



## **ICEAA 18**

International Conference on  
**ELECTROMAGNETICS IN  
ADVANCED APPLICATIONS**

## **IEEE APWC 18**

IEEE-APS Topical Conference on  
**ANTENNAS AND PROPAGATION  
IN WIRELESS COMMUNICATIONS**

## **FEM 18**

The 14th International  
Workshop on  
**FINITE ELEMENTS FOR  
MICROWAVE ENGINEERING**

**SEPTEMBER 10-14 2018  
CARTAGENA DE INDIAS COLOMBIA**



# **ICEAA 18** **IEEE APWC 18**

Organized by  
**POLITECNICO DI TORINO**  
**NATIONAL UNIVERSITY OF COLOMBIA**  
**IEIIT-CNR**

In cooperation with  
**IEEE Antennas and Propagation Society**  
**URSI, the International Union of Radio Science**

Sponsored by  
**IEEE Antennas and Propagation Society**  
**Politecnico di Torino**  
**Torino Wireless Foundation**  
**URSI, the International Union of Radio Science**

Administrative support services  
**provided by SELENE SRL - Eventi e Congressi**

# **FEM 18**

Organized by  
**UNIVERSITÀ DEGLI STUDI DI FIRENZE**  
**COLORADO STATE UNIVERSITY**

Sponsored by  
**IEEE Antennas and Propagation Society**

**FINAL PROGRAM**

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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 twentieth edition of ICEAA and to the eighth edition of IEEE APWC, the IEEE-APS Topical Conference on Antennas and Propagation in Wireless Communications. A warm welcome also goes to the participants in the 14th International Workshop on Finite Elements for Microwave Engineering (FEM2018) that, for this year's edition, is jointly held with ICEAA. These three conferences share a common organization, registration fee, submission site, workshops and short courses, and social events.

The 2018 edition of ICEAA and IEEE APWC is organized by the Politecnico di Torino, the National University of Colombia, and the Institute of Electronics, Computer and Telecommunication Engineering (IEIT-CNR) of the Italian National Research Council. FEM2018 is organized by the University of Florence, Italy, and the Colorado State University, USA. We sincerely thank the two FEM2018 co-chairmen (Prof. Notaros and Selleri) for their contribution to the success of this joint edition.

The combination of these Conferences has a wide scope which includes all kinds of advanced applications in Electromagnetics and new technology developments. Broad areas are covered, ranging from Cognitive Radio to Electromagnetic Compatibility and Intentional Electromagnetic Interference; 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.

Altogether the three conferences feature 39 sessions including one FEM2018 session, and 20 special sessions organized by renowned experts. The ICEAA 2018 Conference program consists of 28 sessions and includes 18 Special Sessions; the IEEE APWC 2018 Conference program consists of 10 sessions, including 2 Special Sessions. About 280 papers are scheduled, out of the 466 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 thank the Chair of the ICEAA – IEEE APWC Scientific Committee (Prof. George Uslenghi) and reviewers for their contribution to the review of papers accepted for inclusion in the Conferences.

On Friday morning, September 14, a free half-day Short Course on “Higher order Method of Moments for parallel and accurate solution of multiscale structures” will be given by Prof. T.K. Sarkar of Syracuse University, Syracuse, New York, USA.

The Conferences are held at the “Centro Internacional de Convenciones Las Americas” of Las Americas Hotel, La Boquilla, Cartagena de Indias, Colombia. Hotel Las Americas is a five-star luxury hotel on the edge of the Caribbean Sea that combines 251 Caribbean style rooms and 279 rooms in a modern 10-story tower with a convention center. We hope you enjoy the magic of the Colombian Caribbean between beaches, swimming pools, bars, restaurants, spacious lounges and gardens, gym, spa, tennis courts, mini-golf, games rooms, water sports, and the best view of the City among all the hotels in Cartagena.

Don't miss the opportunity to visit the many interesting places in Cartagena and its surroundings: we are sure you will enjoy them.

