria, Italy; A.F. Morabito, University Mediterranea of Reggio Calabria, Italy; L. Crocco, IREA-CNR, Italy; T. Isernia, University Mediterranea of Reggio Calabria, Italy

17:40-18:00

GRADED TEMPORAL METAMATERIALS USING HYPERBOLIC TANGENT PROFILE

M. Dalarsson, KTH Royal Institute of Technology, Sweden; B. Rana, KTH Royal Institute of Technology, Sweden

18:00-18:20

THIRD ORDER NONLINEARTIES IN NONLOCAL METASURFACES

A. Tognazzi, University of Palermo, Italy; P. Franceschini, University of Brescia, Italy; E. Menshikov, University of Brescia, Italy; L. Y. Beliaev, Department of Electrical and Photonics Engineering, Technical University of Denmark, Denmark; R. Malureanu, Department of Electrical and Photonics Engineering, Technical University of Denmark, Denmark; O. Takayama, Department of Electrical and Photonics Engineering, Technical University of Denmark, Denmark; I. Alessandri, University of Brescia, Italy; A. C. Cino, University of Palermo, Italy; D. de Ceglia, University of Brescia, Italy; A. Lavrinenko, Department of Electrical and Photonics Engineering, Technical University of Denmark, Denmark; C. De Angelis, University of Brescia, Italy

18:20-18:40

NONLINEAR-NONLOCAL FLAT OPTICS FOR SPACE-TIME IMAGE PROCESSING

C. De Angelis, Universita' di Brescia, Italy; D. de Ceglia, Universita' di Brescia, Italy

Wednesday, September 10 - H 08:20-10:40 - room 4 Guglielmo

session 32 **IEEE APWC**

Signal processing antennas and systems

Chairs: A. Saleem, A. Toccafondi

08:20-08:40

NEAR FIELD TRANSMISSION USING HERMITE-GAUSSIAN MODES

C. Zhu, Lenovo Research, China

08:40-09:00

OPTICAL UNDERSAMPLING-BASED ESTIMATION OF FREQUENCY AND DOA FOR MULTI-BAND SIGNALS

Y.C. Wang, Beihang University, China; R.G. Feng, Beihang University, China; Y.H. Song, Beihang University, China; S.G. Xie, Beihang University, China

09:00-09:20

ANTENNA WITH PATTERN DIVERSITY FOR WI-FI APPLICATIONS

S. Maddio, University of Florence, Italy; G. Giannetti, University of Florence, Italy; S. Selleri, University of Florence, Italy

09:20-09:40

FAST AND PRECISE DIRECTION OF ARRIVAL ESTIMATION BASED ON SPACE AND FREQUENCY DIVISION MULTIPLE ACCESS

S. Maddio, University of Florence, Italy; G. Giannetti, University of Florence, Italy; S. Selleri, University of Florence, Italy; G. Collodi, University of Florence, Italy; M. Righini, University of Florence, Italy; A. Cidronali, University of Florence, Italy

09:40-10:00

DEVICE-FREE LOCALIZATION WITH MULTIPLE ANTENNA RECEIVERS: SIMULATIONS AND RESULTS

V. Rampa, CNR-IEIIT, Italy; F. Fieramosca, DEIB-POLIMI, Italy; S. Savazzi, CNR-IEIIT, Italy; M. D'Amico, DEIB-POLIMI, Italy

10:00-10:20

REALISTIC ANALYSIS OF RIS-ENHANCED V2V COMMUNICATION IN THE PRESENCE OF ENVIRONMENTAL EFFECTS AND VEHICLE MOBILITY

A. Saleem, Anhui Xinhua University, China; T. E. Komolafe, Shanghai University of Medicine & Health Sciences, Shanghai, China, China; L. Zhou, Central Hospital Affiliated to Shanghai University of Medicine & Health Sciences , Jiangning Hospital Affiliated with Nanjing Medical University, China

10:20-10:40

ANALYSIS AND OPTIMIZATION OF UNILATERAL STACKED INTELLIGENT METASURFACES BY USING A MULTI-PORT NETWORK MODEL

A. Abrardo, University of Siena - Dept. on Information Engineering and Mathematics, Italy; G. Bartoli, University of Siena - Dept. on Information Engineering and Mathematics, Italy; A. Toccafondi, University of Siena - Dept. on Information Engineering and Mathematics, Italy; M.Di Renzo, Université Paris-Saclay, CNRS, CentraleSupélec, Laboratoire des Signaux et Systémes, Gif-sur-Yvette, France

Wednesday, September 10 - H 11:00.16:20 - room 4 Guglielmo

session 33 **ICEAA/IEEE APWC**

Artificial intelligence and novel optimization techniques applied to electromagnetics

Organized by F. de Flaviis
Chairs: F. de Flaviis, L. Katehi

11:00-11:20

INVERSE DESIGN OF ELECTROMAGNETIC DEVICES VIA LEARNING-ASSISTED APPROACHES

R. Palmeri, University Mediterranea of Reggio Calabria, Italy; S. Zumbo, University Mediterranea of Reggio Calabria, Italy; A. Yago Ruiz, MiWendo Solutions, Spain; R. Scapaticci, IREA-CNR, Italy; T. Isernia, University Mediterranea of Reggio Calabria, Italy; L. Crocco, IREA-CNR, Italy

11:20-11:40

CROSSTALK OPTIMIZATION IN STRIPLINES BASED ON COMPUTATIONAL TIME DOMAIN FOR ELECTROMAGNETIC COMPATIBILITY-INTERFERENCE

N. Rahayu, Institut Teknologi Bandung, Indonesia; M.A. Wibisono, Institut Teknologi Bandung, Indonesia; A.D. Prasetyo, Institut Teknologi Bandung, Indonesia; M.F. Maulana, Universitas Sangga Buana, Indonesia; A. Munir, Institut Teknologi Bandung, Indonesia

11:40-12:00

ANTENNA NEAR-FIELD RECONSTRUCTION FROM FAR-FIELD DATA USING CONVOLUTIONAL NEURAL NETWORKS

S. Bagherkhani, University of California, Irvine, United States; J.C. Earls, University of California, Irvine, United States; F. De Flaviis, University of California, Irvine, United States; P. Baldi, University of California, Irvine, United States

12:00-12:20

ANALOGUE IN-MEMORY COMPUTING FOR WIRELESS COMMUNICATION SYSTEM

C. He, Texas A&M University, United States; Y. Huang, University of Massachusetts Amherst, United States; Q. Xia, University of Massachusetts Amherst, United States; L.P.B. Katehi, Texas A&M University, United States

12:20-12:40

ADJOINT OPTIMIZATION OF HIGH-PERFORMANCE REFLECTARRAYS AND LENS ANTENNAS

S. D. Campbell, The Pennsylvania State University, United States; P. L. Werner, The Pennsylvania State University, United States; D. H. Werner, The Pennsylvania State University, United States

12:40-13:00

DATA-EFFICIENT SUPERVISED LEARNING FOR RF AND MM-WAVE CIRCUIT DESIGN: TECHNIQUES, CHALLENGES, AND BENEFITS

H. Aghasi, University of California Irvine, United States

14:20-14:40

ELECTROMAGNETIC APPLICATIONS OF MACHINE LEARNING IN SPACE TECHNOLOGY

C. Christodoulou, The University of New Mexico, United States; E. Schamiloglu, The University of New Mexico, United States

14:40-15:00

MACHINE LEARNING-ASSISTED ESTIMATION OF SUBSURFACE ELECTRICAL PROPERTIES IN MULTILAYER MEDIA WITH ROUGH SURFACES

S. Bagherkhani, University of California, Irvine, United States; S. Alamdar, University of California, Irvine, United States; F. De Flaviis, University of California, Irvine, United States

15:00-15:20

PHYSICS-DRIVEN INTELLIGENT DESIGN FOR METASURFACES BY USING METAPHYNET

J.L. Su, Southeast University, China; Z.X. Cai, Southeast University, China; Y. Mao, Southeast University, China; L. Chen, Southeast University, China; J. Zhang, Southeast University, China; Q. Ma, Southeast University, China; J.W. You, Southeast University, China; T.J. Cui, Southeast University, China

15:20-15:40

TOPOLOGICAL OPTIMIZATION OF ELECTROMAGNETIC STRUCTURES BASED ON PHYSICS-INFORMED NEURAL NETWORKS

X. Zheng, Southeast University, China; Y. Zhang, Southeast University, China; J. L. Su, Southeast University, China; J. N. Zhang, Southeast University, China; J. W. You, Southeast University, China; T. J. Cui, Southeast University, China

15:40-16:00

UTILIZATION OF GA AND CMA-ES OPTIMIZERS IN CONFIGURING ULTRA-WIDEBAND SPLINE-BASED LEAF-SHAPED PATCH MONOPOLE ANTENNA

A.D. Prasetyo, Institut Teknologi Bandung, Indonesia; D.P. Setiawan, Telkom University, Indonesia; A. Munir, Institut Teknologi Bandung, Indonesia

16:00-16:20

EFFICIENT MODELING OF MULTI-PURPOSE DUAL-BAND REFLECTARRAY CELLS USING SUPPORT VECTOR REGRESSION

D. Martinez-de-Rioja, Universidad Politécnica de Madrid, Spain; J.A. Lopez-Fernandez, Universidad de Oviedo, Spain; J. Corcoles, Universidad Politécnica de Madrid, Spain; M. Arrebola, Universidad Politécnica de Madrid, Spain

Wednesday, September 10 - H 16:40-18:40 - room 4 Guglielmo

session 34 **IEEE APWC**

AI in electromagnetic applications

Chairs: F. de Flaviis, L. Katehi

16:40-17:00

SPARSE PHASED ARRAY OPTIMIZATION USING DEEP LEARNING

D. Lu, University of California, Irvine, United States; L. Maman, Tel Aviv University, Israel; J. Earls, University of California, Irvine, United States; A. Boag, Tel Aviv University, Israel; P. Baldi, University of California, Irvine, United States

17:00-17:20

PREDICTING RCS OF 2D OBJECTS WITH ARBITRARY SHAPES USING GAUSSIAN PROCESS REGRESSION

N.N. Büyükgölcigezli, ASELSAN Inc., Turkey; E. Sever, ASELSAN Inc., Turkey

17:20-17:40

RECENT DEVELOPMENT OF NEURAL NETWORK-BASED EQUALIZERS FOR HIGH-SPEED CIRCUITS

H. Ma, Zhejiang University, China

17:40-18:00

WSPPSO OPTIMIZATION APPLIED TO ELECTROMAGNETIC PROBLEMS

F. Chiaudani, Politecnico di Milano, Italy; E. L. Zich, Politecnico di Milano, Italy; F. Grimaccia, Politecnico di Milano, Italy; G. F. Martinez, Politecnico di Milano, Italy; R. E. Zich, Politecnico di Milano, Italy

18:00-18:20

MULTI-INPUT 2D CONVOLUTIONAL NEURAL NETWORK FOR RADAR TARGET IDENTIFICATION

T. d'Angelo, Politecnico di Milano, Italy; M. Danesi, Politecnico di Milano, Italy; F. Drago, Politecnico di Milano, Italy; A. Croci, Politecnico di Milano, Italy; E. L. Zich, Politecnico di Milano, Italy; G. F. Martinez, Politecnico di Milano, Italy; R. E. Zich, Politecnico di Milano, Italy

18:20-18:40

SURROGATE MODELING WITH HYBRID CNN-RNN AND GAN ARCHITECTURES FOR ANTENNA DESIGNS

L. Kouhalvandi, Department of Electrical and Electronics Engineering, Dogus University, Istanbul, Turkiye, Turkey; S. Aygun, School of Computing and Informatics, University of Louisiana at Lafayette, USA, United States; S. Ozoguz, Department of Electronics and Communication Engineering, Istanbul Technical University, Istanbul, Turkiye, Turkey; L. Matekovits, Department of Electronics and Telecommunications, Politecnico di Torino, Turin, Italy, Italy; S. Karamzadeh, Millimeter Wave Technologies, Intelligent Wireless System, Silicon Austria Labs (SAL), Austria, Austria

