ICEAA/IEEE APWC committees

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P. Russer, Germany
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G. Vironé, Italy
Y. Wen, China
W. Wiesbeck, Germany
D. R. Witton, USA
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-third edition of ICEAA (International Conference on Electromagnetics in Advanced Applications), and to the eleventh 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.

These Conferences together have a wide scope, which includes all kinds of advanced applications in Electromagnetics and new technology developments. Broad areas are covered, ranging from Electromagnetic Selective Structures to Radio Telescopes and Radio Astronomy Systems, from Electromagnetic Compatibility to Nonlinear Media, Resonances and Inverse Problems, from Antennas, Propagation, and Components Technologies to Radar Cross Section and Asymptotic Techniques, from Electromagnetic Applications to Biomedicine to Computational Electromagnetics, from Wireless Communications to Metamaterials and Metasurfaces.

The two conferences altogether feature 22 sessions including 12 special sessions organized by renowned experts. The ICEAA 2022 Conference program consists of 19 sessions including 11 Special Sessions; the IEEE APWC 2022 Conference program consists of 3 sessions including one Special Session. About 186 papers are scheduled, out of the 257 submitted. As in previous editions, invited papers will be presented at the two Conferences, giving recent information on the state of the art and new technologies.

We also welcome two IEEE AP-S Distinguished Lecturers, Prof. Stefano Maci, University of Siena, Italy, and Prof. David B. Davidson, Curtin University, Perth, Western Australia, who will be presenting plenary lectures at the Conferences.

The conferences are technically sponsored by Stellenbosch University, South Africa, by the Politecnico di Torino, Italy, and by the University of Illinois at Chicago, USA, with the principal co-sponsorship of the IEEE Antennas and Propagation Society and the technical co-sponsorship of the International Union of Radio Science (URSI). We gratefully acknowledge financial sponsorship by the South Africa National Convention Bureau (SANCB), which is a business unit of South African Tourism, the official national marketing agency of the South African government, as well as a number of industrial exhibitors.

The Conferences are held at the Southern Sun Cape Sun hotel and conference centre. The hotel lies in the centre of the Cape Town CBD, and is complemented by spectacular views over Table Mountain, Robben Island, Table Bay and the striking Green Point Stadium. It is ideally located as a base for visiting the many attractions in Cape Town and environs.

We look forward to seeing you in Cape Town in September.

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

Matthys M. Botha
Chairman of the ICEAA - IEEE APWC 2022 Local Organizing Committee
The twenty-third edition of the International Conference on Electromagnetics in Advanced Applications (ICEAA 2022), and the eleventh edition of the IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications (IEEE-APWC 2022) will take place jointly on 5–9 September 2022 in Cape Town, South Africa, in a hybrid format in light of the global mass COVID-19 vaccination campaigns. The conferences are technically sponsored by Stellenbosch University, by the Politecnico di Torino, and by the University of Illinois at Chicago. The conferences consist of invited and contributed papers, and share a common organization, registration fee, submission site, workshops and short courses, banquet, and social events. Summaries may be submitted to the IEEE Xplore Digital Library.

The proceedings of the ICEAA – IEEE APWC 2022 conferences will be submitted to the Xplore Digital Library. Please, Access the Conference Proceedings for the former editions by using the following links:
https://ieeexplore.ieee.org/xpl/conhome/1001761/all-proceedings
https://ieeexplore.ieee.org/xpl/conhome/1000032/all-proceedings

**DATES AND LOCATION**

The conference (combined ICEAA and IEEE APWC) will be held from the 5th to 9th of September 2022, at the Southern Sun Cape Sun Hotel, Strand Street, Cape Town, South Africa. When driving from Cape Town International Airport (CPT), take the N2 to Cape Town. Turn left on Newmarket Street, which becomes Strand Street, and follow until the hotel is reached on the left side.

**OFFICIAL LANGUAGE**

The official language will be 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 IEEE APWC conferences share a common organization, registration fee, submission site and social events. The registration fee varies depending on number of papers presented, IEEE affiliation, South African affiliation, and early or regular time of registration. 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, in order for the paper to be included in the technical program. The registration fee includes attendance to all sessions, luncheons and coffee breaks, welcome reception, banquet, and access to the online portal (see below).

Pre-paid accompanying person fees of ZAR600.00 (±30,00 Euro) and ZAR1000.00 (±60,00 Euro) apply only for the welcome reception and banquet, respectively. On-site registration will only be allowed in case of pre-arrangement with the conference secretariat (contact details above).

**ON SITE REGISTRATION DESK**

A registration desk will be located in front of the Franschoek Room, across the VOC room entrances at the conference centre on the hotel's 3rd floor. It will be open to pre-registrants, accompanying persons and late registrants to pick up conference materials, on Monday 7:00 – 15:30, and Tuesday through Thursday 8:00 – 15:30.

**COVID-19 PROTOCOLS**

South Africa has experienced many waves, just as in the rest of the world. Recent reports indicate that 98% of the adult population has some form of antibodies. Leading vaccines have been widely available since mid-2021. As of July 2022, no Covid related restrictions are in place. Specifically, masks are not required and there are no restrictions on large gatherings. The hospitality industry is fully operational and eager to attract guests. No Covid related requirements apply at South African ports of entry.

For the latest regulations consult https://www.southafricavisa.com/travel-restrictions/.

For those requiring a Covid test to travel back home, various local pathology labs can be consulted. Tests are very affordable by international standards. Having provided this information, it remains the traveler’s own responsibility to be informed of the prevailing regulations at the time of travel.

**HYBRID FORMAT, STREAMING & ONLINE PORTAL**

A hybrid format will be followed, whereby the conference can be attended in person or virtually. Registrants have to indicate their mode of attendance at the time of registration. Video camera feeds from all meeting rooms for the whole technical program will be live-streamed and videos of each presentation will be available during the conference and for a limited time afterwards, all via the online portal. The online portal link will be sent to all registrants ahead of the conference and also published at http://www.iceaa-offshore.org/.

Scheduled presentations will either be presented in person or virtually, according to the presenter’s selected mode of attendance, when registering for the conference. Pre-recorded videos will be required from all presenters (both in-person and virtual). For virtual presentations, the default procedure is to play the pre-recorded video in the meeting room at the scheduled time, with the presenter available online for questions afterwards, via the custom conferencing platform. Virtual presenters may also elect to present live by video link (screen sharing). In case of technical problems with the latter, the presentation format will revert back to playing the video. Detailed information on procedures for virtual presentations will be communicated to the virtual presenters ahead of time per email by the conference secretariat. Virtual attendance cannot be changed to in-person attendance.
MOBILE APP & MEETING HUB
A mobile app will be available for the conference, to share the program and to facilitate virtual interaction via the Meeting Hub feature, whereby registrants can search for other registrants, request connections, and engage with voice calls, video calls, text messages chats and scheduled video meetings. Directions to install the app will be emailed by the conference secretariat to all registrants.

AUDIOVISUAL EQUIPMENT
For in-person presentations each meeting room will be equipped with a notebook computer. Other equipment will be available only upon written request to the Organizing Committee, to be received by August 19. The presenting authors will not be allowed to use their personal computer for presentation; only the computer of the meeting room can be used for presentation.

MEALS AND REFRESHMENTS
Coffee breaks and luncheons are included in the registration fee for all full registrants. Luncheons will be served in the foyer in front of the VOC rooms on the 3rd floor.

WELCOME RECEPTION
A welcome function will be held on Monday evening, 5th September, starting at 17:30, at the conference centre on the hotel’s 3rd floor, for all delegates and registered accompanying persons that indicated attendance.