We look forward to seeing you in Cartagena de Indias in September.

**Roberto D. Graglia**

Chairman of the ICEAA - IEEE APWC Organizing Committee

**Felix Vega**

Chairman of the ICEAA - IEEE APWC Local Organizing Committee



# GENERAL INFORMATION

## DATES AND LOCATION

The conferences will be held from 10th to 14th of September 2018, at the “Centro Internacional de Convenciones Las Americas” of Las Americas Hotel, La Boquilla, Cartagena de Indias, Colombia (see map).

A pedestrian tunnel connects the Convention Centre to Las Americas Hotel.

## OFFICIAL LANGUAGE

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

## PROCEEDINGS

At the Registration, each participant will receive a copy of the Conference Proceedings.

## ON SITE REGISTRATION FEE

The ICEAA, IEEE APWC, and FEM conference share a common organization, registration fee, submission site, workshops and short courses, and social events.

### On-site registration fees are:

**IEEE members:** 695,00 Euro (VAT included)

**Non-IEEE members:** 715,00 Euro (VAT included)

Full registration is required of all participants, including members of the Conference Committees, Session Chairs and Authors.

The registration fee includes attendance to all sessions, luncheons and coffee breaks, Welcome Reception, Conference Banquet, and participants’ briefcase containing the Conference Proceedings and other material.

## REGISTRATION DESK

A registration desk will be located in the Hall of the Congress Center. Accompanying persons and late registrants may register, or pre-registrants may pick up conference materials, at the following times: Sunday: 17:00÷18:30 Monday: 7:30÷17:30, Tuesday through Thursday: 7:30÷17:00. The accompanying person fee is 120,00 Euro and includes only the Welcome Reception and the Conference Banquet.

## **MEALS AND REFRESHMENTS**

Luncheons (from Monday to Thursday) and coffee breaks are included in the registration fee. Buffet-style luncheons are served in the hotel restaurant Mesón de Don Cristóbal. See staff at the Registration Desk for directions during the Conference.

## **WELCOME RECEPTION**

A Welcome Reception will be offered to the participants on Sunday evening, September 9, at 18:00, in the Restaurant Fogón del Navegante of the Las Americas Hotel, Cartagena de Indias. Extra drinks can be purchased at the bar restaurant. The timing of the reception allows you the flexibility of enjoying another hotel restaurant or one of Cartagena's many local restaurants for the dinner.

## **BANQUET**

A banquet will be offered to the participants on Wednesday night, at 19:30 at the beach of the Hotel Las Americas. Additional tickets can be purchased from the Registration Desk. The winner(s) of the 2018 ICEAA - IEEE APWC Best Student Paper Award will be announced at the Banquet.

## **PARKING**

Parking is available at the Hotel. Ask at the hotel reception desk.

## **AUDIOVISUAL EQUIPMENT**

Each meeting room will be equipped with a notebook. Other equipment will be available only upon written request to the Organizing Committee, to be received before September 3. The presenting authors will not be allowed to use their personal computer for presentation; only the computer 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 of the fonts and any auxiliary or multimedia files needed, and that these files are copied on to the session room computer.

## **INTERNET CONNECTION**

The Conference Centre features WI-FI Internet access.

## **ELECTRICAL POWER IN COLOMBIA**

In Colombia the power sockets are of type A and B. The standard voltage is 110 V and the standard frequency is 60 Hz.

Type A: mainly used in North and Central America, China and Japan. This socket only works with plug A.

Type B: like type A but with an extra prong for grounding. This socket also works with plug A.

## COLOMBIA CURRENCY

The Colombian peso (COP\$) is the unit of currency in Colombia.

Payment are in Colombian Pesos. Some shops accept US Dollars, but this is the exception to the rule. Money Exchange (Casa de Cambio) and ATMs can be found at the airport and in the downtown.