Wednesday, September 10 - H 08:20-10:00 - room 5 Basile

session 35 **ICEAA**

Model order reduction in electromagnetics

Organized by R. Torchio
Chair: R. Torchio

08:20-08:40

MODEL ORDER REDUCTION IN ELECTROMAGNETICS: A SHORT SURVEY

R. Torchio, University of Padova, Italy; M. Zorzetto, University of Padova, Italy; R. Basei, University of Padova, Italy

08:40-09:00

A REDUCED BASIS METHOD FOR PARAMETRIC FAST FREQUENCY SWEEP IN ELECTROMAGNETIC DEVICES

M. Ortega, Universidad Politecnica de Madrid, Spain; R. Medeiros, Universidad Politecnica de Madrid, Spain; V. de la Rubia, Universidad Politecnica de Madrid, Spain

09:00-09:20

NONLINEAR DIMENSIONALITY REDUCTION OF ELECTROMAGNETIC MODELS FOR SURROGATE MODELING

M. Zorzetto, University of Padova, Italy; R. Torchio, University of Padova, Italy; F. Pase, Newtwen, Italy; F. Dughiero, University of Padova, Italy

09:20-09:40

EFFICIENT GENERATION OF COMPACT AND STABLE EQUIVALENT CIRCUITS FOR LARGE-SCALE MULTIPORTS

T. Bradde, Politecnico di Torino, Italy

09:40-10:00

STRUCTURED NEURAL ODE FOR MOR OF NONLINEAR DYNAMIC ELECTROMAGNETIC MODELS

R. Basei, University of Padova, Italy; F. Pase, Newtwen, Italy; R. Torchio, University of Padova, Italy

Wednesday, September 10 - H 10:00-12:20 - room 5 Basile

session 36 **ICEAA**

Electromagnetic modeling of devices and circuits

Chairs: P. Schulz, E. Simsek

10:00-10:20

INFORMATION IN ELECTROMAGNETIC FIELDS AND CURRENTS ON THE SURFACE OF AN ANTENNA ARRAY

D. Badheka, J. J. Adams, B. L. Hughes, NC State University, United States

10:20-10:40

ONE-STOP-SHOP FOR MODELING OPTICAL FREQUENCY COMB GENERATION

E. Simsek, A. Niang, P. Shandilya, L. Courtright, R. Islam, G.M. Carter, C.R. Menyuk, University of Maryland Baltimore County, United States

11:00-11:20

NON-UNIFORM DISTRIBUTION EFFECTS ON PLASMA-BASED METASURFACES

O. Sergaeva, Università degli Studi di Brescia, Italy; M. A. Shameli, K. N. Toosi University of Technology, Iran, Islamic Republic of; M. Magarotto, Università degli Studi di Padova, Italy; A. Locatelli, Università degli Studi di Brescia, Italy; A. D. Capobianco, Università degli Studi di Padova, Italy; D. Rocco, Università degli Studi di Brescia, Italy

11:20-11:40

MODEL OF FABRY-PEROT RESONATOR WITH FLAT METAL AND DIELECTRIC MIRRORS

V. Pazynin, Technical University of Berlin, Germany; K. Sirenko, O.Ya. Usikov Institute for Radiophysics and Electronics, Ukraine; W. Keusgen, Technical University of Berlin, Germany

11:40-12:00

ANALYSIS OF MICROSTRIP ANTENNAS BASED ON A MODAL APPROACH

P. Schulz, Otto-von-Guericke University Magdeburg, Germany; M. Leone, Otto-von-Guericke University Magdeburg, Germany

12:00-12:20

TRANSITIONS IN MULTILAYER PCB TECHNOLOGY FOR MMWAVE LOW LOSS TRANSMISSION LINES

S.G. Ballaera, Politecnico di Torino, Italy; J.D. Martinez Perez, Universitat Politècnica de València, Spain

Wednesday, September 10 - H 12:20-18:40 - room 5 Basile

session 37 **ICEAA**

Simulation and diagnostics of space plasma phenomena in the laboratory

Organized by W.E. Amatucci, E. Scime
Chairs: W.E. Amatucci, E. Scime

12:20-12:40

CHARACTERIZATION OF ELECTRIC FIELD SENSOR INSTABILITIES USING LABORATORY MEASUREMENTS AND SIMULATIONS

K.A. Greene,John W. Bonnell, University of California, Berkeley, United States; Erik M. Tejero, Naval Research Laboratory, USA; Justin Bowman, Katherine A. Goodrich, West Virginia University, USA

12:40-13:00

LABORATORY INVESTIGATION INTO ELECTRIC FIELD SENSOR INSTABILITIES: TESTING AND FIRST CAMPAIGN ANALYSIS

J.L. Bowman, Dept. of Physics and Astronomy, West Virginia University, United States; E.M. Tejero, U.S Naval Research Laboratory, Plasma Physics Division, United States; K. Greene, Space Sciences Laboratory, University of California, United States; J.W. Bonnell, Space Sciences Laboratory, University of California, United States; W.E. Ammatucci, U.S. Naval Research Laboratory, Plasma Physics Division, United States; K.A. Goodrich, Dept. of Physics and Astronomy, West Virginia University, United States

14:20-14:40

DEVELOPMENT OF THE AMBIPOLAR ELECTRIC FIELD IN A COMPRESSED CURRENT SHEET WITH AND WITHOUT A GUIDE FIELD

A.M. DuBois, U.S. Naval Research Laboratory, United States; C. Crabtree, U.S. Naval Research Laboratory, United States; E. Lichko, U.S. Naval Research Laboratory, United States; G. Ganguli, U.S. Naval Research Laboratory, United States

14:40-15:00

SHEAR ALFVÉN WAVE ANTENNAS IN THE LARGE PLASMA DEVICE

S. Vincena, UCLA, United States; W. Gekelman, UCLA, United States

15:00-15:20

SOLUTION OF THE WAVE EQUATIONS FOR A CYLINDRICAL WHISTLER DUCT

P. M. Bellan, Caltech, United States

15:20-15:40

LANGMUIR WAVES AT COMET 67P/CHURYUMOV-GERASIMENKO

H. Gunell, Umeå University, Sweden; G. Stenberg Wieser, Swedish Institute of Space Physics, Kiruna, Sweden; A. Moeslinger, Umeå University, Sweden; C. Goetz, Northumbria

University, United Kingdom; R. Canu-Blot, Swedish Institute of Space Physics, Kiruna, Sweden; P. Henri, Laboratoire Lagrange, Observatoire de la Côte d'Azur, Université Côte d'Azur (OCA), CNRS, Nice, France

15:40-16:00

WAVE-PARTICLE CORRELATIONS DURING MAGNETIC RECONNECTION IN PHASMA

S. Yadav, WVU, United States

16:00-16:20

SEARCH FOR ENHANCED SCATTER FROM PLASMA WAVES WITH SPACE OBJECTS IN ORBIT OVER THE JRO VHF RADAR

P.A. Bernhardt, University of Alaska, United States; B.E. Eliasson, University of Strathclyde, United Kingdom; W.A. Scales, Virginia Tech, United States; J. D. Huba, Syntek Technologies, United States

16:40-17:00

EXPERIMENTAL INVESTIGATION OF ORBITAL DEBRIS SOLITON GENERATION

B. Amatucci, E. Tejero, A. DuBois, C.L. Enloe, D. Blackwell, C. Crabtree, G. Ganguli, Naval Research Laboratory, United States; A. Sen, Institute for Plasma Research, India

17:00-17:20

PARTICLE FUELING IN MULTI-ANTENNA HELICON PLASMAS

M. Zepp, University of Wisconsin-Madison, United States; M. Granetzny, University of Wisconsin-Madison, United States; O. Schmitz, University of Wisconsin-Madison, United States

17:20-17:40

USING DUST PLASMA INTERACTIONS TO SHED LIGHT ON MAGNETIC FIELD ALIGNED ELECTRON DENSITY STRUCTURES IN THE MAGNETIZED DUSTY PLASMA EXPERIMENT (MDPX)

S. Chakraborty Thakur, Auburn University, United States; E. Price, Auburn University, United States; S. Bachoti, Auburn University, United States; J. Avritte, Auburn University, United States; E. Thomas, Auburn University, United States

17:40-18:00

HELICON WAVE-PLASMA INTERACTION IN LINEAR AND TOROIDAL GEOMETRIES WITH BIRDCAGE RESONANT ANTENNAS

S.P.H. Vincent, R. Karimov, P. Guittienne, C. Sepulchre, P. Quigley, M. Alfazzaa, C. Stollberg, M. Baquero-Ruiz, R. Jacquier, A.A. Howling, I. Furno, EPFL, Switzerland

18:00-18:20

EXPERIMENTAL ASSESSMENT OF THE PERFORMANCE OF AN ELECTRON CYCLOTRON RESONANCE ACCELERATION (ECRA) THRUSTER OPERATED WITH IODINE

S. Carere, Politecnico di Torino, Italy; F. Boni, ONERA, France; G. Lombardi, Politecnico di Torino, Italy; V. Désangles, ONERA, France

18:20-18:40

NRL SPADE-3 EXPERIMENT

B. Amatucci, Naval Research Laboratory, United States; E. Tejero, Naval Research Laboratory, United States; G. Gatling, Naval Research Laboratory, United States

THURSDAY 11

Thursday, September 11 - H 08:20-10:00 - room 1 Federico

session 38 **IEEE APWC**

Smart antennas and arrays

Chairs: R. Asfour, H. Nakano

08:20-08:40

A NOVEL EQUIVALENT CIRCUIT PRESENTATION FOR TWO-ELEMENT 5G WIDEBAND DIELECTRIC RESONATOR ANTENNA

Z.Y. Shou, University of Manchester, United Kingdom; Z. Wu, University of Manchester, United Kingdom

08:40-09:00

DESIGN OF A HIGH-GAIN ANTENNA SYSTEM FOR MM-WAVE FULL-DUPLEX COMMUNICATION

R. Asfour, Essex University, United Kingdom; S. Salarian, Essex University, United Kingdom; U. Jankovic, University of Westminster, United Kingdom; D. Budimir, University of Westminster, United Kingdom; M. dariush, Essex University, United Kingdom

09:00-09:20

WIDE-ANGLE BEAM SCANNING LEAKY-WAVE ANTENNA WITH BUILT-IN BANDSTOP FILTERING FOR SENSING IN ISAC APPLICATIONS

P. Tang, City university of Hong Kong, Hong Kong; H. Wong, City university of Hong Kong, Hong Kong

09:20-09:40

DUAL RIS CONFIGURATION FOR SIGNAL ENHANCEMENT IN L-SHAPED CORRIDORS

A. Burladean, University of Florence, Italy; A. Freni, University of Florence, Italy; P. Pirinoli, Politecnico di Torino, Italy; A. Mazzinghi, University of Florence, Italy

09:40-10:00

PHYSICALLY UNCLONABLE REFLECTING INTELLIGENT SURFACES FOR CYBER-PHYSICAL SECURITY IN SMART WIRELESS NETWORKS

D.A. Pham, University of Illinois Chicago, United States; P.Y. Chen, University of Illinois Chicago, United States; D. Erricolo, University of Illinois Chicago, United States

Thursday, September 11 - H 10:00-18:00 - room 1 Federico

session 39 **IEEE APWC**

Wide/multiband antennas and innovative antenna technology

Organized by H. Nakano
Chairs: H. Nakano, R. Tamas

10:00-10:20

A THREE-ARM METASPIRAL ANTENNA

H. Nakano, Hosei University, Japan; T. Abe, Hosei University, Japan; A. Mehta, Swansea University, United Kingdom

10:20-10:40

ARTIFICIAL MATERIAL WITH MULTIPARAMETER TO CONTROL EFFECTIVE PERMITTIVITY AND ITS APPLICATION IN RESONANT CAVITY ANTENNA

Y. Zhang, Ryukoku University, Japan; Y. Toda, Ryukoku University, Japan

11:00-11:20

A DIELECTRIC ANTENNA FOR LEAKY- AND STANDING-WAVE RADIATIONS

H. Wong, City University of Hong Kong, Hong Kong; W.J. Sun, City University of Hong Kong, Hong Kong

11:20-11:40

OMNIDIRECTIONAL COMPACT MICROSTRIP ANTENNA IN 920MHZ BAND FOR OCEAN WIRELESS SENSOR NETWORK

T. Fujimoto, Nagasaki University, Japan; K. Inoue, Nagasaki University, Japan; C.E. Guan, Nagasaki University, Japan; Y. Maemura, University of Nagasaki, Japan