BANQUET
The banquet/gala dinner will be held on Wednesday evening, 7th September at The Restaurant at Clos Malverne in the Stellenbosch Winelands, for all delegates and registered accompanying persons that indicated attendance. Bus transportation will depart at 16:45, from outside the hotel’s lobby.

MESSAGES
During the Conference, messages may be directed to participants via email (iceaa22@iceaa.polito.it or leandrid@consultus.co.za) and be posted at the notice board at the registration desk and via the app. Delegates can also make contact with each other via the mobile app.

HOTEL ACCOMMODATIONS
A number of rooms in the conference hotel as well as in the Stay Easy Cape Town City Bowl Hotel (550m from conference venue), have been reserved for the period of the conference. Please use the booking link available at http://www.iceaa-offshore.org/ for direct bookings.

TECHNICAL EXHIBITION
A technical exhibition will be held at the conference centre on the hotel’s 3rd floor. Exhibitors and others requiring further information on this matter should contact the conference secretariat (contact details above).

The following exhibitors will be present.

- www.altair.com
- www.ansys.com
- www.concilium.co.za
- www.3ds.com
- www.emssantennas.com
- www.protea.co.za
- www.qfinsoft.co.za
- www.qfinsoft.co.za
- www.ansys.com

PARKING
Parking is available in the Picbel Parkade located diagonally across the hotel on Strand Street and complimentary parking vouchers may be collected from the registration desk on a daily basis. The parking voucher received at the parkade entrance must be retained and handed in, together with the complimentary voucher as payment.
TOURS & ACTIVITIES

There are many and diverse activities in Cape Town throughout the year. See e.g. the following links for ideas and specific options:

https://www.whatsonincapetown.com/
https://secretcapetown.co.za/
https://www.cityofcapetown.info/
https://www.capetown.travel/
https://www.ilovecapetown.com/

Any conference-linked activities will be communicated via email by the secretariat, and published on the conference website at https://www.iceaa-offshore.org/.

USEFUL CONTACTS

For all logistics aspects:
Ms Hanri Lennox, Ms Leandri Duvenhage
ICEAA '22 – IEEE APWC '22 Secretariat
ConsultUS (Pty) Ltd
PO Box 4335
Tygervalley
South Africa
Phone: +27 21 205 7382/4
Email: hlennox@consultus.co.za or leandrid@consultus.co.za

For Southern Sun Cape Sun Hotel enquiries:
Ibtisaam Brown
Phone: +27 21 492 0404
Email: Ibtisaam.Brown@southernsun.com

ICEAA - IEEE APWC awards

ICEAA - IEEE APWC
2021 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 1, 2022) who 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 2022 Young Scientist Award will be announced at the Conference Banquet on Wednesday evening, Sept. 7, 2022 and acknowledged on the Conference website.

ICEAA 2022 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. 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, each awardee will receive a certificate and the cash award will be shared equally among them.

Publicity

The winner(s) of the ICEAA - IEEE APWC 2022 awards will be acknowledged on IEEE Xplore in a special page entitled: “Winner of the ICEAA - IEEE APWC 2022 Awards”.

general information
A new generation of metasurface antennas

Abstract

“Metasurface” (MTS) denotes a surface constituted at microwave frequency by PCB or 3D printed elements small in terms of wavelengths that collectively exhibits equivalent homogeneous boundary conditions to any interacting electromagnetic fields. MTSs have had and are having a strong impact in Antenna applications. In the years 2000-2010 MTS for antennas were essentially uniform in space and realized by periodic printed elements. This was the first generation of MTS. In the second generation (2010-2020), MTS for antennas was constructed in such a way to change boundary conditions in space and control the scattered field. Today we are facing a transition to the third generation of MTS antennas, where MTSs change boundary conditions in space and time, opening new perspectives in 5G communications and beyond. In this presentation, the evolution of MTS antennas is described, with new ideas and examples on future communication scenarios.

Biography

Stefano Maci, is a Professor at the University of Siena since 97. The research interest of Prof Maci includes high-frequency and beam representation methods, computational electromagnetics, large phased arrays, planar antennas, reflector antennas and feeds, metamaterials and metasurfaces. Since 2000, he was member the Technical Advisory Board of 13 international conferences and member of the Review Board of 6 International Journals. In 2004 he was the founder of the European School of Antennas (ESoA), a post graduate school that presently comprises 34 courses on Antennas, Propagation, Electromagnetic Theory, and Computational Electromagnetics and 150 teachers coming from 15 countries. Since 2004 is the Director of ESoA. Since 2010 he has been Principal Investigator of 6 cooperative projects financed by European Space Agency.

Professor Maci has been a former member of the AdCam of IEEE Antennas and Propagation Society (AP-S), associate editor of AP-Transaction, Chair of the Award Committee of IEEE AP-S, and member of the Board of Directors of the European Association on Antennas and Propagation (EurAAP). From 2008 to 2015 he has been Director of the PhD program in Information Engineering and Mathematics of University of Siena, and from 2013 to 2015 he was member of the first National Italian Committee for Qualification to Professor. He has been former member of the Antennas and Propagation Executive Board of the Institution of Engineering and Technology (IET, UK). He founded and has been former Director of the consortium FORESEEN, involving 48 European Institutions. He was the principal investigator of the Future Emerging Technology project "Nanoarchitectronics" of the 8th EU Framework program, and he is presently principal investigator of the EU program "Metamask". He was co-founder of 2 Spin-off Companies. He has been a Distinguished Lecturer of the IEEE Antennas and Propagation Society (AP-S), and EurAAP distinguished lecturer in the ambassador program. He was recipient of the EurAAP Award in 2014, of the IEEE Schelkunoff Transaction Prize in 2016, of the Chen-To Tai Distinguished Educator award in 2016, and of the URSI Dollinger Gold Medal in 2020. He has been TPC Chair of the METAMATERIAL 2020 conference and designed Chairperson of EuCAP 2023. In the last ten years he has been invited 25 times as key-note speaker in international conferences. He is President Elect of the IEEE Antennas and Propagation Society 2022.

His research activity is documented in 180 papers published in international journals, (among which 100 on IEEE journals), 10 book chapters, and about 450 papers in proceedings of international conferences. The papers he coauthored have been cited about 8300 times (h index 47, source: Google Scholar).
Engineering the SKA-Low telescope

Abstract
The Square Kilometre Array (SKA) is one of the most ambitious international mega-science projects currently in progress. This paper focusses on the SKA-Low telescope; construction the Murchison Radio-astronomy Observatory is scheduled to start shortly. This telescope covers the "low-frequency" radio astronomy band from 50-350 MHz. It will consist of large number of stations each approximately 40m in diameter, comprising 256 dual-polarised log-periodic dipole antennas. The stations function as a receive-only phased array. The baseline design envisages 512 such stations. The core of the telescope is very dense and contains almost half of all the stations. The remaining stations are distributed along three quasi-spiral arms, with a maximum baseline of 65 km.

The talk will draw on the presenter’s involvement in the international SKA project for almost two decades, and will focus in particular on the computational electromagnetic simulation of SKA-Low stations.

Biography
David Davidson completed his undergraduate and Master’s degrees in electronic engineering at the University of Pretoria in 1982 and 1986 respectively. From 1985 to 1988 he was with the Council for Scientific and Industrial Research in Pretoria, South Africa. From 1988 until 2017, he was with Stellenbosch University (SU); he received his PhD and D Eng from SU in 1991 and 2017 respectively. From 2011-17, he held the South African SKA Research Chair at SU; he was also a Distinguished Professor there and is presently Professor Extraordinary. He holds a B1 research rating from the (South African) National Research Foundation.