Exchange rate is 1 USD = 2,900 COP (approximately). In Colombia, the printed sign for pesos is “\$”, which is the same sign used for Dollars in the United States. Therefore don’t get alarmed if, when buying a cup of coffee you see \$5,000 This is less than 2 USD. However, in order to avoid confusion, always ask if the price tag of goods is in Pesos or US Dollars.

Counterfeit pesos are a major problem in Colombia and you’ll notice cashiers everywhere vigorously checking notes before completing transactions. While it is difficult for visitors to identify dud bills, if you are given one that is old, battered or just doesn’t seem right, hand it back and ask for another.

Credit cards are common in Colombia and used extensively in the major cities and larger towns. When paying with a credit card, you will be asked, ‘¿En cuantas cuotas?’ (How many payments?). Colombian customers can choose to divide the payment over one to 24 months. Foreign cardholders should just say ‘one.’

Visa and Mastercard are widely accepted. Other cards are of limited use.

## MESSAGES

During the Conference, messages may be directed to participants via Email: [iceaa@seleneweb.com](mailto:iceaa@seleneweb.com). Messages will be posted in front of the Registration desk.

## TRANSPORTATION

Taxis will be frequently available if required, otherwise bookings can be made at the hotel registration desk. Hiring vehicles via APPs such as UBER and Easytaxi is very popular in Cartagena.

Cartagena Airport is only 10 minutes by car from Las Americas Convention Centre. As well as taxis, there is a shuttle service available at the hotel that can be booked in advance by contacting the local Agency Contactos: [maria.rodriquez@contactos.com.co](mailto:maria.rodriquez@contactos.com.co)

## WEATHER

In Cartagena de Indias, at 10°25’ north latitude, it is hot all year round; temperatures in September range from 26-32 degrees Celsius. Showers are possible; therefore raincoats or umbrellas may be useful.

## HOTEL ACCOMMODATIONS

A block of rooms at a Special Rate has been reserved at the Conference Venue: the LAS AMERICAS HOTEL, La Boquilla, Cartagena de Indias, Colombia. The Special Rate is offered for a period of two days before and two days after the Conference dates, to accommodate those who wish to extend their visits (from September 8 through September 16). For bookings please visit the Conference website: <http://www.iceaa-offshore.org> at the page Hotel & Tourist Info / Accommodation and follow the instructions. Group code: 1589

## TOURS & ACTIVITIES

For the latest information on the Accompanying Person Programme and other Social Events please check [www.iceaa-offshore.org](http://www.iceaa-offshore.org), or refer to the Conference registration desk.

## USEFUL ADDRESSES

**For technical and scientific aspects:**

### ICEAA Secretariat

Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino  
Corso Duca degli Abruzzi 24, 10129 Torino

Tel. +39-011-090-4000 / (-4056, Prof. R.D. Graglia; -4012, Prof. G. Lombardi)

Fax +39-011-090-4015/ -4099 - E-mail: [iceaa18@iceaa.polito.it](mailto:iceaa18@iceaa.polito.it)

**For logistics aspects and hotel reservation:**

### SELENE s.r.l. (Mrs. Manuela Trincherò)

Via Medici, 23 - 10143 Torino

Tel. +39 011 749960 - Fax +39 011 7499576 - E-mail: [iceaa@seleneweb.com](mailto:iceaa@seleneweb.com)

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

## ICEAA - IEEE APWC 2018 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 8, 2018) who has authored the best ICEAA or IEEE APWC paper in terms of content and impact on Electromagnetics, either as a single author or as the first author of a team of no more than three authors. The ICEAA – IEEE APWC Scientific Committee reserves the right to make no award if there are no papers of sufficient quality.

The finalists for this Award must present their paper in a special poster session scheduled for Monday afternoon, September 10, 2018, in the coffee-break area near the registration desk. 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 2018 Young Scientist Award will be announced at the Conference Banquet on Wednesday evening, September 12, 2018. Since the award announcement and presentation are made at the Conference Banquet, all candidates are expected to attend it.