11:40-12:00

ANALYSIS OF THE EFFECTS OF DIELECTRIC MEDIA ON MAGNETIC COUPLING WPT USING FILTER THEORY

T. Maruyama, Hiroshima Institute of technology, Japan; A. Kamada, National Institute of Technology, Hakodate College, Japan; M. Nakatsugawa, National Institute of Technology, Hakodate College, Japan; I. Awai, Yamaguchi Laboratories, Fujiwaves, Corp., Japan; M. Oamoto, National Institute of Technology, Ube College, Japan; K. Nakahira, National Institute of Technology, Okinawa College, Japan

12:00-12:20

AN ULTRA-WIDEBAND BOR-SPR ANTENNA BACKED BY A CONICAL GROUND PLANE

Y. Oishi, Toshiba Infrastructure Systems & Solutions Corporation, Japan; Y. Masuda, Toshiba Infrastructure Systems & Solutions Corporation, Japan; M. Tanabe, Toshiba Infrastructure Systems & Solutions Corporation, Japan; H. Nakano, Hosei University, Japan

12:20-12:40

DUAL-SENSE CIRCULARLY POLARIZED WAVEGUIDE ANTENNA DESIGN USING TWO ORTHOGONAL PROBES

T. Fukusako, Kumamoto University, Japan; R. Kuse, Kumamoto University, Japan

12:40-13:00

A LOW-PROFILE DUAL-BAND MULTI-PORT DIVERSITY ANTENNA

T.H. Bui, The University of Queensland, Australia; S.A. Rezaeieh, The University of Queensland, Australia; C. Fumeaux, The University of Queensland, Australia

14:20-14:40

RECONFIGURING THE OPERATING FREQUENCY OF A GALLIUM-BASED LIQUID METAL YAGI-UDA ANTENNA BY STRETCHING

A. Maniar, Queen Mary University of London, United Kingdom; J.R. Kelly, Queen Mary University of London, United Kingdom

14:40-15:00

A 3D-SIW CIRCULARLY POLARIZED HIGH GAIN HORN ANTENNA FOR THE LOWER SUB-TERAHERTZ BAND

D. Pouhe, Reutlingen University, Germany

15:00-15:20

MILLIMETER-WAVE PHASED ARRAY ANTENNAS WITH MIXED SUB-ARRAYS AND SINGLE-ELEMENTS FOR SUPPRESSED GRATING LOBES

N. Guan, Fujikura Ltd., Japan; S. Kaushal, Fujikura Ltd., Japan

15:20-15:40

LOW-PROFILE WIDEBAND GNSS ANTENNA WITH ENHANCED FRONT-TO-BACK-RATIO WITHOUT ADDITIONAL GROUND PLANE

H. Sakamoto, Mitsubishi Electric, Japan; K. Nishimoto, Mitsubishi Electric, Japan; Y. Inasawa, Mitsubishi Electric, Japan

15:40-16:00

DESIGN OF WIDEBAND ANTENNA AND ANTENNA PAIR USING THE CONCEPT OF BUILDING BLOCK

H. Y. Wang, Huawei Technologies, United Kingdom

16:00-16:20

METALINE ARRAY ANTENNA USING AXIAL ROTATION TECHNIQUE

K. Sato, DKK Co., Ltd., Japan; H. Nakano, Hosei Univ., Japan

16:40-17:00

AI-DRIVEN OPTIMIZATION FOR LOW-PROFILE MULTI-BAND ANTENNAS FOR DIRECTION FINDING

A. Constantin, Constanta Maritime University, Romania; A. Heiman, Constanta Maritime University, Romania; R.D. Tamas, Constanta Maritime University, Romania

17:00-17:20

AN ELECTRICALLY SMALL COMPOSITE MONOPOLE ANTENNA FOR LONG-WAVE BANDS

X. Wang, Beijing Institute of Radio Metrology and Measurement, China; S. Zhang, Beijing Institute of Radio Metrology and Measurement, China; J. Liu, Beijing Institute of Radio Metrology and Measurement, China; S. Ge, Yangtze Delta Region Academy of Beijing Institute of Technology, China; Z. Shen, Yangtze Delta Region Academy of Beijing Institute of Technology, China; Y. Qian, Ningbo University, China; C. Hua, Ningbo University, China

17:20-17:40

LOCATION DEPENDENCE OF WPT EFFICIENCY CHARACTERISTICS BETWEEN A CIRCUIT-SHAPED LEAKY-WAVEGUIDE AND A Λ/2 DIPOLE ANTENNA DUE TO ELECTRIC FIELD DISTRIBUTION

M. Nakatsugawa, National Institute of Technology, Hakodate College, Japan; T. Goto, National Institute of Technology, Hakodate College, Japan; T. Maruyama, Hiroshima Institute of Technology, Japan; M. Omiya, Hokkaido university, Japan; Y. Tamayama, Nagaoka University of Technology, Japan

17:40-18:00

HOURGLASS SLOT ANTENNA WITH EXPONENTIAL FLARE FOR WIDEBAND AND DIRECT COAXIAL CABLE FEED

M. Matsunaga, Shizuoka University, Japan

18:00-18:20

Additional paper at the end of the session due to presenter's request (moved from session 53)

ASSESSMENT OF "REDUCED BASIS" FORMULATIONS FOR ELECTROMAGNETIC FINITE ELEMENT TEARING AND INTERCONNECTING (FETI) FREQUENCY SWEEPS SIMULATIONS OF LARGE RECONFIGURABLE TRANSMIT ARRAYS ANTENNAS

A. Barka, Onera The French Aerospace Lab, France; F. X. Roux, OneraThe French Aerospace Lab, France; A. DE Oliveira Cabral, Onera The French Aerospace Lab, France

Thursday, September 11 - H 08:20-12:20 - room 2 Enrico

session 40 **ICEAA**

Antennas and electromagnetic systems with periodic and quasi-periodic structures

Organized by L. Matekovits, K. Esselle
Chairs: L. Matekovits, K. Esselle

08:20-08:40

SIMPLIFIED RISLEY PRISM-INSPIRED 2-D BEAM STEERING WITH A TILTED-BEAM RESONANT CAVITY ANTENNA AND SINGLE METASURFACE

K. Singh, University of Technology Sydney, Australia; D. N. Thalakotuna, University of Technology Sydney, Australia; K. P. Esselle, University of Technology Sydney, Australia

08:40-09:00

METASURFACE-BASED CIRCULAR POLARIZATION CONVERSION FOR A PATCH ANTENNA AT 5.8 GHZ

Z. Hamzavi-Zarghani, Graz University of Technology, Austria; B. Rezaee, Graz University of Technology, Austria; W. Bösch, Graz University of Technology, Austria; L. Matekovits, Politecnico di Torino, Italy

09:00-09:20

AUTOMATED FSS DESIGN AND OPTIMIZATION WITH TIME SERIES FORECASTING PROCESS THROUGH COMBINED CNN-RNN MODEL

L. Kouhalvandi, Dogus University, Turkey; M. Alibakhshikenari, University of Rome "Tor Vergata", Italy; S. Ozoguz, Istanbul Technical University, Turkey; L. Matekovits, Politecnico di Torino, Italy

09:20-09:40

MECHANICALLY RECONFIGURABLE GRIN LENS CONCEPT FOR FOCUSING AND BEAMFORMING APPLICATIONS

K. Kaboutari, University of Aveiro, Portugal; X. Liu, Carnegie Mellon University, United States; A. Abraray, P. Pinho, University of Aveiro, Portugal; S. Shen, Carnegie Mellon University, United States; S. Maslovski, University of Aveiro, Portugal

09:40-10:00

ADVANCED PHASE ROTATION UNIT CELLS FOR BEAM STEERING AND POLARIZATION CONVERSION WITH ENHANCED SIDELOBE PERFORMANCE

A. Thekedathu Raveendran, University of Technology Sydney, Australia; K. Singh, University of Technology Sydney, Australia; D. N. Thalakotuna, University of Technology Sydney, Australia; K. P. Esselle, University of Technology Sydney, Australia; S. Muzahir Abbas, GME, Australia

10:00-10:20

HOLEY PHOTONIC CRYSTALS AS 3-D PRINTED STRUCTURES FOR LEAKY WAVE ANTENNAS IN K-BAND

L. Tognolatti, Roma Tre University, Italy; S. Ceccuzzi, ENEA, Italy; V. Jandieri, University of Druisburg-Essen and CENIDE, Georgia; F. Pizarro, Pontificia Universidad Catolica de Valparaiso, Italy; C. Ponti, Roma Tre University, Italy; G. Schettini, Roma Tre University, Italy; P. Baccarelli, Roma Tre University, Italy

10:20-10:40

EXPERIMENTAL CHARACTERIZATION OF THE TRAVELING WAVE STRENGTH IN MODULATED MICROSTRIP-LINE-BASED HIGH IMPEDANCE SURFACE THROUGH INFRARED THERMOGRAPHY

S. Miclaus, "Nicolae Balcescu" Land Forces Academy, Sibiu, Romania; M. Elisabeth, ENSIL-ENSCI Ecole d'Ingenieurs de Limoges, France; L. Matekovits, Politecnico di Torino, Italy

11:00-11:20

ANALYTICAL DESIGN OF PRACTICAL-THICKNESS SLAB DEVICES SUPPORTING BOUND STATES IN THE CONTINUUM

O. Lipan, Department of Physics, University of Richmond, Richmond, VA 23173, USA, United States; A. De Sabata, Department of Measurements and Optical Electronics, University Politehnica Timisoara, Timisoara, Romania, Romania; L. Matekovits, Department of Electronics and Telecommunications, Politecnico di Torino, Turin, Italy

11:20-11:40

ULTRATHIN METASURFACE DESIGN FOR ENHANCED WIRELESS POWER TRANSFER TO DEEP TISSUE IMPLANTS

Y.B. Pan, University of Electronic Science and Technology of China, China; L. Matekovits, Politecnico di Torino, Italy; Y. Yan, University of Electronic Science and Technology of China, China; W.J. Fu, University of Electronic Science and Technology of China, China

11:40-12:00

WATER BASED FREQUENCY SELECTIVE SURFACE ACTING AS AN ABSORBER

C. Pescari, University Politehnica Timisoara, Romania; A.M. Silaghi, University Politehnica Timisoara, Romania; A. De Sabata, University Politehnica Timisoara, Romania; L. Matekovits, Politecnico di Torino, Italy

12:00-12:20

TRI-BAND OPTICALLY TRANSPARENT ABSORPTION METASURFACE FOR RCS REDUCTION

Z.H. Li, Y.J. Li, J.H. Wang, Beijing Jiaotong University, China

Thursday, September 11 - H 12:20-18:40 - room 2 Enrico

session 41 **ICEAA**

Metamaterials and metasurfaces

Chairs: F. Costa, C.A. Downing

12:20-12:40

ENHANCING DEVICE AUTHENTICATION FOR RF-FINGERPRINTED RECONFIGURABLE INTELLIGENT SURFACES VIA CONVOLUTIONAL NEURAL NETWORK

E. Hamdan, University of Illinois Chicago, United States; D.A. Pham, University of Illinois Chicago, United States; P.Y. Chen, University of Illinois Chicago, United States; A.E. Cetin, University of Illinois Chicago, United States

12:40-13:00

LONG-RANGE INTERACTIONS IN METAMATERIALS CAN INDUCE UNUSUAL EDGE STATES

C. A. Downing, O. I. R. Fox, University of Exeter, United Kingdom

14:20-14:40

EXPLORING FREQUENCY STABILITY OF RADIATION PATTERNS IN ANTENNA DESIGNS WITH NONLOCAL SHIELDING

A. Zhuravlev, ITMO University, Russian Federation; S. Glybovski, ITMO University, Russian Federation

14:40-15:00

MAGNETO-OPTICAL METASURFACES BASED ON BISMUTH IRON GARNET

F. Habibighahfarokhi, University of Brescia, Italy; O. Sergaeva, University of Brescia, Italy; C.D. Angelis, University of Brescia, Italy; D. Rocco, University of Brescia, Italy

15:00-15:20

A WIDEBAND ACTIVE FREQUENCY SELECTIVE RASORBER BASED ON HYBRID ABSORPTIVE-DIFFUSIVE MECHANISM

Y. H. Feng, Southeast University, China; S. C. Zhu, Southeast University, China; Z. X. Cao, Southeast University, China

15:20-15:40

CSA ALGORITHM-BASED DESIGN OF A MULTIFUNCTIONAL METASURFACE LENS FOR BEAMFORMING APPLICATIONS

I.J. Hwang, Korea Research Institute of Standards and Science, Republic of Korea; Y.P. Hong, Korea Research Institute of Standards and Science, Republic of Korea; I.H. Lee, Korea Research Institute of Standards and Science, Republic of Korea; D.J. Yun, Korea Research Institute of Standards and Science, Republic of Korea