As of 2018, he joined Curtin University, Perth, Western Australia, where he is Professor and Director of Engineering at the International Centre for Radio Astronomy Research at Curtin University node (Australia). He has held a number of visiting appointments, including at the University of Arizona (1993); Cambridge University (1997); Delft University of Technology (2003); and the University of Manchester (2008). He is a registered Professional Engineer with the Engineering Council of South Africa and a Chartered Professional Engineer with Engineers Australia. He is a Fellow of the IEEE (2012) and an associate editor of the IEEE Transaction on Antennas and Propagation. He has been extensively involved with the ICEAA conference series, and chaired the local organizing committee for the ICEAA12 Cape Town edition.
Monday 5

ROOM VOC NORTH

8.00-8.40
Formal Opening

8.40-9.20
plenary lecture 1
A new generation of metasurface antennas
S. Maci, University of Siena, Italy

9.20-10.00
plenary lecture 2
Engineering the SKA-Low telescope
D. Davidson, Curtin University, Australia

10.20-14.40
session 01 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

14.40-17.00
session 02 ICEAA
Metamaterials and metasurfaces
Chairs:
M. Botha, B. Khalichi

ROOM VOC SOUTH

10.20-13.00
session 03 ICEAA
Natural and stimulated emissions in space and laboratory
Organized by
G. Ganguli
Chair:
G. Ganguli

14.00-17.20
session 04 ICEAA
Mathematical advances in electromagnetics
Organized by
P.D. Smith, J. Arnold, E. Vinogradova
Chairs:
P.D. Smith, E.D. Vinogradova

Coffee break 10:00-10:20 / Lunch break 13:00-14:00 / Coffee break 16:00-16:20
Welcome Reception, starting 17:30 at conference centre on 3rd floor of the hotel
Tuesday 6

ROOM VOC NORTH

8.00-9.20
session 05 ICEAA
Integral equation and hybrid methods
Chairs:
S. Eijsvogel, I. Zhabitskiy

9.20-18.00
session 06 IEEE APWC
Innovative antenna technologies and wide/multi band antennas
Organized by
H. Nakano
Chairs:
H. Nakano, N. Guan, K.-F. Tong, J.R. Kelly

ROOM VOC SOUTH

8.00-9.00
session 07 ICEAA
Electromagnetic selective structures and applications
Organized by
Z. Shen
Chair:
Z. Shen

9.00-18.00
session 08 ICEAA
Antennas, Microwaves and EMC in South Africa
Organized by
W. Steyn, T. Stander
Chairs:
W. Steyn, T. Stander

Wednesday 7

ROOM VOC NORTH

8.00-13.00
session 09 ICEAA
Numerical methods in electromagnetics
Organized by
R.D. Graglia, D.R. Wilton
Chairs:
R.D. Graglia, D.R. Wilton

14.00-16.00
session 10 IEEE APWC
Propagation and networks
Chairs:
R.D. Graglia, V. Rampa

ROOM VOC SOUTH

8.00-9.20
session 11 ICEAA
EM measurements and modelling
Chairs:
D. de Villiers, J. Wang

9.20-16.00
session 12 ICEAA
Radio telescopes and radio astronomy systems
Organized by
D. de Villiers, E. de Lera Acedo, S. Srikant
Chairs:
E. de Lera Acedo, S. Srikant

Coffee break 10:20-10:40 / Lunch break 13:00-14:00 / Coffee break 16:00-16:20

Coffee break 10:20-10:40 / Lunch break 13:00-14:00
Banquet: departure at 16:45 from hotel lobby
Thursday 8

**ROOM VOC NORTH**

9.20-12.20
**session 13** ICEAA
Recent advancement of electromagnetic theory
Organized by H. Shirai
Chairs: M. Hirose, H. Shirai

12.20-16.00
**session 14** IEEE APWC
Antennas and Propagation
Chairs: M. Alibakhshikenari, L. Plouhinec

16.20-17.40
**session 15** ICEAA
Electromagnetic applications to biomedicine
Chairs: B. Svendsen, L. Tarricone

**ROOM VOC SOUTH**

9.20-13.00
**session 16** ICEAA
Antennas and radar techniques
Chairs: M. Botha, L. Jonsson

14.00-16.00
**session 17** ICEAA
Nonlinear media, resonances and inverse problems
Organized by Y. Shestopalov
Chair: Y. Shestopalov

16.20-17.40
**session 18** ICEAA
EMC/EMI/EMP/HPEM
Chairs: I. Mori, P.W. van der Walt

Friday 9

**ROOM VOC NORTH**

8.00-10.20
**session 19** ICEAA
Periodic and quasi-periodic electromagnetics
Organized by K. Esselle, L. Matekovits
Chairs: K. Esselle, L. Matekovits

10.40-12.40
**session 20** ICEAA
Antennas
Chairs: W. du Plessis, A. Monorchio

**ROOM VOC SOUTH**

10.40-12.40
**session 21** ICEAA
AI-driven research on EMC of intelligent transportation systems
Organized by Y. Wen
Chair: Y. Wen, D. Lu

16.20-17.40
**session 22** ICEAA
Technologies for mm and sub-mm waves
Chairs: Y. Wen, J. Zhang
Monday 5

Monday September 5 - 8:00 room VOC North

8:00-8:40
Formal Opening

8:40-9:20
plenary lecture 1
A NEW GENERATION OF METASURFACE ANTENNAS
S. Maci, University of Siena, Italy

9:20-10:00
plenary lecture 2
ENGINEERING THE SKA-LOW TELESCOPE
D. Davidson, Curtin University, Australia

Monday September 5 - 10:20 room VOC North

session 01  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

10:20-10:40  
SOME FEATURES OF THE CIRCULAR FERRITE-DIELECTRIC WAVEGUIDE PHASE SHIFTER OF AZIMUTHAL MAGNETIZATION
M.N. Georgieva-Grosse, G.N. Georgiev, Consulting and Researcher, Bulgaria;

10:40-11:00  
AN APPLICATION OF THE L4 NUMBERS IN THE THEORY OF AZIMUTHALLY MAGNETIZED FERRITE-DIELECTRIC CIRCULAR WAVEGUIDES
G. N. Georgiev, M. N. Georgieva-Georgieva, Consulting and Researcher, Bulgaria;
A JOINT MAGNETOELECTRIC SENSOR AND HUMAN HEAD MODEL FOR BIOMAGNETIC SIMULATION

M.-Ö. Özden, M. Gerken, Kiel University, Germany;

A COMPREHENDIUM OF EXACT GEOMETRICAL OPTICS SCATTERING BY TWO-DIMENSIONAL METAMATERIAL STRUCTURES

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

SYNTHESIS OF ANISOTROPIC TWIST-STRUCTURE OF NONORTHOGONAL IMPEDANCE STRIPES

Y. Yukhanov, T. Privalova, Southern Federal University, Russia;

SNELL LAW FOR AN ELECTROMAGNETIC PULSE TRAVELLING OVER A TORUS AND SCATTERED BY A FLAT

J.M. Velázquez-Arcos, J. Granados-Samaniego, A. Pérez-Ricardez, C.A. Vargas, S. Aicántara-Montes, Metropolitan Autonomous University, Mexico;

INFLUENCE OF ANTENNA SYSTEMS WITH METAMATERIAL SCREENS COMPOSITION AND GEOMETRIC PARAMETERS ON MUTUAL COUPLING BETWEEN ANTENNAS

A.L. Buzov, M.A. Buzova, JSC “Samara Innovative Business Radio Systems”, Russia;