# PLENARY LECTURES

MONDAY MORNING, SEPTEMBER 10, 2018 - 10:20-11:20



## CASIMIR FORCE CALCULATION: A GRAND CHALLENGE PROBLEM FOR COMPUTATIONAL ELECTROMAGNETICS

**Prof. Weng C. Chew**

Purdue University, West Lafayette, IN 47907, USA

**Abstract** - This talk will begin by introducing quantum effects that are relevant to electromagnetics. A number of technologies are increasingly affected by quantum theory as measurement sensitivity increases and device dimensions become smaller. Examples of such technologies are quantum communication, quantum computing, and quantum sensors. We will briefly review how quantum effects in electromagnetics are impacting the development of quantum technologies.

Then we will focus on the Casimir force calculation. The physics and mathematics of it will be reviewed, and we will explain why this problem can be a grand challenge problem. The argument principle approach will be reviewed, and we will demonstrate how it can be easily used to compute Casimir force.

**Biography** - **Weng C. Chew** received all his degrees from MIT. His research interests are in wave physics, specializing in fast algorithms for multiple scattering imaging and computational electromagnetics in the last 30 years. His recent research interest is in combining quantum theory with electromagnetics, and differential geometry with computational electromagnetics. After MIT, he joined Schlumberger-Doll Research in 1981. In 1985, he joined U Illinois Urbana-Champaign, was then the director of the Electromagnetics Lab from 1995-2007.

During 2000-2005, he was the Founder Professor, 2005-2009 the YT Lo Chair Professor, and 2013-2017 the Fisher Distinguished Professor. During 2007-2011, he was the Dean of Engineering at The University of Hong Kong. He joined Purdue U in August 2017 as a Distinguished Professor. He has co-authored three books, many lecture notes, over 400 journal papers, and over 600 conference papers. He is a fellow of various societies, and an ISI highly cited author. In 2000, he received the IEEE Graduate Teaching Award, in 2008, he received the IEEE AP-S CT Tai Distinguished Educator Award, in 2013, elected to the National Academy of Engineering, and in 2015 received the ACES Computational Electromagnetics Award. He received the 2017 IEEE Electromagnetics Award. He now is the 2018 IEEE AP-S President.



## **EXTREME ELECTROMAGNETICS**

### **Prof. Nader Engheta**

University of Pennsylvania, Department of Electrical and Systems Engineering, Philadelphia, Pennsylvania, 19104, USA

**Abstract** - Materials are often the means to control and manipulate electromagnetic fields and waves. With the recent development in materials science and engineering, nanoscience and nanotechnology, and atomic- and molecular-level structuring of matters, ample opportunities have become available to construct structures with unprecedented attributes and characteristics in tailoring and sculpting waves and fields at various length scales.

We have been exploring a series of phenomena related to the wave-matter interaction in platforms with “extreme” features, such as one-atom-thick structures capable of guiding EM waves (i.e., thinnest possible waveguides), composite structures with near-zero effective refractive index, geometry-independent resonant structures (i.e., cavity resonators whose resonance frequency is independent of the shape of their external boundaries), photonic doping of zero-index media (i.e., electromagnetic analogue of electronic doping), materials with effective permittivity and/or permeability near zero, optical lumped nanocircuitry (“optical metatronics”) which is a circuit paradigm with light at the nanoscale, slow energy velocity, nonreciprocal vortices at subwavelength scales, materials that can perform analog computing with waves, large anisotropy and nonlinearity, and more. The “extreme electromagnetics” is an exciting platform with unconventional features and functionalities in wave dynamics. I will discuss some of our current work in these areas, will present some of the exciting opportunities and challenges, and will speculate some future directions and possibilities.