15:40-16:00

EFFICIENT SURFACE IMPEDANCE MODELING OF CONFORMAL METASURFACES FOR RCS REDUCTION OF DRONES

T. Bulteau, CEA, France; P. Aguilera, CEA, France; I. Moufid, CEA, France; R. Loison, IETR, France; S. Meric, IETR, France; R. Gillard, IETR, France

16:00-16:20

A PASSIVE RF-POWERED METAMATERIAL SENSOR FOR AUTONOMOUS SOIL MOISTURE MONITORING

M. Amiri, University of Technology Sydney, Australia

16:40-17:00

MICROFABRICATION OF TRASPARENT ELECTROMAGNETIC METASURFACES FOR 5G/6G WIRELESS COMMUNICATIONS

G. Marchi, Fondazione Bruno Kessler, Italy; A. Bagolini, Fondazione Bruno Kessler, Italy; J. Iannacci, Fondazione Bruno Kessler, Italy; V. Mulloni, Fondazione Bruno Kessler, Italy; R. Marcelli, National Research Council, Italy; E. Proietti, National Research Council, Italy; G. Capoccia, National Research Council, Italy; L. Lorenzelli, Fondazione Bruno Kessler, Italy

17:00-17:20

PRELIMINARY RESULTS ON A HEXAGONAL LATTICE META-LENS FOR SATCOM ON THE MOVE APPLICATIONS

M. Cavallo, Politecnico di Torino, Italy; M. Beccaria, Politecnico di Torino, Italy; G. Giordanengo, Links Foundation, Italy; G. Vecchi, Politecnico di Torino, Italy; P. Pirinoli, Politecnico di Torino, Italy

17:20-17:40

INFERRING SURFACE SUSCEPTIBILITIES FOR MASK-BASED METASURFACE BEAM SHAPING USING DEEP LEARNING

C. Niu, University of Manitoba, Canada; M. Phaneuf, University of Manitoba, Canada; P. Mojabi, University of Manitoba, Canada

17:40-18:00

SLIDING-SPLIT-STRIP METAMATERIAL WITH TUNABLE DIELECTRIC AND PLASMONIC PROPERTIES
J.A. Enriquez, ITMO University, Russian Federation; A. Zhuravlev, ITMO University, Russian Federation; P.A. Belov, ITMO University, Russian Federation; J.D. Baena, Universidad Nacional de Colombia, Colombia

18:00-18:20

BACKSCATTERING MECHANICAL SENSING THROUGH METAMATERIALS
S. Rodini, University of Pisa, Italy; S. Genovesi, University of Pisa, Italy; G. Manara, University of Pisa, Italy; F. Costa, University of Pisa, Italy

18:20-18:40

NOVEL EMBEDDED METAL VIA IN DIELECTRIC SPLIT RING RESONATOR STRUCTURE TO ENHANCE ISOLATION FOR FULL-DUPLEX APPLICATIONS
J.M. Zaid, Huawei Technologies, Canada

Thursday, September 11 - H 08:20-10:20 - room 3 Angelica

session 42 **ICEAA**

mmWave sensors and devices

Organized by C. Baer, C. Schulz
Chairs: C. Baer, C. Schulz

08:20-08:40

HOW TO TRAIN YOUR RADAR: AI-BASED DETECTION OF ANTENNA CONTAMINATION
C. Schulz, KROHNE Messtechnik GmbH, Germany; P. Gembaczka, Krohne Messtechnik GmbH, Germany; F. Dübler, Krohne Messtechnik GmbH, Germany; P. Mück, Krohne Messtechnik GmbH, Germany; C. Schmits, Krohne Messtechnik GmbH, Germany

08:40-09:00

THE FUTURE OF AUTONOMOUS PARKING
A. Talai, Aptiv Services Deutschland GmbH, Germany; G. Vinci, Aptiv Services Deutschland GmbH, Germany

09:00-09:20

EVALUATING INTEGRATED AUTOMOTIVE RADAR SENSOR PERFORMANCE UTILIZING ANTENNA DIGITAL TWINS
W. Simon, IMST GmbH, Germany; A. Lauer, IMST GmbH, Germany; T. Liebig, IMST GmbH, Germany; D. Schaefer, IMST GmbH, Germany; B. Derat, Rohde & Schwarz GmbH, Germany

09:20-09:40

ADDRESSING THE CHALLENGES OF RADAR-BASED ENVIRONMENTAL SENSING FOR AUTONOMOUS GROUND VEHICLES IN OFF-ROAD TERRAIN
C. Robbe, CLAAS E-Systems, Germany; C. Baer, Ruhr University Bochum, Germany

09:40-10:00

HISTOGRAM-BASED ANALYSIS OF UAV-SAR DATA FOR AGRICULTURAL VEGETATION CLASSIFICATION
F. Bormuth, Ulm University, Germany; R. Riekenbrauck, Ulm University, Germany; J. Kanz, Ulm University, Germany; E. Sterk, Ulm University, Germany; D. Schmidt, Ulm University, Germany; R. F. H. Fischer, Ulm University, Germany; G. Krieger, German Aerospace Center (DLR), Germany; C. Waldschmidt, Ulm University, Germany; C. Damm, Ulm University, Germany

10:00-10:20

ALL-CERAMIC MM-WAVE CHIPLESS SENSORS FOR WIRELESS TEMPERATURE SENSING OVER 1000 °C IN CLUTTERED AND OBSTRUCTED ENVIRONMENTS
A. Jiménez-Sáez, Technical University of Darmstadt, Germany; J. Sánchez-Pastor, Technical University of Darmstadt, Germany; M. Sakaki, University of Duisburg-Essen, Germany; P. Kadera, Brno University of Technology, Czech Republic; M. Schüßler, Technical University of Darmstadt, Germany; J. Lacik, Brno University of Technology, Czech Republic; R. Jakoby, Technical University of Darmstadt, Germany; N. Benson, University of Duisburg-Essen, Germany

Thursday, September 11 - H 10:20-15:20 - room 3 Angelica

session 43 **ICEAA**

Dielectric waveguides and polymer microwave fiber technology

Organized by C. Baer, C. Schulz
Chairs: C. Baer, C. Schulz

10:20-10:40

A NOVEL DIELECTRIC WAVEGUIDE BASED MATERIAL CHARACTERIZATION SYSTEM FOR NON-DESTRUCTIVE DEFECT DETECTION
J. Schnarr, Institute of Electronic Circuits, Germany; T. Musch, Institute of Electronic Circuits, Germany; C. Baer, Institute of Electronic Circuits, Germany

11:00-11:20

CHARACTERIZATION OF DIELECTRIC PROPERTIES AND ANISOTROPY OF 3D-PRINTED DIELECTRICS FOR MM-WAVE APPLICATIONS
R. Bord, University of Ulm, Germany; M. Hitzler, University of Ulm, Germany; M. Döring, University of Ulm, Germany; N. Riese, University of Ulm, Germany; V. Kienle, University of Ulm, Germany; C. Waldschmidt, University of Ulm, Germany

11:20-11:40

A MULTI-BAND TRANSITION FROM MICROSTRIP LINE TO 3D-PRINTED DIELECTRIC WAVEGUIDE FOR THE K- AND E-BAND
N. Riese, Ulm University, Germany; F. Schmidt, Ulm University, Germany; A. Diepolder, Ulm University, Germany; R. Bord, Ulm University, Germany; C. Damm, Ulm University, Germany; C. Waldschmidt, Ulm University, Germany

11:40-12:00

ORTHOMODE TRANSDUCER AND POLARIZER FOR THE PRACTICAL APPLICATION OF CIRCULAR DIELECTRIC WAVEGUIDES IN W BAND AND D BAND
M. Schneider, University of Bremen, Germany

12:00-12:20

3D-PRINTED DIELECTRIC WAVEGUIDE CONNECTIONS FOR MMWAVE FREQUENCIES: SOLVENT BONDING AND REFLECTION ANALYSIS
C. Baer, Ruhr University Bochum, Germany

12:20-12:40

DIFFERENTIAL SUBSTRATE INTEGRATED WAVEGUIDE COUPLING FOR WHISPERING GALLERY MODE RESONATORS IN THE 20 GHZ RANGE
L. Kensbock, Ruhr University Bochum, Germany; L. Polzin, Ruhr University Bochum, Germany; T. Musch, Ruhr University Bochum, Germany; M. van Delden, Ruhr University Bochum, Germany

12:40-13:00

MMIC BASED YIG-TUNED OSCILLATORS WITH BOND WIRE COUPLING OPERATING UP TO 47 GHZ

M. van Delden, Ruhr University Bochum, Institute of Electronic Circuits, Germany; L. Polzin, Ruhr University Bochum, Institute of Electronic Circuits, Germany; N. Pohl, Ruhr University Bochum, Institute of Integrated Systems, Germany; K. Aufinger, Infineon Technologies AG, Germany; T. Musch, Ruhr University Bochum, Institute of Electronic Circuits, Germany

14:20-14:40

POWER-EFFICIENT 173 GHZ DUAL-MODULUS 4/5 PRESCALER WITH OPTIMIZED CLOCK DISTRIBUTION IN 130 NM SIGE:C BICMOS

L. Polzin, Ruhr University Bochum, Germany; L. Kensbock, Ruhr University Bochum, Germany; N. Pohl, Ruhr University Bochum, Germany; H. Rücker, Leibniz-Institut für innovative Mikroelektronik, Germany; T. Musch, Ruhr University Bochum, Germany; M. van Delden, Ruhr University Bochum, Germany

14:40-15:00

A STUDY ON MOLDING BROADBAND INTEGRATED ANTENNAS FOR A G-BAND RADAR

V. Kienle, University of Ulm, Germany; M. Weißer, University of Ulm, Germany; M. Hitzler, University of Ulm, Germany; F. Matt, University of Ulm, Germany; R. Bord, University of Ulm, Germany; C. Waldschmidt, University of Ulm, Germany

15:00-15:20

WHEELER CAP METHOD EFFICIENCY ESTIMATION ERRORS AT ANTENNA CHARACTERISTIC MODES

C.G. Hynes, R.G. Vaughan, Simon Fraser University, Canada

Thursday, September 11 - H 15:20-18:40 - room 3 Angelica

session 44 **ICEAA/IEEE APWC**

Recent advances in measurement techniques for spatially distributed electromagnetic fields

Organized by O. Breinbjerg
Chairs: O. Breinbjerg

15:20-15:40

DETERMINATION OF THE SUPERGAIN CRITERION FOR ANTENNAS

A.D. Yaghjian, Electromagnetics Research, United States

15:40-16:00

DIMENSIONING OF FLAT RADIATING PANELS FOR PLANE-WAVE GENERATION

A. Capozzoli, Università di Napoli Federico II, Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione, Italy; C. Curcio, Università di Napoli Federico II, Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione, Italy; L. Foged, Microwave Vision Group (MVG), Italy; A. Liseno, Università di Napoli Federico II, Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione, Italy; F. Saccardi, Microwave Vision Group (MVG), Italy

16:00-16:20

TEST SETUP AND APPROACH TO OBTAIN BISTATIC 2-D REFLECTION PATTERNS OF RECONFIGURABLE INTELLIGENT SURFACES BASED ON MONOSTATIC MEASUREMENTS

F. T. Bette, Rohde & Schwarz GmbH & Co. KG, Germany; O. Kasap, Rohde & Schwarz GmbH & Co. KG, Germany; T. M. Gemmer, Rohde & Schwarz GmbH & Co. KG, Germany; H. Bartko, Rohde & Schwarz GmbH & Co. KG, Germany; B. Derat, Rohde & Schwarz GmbH & Co. KG, Germany; W. Keusgen, Technical University Berlin, Germany

16:40-17:00

STANDOFF WEAPON IMAGING USING MM-WAVE INVERSE SYNTHETIC APERTURE RADAR AND AI DETECTION

C. Rappaport, Northeastern University, United States; M. Asri, Northeastern University, United States; M. Valipour, Northeastern University, United States; A. Morgenthaler, Northeastern University, United States

17:00-17:20

ON THE ACCURACY OF SIMULATION MODELS FOR HOLOGRAPHIC INDOOR IMAGING

A. H. Paulus, Technical University of Munich, Germany; F. Fieramosca, Politecnico di Milano, Italy; M. D'Amico, Politecnico di Milano, Italy; S. Savazzi, Consiglio Nazionale delle Ricerche, Italy