THE TUNABLE SINGLE-/NARROW-BAND TERAHERTZ METAMATERIAL ABSORBER THROUGH PHOTOCONDUCTIVITY

S. Liu, H. Zhao, X. Yin, Southeast University, China;

MULTI-BAND LIGHT-MATTER INTERACTION IN HBN-BASED METASURFACE ABSORBER

B. Khalichi, Z.R. Omam, A.K. Osgouei, A. Ghobadi, E. Ozbay, Bilkent University, Turkey;

A WAVELENGTH-SELECTIVE MULTILAYER ABSORBER FOR HEAT SIGNATURE CONTROL

A.K. Osgouei, B. Khalichi, Z. R. Omam, A. Ghobadi, E. Ozbay, Bilkent University, Turkey;

TOWARD NON-METALLIC INFRARED METASURFACE FILTERS WITH ELECTRICAL AND THERMAL CONTROLLABILITY

M. Clemente-Arenas, UNTELS, Peru; R.E. Rubio-Noriega, INICTEL-UNI, Peru; J. Urbina, A. Lakhtakia, Pennsylvania State University, United States;

WAVE-PARTICLE INTERACTIONS IN EARTH OUTER RADIATION ZONE

D.N. Baker, University of Colorado Boulder, United States;
10:40-11:00 M. Sitnov, O. Stephens, H. Arnold, JHU/APL, United States; 
MACHINE LEARNING RECONSTRUCTION OF THE MAGNETOTAIL CONFIGURATION TO SUPPORT SIMULATIONS OF THE TEARING INSTABILITY AND MAGNETIC RECONNECTION

11:00-11:20 M.J. Starks, Air Force Research Laboratory, United States; D.S. Lauben, Stanford University, United States; W.R. Johnston, Air Force Research Laboratory, United States; U.S. Inan, Koc University, Turkey; 
PROPAGATION OF VLF WAVES IN THE MAGNETOSPHERE FROM THE DSX SPACECRAFT

11:20-11:40 R. Bingham, STFC Rutherford Appleton Laboratory, United Kingdom; 
MODULATIONAL INSTABILITY AND WAVE COLLAPSE OF LOWER HYBRID WAVES IN THE IONOSPHERE AND MAGNETOSPHERE

11:40-12:00 W. Scales, Virginia Tech, United States; 
STIMULATED SECOND HARMONIC EMISSIONS DURING IONOSPHERIC HEATING EXPERIMENTS

12:00-12:20 T.A. Carter, J. Larson, G. Bal, S. Vincena, UCLA, United States; 
NONLINEAR INTERACTION BETWEEN ALFVÉN WAVES AND DRIFT-WAVE INSTABILITIES IN LAPO

12:20-12:40 B. Eliasson, K. Ronald, A.D.R. Phelps, University of Strathclyde, United Kingdom; R. Bingham, STFC Rutherford Appleton Laboratory, United Kingdom; 
MULTI-SCALE BEHAVIOR OF LANGMUIR TURBULENCE DURING IONOSPHERIC HEATING EXPERIMENTS

12:40-13:00 P.L.E. Uslenghi, University of Illinois at Chicago, United States; 
EXACT GEOMETRICAL OPTICS SCATTERING BY TRUNCATED METAMATERIAL CYLINDERS

14:00-14:20 F. Sepehripour, M.C. van Beurden, B.P. de Hon, Eindhoven University of Technology, Netherlands; 
AN ERROR ANALYSIS OF THE THREE-TERM RECURRENCE RELATION OF THE MODAL GREEN FUNCTION

14:20-14:40 D. van den Hof, B.P. de Hon, Eindhoven University of Technology, Netherlands; 
A DEMONSTRATION OF MULTIPLICATIVE TAPERING IN FDTD GREEN'S FUNCTION DIANKOPTICS

14:40-15:00 T. Topal, E.D. Vinogradova, P.D. Smith, Macquarie University, Australia; 
TE-TYPE NATURAL COMPLEX OSCILLATIONS IN 2D ARBITRARILY SHAPED SLOTTED CAVITIES

15:00-15:20 Y. Shestopalov, University of Gävle, Sweden; 
ON A NATURE OF ‘REAL-VALUED’ RESONANCES IN OPEN STRUCTURES

16:20-16:40 K. Kobayashi, Chuo University, Japan; 
RADAR CROSS SECTION ANALYSIS OF A FINITE PARALLEL-PLATE WAVEGUIDE WITH FOUR-LAYER MATERIAL LOADING: A RIGOROUS WIENER-HOPF APPROACH

16:40-17:00 V. Daniele, G. Lombardi, Politecnico di Torino, Italy; 
COMBINED SPECTRAL METHODS TO STUDY COMPLEX SCATTERING PROBLEMS FORMULATED WITH THE WIENER-HOPF TECHNIQUE: THE SEMI-INFINITE GROUNDED DIELECTRIC SLAB PROBLEM

17:00-17:20 P.D. Smith, A.J. Markowskie, Macquarie University, Australia; 
A NEW PERTURBATION APPROACH TO QUANTIFYING CHANGES IN THE FAR FIELD PATTERN INDUCED BY ROUNDING THE CORNERS OF A SCATTERER.
Tuesday 6

Tuesday September 6 - 08:00 room VOC North

**session 05**

Integral equation and hybrid methods

**Chairs S. Eijsvogel, I. Zhabitskiy**

- **8:00-8:20**
  - ITERATIVE DGFM SOLVER EXTENSIONS FOR FAST SPARSE ARRAY ANALYSIS
    - A.S. Conradie, M.M. Botha, Stellenbosch University, South Africa;

- **8:20-8:40**
  - COMPUTING GABOR COEFFICIENTS FOR A SCATTERING PROBLEM: SUPER EXPONENTIAL CONVERGING ACCURACY AND A MORE LOCALIZED REPRESENTATION
    - S. Eijsvogel, R.J. Dilz, M.C. van Beurden, Eindhoven University of Technology, Netherlands;

- **8:40-9:00**
  - COMPUTING SURFACE INTEGRAL EQUATION MATRICES WITH SHARED MEMORY PARALLELIZATION
    - P.I. Cilliers, M.M. Botha, Stellenbosch University, South Africa;

- **9:00-9:20**
  - ARRAY ANTENNA SOLVER BASED ON MACRO BASIS FUNCTIONS, WITH IMPROVED ACCURACY
    - I. Zhabitskiy, M.M. Botha, Stellenbosch University, South Africa;

Tuesday September 6 - 9:20 room VOC North

**session 06**

Innovative antenna technologies and wide/multi band antennas

**Organized by H. Nakano**

- **Chairs H. Nakano, N. Guan, K.-F. Tong, J.R. Kelly**

- **9:20-9:40**
  - METALOOP ANTENNA WITH A CONDUCTING PLATE
    - H. Nakano, T. Abe, J. Yamauchi, Hosei University, Japan;

- **9:40-10:00**
  - DESIGN OF A WIDEBAND RING MICROSTRIP ANTENNA FED BY AN L-PROBE WITH A SINGLE-LAYERED DIELECTRIC SUBSTRATE
    - K. Furukawa, S. Saito, Y. Kimura, Saitama University, Japan;

- **10:00-10:20**
  - AN ARTIFICIAL MATERIAL WITH SINGLE LAYER CONFIGURATION FOR ANTENNA GAIN ENHANCEMENT
    - Y. Zhang, Y. Toda, Ryukoku University, Japan;

- **10:40-11:00**
  - A HIGH EFFICIENCY METASURFACE-ENGINEERED ANTENNA FOR MULTIPLEXING OAM BEAM GENERATION
    - Y. Yuan, K. Zhang, Q. Wu, Harbin Institute of Technology, China;

- **11:00-11:20**
  - SPIRAL ANTENNA WITH A CIRCULAR HIS REFLECTOR SANDWICHED BY RING-SHAPED ABSORBERS
    - M. Tanabe, TOSHIBA Corporation, Japan;