**Biography** - Nader Engheta is the H. Nedwill Ramsey Professor at the University of Pennsylvania in Philadelphia, with affiliations in the Departments of Electrical and Systems Engineering, Bioengineering, Materials Science and Engineering, and Physics and Astronomy. He received his B.S. degree from the University of Tehran and his M.S and Ph.D. degrees from Caltech. His current research activities span a broad range of areas including electromagnetics, photonics, metamaterials, nano-optics, graphene electromagnetics, imaging and sensing inspired by eyes of animal species, microwave and optical antennas, and physics and engineering of fields and waves.

He has received several awards for his research including the 2018 Pioneer Award in Nanotechnology from the IEEE Nanotechnology Council, the 2017 William Streifer

Scientific Achievement Award from the IEEE Photonics Society, the 2014 Balthasar van der Pol Gold Medal from URSI, the 2015 Gold Medal from SPIE, the 2015 Fellow of US National Academy of Inventors (NAI), the 2012 IEEE Electromagnetics Award, the 2015 IEEE Antennas and Propagation Society Distinguished Achievement Award, the 2017 Beacon of Photonics Industry Award from the Photonics Media, the 2015 Vannevar Bush Faculty Fellowship Award from US Department of Defense, the 2015 Wheatstone Lecture in King's College London, the 2013 Inaugural SINA Award in Engineering, 2006 Scientific American Magazine 50 Leaders in Science and Technology, the Guggenheim Fellowship, and the IEEE Third Millennium Medal. He is a Fellow of seven international scientific and technical organizations, i.e., IEEE, OSA (Optical Society of America), APS (American Physical Society), MRS (Materials Research Society), SPIE (International Society for Optics and Photonics), URSI, and American Association for the Advancement of Science (AAAS). He has received the honorary doctoral degrees from the Aalto University in Finland in 2016, the University of Stuttgart, Germany in 2016, and Ukraine's National Technical University Kharkov Polytechnic Institute in 2017.

## SHORT COURSE

Prof. Tapan K. Sarkar of Syracuse University, Syracuse, NY, USA, will hold a half-day short course on “Higher order Method of Moments for parallel and accurate solution of multiscale structures” on Friday morning, September 14. The short course is free for the Conference registrants. Participants may register for this short course at the conference registration desk.

FRIDAY MORNING, SEPTEMBER 14, 2018 - 8:40-12:40

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### ON HIGHER ORDER METHOD OF MOMENTS FOR PARALLEL AND ACCURATE SOLUTION OF MULTISCALE STRUCTURES

Instructor **Tapan K. Sarkar**

Syracuse University, Syracuse, NY, USA.

(with participation from Y. Zhang, D. Donoro, W. Zhao and M. Salazar-Palma)

**Abstract** - The course will start with the description of the mathematical equations and the unique properties of the higher order basis functions in the context of the solution of Integral Equations in computational electromagnetics. The theory and the solution methodology of using Surface Integral Equations (SIEs) for analyzing the radiation and scattering from composite metallic and dielectric structures in the frequency domain will be introduced first, followed by the unique properties of the higher order basis functions. The higher order basis functions involved in this case are nothing but simple polynomials of varying degrees. These basis functions are now used to describe the unknowns over electrically large subdomain patches, in contrast to the conventional piecewise linear basis functions over sub wavelength patches. Use of these higher order basis— namely use multiple basis functions over the same electrically large patch—in contrast to use of a single basis over an electrically small patch, can lead to a significant reduction in the total number of unknowns in addition to several other interesting properties. Typically, for a higher order basis, only 10–20 unknowns per wavelength squared of surface area are needed, leading to a reduction of an order of the magnitude of the size of the impedance matrix that needs to be solved.