17:20-17:40

RECENT ADVANCES IN UNIFIED PHASE RETRIEVAL: FROM FAR-FIELD TO NEAR-FIELD USING A SINGLE MEASUREMENT SURFACE

G. M. Battaglia, T. Isernia, A. F. Morabito, R. Palmeri, Università degli Studi Mediterranea di Reggio Calabria, Italy, Italy; R. Solimene, M. A. Maisto, Università degli Studi della Campania Luigi Vanvitelli, Italy

17:40-18:00

ANTENNA DIAGNOSTICS USING IR THERMOGRAPHY PLANAR PHASELESS NEAR-FIELD MEASUREMENTS

S. Faure, Anyfields, France; R. Carrizales-Juarez, Anyfields, France; N. Mézières, CNES, France; A. Laffont, Anyfields, France

18:00-18:20

A NOVEL TWO-STEPS APPROACH FOR THE CORRECTION OF 3-D POSITION ERRORS OF THE MEASURING PROBE IN A NON-REDUNDANT SPHERICAL SCANNING

F. D'Agostino, University of Salerno, Italy; F. Ferrara, University of Salerno, Italy; C. Gennarelli, University of Salerno, Italy; R. Guerriero, University of Salerno, Italy; M. Migliozzi, University of Salerno, Italy; L. Pascarella, University of Salerno, Italy

18:20-18:40

ON-THE-FLY SAMPLING OF SPATIAL FIELDS WITH CORRECTION FOR SIGNAL-AVERAGING SMEARING ERROR

O. Breinbjerg, ElMaReCo, Denmark

Thursday, September 11 - H 08:20-15:40 - room 4 Guglielmo

session 45 **ICEAA**

Electromagnetic sensing and imaging technologies for health applications

Organized by L. Crocco, R. Cruz Conceição, F. Vipiana
Chairs: L. Crocco, R. Cruz Conceição, F. Vipiana

08:20-08:40

EMPIRICAL CALIBRATION METHOD FOR A MULTISTATIC MICROWAVE SENSING SYSTEM

F. Eashour, University of Manitoba, Canada; S. Pistorius, University of Manitoba, Canada

08:40-09:00

PRELIMINARY ANALYSIS OF MICROWAVE IMAGES OF BREAST CANCER PATIENTS

R. Conceição, Universidade de Lisboa, Portugal; M. Alfaiate, NOVA University of Lisbon, Portugal; A. Simões, I. A. Correia, G. Canastra, PJ. Saraiva, R. Dias, Universidadede Lisboa, Portugal; L. Ramos, A. Andrade Junior, Hospital de Vila Franca de Xira, Portugal; D. M. Godinho, Universidade de Lisboa, Portugal

09:00-21:20

LIVER AND KIDNEY TISSUE PHANTOMS IN HYPERTHERMIA AND MICROWAVE THERMAL ABLATION: A REVIEW

K. Vidjak, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia; F. Capitanio, Dept. of Information Engineering, Electronics, and Telecommunications, Sapienza University of Rome, Italy; M. Di Cristofano, Dept. of Information Engineering, Electronics, and Telecommunications, Sapienza University of Rome, Italy; F. Liporace, Medical Physics Department, Bambino Gesù Children's Hospital, IRCSS, Italy; M. Cavagnaro, Dept. of Information Engineering, Electronics, and Telecommunications, Sapienza University of Rome, Italy

09:20-09:40

RBF BASED ULTRASOUND ALGORITHM FOR GENERATION OF PRIOR INFORMATION IN MW BREAST IMAGING

S.M. Trudeau, University of Manitoba, Canada; V. Khoshdel, University of Manitoba, Canada; J. LoVetri, University of Manitoba, Canada

09:40-10:00

PRESERVATION OF THE MECHANICAL PROPERTIES OF MULTI MODAL TISSUE MIMICKING PHANTOMS

S. Di Meo, Università degli Studi di Pavia, Italy; D. Diaferia, Università degli Studi di Pavia, Italy; A. Cannatà, Università degli Studi di Pavia, Italy; G. Matrone, Università degli Studi di Pavia, Italy; M. Pasian, Università degli Studi di Pavia, Italy

10:00-10:20

MICROWAVE IMAGING EVALUATION OF PRIOR STRUCTURAL INFORMATION ON THE INVERSION-KERNEL BUILDING APPLY TO A BRAIN STROKE MONITORING SCENARIO

A.R. Masaquiza Caiza, Politecnico di Torino, Italy; M. Gugliermino, Politecnico di Torino, Italy; D.O. Rodriguez-Duarte, Politecnico di Torino, Italy; F. Vipiana, Politecnico di Torino, Italy

10:20-10:40

USING QUALITATIVE INVERSE SCATTERING TO CO-REGISTER MR IMAGES WITH A MW SYSTEM

M.T. Bevacqua, Università degli Studi Mediterranea di Reggio Calabria, Italy; M. Ambrosanio, University of Naples Parthenope, Italy; J. LoVetri, University of Manitoba, Canada; V. Pascazio, University of Naples Parthenope, Italy; T. Isernia, Università degli Studi Mediterranea di Reggio Calabria, Italy

11:00-11:20

A MILD DATA-DRIVEN APPROACH FOR BRAIN STROKE MICROWAVE IMAGING

A. Fedeli, University of Genoa, Italy; C. Estatico, University of Genoa, Italy; A. Randazzo, University of Genoa, Italy

11:20-11:40

GENERATION OF 3D MRI-INTENSITY BREAST IMAGES USING A CLASS CONDITIONAL LATENT DIFFUSION MODEL

N. Abharian, University of Manitoba, Canada; J. LoVetri, University of Manitoba, Canada; V. Khoshdel, University of Manitoba, Canada

11:40-12:00

MODEL ORDER ESTIMATION OF DEBYE DIELECTRIC SPECTRA: A NUMERICAL COMPARISON

R. Dima, University of Campania, Italy; M.A. Maisto, University of Campania, Italy; R. Solimene, University of Campania, Italy

12:00-12:20

DIFFERENTIAL PERMITTIVITY MODELING IN BIOLOGICAL PHANTOMS VIA WATER TEMPERATURE CONTROL

L. Cardinali, Politecnico di Torino, Italy; R. Aldana, Universitat Politecnica de Catalunya, Spain; D.O. Rodriguez-Duarte, Politecnico di Torino, Italy; J.A. Tobon Vasquez, Politecnico di Torino, Italy; F. Vipiana, Politecnico di Torino, Italy; L. Jofre-Roca, Universitat Politecnica de Catalunya, Spain

12:20-12:40

ADAPTIVE SKULL RECONSTRUCTION PROCEDURE FOR MICROWAVE IMAGING APPLICATIONS

A. Kovacevic, School of Electrical Engineering, University of Belgrade, Serbia; D. Ninkovic, School of Electrical Engineering, University of Belgrade, Serbia; M. Stevanovic, School of Electrical Engineering, University of Belgrade, Serbia

12:40-13:00

IMPLANTABLE RECONFIGURABLE FSS FOR WIRELESS PROTECTION OF IMPLANTABLE CARDIAC DEVICES IN THE ISM BAND

F. Lestini, University of Rome "Tor Vergata", Italy; F. Bassano, University of Rome "Tor Vergata", Italy; G. Marrocco, University of Rome "Tor Vergata", Italy; C. Occhiuzzi, University of Rome "Tor Vergata", Italy

14:20-14:40

MINIATURIZED DUAL-BAND IMPLANTABLE ANTENNA FOR CONTROLLED DRUG DELIVERY

Y. Ding, King's College London, United Kingdom; P. Kosmas, National Center for Scientific Research "Demokritos", Greece

14:40-15:00

BONE REGENERATION MONITORING USING ELECTROMAGNETIC IMAGING AND MAGNETIC SCAFFOLDS: ROLE OF THE ANTENNA ARRAY SIZING

E. Akbari Sekehravani, IREA-CNR, Italy; R. Palmeri, DIIES - Università Mediterranea di Reggio Calabria, Italy; L. Crocco, IREA-CNR, Italy; R. Scapaticci, CNR-IREA, Italy

15:00-15:20

PRECLINICAL TESTING PROCEDURE FOR ULTRA-WIDEBAND MICROWAVE BREAST SCANNER

A. Prokhorova, Technische Universität Ilmenau, Germany; B. Faenger, Jena University Hospital, Germany; I. Hilger, Jena University Hospital, Germany; M. Helbig, Technische Universität Ilmenau, Germany

15:20-15:40

SKIN-MIMICKING PHANTOM FOR NEAR-BODY ANTENNA CHARACTERIZATION

R. Rizzo, IETR, University of Rennes, France; G. Ruello, DIETI, University of Naples "Federico II", Italy; M. Zhadobov, IETR, University of Rennes, France; G. Sacco, IETR, University of Rennes, France

Thursday, September 11 - H 15:40-18:40 - room 4 Guglielmo

session 46 **ICEAA**

Fast and efficient solvers and stable discretizations

Organized by F. Andriulli
Chairs: F. Andriulli

15:40-16:00

NEAR-FIELD CURVED-BEAM RADIATION THROUGH RAY-CAUSTIC SYNTHESIS AT MICROWAVES AND MILLIMETER WAVES

F. Anfuso, University of Catania, Italy; A. U. Khan, University of Catania, Italy; G. Sorbello, University of Catania, Italy; S. C. Pavone, University of Catania, Italy

16:00-16:20

INVESTIGATION OF A FAST FOURIER TRANSFORM ACCELERATED INTERPOLATORY H^2-METHOD FOR THE ELECTRIC FIELD INTEGRAL EQUATION

D. Jukic, Universität Rostock, Germany; B. Hofmann, University of Southern California, United States; T.F. Eibert, Technische Universität München, Germany; S.B. Adrian, Universität Rostock, Germany

16:40-17:00

PRECONDITIONING OF MIXED SYSTEMS OF SURFACE INTEGRAL AND SURFACE DIFFERENTIAL EQUATIONS

E. Chernokozhin, Tel Aviv University, Israel; A. Boag, Tel Aviv University, Israel

17:00-17:20

STABLE SOLUTIONS OF TIME-DOMAIN INTEGRAL EQUATIONS FOR TRANSIENT ELECTROMAGNETIC PROBLEMS WITH BODIES OF REVOLUTION

S.R. Wang, Tongji University, China; S.J. He, Tongji University, China; M.S. Tong, Tongji University, China

17:20-17:40

FAST INVERSE DESIGN USING THE PRECOMPUTED NUMERICAL GREEN FUNCTION METHOD

J. Sun, University of Southern California, United States; C. Sideris, University of Southern California, United States

17:40-18:00

TOWARD THE DESIGN OF THE GLOBAL MULTI-TRACE VOLUME-SURFACE VECTOR-POTENTIAL INTEGRAL EQUATIONS IN INHOMOGENEOUS DIELECTRIC MEDIA

P. Olyslager, Ghent University, Belgium; H. Rogier, Ghent University, Belgium; K. Cools, Ghent University, Belgium

18:00-18:20

FULL WAVE INDOOR PROPAGATION MODELING BASED ON GENERAL GREEN'S FUNCTION METHOD OF MOMENTS

B. M. Kolundzija, WIPL-D d.o.o., Serbia; B. M. Ninkovic, WIPL-D d.o.o, Serbia; T. M. Milosevic, WIPL-D d.o.o, Serbia

18:20-18:40

ON THE USE OF GENERALIZED RWG BASIS FUNCTIONS FOR CURVATURE FIDELITY IN H-REFINEMENT METHODS

V.F. Martin, Universidad Rey Juan Carlos, Spain; L. Landesa, Universidad de Extremadura, Spain; J.L. Rodriguez, Universidad de Vigo, Spain; J.M. Taboada, Universidad de Extremadura, Spain; F. Vipiana, Politecnico di Torino, Italy

Thursday, September 11 - H 08:20-10:00 - room 5 Basile

session 47 **ICEAA**

Beam methods and phenomena in the frequency and time domains

Organized by T. Melamed
Chairs: T. Melamed

08:20-08:40

THE UWB PHASE-SPACE BEAM-SUMMATION EXPANSION IN A NON-UNIFORM BACKGROUND

E. Heyman, Tel Aviv University, Israel

08:40-09:00

REPRESENTATION OF ELECTROMAGNETIC FIELDS BY MEANS OF SPIN SPHERICAL WAVELETS

A. Chabory, ENAC, France; A. Quennelle, Formerly with ENAC lab, now with Thales Six GTS, France

09:00-09:20

NEW METHODS TO REDUCE ERRORS IN PRECISION POLARIMETRY

J. del Hoyo, J. Andres-Porras, A. Soria-Garcia, I.M. Diaz-Garcia, I. Gonzalez-Martinez, K.P. Soto-Gonzalez, J. Alda, L.M. Sanchez-Brea, Universidad Complutense de Madrid, Spain