- **11:20-11:40**
  - A DUAL-POLARIZED APERTURE-COUPLED PATCH ANTENNA FOR N257 EXCITED BY COPLANAR LINE
    - Y. Hasegawa, K. Masuko, N. Guan, Fujikura Ltd., Japan;

- **11:40-12:00**
  - ROD ANTENNA FOR 28-GHZ BAND OPERATION
    - K. Sato, I. Oshima, DKK Co Ltd., Japan; H. Nakano, Hosei University, Japan;

- **12:00-12:20**
  - MULTI-BAND DIPOLE ANTENNA BY MULTI-MODE EXCITATION FOR MASSIVE CONNECTIONS OF IOT
    - B. Xiao, H. Wong, City University of Hong Kong, China;

- **12:20-12:40**
  - COMPACT, WIDEBAND, CIRCULARLY POLARIZED, INDUCTIVE GRID-ARRAY METASURFACE ANTENNA
    - Q. Lin, M.-C. Tang, Chongqing University, China; R.W. Ziolkowski, University of Technology Sydney, Australia;

- **12:40-13:00**
  - IMPROVEMENT OF GAIN IN COMPACT ANTIPODAL VIVALDI ANTENNA
    - T. Fujimoto, M. Sugimoto, C-E. Guan, Nagasaki University, Japan;

- **14:00-14:20**
  - FDTD ANALYSIS OF A TERAHERTZ WAVEGUIDE POLARIZER
    - J. Shibayama, H. Tanaka, J. Yamauchi, H. Nakano, Hosei University, Japan; image

- **14:20-14:40**
  - THE RECTENNA ARRAY FOR MINECART FED BY LEAKY WAVE WAVEGUIDE FOR MICROWAVE SNOW MELTING
    - T. Maruyama, M. Nakatsugawa, T. Nakamura, National Institute of Technology-Hakodate College, Japan; Y. Tamayama, Nagaoka University of Technology, Japan; M. Omiya, Hokkaido University, Japan;
14:40-15:00  ⚡
WPT PERFORMANCE ANALYSIS ON ANTENNA HEIGHT DEPENDENCY BETWEEN CIRCUIT-SHAPE LEAKY WAVEGUIDE AND λ/2 WAVELENGTH DIPOLE ANTENNA
M. Nakatsugawa, Y. Kanaya, T. Maruyama, National Institute of Technology-Hakodate College, Japan; M. Omiya, Hokkaido University, Japan; Y. Tamayama, Nagaoka University of Technology, Japan;

15:00-15:20  ⚡
AXIAL RATIO EXTENSION OF CIRCULARLY POLARIZED PATCH ANTENNAS USING DIAMOND-SHAPED METASURFACE
T. Fukusako, U. Purevdorj, R. Kuse, Kumamoto University, Japan;

15:20-15:40  ⚡
SMALL CIRCULAR POLARIZED ANTENNA WITH SPIRAL ELEMENTS SUPPRESSING BACK-LOBE RADIATION
H. Sakamoto, H. Makimura, K. Nishimoto, Y. Nishioka, Y. Inasawa, H. Miyashita, Mitsubishi Electric Corporation, Japan;

15:40-16:00  ⚡
RADIATION PATTERN DIVERSIFIED SINGLE-FLUID-CHANNEL SURFACE-WAVE ANTENNA FOR MOBILE COMMUNICATIONS
Y. Shen, K. Wong, K.-F. Tong, University College London, United Kingdom;

16:20-16:40  ⚡
RADIATION PATTERN DIVERSIFIED DOUBLE-FLUID-CHANNEL SURFACE-WAVE ANTENNA FOR MOBILE COMMUNICATIONS
Y. Shen, K. Wong, K. Tong, University College London, United Kingdom;

17:00-17:20  ⚡
A BUILDING BLOCK ELEMENT (BBE) CAPABLE OF REALIZING FUNCTIONAL RECONFIGURATION BETWEEN ANTENNA AND RESONATOR MODE
X. Fang, J. Kelly, S. Alkaraki, Queen Mary University of London, United Kingdom;

17:20-17:40  ⚡
SIGNIFICANCE OF THE HIGHER-ORDER MODES TO THE NEAR-FIELD CALCULATION OF THE SPHERICAL HELIX ANTENNAS
K. Fujita, Maebashi Institute of Technology, Japan;

17:40-18:00  ⚡
FEASIBILITY STUDY OF CIRCULARLY POLARIZED MACKEY
S. Makino, K. Yokoe, M. Yoneda, Kanazawa Institute of Technology, Japan;

18:00-18:20  ⚡
A SINGLE HIGH GAIN AND NARROW-BEAM FOLDED DIPOLE ANTENNA FOR MILLIMETER-WAVE APPLICATIONS
M. Matsunaga, Shizuoka University, Japan;
**PRELIMINARY INVESTIGATION INTO THE USE OF SILVER SEED LAYERS IN COPPER ELECTROPLATING OF WAVEGUIDE PARTS**
A. Simonovic, E. Rohwer, T. Stander, University of Pretoria, South Africa;

**PROGRESS TOWARDS A PLANAR INTEGRATED 22 GHZ RADIOMETER FOR WATER VAPOUR RADIOMETRY**
H. Pretorius, R. Neate, T. Stander, University of Pretoria, South Africa;

**EFFICIENT SENSITIVITY ANALYSIS OF EM STRUCTURES USING NLPLS-BASED PCE**
D.G. Klink, P. Meyer, W. Steyn, Stellenbosch University, South Africa;

**IMPROVED IMPLEMENTATION OF WIDEBAND 90° HYBRIDS**
J.B. du Toit, J. Joubert, J.W. Odendaal, University of Pretoria, South Africa;

**TOWARDS COST-EFFECTIVE EMC STRATEGIES FOR NANOSATELLITES IN AFRICA**
A. Stofberg, Reutech Radar Systems, South Africa; P. van der Walt, Stellenbosch University, South Africa;

**THE OPTICS AND FEED DESIGN OF THE 18 METRE REFLECTOR ANTENNA FOR THE NGVLA**
R. Lehmensiek, EMSS Antennas, South Africa; D.I.L. de Villiers, Stellenbosch University, South Africa;

**PCB BASED HIGH POWER L-BAND DUPLEXER**
A. Stofberg, Reutech Radar Systems, South Africa; P. van der Walt, Stellenbosch University, South Africa;

**THE SOUTH AFRICAN MARINETIME DOMAIN AWARENESS SATELLITE CONSETELLATION AND BEYOND**
Nyameko Royi, Cape Peninsula University of Technology, South Africa;

**EFFICIENT BROADBAND MODELING OF MICROWAVE DEVICES WITH MACHINE LEARNING AND ANALYTICAL EXTENSION OF EIGENVALUES**
Y. Liu, H. Li, J.-M. Jin, University of Illinois, United States;
8:20-8:40
A NON-CONFORMAL MULTI-RESOLUTION PRECONDITIONER IN THE MOM SOLUTION OF LARGE MULTI-SCALE STRUCTURES
V.F. Martin, J.M. Taboada, University of Extremadura, Spain; F. Vipiana, Politecnico di Torino, Italy;

8:40-9:00
PRECONDITIONERS FOR MULTI-SCREEN SCATTERING
K. Cools, Ghent University, Belgium; C. Urzua-Torres, TU Delft, Netherlands;

9:00-9:20
ON THE FAST DIRECT SOLUTION OF A PRECONDITIONED ELECTROMAGNETIC INTEGRAL EQUATION
D. Consoli, Politecnico di Torino, Italy; C. Henry, IMT Atlantique, France; A. Dély, L. Rahmouni, Politecnico di Torino, Italy; J.E.O. Guzman, Universidad de Nariño, Colombia; T.L. Chhim, Politecnico di Torino, Italy; S.B. Adrian, Universität Rostock, Germany; A. Merlini, IMT Atlantique, France; F.P. Andriulli, Politecnico di Torino, Italy;