The advantage of the use of the higher-order polynomials as basis functions is that they can also be adapted to deal with extremely nonuniform mesh sizes, which range



from approximately  $10^{-6} \lambda$  to  $2 \lambda$  in electrical size. Thus, they are quite suitable and very flexible for modeling multiscale structures. The mesh density and the number of unknowns are reduced when compared with the piecewise basis functions. The lower/upper (LU) decomposition is used to solve the matrix equation to ensure the solution accuracy of the method of moments. Numerically, the resulting matrix equation dealing with the impedance matrix is solved using a parallel higher-order method of moments (HOMoM) with a newly developed reduced-communication, lower-upper (RCLU) decomposition solver. For example, the presented method using 201,600 central processing unit (CPU) cores on (dethroned in 2016 - now ranked number 2 supercomputer of the world) Tianhe-2 located in Guangzhou, China can solve a full complex dense matrix equation with 1.06 million unknowns for the surface-current distribution using the classical lower-upper (LU) solver in approximately half an hour. This is accomplished using a new electromagnetic simulator called HOBBIES (Higher Order Basis Based Integral Equation Solver). HOBBIES is based on a parallel In-Core and Out-of-Core integral-equation solver and has a personal pre- and postprocessor called GiD. GiD is used to create the geometrical and topological information of the model, define the run environment required by the solver and display results returned by this solver. HOBBIES presents some important features such as multiplatform and multilanguage environment, definition of models using symbolic variables, automatic optimization of objectives and the option of execute simulations on high performance cluster.

The efficiency and scalability of a parallel higher-order method of moments will also be illustrated for example, using up to 4096 CPU cores on a supercomputer for the analysis of radiation and scattering of a microstrip patch phased array antenna mounted on full scale airplanes. Both the scattering and radiation problems are simulated to demonstrate the efficiency and scalability of the algorithm. Numerical results show that one can achieve above 60% efficiency when the used memory to the total memory ratio is larger than 15%, and the scalability can reach a theoretical value between  $O(N^2)$  and  $O(N^3)$ , where  $N$  is the number of unknowns. Due to its high efficiency and excellent scalability, the algorithm is able to accurately solve large complex electromagnetic problems including composite and multi-scale structures.

# CONFERENCE SCHEDULE\*

\*PLEASE CHECK THE DETAILED PROGRAM IN THE FOLLOWING PAGES

## MONDAY, SEPTEMBER 10, 2018

SALON NUEVA GRANADA B		
9.00-10:00 FORMAL OPENING		
<p style="text-align: center;">10.20-11:20</p> <p style="text-align: center;"><b>PLENARY ADDRESS BY Weng C. Chew</b> Purdue University, USA</p> <p style="text-align: center;"><b>CASIMIR FORCE CALCULATION: A GRAND CHALLENGE PROBLEM FOR COMPUTATIONAL ELECTROMAGNETICS</b></p>		
<p style="text-align: center;">11.20-12:20</p> <p style="text-align: center;"><b>PLENARY ADDRESS BY Nader Engheta</b> University of Pennsylvania, USA</p> <p style="text-align: center;"><b>EXTREME ELECTROMAGNETICS</b></p>		
SALON NUEVA GRANADA B	SALON NUEVA GRANADA C	SALON NUEVA GRANADA D
<p>13:40-16:40</p> <p><b>Session 1 ICEAA</b></p> <p>INVERSE PROBLEMS AND NONLINEAR MEDIA Organized by Y. Shestopalov Chair: Y. Shestopalov</p>	<p>13:40-17:40</p> <p><b>Session 3 IEEE APWC</b></p> <p>WIRELESS COMMUNICATIONS AND SENSORS Chairs: F. Ellinger A. Seidel</p>	<p>13:40-15:40</p> <p><b>Session 4 ICEAA</b></p> <p>ELECTROMAGNETIC THEORY AND EDUCATION Chairs: A. Delgado P.L.E. Uslenghi</p>
<p>16:40-17:20</p> <p><b>Session 2 IEEE APWC</b></p> <p>DOA ESTIMATION Chairs: G. Castellanos Y. Shestopalov</p>		<p>16:00-17:40</p> <p><b>Session 5 ICEAA</b></p> <p>RECENT ADVANCEMENT OF ELECTROMAGNETIC THEORY organized by H. Shirai Chairs: S.-Y. Kim H. Shirai</p>