09:20-09:40

FOCUSING BY LEAKY-WAVE BESSEL-BEAM LAUNCHERS: PRINCIPLES, DESIGN, AND APPLICATIONS

E. Negri, CNR - IMM Rome, Italy; S. Ventucci, Sapienza University of Rome - DIET, Italy; W. Fuscaldo, CNR - IMM Rome, Italy; P. Burghignoli, Sapienza University of Rome - DIET, Italy; A. Galli, Sapienza University of Rome - DIET, Italy

09:40-10:00

PULSED CURVED BEAM DESIGN

T. Melamed, Ben Gurion University of the Negev, Israel

Thursday, September 11 - H 10:00-11:40 - room 5 Basile

session 48 **ICEAA**

EM protection in intelligent transportation systems

Organized by Y. Wen
Chairs: Y. Wen

10:00-10:20

INVESTIGATION OF THE IMPACT OF CONSTANT MAGNETIC FIELD ON FIXED BALISE

T.M. Meng, B. Yingjie, G. Zhiqiang, L. Dong, D. Geng, CRSC Research & Design Institute Group Co., Ltd., China

10:20-10:40

APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN ELECTROMAGNETIC RESEARCH OF HIGH-SPEED MAGLEV TRAINS

S. Xiao, CRRC Qingdao Sifang Co., Ltd, China; Z.Q. Zhang, CRRC Qingdao Sifang Co., Ltd, China; Q.P. Feng, CRRC Qingdao Sifang Co., Ltd, China; Y.X. Liu, Beijing Jiaotong University, China; J.B. Zhang, Beijing Jiaotong University, China

11:00-11:20

AI-DRIVEN ADAPTIVE PORT SELECTION FOR FLUID ANTENNA MULTIPLE ACCESS

S.H. Fan, Beijing Jiaotong University, China; X.Y. Wang, Beijing Jiaotong University, China; Y.X. Liu, Beijing Jiaotong University, China; J.B. Zhang, Beijing Jiaotong University, China

11:20-11:40

MACHINE LEARNING ACCELERATED NASH EQUILIBRIUM OPTIMIZATION FOR WIRELESS NETWORK RESOURCE ALLOCATION

Q.C. Shi, Beijing Jiaotong University, China; Z.L. Yue, Beijing Jiaotong University, China; J. Ren, Beijing Jiaotong University, China

Thursday, September 11 - H 11:40-13:00 - room 5 Basile

session 49 **ICEAA**

Mathematical advances in electromagnetics

Organized by P.D. Smith, E. Vynogradova
Chairs: P.D. Smith, E. Vynogradova

11:40-12:00

HELICOIDAL MODES IN A COAXIAL LINE WHOSE CROSS-SECTION IS A REGULAR POLYGON

P.L.E. Uslenghi, University of Illinois Chicago, United States

12:00-12:20

WAVE PROPAGATION IN AN INHOMOGENEOUS DIELECTRIC SLAB CONTAINING TWO PLANE-PARALLEL LAYERS SEPARATED BY A GRAPHENE FILM

E. Smolkin, University of Gävle, Sweden; Y. Shestopalov, University of Gävle, Sweden

12:20-12:40

SCATTERING OF TM- AND TE-PLANE WAVES OBLIQUELY INCIDENT ON SLOTTED PEC CYLINDERS WITH SURFACES PARAMETERIZED BY THE SUPER-ELLIPSE EQUATION

E.D. Vinogradova, Macquarie University, Australia

12:40-13:00

REGULARIZED SOLUTION OF 2D SCATTERING FROM IMPEDANCE-LOADED CAVITIES: THE TE-CASE

P.D. Smith, Macquarie University, Australia; E.D. Vinogradova, Macquarie University, Australia

Thursday, September 11 - H 14:20-18:20 - room 5 Basile

session 50 **ICEAA**

Remote sensing techniques and models for monitoring the impact of natural events on the Earth system

Organized by G. De Franceschi, V. Romano, S. Scollo
Chairs: G. De Franceschi, V. Romano, S. Scollo

14:20-14:40

TOWARDS DETECTING THE AREA COVERED BY TEPHRA FALLOUT COMBINING GROUND-BASED AND SATELLITE-BASED SENSORS

L. Mereu, Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Bologna, Bologna, Italy; F. Romeo, Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Catania, Italy; M. Prestifilippo, Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Catania, Italy; S. Scollo, Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Catania, Italy

14:40-15:00

A FEASIBILITY STUDY ON OPPORTUNISTIC TROPOSPHERIC SENSING FOR METEOROLOGICAL AND GEOPHYSICAL APPLICATIONS USING MICROWAVE SATELLITE DOWNLINKS

F. Sapienza, University of Pisa, Department of Information Engineering, Italy; F. Giannetti, University of Pisa, Department of Information Engineering, Italy; V. Lottici, University of Pisa, Department of Information Engineering, Italy; E.M. Sciortino, University of Pisa, Department of Information Engineering, Italy; A. Piras, University of Pisa, Department of Information Engineering, Italy

15:00-15:20

RELATIVE SEA LEVEL RISE PROJECTIONS UP TO 2150 ALONG THE ITALIAN COASTS FROM GEODESY, HIGH RESOLUTION TOPOGRAPHY AND CLIMATIC PROJECTIONS

M. Anzidei, D. Trippanera, Istituto Nazionale di Geofisica e Vulcanologia, Italy; A. Bosman, IGAG CNR, Italy; C.A. Brunori, T. Alberti, A. Vecchio, Radboud University Nijmegen, The Netherlands, Italy; E. Serpelloni, C. Tolomei, F. Iacono, M. Bisson, Istituto Nazionale di Geofisica e Vulcanologia, Italy

15:20-15:40

LIGHTWEIGHT ARCHITECTURES FOR BINARY SEGMENTATION OF FRESH MUD DEPOSITS IN UAV IMAGERY

M. Guastella, Sapienza University, Italy; A. D'Alessandro, National Institute of Geophysics and Volcanology (INGV), Italy; A.F. Pisciotta, National Institute of Geophysics and Volcanology (INGV), Italy; R. Martorana, University of Palermo, Italy

15:40-16:00

INTEGRATING SATELLITE AND GROUND-BASED DATA FOR MONITORING VOLCANIC UNREST: THE 2021-2022 UNREST IN VULCANO

F. Spina, INGV-OE, Italy; G. Bilotta, INGV-OE, Italy; I.S. Diliberto, INGV, Italy; G. Ganci, INGV-OE, Italy

16:00-16:20

VOLCANIC ASH SIZE AND MASS ESTIMATED BY SATELLITE PASSIVE RADIOMETERS: A COMPARISON BETWEEN TWO RADIATIVE TRANSFER MODELS

F. Romeo, Istituto Nazionale di Geofisica e Vulcanologia, Italy; L. Mereu, Istituto Nazionale di Geofisica e Vulcanologia, Italy; S. Corradini, Istituto Nazionale di Geofisica e Vulcanologia, Italy; L. Guerrieri, Istituto Nazionale di Geofisica e Vulcanologia, Italy; S. Scollo, Istituto Nazionale di Geofisica e Vulcanologia, Italy

16:40-17:00

LEVERAGING COPERNICUS EMERGENCY CORE SERVICE PRODUCTS TO SUPPORT NATIONAL INSTITUTIONS IN EARTHQUAKE EMERGENCY MANAGEMENT

C. Casarotti, European Centre for Training and Research in Earthquake Engineering, Eucentre Foundation, Italy; I. E. Senaldi, European Centre for Training and Research in Earthquake Engineering, Eucentre Foundation, Italy

17:00-17:20

THE PEOS E-INFRASTRUCTURE PROTOTYPE: NATURAL HAZARD MONITORING THROUGH EARTH OBSERVATION FROM SPACE

C. Marcocci, E. Pica, M. Viola, N. Guglielmi, G. Sensale, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy; M. Spina, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy; C. Bignami, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy; F. Pardini, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy; V. Romano, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

17:20-17:40

THE ECONOMIC IMPACT OF IONOSPHERIC SCINTILLATIONS ON PRECISION AGRICULTURE IN BRAZIL: THE CASE OF SUGARCANE AND SOYBEAN INDUSTRIES

G. Abbati, Istituto Nazionale di Geofisica e Vulcanologia, Italy; S. Mainella, Istituto Nazionale di Geofisica e Vulcanologia, Italy; P. Vermicelli, Spacearth Technology s.r.l., Italy

17:40-18:00

NOWCASTING VOLCANIC ASH CLOUDS COMBINING DEEP LEARNING AND GEOSTATIONARY SATELLITE DATA

L. Basile, A. Cocuzza, Università di Catania, Catania, Italy; C. Corradino, Istituto Nazionale di Geofisica e Vulcanologia, Italy; S. Palazzo, Università di Catania, Italy; F. Torrisi, S. Cariello, G.S. Di Bella, A.B. Malaguti, C. Del Negro, Istituto Nazionale di Geofisica e Vulcanologia,Italy

18:00-18:20

RELAYING VOLCANIC PLUME MEASUREMENTS IN REAL TIME BY USING A BALLOON-BORNE MULTI-GAS AND PARTICLES SENSORS SYSTEM

S. Corradini, INGV-ONT, Italy; S. Marcuccio, University of Pisa, Space Systems Laboratory, Dept. of Civil and Industrial Engineering, Italy; R. Biondi, CIMA Foundation, Italy; F. Ciancitto, INGV-OE, Italy; A. Filippeschi, University of Pisa, Space Systems Laboratory, Dept. of Civil and Industrial Engineering, Italy; M. Gemignani, University of Pisa, Space Systems Laboratory, Dept. of Civil and Industrial Engineering, Italy; G. Giudice, INGV-OE, Italy; L. Guerrieri, INGV-ONT, Italy; L. Lambertucci, INGV-ONT, Italy; I. Marsili, University of Pisa, Space Systems Laboratory, Dept. of Civil and Industrial Engineering, Italy; L. Merucci, INGV-ONT, Italy; C. Naranjo, INGV-ONT, Italy; S. Scollo, INGV-OE, Italy; D. Stelitano, INGV-ONT, Italy

FRIDAY 12

Friday, September 12 - H 08:20-10:40 - room 1 Federico

session 51 **ICEAA**

Advances in time and frequency domain methods

Organized by F. Erden, H.A. Ülkü, E. Basaran
Chairs: F. Erden, H.A. Ülkü, E. Basaran

08:20-08:40

EVALUATION OF THE TIME DOMAIN EQUIVALENT EDGE CURRENTS RADIATION INTEGRAL FOR NURBS EDGES

A. Aktepe, Aselsan Inc., Turkey; H. A. Ulku, Yeditepe University, Turkey

08:40-09:00

FAST MULTIPOLE METHOD IMPLEMENTATION OF EXTENDED BOUNDARY CONDITION METHOD FOR WAVE SCATTERING BY DIELECTRIC CYLINDERS

M.E. Hatipoglu, Gebze Technical University, Turkey; F. Dikmen, Gebze Technical University, Turkey

09:00-09:20

EXTENDED BOUNDARY CONDITION METHOD FOR WAVE SCATTERING BY DIELECTRIC CYLINDERS IN PLANAR LAYERED MEDIUM

M.E. Hatipoglu, Gebze Technical University, Turkey; F. Dikmen, Gebze Technical University, Turkey; A. Alparslan, Trakya University, Turkey

09:20-09:40

3-LEVEL DISCRETE COMPLEX IMAGES METHOD FOR THE FAST AND ACCURATE ANALYSIS OF 2-D LAYERED GEOMETRIES

A. Alparslan, Trakya University, Turkey

09:40-10:00

ZENNECK SURFACE WAVE EXCITATION IN FDTD METHOD

E. Basaran, Yeditepe University, Turkey; H. A. Ulku, Yeditepe University, Turkey; A. A. Ergin, Bahcesehir University, Turkey

10:00-10:20

A NEW LOOK AT ANALYTICAL ABSORBING BOUNDARY CONDITIONS IN THE FDTD METHOD

T. P. Stefanski, Gdansk University of Technology, Poland; J. Gulgowski, University of Gdansk, Poland; K.L. Tsakmakidis, National and Kapodistrian University of Athens, Greece