9:20-9:40
EFFICIENT SIMULATION OF 5G MOBILE BASE STATION ANTENNAS FOR RF SAFETY ANALYSIS
D.J. Ludick, R. Swanepoel, W. Barnard, Alphawave Mobile Network Products (Pty) Ltd, South Africa;

9:40-10:00
E. Bleszynski, M. Bleszynski, T. Jaroszewicz, Monopole Research, United States; W. Johnson, Consultant, United States; J. Rivero, F. Vipiana, Politecnico di Torino, Italy; D.R. Wilton, University of Houston, United States;

10:00-10:20
NOVEL INTEGRAL EQUATION FORMULATION FOR SCATTERING ON DIELECTRIC OBJECTS FREE OF LOW-FREQUENCY AND OVERSAMPLING BREAKDOWNS
O. Goni, V. Okhmatovski, University of Manitoba, Canada;

10:40-11:00
FAST OPTIMIZATION PROCEDURE FOR THE SYNTHESIS OF ARBITRARILY CONFORMABLE MAGNETIC METASURFACES
P. Usai, D. Brizi, A. Monorchio, Università di Pisa/CNIT, Italy;

11:00-11:20
HIERARCHICAL VECTOR BASES FOR PYRAMID CELLS
R.D. Graglia, Politecnico di Torino, Italy;

11:20-11:40
SOME TRENDS AND PROBLEMS IN ALGEBRAIC PRECONDITIONING FOR SOLVING DENSE METHOD OF MOMENTS LINEAR SYSTEMS.
B. Carpentieri, Free University of Bolzano, Italy;

11:40-12:00
FAST ALTERNATING DIRECTION ITERATIVE METHOD FOR POISSON EQUATION OF POTENTIAL
E.L. Tan, Nanyang Technological University, Singapore;

12:00-12:20
ELECTROMAGNETIC MODELING OF NONLINEAR GRAPHENE-BASED NANOSTRUCTURES
J.W. You, T.J. Cui, Southeast University, China;

12:20-12:40
ON-THE-FLY TRAINING CONVOLUTIONAL NEURAL NETWORK MODELS FOR RADIO WAVE PROPAGATION IN TUNNELS
S. Huang, S. Wang, X. Zhang, University College Dublin, Ireland;

12:40-13:00
HIGH POWER RF CALIBRATION METHOD WITH ARTIFICIAL INTELLIGENCE
T.S.C. Walpita, A. Eroglu, M.N Mahmoud, North Carolina A&T State University, United States;

13:00-14:00
FAST FREQUENCY SWEEP USING THE METHOD OF MOMENTS: INCLUDING THE EFFECT OF THE SUBSTRATE
D. Tihon, K. Al Khalifeh, J. Cavillot, C. Craeye, Université catholique de Louvain, Belgium;

14:00-14:20
ELECTROMAGNETIC MODELS FOR DEVICE-FREE RADIO LOCALIZATION WITH ANTENNA ARRAYS
V. Rampa, S. Savazzi, IEIIT-CNR, Italy; M. D’Amico, DEIB-POLIMI, Italy;

14:20-14:40
ON-THE-FLY TRAINING CONVOLUTIONAL NEURAL NETWORK MODELS FOR RADIO WAVE PROPAGATION IN TUNNELS
S. Huang, S. Wang, X. Zhang, University College Dublin, Ireland;

14:40-15:00
SDR 5G NSA MOBILE NETWORK AND AN IMS CORE TO PROVIDE VOICE OVER IP LTE SERVICE
J.J. Abularach Arnez, W. Medeiros Silva, R.K. Gomes Do Reis, L. Almeida Da Silva, M.G. Lima Damasceno, Sidia Research and Development Institute of Technology, Brazil;
15:40-16:00  🍀
ANALYSIS OF EMERGENCY CALL TRACKING IN A 4G/LTE MOBILE NETWORK
Abularach Arnez J.J., Lima Damasceno M.G., Gomes Do Reis R.K., Almeida Da Silva L., Cavalcante Tribuzy L.B., Costa Lucena M., Sidia Research and Development Institute of Technology, Brazil;

Wednesday September 7 - 08:00 room VOC South

session 11

EM measurments and modelling
Chairs D. de Villiers, J.Wang

8:00-8:20  🍀
PHASELESS BI-SPHERICAL NEAR-FIELD MEASUREMENT
J. Wang, Y. Wen, J. Zhang, Beijing Jiaotong University, China;

8:20-8:40  🍀
SPHERICAL NEAR FIELD TO FAR FIELD TRANSFORMATION ALGORITHM FOR OFFSET-MOUNTED ANTENNAS ON METALLIC GROUND
J. Wang, Y. Wen, D. Zhang, Beijing Jiaotong University, China;

8:40-9:00  🍀
ARTIFICIAL NEURAL NETWORKS FOR MODELING OF GAN DEVICES
C.B. Shelton, A. Eroglu, M.N. Mahmoud, North Carolina A&T State University, United States;

9:00-9:20  🍀
ENHANCED TERAHertz SMITH-PURCELL RADIATION WITH A NOVEL GRATING
Z. Zhang, Y. Li, Y. Huang, R. Wang, H. Huang, National Innovation Institute of Defense Technology, China;

9:20-9:40

Radio telescopes and radio astronomy systems
Organized by D. de Villiers, E. de Lera Acedo, S. Srikanth
Chairs D. de Villiers, E. de Lera Acedo, S. Srikanth

9:20-9:40  🍀
THE NGVLA: A TECHNICAL DEVELOPMENT UPDATE
R. Selina, E. Murphy, A. Beasley, NRAO, United States;

9:40-10:00  🍀
HYDROGEN INTENSITY AND REAL TIME ANALYSIS EXPERIMENT: A RADIO INTERFEROMETER FOR PRECISION COSMOLOGY
M. Vijayaraghavan, HIRAX, South Africa;

10:00-10:20  🍀
OVER-THE-AIR SYSTEM NOISE TEMPERATURE MEASUREMENT OF ACTIVE INTEGRATED ANTENNAS IN A REVERBERATION CHAMBER
T. Stek, ASTRON, Netherlands; A. Hubrechtsen, Antennex, Netherlands; D.S. Prinsloo, ASTRON, Netherlands; U. Johannsen, Eindhoven University of Technology, Netherlands;

10:40-11:00  🍀
DESIGN AND VERIFICATION OF A HYBRID MULTI-BEAMFORMING SYSTEM FOR SKA MFAA
R. Cao, L. Jiang, Z. Li, Xiaohui Tao, G. Peng, KLAASA, China; K. Li, Anhui University, China; Y. Xu, Dawei Rong, X. Xu, KLAASA, China;

11:00-11:20  🍀
DIGITAL BEAMFORMING SYSTEM FOR SKA LOW FREQUENCY APERTURE ARRAY
G. Peng, R. Cao, L. Jiang, KLAASA, China; K. Li, Anhui University, China; X. Tao, Y. Zhang, Y. Xu, D. Rong, X. Xu, KLAASA, China;

11:20-11:40  🍀
A TRI-RIDGE FLARED HORN REFLECTOR ANTENNA FEED FOR RADIO ASTRONOMY
Z. Du Tolt, F. Mokhupuki, D.I.L. De Villiers, Stellenbosch University, South Africa;