Coffee break 10.00-10.20 - Lunch break 12.20-13.40 - Coffee break 15.40-16.00

## TUESDAY, SEPTEMBER 11, 2018

SALON NUEVA GRANADA B	SALON NUEVA GRANADA C	SALON NUEVA GRANADA D	ROOM PORTAL 3D
<p><u>8:40-12:20</u></p> <p><b>Session 6</b> <b>IEEE APWC</b></p> <p>ANTENNAS APWC Chairs: D. Filipovic S. Selleri</p>	<p><u>8:40-14:40</u></p> <p><b>Session 9</b> <b>ICEAA</b></p> <p>NUMERICAL METHODS IN ELECTROMAGNETICS Organized by R.D. Graglia D.R. Wilton Chairs: R.D. Graglia D.R. Wilton</p>	<p><u>8:40-10:00</u></p> <p><b>Session 11</b> <b>ICEAA</b></p> <p>LIGHTNING ELECTROMAGNETICS Organized by F. Rachidi M. Rubinstein Chairs: F. Rachidi M. Rubinstein</p>	<p><u>8:40-10:00</u></p> <p><b>Session 15</b> <b>ICEAA</b></p> <p>ADVANCED ARCHITECTURES SUPPORTING RADIATIONLESS ANAPOLE MODES IN ELECTRODYNAMICS AND NANOPHOTONICS Organized by A. Basharin L. Matekovits Chairs: A. Basharin L. Matekovits</p>
<p><u>13:40-14:40</u></p> <p><b>Session 7</b> <b>IEEE APWC</b></p> <p>RFID TECHNOLOGIES Chairs: M. Longhi S. Selleri</p>	<p><u>14:40-17:20</u></p> <p><b>Session 10</b> <b>ICEAA</b></p> <p>OPTOELECTRONICS AND PHOTONICS Chairs: T. Dhaene E. Reyes Vera</p>	<p><u>10:20-12:20</u></p> <p><b>Session 12</b> <b>ICEAA</b></p> <p>ELECTROMAGNETIC MODELING OF DEVICES AND CIRCUITS Chairs: F. Vega T. Yin</p>	<p><u>10:20-12:00</u></p> <p><b>Session 16</b> <b>ICEAA</b></p> <p>EMC/EMI/EMP Chairs: L.R. Arnaut F. Roman</p>
<p><u>14:40-17:20</u></p> <p><b>Session 8</b> <b>ICEAA</b></p> <p>RADAR, IMAGING, INVERSE SCATTERING AND REMOTE SENSING Chairs: L. Klinkenbusch M. Sato</p>		<p><u>13:40-15:40</u></p> <p><b>Session 13</b> <b>ICEAA</b></p> <p>RECENT ADVANCES IN ELECTROMAGNETICS FOR MRI Organized by D. Erricolo G. Carluccio Chairs: G. Carluccio A. O. Rodriguez</p>	<p><u>13:40-16:40</u></p> <p><b>Session 17</b> <b>ICEAA</b></p> <p>ANTENNAS AND ELECTROMAGNETIC DEVICES INSPIRED BY ELECTROMAGNETIC BANDGAP AND METAMATERIALS Organized by K. Esselle L. Matekovits ICEAA Chairs: K. Esselle L. Matekovits</p>
		<p><u>16:00-16:40</u></p> <p><b>Session 14</b> <b>ICEAA</b></p> <p>ELECTROMAGNETIC APPLICATIONS TO BIOMEDICINE Chairs: G. Carluccio A. O. Rodriguez</p>	