10:20-10:40

GENERALIZED REFORMULATION OF MAXWELL'S EQUATIONS FOR TIME-DOMAIN ELECTROMAGNETIC SIMULATIONS

F. Erden, National Defence University, Turkish Naval Academy, Turkey

Friday, September 12 - H 11:00-13:00 - room 1 Federico

session 52 **ICEAA**

Electromagnetic measurements

Chairs: S.G. Ballaera, M. Zahner

11:00.11:20

TIME-FREQUENCY DOMAIN FILTERING METHOD FOR OPTICAL DOWN-CONVERSION ELECTRIC FIELD MEASUREMENT

Q.W. Zhang, Beihang University, China; X.Y. Zhang, Beihang University, China; Y.H. Song, Beihang University, China; Y. Yang, Beihang University, China; S.G. Xie, Beihang University, China

11:20-11:40

A SINGLE-CHANNEL BLIND SOURCE SEPARATION METHOD FOR DOWN-CONVERTED ALIASED SIGNALS BASED ON TIME-FREQUENCY MAP PREPROCESSING

X.Y. Zhang, Beihang University, China; Q.W. Zhang, Beihang University, China; M.L. Yang, Beihang University, China; Y.H. Song, Beihang University, China; Y. Yang, Beihang University, China; S.G. Xie, Beihang University, China

11:40-12:00

SENSOR NETWORK FOR THE ASSESSMENT OF SPATIOTEMPORAL DYNAMICS OF THE ENVIRONMENTAL EXPOSURE OF ADAPTIVE ANTENNAS

M. Zahner, Fields at Work GmbH, Switzerland; D. Haas, Grolimund + Partner AG, Switzerland; T. Ziegler, Grolimund + Partner AG, Switzerland; J. Fröhlich, Fields at Work GmbH, Switzerland

12:00-12:20

A UAV-BASED FAR-FIELD MEASUREMENT SYSTEM FOR HF ANTENNAS

J.L. He, Southeast University, China; Z.X. Cao, Southeast University, China

12:20-12:40

HIGH FREQUENCY CHARACTERIZATION OF ULTRA-THIN TRANSPARENT FILMS

B.H. Mohamed, Technical University of Berlin, Germany; W. Keusgen, Technical University of Berlin, Germany; M. Widmaier, University of Stuttgart, Germany; H. Bauer, University of Stuttgart, Germany; N. Fruehauf, University of Stuttgart, Germany

12:40-13:00

SUSTAINABLE BIOCHAR COATED DRYWALL WITH ELECTROMAGNETIC SHIELDING PROPERTIES

G. Ruscica, Università di Bergamo, Italy; S.G. Ballaera, Politecnico di Torino, Italy; I. Natali Sora, Università di Bergamo, Italy; P. Savi, Politecnico di Torino, Italy

Friday, September 12 - H 08:20-12:40 - room 2 Enrico

session 53 **ICEAA**

Reconfigurable Metasurfaces: Theory, Design and Applications

Organized by G. Manara, F. Costa
Chairs: G. Manara, F. Costa

08:20-08:40

TOWARD RECONFIGURABLE PLASMA-BASED METASURFACES: EXPERIMENTAL CHARACTERIZATION VIA ELECTRICAL AND WAVEGUIDE MEASUREMENT TECHNIQUES

M. Barbuto, Roma Tre University, Italy; A. Monti, Roma Tre University, Italy; S. Vellucci, Niccolò Cusano University, Italy; M.G.H. Alijani, Roma Tre University, Italy; T. Giagnacovo, Alma Sistemi srl, Italy; G. Laghi, University of Bologna, Italy; F. Capelli, University of Bologna, Italy; R. Filippone, Alma Sistemi srl, Italy; G. Di Iorio, Alma Sistemi srl, Italy; A. Di Iorio, Alma Sistemi srl, Italy; M. Gherardi, University of Bologna, Italy; F. Bilotti, Roma Tre University, Italy; A. Toscano, Roma Tre University, Italy

08:40-09:00

EFFECT OF PHASE QUANTIZATION ON SHAPED NEAR-FIELD PATTERNS IN RECONFIGURABLE INTELLIGENT SURFACE

A.F. Vaquero, Universidad de Oviedo, Spain; S.M. Feito, Universidad de Oviedo, Spain; M. Arrebola, Universidad Politécnica de Madrid, Spain

09:00-09:20

SYSTEM-LEVEL SIMULATIONS FOR RIS APPLICATIONS IN REALISTIC THZ-COMMUNICATIONS SCENARIOS

C. Herold, Technische Universität Braunschweig, Germany; L. H. W. Loeser, Technische Universität Braunschweig, Germany; B. K. Jung, Technische Universität Braunschweig, Germany; G. Jensen, Technische Universität Braunschweig, Germany; T. Kürner, Technische Universität Braunschweig, Germany

09:20-09:40

RECONFIGURABLE METASURFACES FOR SATCOM AND 5G.

S. Maci, University of Siena, Italy

09:40-10:00

SUB-100 MS RESPONSE TIMES IN LIQUID CRYSTAL RECONFIGURABLE INTELLIGENT SURFACES VIA THE DELAY-LINE ARCHITECTURE

A. Jiménez-Sáez, Technical Universiy of Darmstadt, Germany; R. Neuder, Technical University of Darmstadt, Germany; M. Späth, Technical University of Darmstadt, Germany; M. Schüßler, Technical University of Darmstadt, Germany

10:00-10:20

GREEN'S FUNCTION OF METASURFACE-ASSISTED CAVITIES

A. Torabi, University of Surrey, United Kingdom; G. Gradoni, University of Surrey, United Kingdom

10:20-10:40

MODAL ANALYSIS OF ALL-METAL WAVEGUIDES WITH GLIDE-SYMMETRIC LOADING

G. Flaviani, Sapienza University, Italy; Y. Tong, Sorbonne University, France; B. Ambrogi, Sapienza University, Italy; G. Valerio, Sorbonne University, Italy; D. Comite, Sapienza University, Italy

11:00-11:20

DESIGN OF LOW-PROFILE SCANNING TRANSMITARRAYS BY VIRTUAL FOCUS SYNTHESIS

A. Tummolo, Institut d'Électronique et des Technologies du numérique (IETR - UMR CNRS 6164), France; O. Koutsos, F. Foglia Manzillo, A. Clemente, CEA, Leti, Univ. Grenoble Alpes, Grenoble, France; R. Sauleau, Institut d'Électronique et des Technologies du numérique (IETR - UMR CNRS 6164), France

11:20-11:40

SPACE-TIME MODULATED METASURFACE-BASED EM TAGS FOR CODING CAPACITY ENHANCEMENT

Z. H. Ning, Nanjing University of Science and Technology, China; Y. W. Wang, Nanjing University of Science and Technology, China; M. Li, Nanjing University of Science and Technology, China; D. Z. Ding, Nanjing University of Science and Technology, China

11:40-12:00

RECONFIGURABLE ORIGAMI NONLOCAL SCATTERER FOR ANALOG COMPUTING

E. Wu, Zhejiang University, China; H. Yang, Zhejiang University, China; X. Li, Zhejiang University, China; B. Zhou, Zhejiang University, China; H. Chen, Zhejiang University, China; Z. Wang, Zhejiang University, China

12:00-12:20

MODAL ANALYSIS AND DEMONSTRATION OF INHOMOGENEOUS RECONFIGURABLE METASURFACE-LOADED BEAM SCANNING VERTICAL-POLARIZED ANTENNAS

M. Bie, Z.H. Jiang, Southeast University, China

12:20-12:40

THEORETICAL EVALUATION OF THE COMPLEX SCATTERED FLOQUET HARMONICS IN THE CANONICAL PROBLEM OF ANOMALOUS REFLECTION

F. Giusti, University of Siena, Italy; E. Martini, University of Siena, Italy; S. Maci, University of Siena, Italy; M. Albani, University of Siena, Italy

Friday, September 12 - H 08:40-10:40 - room 3 Angelica

session 54 **ICEAA**

Method of moments for array-related problems

Organized by C. Craeye, M. Botha
Chairs: C. Craeye, M. Botha

08:40-09:00

DOMAIN DECOMPOSITION ANALYSIS OF OPEN-CAVITY-BASED ARRAY ELEMENTS — ROADMAP TOWARD ANALYZING LARGE-SCALE REFLECTARRAYS AND RECONFIGURABLE INTELLIGENT SURFACES

R. Maaskant, Chalmers University of Technology, Sweden; D. Lin, Chalmers University of Technology, Sweden; F. Maxharraj, Chalmers University of Technology, Sweden; M.G. Aram, Chalmers University of Technology, Sweden; L. Manholm, Ericsson Research, Sweden; P. Aghdam, Ericsson Research, Sweden; G. Gerini, TNO – Optics Department, Netherlands; T. Svensson, Chalmers University of Technology, Sweden; M.V. Ivashina, Chalmers University of Technology, Sweden

09:00-09:20

A CALDERON PRECONDITIONER FOR LARGE GROUND PLANES WITH ARBITRARY CONTOURS

A. Abazi, Université Catholique de Louvain (UCLouvain), Belgium; J. Cavillot, Université Catholique de Louvain (UCLouvain), Belgium; C. Craeye, Université Catholique de Louvain (UCLouvain), Belgium

09:20-09:40

STUDY OF FAR-FIELD PIVOTS IN THE ACA ALGORITHM WITH ARRAY ANALYSIS APPLICATION

K. Sewraj, Université des Mascareignes, Mauritius; M.M. Botha, Stellenbosch University, South Africa

09:40-10:00

INVESTIGATING ACTIVE IMPEDANCE IN ARRAYS WITH VARYING SIZE USING ACCELERATED MOM

H. Hultin, KTH Royal Institute of Technology & Saab AB, Sweden; L. Åkerstedt, KTH Royal Institute of Technology, Sweden; B.L.G. Jonsson, KTH Royal Institute of Technology, Sweden

10:00-10:20

PRELIMINARY ARRAY ANALYSIS RESULTS WITH A NEW SEMI-REDUCED SOLVER CONCEPT

A.S. Conradie, Stellenbosch University, South Africa; P.I. Cilliers, Stellenbosch University, South Africa; M.M. Botha, Stellenbosch University, South Africa

10:20-10:40

FAST SCATTERING ANALYSIS OF LARGE OPEN-CAVITY BASED REFLECTARRAYS USING A HYBRID METHOD OF MOMENT AND PHYSICAL OPTICS APPROACH

D. Lin, Chalmers University of Technology, Sweden; L. Manholm, Ericsson Research, Sweden; O. Talcoth, Ericsson Research, Sweden; S. Agneessens, Ericsson Research, Sweden; P. Aghdam, Ericsson Research, Sweden; R. Maaskant, Chalmers University of Technology, Sweden

Friday, September 12 - H 11:00-13:00 - room 3 Angelica

session 55 **ICEAA**

Numerical methods for transient wave scattering

Organized by A. Zuccotti, K. Cools
Chairs: A. Zuccotti, K. Cools

11:00-11:20

COMBINING FDTD AND KIRCHHOFF INTEGRATION WITH BACK-PROPAGATION FOR REFLECT-ARRAYS DESIGN

G. Junkin, The Autonomous University of Barcelona, Spain

11:20-11:40

IMPACT OF TIME STEP SCALING IN TDIE MOT-JVIE FOR METASURFACE ANALYSIS

S. Kumar, Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven, AP, Netherlands; P.W.N. Van Diepen, Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven, AP, Netherlands; G. Gerini, Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven & Optics Department, Netherlands Organization for Applied Scientific Research (TNO), Delft, Netherlands; M.C. Van Beurden, Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven, AP, Netherlands

11:40-12:00

MULTI-CLASS LOCAL TIME-STEPPING STRATEGY FOR MULTI-METHODS/ MULTI-DOMAINS SCHEMES TO SOLVE TIME DOMAIN MAXWELL'S EQUATIONS

X. Ferrière, L.M. Mazzolo, N.A. Messai, ONERA, France;

12:00-12:20

TLM METHOD WITH NON-ORTHOGONAL HEXAHEDRAL MESHING WITH UNCONDITIONAL STABILITY

A. Ijjeh M. Cueille, A. Debard, J. Dubard, LEAT laboratory, university of cote d'azur, France; M. NEY, IMT-atlantique/Lab-STICC, France