11:40-12:00

12:00-12:20  🍀
EVALUATING AN ALTERNATE LAYOUT FOR THE SKA-LOW APERTURE ARRAY STATIONS USING COMPUTATIONAL ELECTROMAGNETIC SIMULATIONS
P. Bolli, INAF, Italy; D.B. Davidson, ICRAR-Curtin, Australia; R. Braun, SKAO, United Kingdom; P. di Ninni, INAF, Italy; D. Ung, ICRAR-Curtin, Australia;

12:20-12:40  🍀
MODELING THE INSTRUMENTAL CONTRIBUTION OF A RADIO TELESCOPE TO ASTRONOMICAL POLARIZATION MEASUREMENTS: THE MUELLER MATRIX APPROACH
X. Du, M. Islam, T. Robishaw, B. Veidt, National Research Council Canada, Canada;

12:40-13:00  🍀
REDUCING SKA-LOW STATION CALIBRATION ERRORS BY WIDEBAND GAIN MODEL FITTING
S.J. Wijnholds, Netherlands Institute for Radio Astronomy (ASTRON), Netherlands;

14:00-14:20  🍀
DETAILED DESIGN OF AN 18-45 GHZ MULTI-PURPOSE RADIO ASTRONOMY RECEIVER
S. Mundia, T. Stander, University of Pretoria, South Africa;

14:20-14:40  🍀
A REVIEW OF STATE-OF-THE-ART RADIO TECHNOLOGY FOR 21-CM COSMOLOGY EXPERIMENTS
E. de Lera Acedo, University of Cambridge, United Kingdom;
Thursday 8

Thursday September 8 - 9:20 room VOC North

Recent advancement of electromagnetic theory
Organized by H. Shirai
Chairs M. Hirose, H. Shirai
9:20-9:40
NEW FORMULATION OF PHYSICAL OPTICS APPROXIMATION FOR EDGE DIFFRACTION BY DIELECTRIC WEDGES
D.M. Nguyen, H. Shirai, Chuo University, Japan; S.Y. Kim, KIST, Korea, South;
9:40-10:00
DIFFRACTION BY A SEMI-INFINITE PLATE WITH FRACTIONAL BOUNDARY CONDITIONS
T. Nagasaka, K. Kobayashi, Chuo University, Japan;

12:20-12:40
PHYSICAL-STATISTICAL AND WIDEBAND MODEL OF THE LAND MOBILE SATELLITE PROPAGATION CHANNEL
J. Israel, ONERA, France;
12:40-13:00
KNIFE-EDGE DIFFRACTION MODELS FOR HUMAN BODY SHADOWING PREDICTION
E. Plouhinec, LESTP/IETR, France; B. Uguen, Université de Rennes 1, France;
14:00-14:20
COMPACT CERAMIC ON-METAL RFID TAG
I. Yusupov, ITMO University, Russia; D. Dobrykh, Tel Aviv University, Israel; D. Filonov, Moscow Institute of Physics and Technology, Russia; A. Slobozhanyuk, ITMO University, Russia; P. Ginzburg, Tel Aviv University, Israel;
11:40-12:00 FREQUENCY RIPPLE IN ANTENNA NOISE TEMPERATURE OF SMALL OFFSET GREGORIAN REFLECTOR SYSTEMS
W.J. Cerfonteyn, F.T.T. Mokhupuki, D.I.L. de Villiers, Stellenbosch University, South Africa;
12:00 12:20 A FIGURE OF MERIT FOR THE X-BAND ALL-SKY SURVEY
S.G.H. Kriel, D.I.L. de Villiers, Stellenbosch University, South Africa;
12:20-12:40 ACCURATE AND EFFICIENT MODELING OF GAIN PATTERNS OF MULTIBAND PIXELATED ANTENNA BY DEEP NEURAL NETWORKS
J.P. Jacobs, University of Pretoria, South Africa;
12:40-13:00 FAST POINT SOURCE SHADOWING DETERMINATION FOR MESH-BASED PHYSICAL OPTICS ANALYSIS
D.P. Xiang, Hunan Institute of Engineering, China; M.M. Botha, Stellenbosch University, South Africa.

Thursday September 8 - 14:00 room VOC South

Nonlinear media, resonances and inverse problems

Organized by Y. Shestopalov
Chair Y. Shestopalov

14:00-14:20 EXTENDED TREATMENT OF STATISTICAL MOMENTS OF RANDOM FIELDS IN NONLOCAL MARKOV APPROXIMATION
M.A. Bisyarin, V. Gherm, N.N. Zernov, Saint Petersburg State University, Russia;
14:20-14:40 NONLINEAR INVERSION FOR MICROWAVE CHARACTERIZATION OF TARGETS IN NON-HOMOGENEOUS MEDIA
V. Schenone, A. Fedeli, C. Estatico, M. Pastorino, A. Randazzo, University of Genoa, Italy;
14:40-15:00 SYNTHESIS OF AN INHOMOGENEOUS ANISOTROPIC IMPEDANCE PLANE FROM SEVERAL REFLECTED WAVES
Y. Yukhanov, T. Privalova, E.V. Kriuk, Southern federal university, Russia;
15:00-15:20 RIGOROUS APPROACH TO THE CALCULATION OF CUT-OFF WAVENUMBERS IN WAVEGUIDES WITH MULTIPLE EMBEDDINGS
P.D. Smith, E.D. Vinogradova, Macquarie University, Australia; Yu.V. Shestopalov, University of Gävle, Sweden;
15:20-15:40 NONLINEAR TM WAVE PROPAGATION IN A SLAB WITH ANISOTROPIC KERR NONLINEARITY
S. Tikhov, D. Valovik, Penza State University, Russia;
15:40-16:00 APPLICATION OF PARAMETRIC FOURIER SERIES TO THE ANALYSIS OF PARTIAL INVISIBILITY AND RESONANCE SCATTERING BY CANONICAL STRUCTURES
Y. Shestopalov, University of Gävle, Sweden.

Thursday September 8 - 16:20 room VOC South

EMC/EMI/EMP/HPEM

Chairs I. Mori, P.W. van der Walt

16:20-16:40 MODELING COMMON-MODE CURRENTS IN AUXILIARY STRUCTURES OF MOTOR-DRIVE SYSTEMS BY A MULTICONDUCTOR TRANSMISSION LINE APPROACH
M. Shokri, M.C. van Beurden, R. Serra, Eindhoven University of Technology, Netherlands;
16:40-17:00 WHERE RF MEETS DC
W. Steyn, P.W. van der Walt, Stellenbosch University, South Africa;
17:00-17:20 APPLICATION OF A MAGNETO-DIELECTRIC ABSORBER TO THE ANTENNA FEED CABLE
I. Mori, National Institute of Technology (KOSEN), Suzuka College, Japan; A.E. Sowa, Wroclaw University of Science and Technology, Poland;
17:20-17:40 ELECTROMAGNETIC SPACE LAUNCH INFRASTRUCTURE – A TECHNO-ECONOMIC ANALYSIS
P. L. Swan, The Atlantis Project, United States;
Friday 9

**Periodic and quasi-periodic electromagnetics**

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

**8:00-8:20**
**WAVEGUIDE FILTER MINIATURIZATION WITH METALLIC METASURFACES**
H. Sarbandi Farahani, B. Rezaee, IHF - Graz University of Technology, Austria; O. Quevedo-Teruel, KTH Royal Institute of Technology, Sweden; W. Bösch, IHF - Graz University of Technology, Austria;

**8:20-8:40**
**CUSTOMIZING THE RESPONSE OF CONFORMAL AND LOW-FREQUENCY MAGNETIC METASURFACES**
A. Dellabate, V. Lazzoni, D. Brizi, P. Usai, A. Monorchio, Università di Pisa, Italy;

**8:40-9:00**
**CONVERSION FROM LP TO CP BY A TUNABLE FSS WITH EMBEDDED MICROSTRIP LINES AS FEEDING NETWORK**
F. Mir, L. Matekovits, Politecnico di Torino, Italy; A. De Sabata, Politehnica University Timisoara, Romania;