12:20-12:40

EXACT EVALUATION OF TD-BEM MATRIX ENTRIES FOR SCALAR WAVE SCATTERING OVER MESHES CONTAINING PARALLEL ENTITIES

A. Zuccotti, Ghent university, Belgium; K. Cools, Ghent university, Belgium

12:40-13:00

A STUDY ON ELECTROMAGNETIC TRANSIENT ANALYSES BASED ON FAST INVERSE LAPLACE TRANSFORM AND DISCRETE INVERSE FOURIER TRANSFORM

K. Watanabe, Fukuoka Institute of Technology, Japan

Friday, September 12 - H 08:20-09:40 - room 4 Guglielmo

session 56 **ICEAA**

Modeling and characterization of thin film, ferroelectric and phase-change materials for RF devices

Organized by L. Pierantoni, D. Mencarelli
Chairs: L. Pierantoni, D. Mencarelli

08:20-08:40

MIM DIODES BASED ON DIELECTRIC HFO2 AND ZRO2: A COMPARATIVE ATOMISTIC ANALYSIS

E. Pavoni, E. Mohebbi, M. Petroselli, D. Mencarelli, L. Pierantoni, P. Stipa, Università Politecnica delle Marche, Italy; C.H. Joseph, M. Aldrigo, National Institute for Research and Development in Microtechnologies, Romania; E. Laudadio, Università Politecnica delle Marche, Italy

08:40-09:00

ELECTRONIC PROPERTIES OF BARE AND VANADIUM-DOPED MONOLAYER OF WSE2: AN ATOMISTIC STUDY

E. Laudadio, E. Mohebbi, M. Petroselli, D. Mencarelli, L. Pierantoni, P. Stipa, E. Pavoni, Università Politecnica delle Marche, Italy

09:00-09:20

SPRAY-DEPOSITED GRAPHITE NANOPLATELET METASURFACES FOR CHIPLESS WIRELESS STRAIN SENSING

F. Cilento, National Research Council of Italy, Italy; P. Zarafshani, F. Esposito, A. Iadiccio, Department of Engineering, University of Naples "Parthenope", Italy; L. Zappelli, D. Mencarelli, L. Pierantoni, Università Politecnica delle Marche, Italy; M. Giordano, National Research Council of Italy, Italy

09:20-09:40

MULTIPHYSICS MODELING OF SPIN DIODE UNDER THE SIMULTANEOUS EXCITATION OF SPIN TRANSFER TORQUE AND STRAIN

R. Moukhader, Università politecnica delle Marche, Italy; D. Mencarelli, Università politecnica delle Marche, Italy; L. Pierantoni, Università politecnica delle Marche, Italy; A. Giordano, Università degli studi di Messina, Italy; G. Finocchio, Università degli studi di Messina, Italy

Friday, September 12 - H 09:40-13:00 - room 4 Guglielmo

session 57 **IEEE APWC**

Wireless communications

Chairs: C. M. Andras, D. Lee

09:40-10:00

MOS-BASED ANALYSIS OF AUDIO CODEC PERFORMANCE IN SIMULATED 5G NETWORKS

J. J. Abularach Arnez, Sidia Institute of Science and Technology, Brazil; W. Acioli e Silva, Sidia Institute of Science and Technology, Brazil; G. H. Ramos e Silva, Sidia Institute ofScience and Technology, Brazil; M. G. Lima Damasceno, Sidia Institute of Science and Technology, Brazil; M. Dalvino Marques, Sidia Institute of Science and Technology, Brazil

10:00-10:20

ANALYSIS OF SIGNAL COVERAGE AND THROUGHPUT PERFORMANCE WITH BEAM PATTERN VARIATIONS IN PRIVATE 5G BASE STATION ANTENNAS FOR RAILWAY APPLICATIONS

D. Lee, Korea Railroad Research Institute, Korea, Republic of Korea; I. Byun, Korea Railroad Research Institute, Republic of Korea ; R. Jeong, Korea Railroad Research Institute, Republic of Korea

10:20-10:40

MASSIVE MIMO IN 5G: CAPACITY TRADE-OFFS BETWEEN OPEN LOOP AND CLOSED LOOP MIMO

C. M. Andras, G. Barb, M. Otesteanu, Universitate Politehnica Timisoara, Romania

11:00-11:20

COMPARATIVE ANALYSIS OF MULTIPLE ACCESS TECHNIQUES: NOMA VS OMA FOR 5G NETWORKS

F. Danuti, Politehnica University Timisoara, Romania; A.M. Cismas, Politehnica University Timisoara, Romania; M. Laus, Politehnica University Timisoara, Romania; G.S. Martin, Politehnica University Timisoara, Romania; G. Barb, Politehnica University Timisoara, Romania

11:20-11:40

COMPARATIVE ANALYSIS OF BATTERY CONSUMPTION IN 5G AND 4G NETWORKS FOR VIDEO STREAMING

C.M. Andras, D. Musteata, R. Neag, Continental Engineering Services, Romania; G. Barb, Universitatea Politehnica Timisoara , Romania

11:40-12:00

RCS SEQUENCE PREDICTION FOR MULTIPLE SCATTERERS BASED ON CHARACTERISTIC MODES

J.M. Shi, Nanjing University of Science and Technology, China; J.H. Gu, Nanjing University of Science and Technology, China; Z.Y. Wang, Nanjing University of Science and Technology, China; C.F. Wang, Nanjing University of Science and Technology, China; D.Z. Ding, Nanjing University of Science and Technology, China

12:00-12:20

VOICE OVER NEW RADIO (VONR) AND SIP-KAMAILIO SERVER: ASSESSING VOICE PERFORMANCE WITH SOFTWARE-DEFINED RADIO (SDR)

J. J. Abularach Arnez, Sidia Institute of Science and Technology, Brazil; W. Acioli e Silva, Sidia Institute of Science and Technology, Brazil; M. G. Lima Damasceno, Sidia Institute of Science and Technology, Brazil; F. Falcao de Souza Oliveira, Sidia Institute of Science and Technology, Brazil; G. H. Ramos e Silva, Sidia Institute of Science and Technology, Brazil; M. Dalvino Marques, Sidia Institute of Science and Technology, Brazil

12:20-12:40

A HIGH-EFFICIENCY 10 W GAN HEMT POWER AMPLIFIER OPTIMIZED BY GRAVITATIONAL SEARCH ALGORITHM FOR WIRELESS COMMUNICATION

M.S. Soruri, University of Birjand, Iran; M.F. Forouzanfar, University of Birjand, Iran; A.G. Gulotta, University of Palermo, Italy; L.M. Mendola, University of Palermo, Italy; H.Z. Zakeri, Amirkabir University of Technology, Iran, Islamic Republic of; P.L. Livreri, University of Palermo, Italy

12:40-13:00

IMPROVING RADIO-OVER-FIBER SYSTEMS USING MODULATION INSTABILITY PHENOMENON FOR SATELLITE COMMUNICATION APPLICATION

H. Zakeri, Amirkabir University of Technology, Iran, Islamic Republic of; R. Azizpour, Amirkabir University of Technology, Iran, Islamic Republic of; G. Moradi, Amirkabir University of Technology, Iran, Islamic Republic of; M. Alibakhshikenari, University of Rome "Tor Vergata", Italy; I. Huynen, Universite Catholique de Louvain, Belgium; P. Livreri, University of Palermo, Italy; M. Soruri, University of Birjand, Iran, Islamic Republic of; L. Kouhalvandi, Dogus University, Turkey; T. Saber, University of Galway, Ireland

Friday, September 12 - H 08:20-09:40 - room 5 Basile

session 58 **ICEAA**

Advanced electromagnetic technologies for biomedical applications

Organized by T. Nagaoka
Chairs: T. Nagaoka

08:20-08:40

MINIMIZING LATERAL HEATING SPREAD IN MICROWAVE SURGICAL ENERGY DEVICES USING WAVEGUIDE STRUCTURES

T. Nishidate, Chiba University, Japan; K. Saito, Chiba University, Japan

08:40-09:00

HEATING EXPERIMENT OF BILATERAL KNEE HEATING SYSTEM FOR THERMAL REHABILITATION

Y. Shindo, Toyo University, Japan; H. Taoda, Graduate School of Toyo University, Japan

09:00-09:20

EFFICIENT ASSESSMENT OF WHOLE-BODY EXPOSURE TO BEAMS FROM MM-WAVE BASE STATIONS USING LOW-RANK APPROXIMATION

Y. Kushiyama, National Institute of Information and Communications Technology, Japan; T. Nagaoka, National Institute of Information and Communications Technology, Japan

09:20-09:40

EXPOSURE CHARACTERIZATION OF A SPATIALLY SYNTHESIZED 60 GHZ SYSTEM FOR LOCALIZED MILLIMETER-WAVE IRRADIATION AT MULTIPLE POINTS ON HUMAN SKIN

T. Hikage, Hokkaido University, Japan; S. Suzuki, Hokkaido University, Japan; H. Masuda, Kurume University School of Medicine, Japan; T. Ishitake, Kurume University School of Medicine, Japan; K. Li, University of Electro-Communications, Japan; A. Nagai, Aichi Gakuin University, Japan

final program

Friday, September 12 - H 09:40-13:00 - room 5 Basile

session 59 **ICEAA**

Antennas

Chairs: Y.W. Chen, P. Pinho

09:40-10:00

A 5.8 GHZ ANTENNA RADIATION PATTERN WITH FOUR-LEAF CLOVER FOR VEHICULAR COMMUNICATIONS AND SENSING

V.U. Oliveira, Instituto de Telecomunicações, Portugal; A.K. Baghel, Instituto de Telecomunicações, Portugal; P. Pinho, Instituto de Telecomunicações, Portugal

10:00-10:20

A WIDEBAND WIDE-ANGLE SCANNING DUAL-POLARIZED PHASED ARRAY ANTENNA BASED ON ASYMMETRIC ORTHOMODE TRANSDUCER

J.Y. Tan, Key Laboratory of All Optical Network and Advanced Telecommunication Network of MOE Beijing Jiaotong University, China; Y.J. Li, Key Laboratory of All Optical Network and Advanced Telecommunication Network of MOE Beijing Jiaotong University, China; Z.H. Li, Key Laboratory of All Optical Network and Advanced Telecommunication Network of MOE Beijing Jiaotong University, China; J.H. Wang, Key Laboratory of All Optical Network and Advanced Telecommunication Network of MOE Beijing Jiaotong University, China

10:20-10:40

INVERSE PROBLEMS FOR REFLECTOR SYSTEMS

E. Hasanoglu, Isik University, Turkey

11:00-11:20

MILLIMETER-WAVE ELLIPSE ANTENNA FOR 5G APPLICATIONS

A. A. Alshehri, KACST, Saudi Arabia; G. H. Alyami, KACST, Saudi Arabia; H. N. Shaman, KACST, Saudi Arabia

11:20-11:40

ANALYSIS AND DESIGN OF RECONFIGURABLE GRIN LIQUID CRYSTAL LENS.

B.H. Mohamed, Technical University of Berlin, Germany; J.M. Gispets, Technical University of Berlin, Germany; W. Keusgen, Technical University of Berlin, Germany

11:40-12:00

FREQUENCY-AGILE SUPER-DIRECTIVE PARASITIC ANTENNA ARRAY DESIGN

A. Touhami, CEA-Leti, France; M. Jadid, CEA-Leti, France; C. Delaveaud, CEA-Leti, France

12:00-12:20

KAPTON BASED 1X8 FLEXIBLE MICROSTRIP ANTENNA ARRAY AT KA-BAND

Z.Q. Wang, University of Sheffield, United Kingdom; S. Khamas, University of Sheffield, United Kingdom; R. Saad, University of Sheffield, United Kingdom

12:20-12:40

BEYOND HANNAN'S LIMIT ON EMBEDDED ELEMENT EFFICIENCY IN DENSE ARRAYS: TRADE-OFF BETWEEN DIRECTIVITY AND EFFICIENCY

Y.w. Chen, University of Siena, Italy; S. Maci, University of Siena, Italy

12:40-13:00

DESIGN AND IMPLEMENTATION OF A DIELECTRIC ROD USING 3D PRINTING FOR ANTENNA GAIN OPTIMIZATION

S. Alvarez, Pontificia Universidad Católica del Perú, Peru; H. J. Martínez, Pontificia Universidad Católica del Perú, Peru; M. A. Yarlequé, Pontificia Universidad Católica del Perú, Peru

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