**9:00-9:20**
**FREELY TAILORING FAR-FIELD SPIN-POLARIZED WAVEFRONTS WITH SURFACE WAVE METASURFACES**
W. Pan, Z. Wang, Q. He, L. Zhou, Sh. Sun, Fudan University, China;

**9:20-9:40**
**DESIGN OF HIGH-GAIN LENS ANTENNA USING PIXELATED PHASE GRADIENT METASURFACE**
M. Soltani, Y. Azizi, M. Soleimani, Iran University of Science and Technology, Iran; L. Matekovits, Politecnico di Torino, Italy;

**9:40-10:00**
**A CASE STUDY FOR IMPROVING PERFORMANCE OF FREQUENCY SELECTIVE SURFACE THROUGH UNION OF SUB-SETS AND PARTICLE SWARM OPTIMIZATION**
L. Kouhalvandi, Dogus University, Turkey; L. Matekovits, Politecnico di Torino, Italy;

**10:00-10:20**
**ULTRA-WIDE BAND FREQUENCY SELECTIVE SURFACE: DESIGN AND EXPERIMENTAL VERIFICATION OF PERFORMANCE FOR WIDE INCIDENT ANGLE**
A.‐M. Silaghi, A. De Sabata, University Politehnica Timisoara, Romania; L. Matekovits, Politecnico di Torino, Italy; A. Buta, University Politehnica Timisoara, Romania;

**Antennas**

**Chairs W. du Plessis, A. Monorchio**

**10:40-11:00**
**PARAMETRIC IDENTIFICATION METHOD FOR ANTENNA MODEL ON TIME-DOMAIN**
R.R.L. Benevides, Aerospace Operations Command, Brazil; S. Rondineau, Univ. of Brasilia, Brazil; B. Fuchs, L. Le Coq, IETR, Univ. of Rennes 1, France; M.C. Migliore, DIEI, Univ. of Cassino e Lazio Meridionale, Italy;

**11:00-11:20**
**SMART HAT ANTENNA FOR WIFI APPLICATIONS**
L. Niyonzima, C. Craeye, Université Catholique de Louvain, Belgium;

**11:20-11:40**
**INITIAL RESULTS FOR CROSS-POLARISATION JAMMING OF MONOPULSE RADAR**
W.P. du Plessis, K. Mosoma, University of Pretoria, South Africa;

**11:40-12:00**
**FULL-WAVE ANALYSIS OF MUTUAL COUPLING IN THE HIRAX RADIO TELESCOPE**
O. Ruegge, University of Cambridge, United Kingdom; A. Sampath, D. Crichton, University of KwaZulu-Natal, South Africa; A. Brown, Queen Mary, United Kingdom; E. de Lera Acedo, University of Cambridge, United Kingdom; K. Moodley, University of KwaZulu-Natal, South Africa;

**12:00-12:20**
**DETECTION OF HRP AT MICROWAVE FREQUENCY WITH FUNCTIONALIZED GRAPHENE FILM**
M. Yasir, Offis institute of information technology, Germany; P. Savi, G. Palmara, F. Frascella, A. Chiado, P. Zaccagnini, Politecnico di Torino, Italy;
**session 21**

**ICEAA**

**Al-driven research on EMC of intelligent transportation systems**

Organized by Y. Wen
Chairs Y. Wen, D. Lu

8:00-8:20  🌝

**RAILWAY ENVIRONMENTAL SCENARIO RECOGNITION FOR GNSS LOCALIZATION BASED ON DEEP LEARNING AND VIT MODEL**

H. Sun, D. Lu, B. Cai, Beijing Jiaotong University, China; T. Lan, Technische Universität Braunschweig Braunschweig, GERMANY,

8:20-8:40  🌝

**ANALYSIS OF THE DISCHARGE OF THE PANTOGRAPH OFFLINE WHEN THE CONTACT WIRE IS COVERED WITH ICE**

Y. Sun, CRRC Qingdao Sifang CO., LTD, China; L. Ma, Telefonaktiebolaget LM Ericsson, China; C. Wang, J. Zhang, Beijing Jiaotong University, China;

8:40-9:00  🌝

**RESEARCH ON THE EFFECT OF TRACTION RETURN CURRENT ON LOCOMOTIVE SIGNALING EQUIPMENT**

X. He, Y. Wen, D. Zhang, Beijing Jiaotong University, China;

9:00-9:20  🌝

**ANALYSIS OF RANDOM CABLE BUNDLE CROSSTALK COUPLING MODEL BASED ON HERMITE INTERPOLATION METHOD**

C. Lu, Y. Wen, X. D. He, D. Zhang, Beijing Jiaotong University, China;

9:20-9:40  🌝

**GNSS-BASED END-OF-TRAIN DEVICE PERFORMANCE EVALUATION AND IMPROVEMENT BY MEANS OF PARTICLE FILTER ALGORITHM**

G. Duan, D. Lu, H. Dong, B. Cai, J. Wang, J. Liu, Beijing Jiaotong University, China;

9:40-10:00  🌝

**ANALYSIS OF ELECTROMAGNETIC DISTURBANCE CHARACTERISTICS OF TRACTION DRIVE SYSTEM**

S. Xiao, CRRC Qingdao Sifang CO., LTD, China; M. Li, China Academy of railway Sciences, China; Yu Sheng, Beijing Jiaotong University, China;

**session 22**

**ICEAA**

**Technologies for mm and sub-mm waves**

Chairs Y. Wen, J. Zhang

10:40-11:00  🌝

**DESIGN OF 3 MM FREQUENCY BAND SIGE BICMOS POWER AMPLIFIER**

Y. Zhang, Y. Xu, Z. Li, R. Cao, X. Tao, G. Peng, L. Jiang, D. Rong, Key Laboratory of Aperture Array and Space Application, China; J. Zhang, Hefei University of Technology, China;

11:00-11:20  🌝

**DESIGN OF 94GHZ SERIES-FED MICROSTRIP ANTENNA ARRAY**

J. Zhang, Yu Su, hfut, China; R. Cao, X. Tao, Y. Zhang, No.38 Research Institute of CETC, China; X. Qi, hfut, China;

11:20-11:40  🌝

**DESIGN OF W-BAND SUBSTRATE INTEGRATED WAVEGUIDE SLIT ANTENNA ARRAY**

J. Zhang, Yu Wang, HFUT, China; R. Cao, X. Tao, Y. Zhang, No 38 Research Institute of CETC, China; X. Qi, hfut, China;

11:40-12:00  🌝

**DESIGN OF W-BAND ON-CHIP DIFFERENTIAL CROSS-COUPLED GYSEL POWER COMBINER**

Y. Xu, Z. Li, Y. Zhang, R. Cao, X. Tao, G. Peng, L. Jiang, D. Rong, Key Laboratory of Aperture Array and Space Application, China; J. Zhang, Hefei University of Technology, China;

12:00-12:20  🌝

**DESIGN OF AN 8×8 PARALLEL-FED MM-WAVE MICROSTRIP ANTENNA ARRAY FOR WIRELESS POWER TRANSMISSION**

X. Qi, Q. Zhang, Hefei University of Technology, China; R. Cao, X. Tao, Y. Zhang, Hefei No 38 Research Institute of CETC, China; J. Zhang, Hefei University of Technology, China;

12:20-12:40  🌝

**TERAHERTZ WAVE GENERATION FROM DC FIELD-APPLIED HOLLOW AIR-PLASMAS**

list of Reviewers

G. Addamo, Italy
J. Arnold, United Kingdom
A. Atrass, Italy
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