**Coffee break 10.00-10.20 - Lunch break 12.20-13.40 - Coffee break 15.40-16.00**

## WEDNESDAY, SEPTEMBER 12, 2018

SALON NUEVA GRANADA B	SALON NUEVA GRANADA C	SALON NUEVA GRANADA D
<p><u>8:20-11:20</u></p> <p><b>Session 18</b> <b>ICEAA</b></p> <p>FAST COMPUTATIONAL METHODS FOR FORWARD AND INVERSE PROBLEMS</p> <p>Organized by A. Boag X. Chen J. -M. Jin</p> <p>Chairs: A. Boag X. Chen J. -M. Jin</p>	<p><u>8:40-10:40</u></p> <p><b>Session 20</b> <b>ICEAA</b></p> <p>MODERN PROBLEMS OF MATHEMATICAL AND COMPUTATIONAL ELECTROMAGNETICS AND THEIR ADVANCED APPLICATIONS</p> <p>Organized by M.N. Georgieva-Grosse G.N. Georgiev</p> <p>Chairs: G.N. Georgiev M.N. Georgieva-Grosse</p>	<p><u>8:40-14:40</u></p> <p><b>Session 23</b> <b>ICEAA</b></p> <p>SIGNALS-OF-OPPORTUNITY BISTATIC RADAR</p> <p>Organized by M. Moghaddam J. Garrison</p> <p>Chairs: J. Garrison M. Moghaddam</p>
<p><u>11:20-17:20</u></p> <p><b>Session 19</b> <b>ICEAA</b></p> <p>ANTENNAS</p> <p>Chairs: L. Jonsson I. Strytsin</p>	<p><u>10:40-12:20</u></p> <p><b>Session 21</b> <b>IEEE APWC</b></p> <p>CHANNEL MODELLING AND MIMO SYSTEMS</p> <p>Chairs: L. Ahumada E. Zochmann</p>	<p><u>15:00-16:40</u></p> <p><b>Session 24</b> <b>ICEAA</b></p> <p>NOVEL FREQUENCY SELECTIVE STRUCTURES AND APPLICATIONS</p> <p>Organized by Z. Shen</p> <p>Chair: Z. Shen</p>
	<p><u>13:40-17:00</u></p> <p><b>Session 22</b> <b>FEM</b></p> <p>FEM WORKSHOP</p> <p>Chairs: B. Notaros S. Selleri</p>	

**Coffee break 10.00-10.20 - Lunch break 12.20-13.40 - Coffee break 15.40-16.00**

## THURSDAY, SEPTEMBER 13, 2018

SALON NUEVA GRANADA B	SALON NUEVA GRANADA C	SALON NUEVA GRANADA D	ROOM PORTAL 3D
<p><u>8:40-15:00</u></p> <p><b>Session 25</b> <b>IEEE APWC</b></p> <p>EMERGING ANTENNA TECHNOLOGIES AND WIDEBAND/MULTIBAND ANTENNAS</p> <p>Organized by H. Nakano</p> <p>Chairs: T. Kawano H. Nakano</p>	<p><u>8:40-15:00</u></p> <p><b>Session 27</b> <b>ICEAA</b></p> <p>COMPLEX MEDIA AND MATERIALS</p> <p>Chairs: A. Boag Ph. Lambin</p>	<p><u>9:00-10:00</u></p> <p><b>Session 29</b> <b>IEEE APWC</b></p> <p>SPECTRUM MANAGEMENT EVOLUTION</p> <p>Organized by A. Navarro</p> <p>Chairs: A. Navarro M. Pineda</p>	<p><u>8:40-12:00</u></p> <p><b>Session 33</b> <b>ICEAA</b></p> <p>ANTENNA SYSTEMS FOR RADIO ASTRONOMY AND COSMOLOGY</p> <p>Organized by D.B. Davidson E. Carretti H. Pienaar</p> <p>Chair: H. Pienaar</p>
		<p><u>10:20-12:20</u></p> <p><b>Session 30</b> <b>IEEE APWC</b></p> <p>COGNITIVE RADIO</p> <p>Chairs: J. Jr Abularach Amez G. Ramirez</p>	<p><u>12:00-14:20</u></p> <p><b>Session 34</b> <b>ICEAA</b></p> <p>RADIO ASTRONOMY</p> <p>Chairs: H. Pienaar S. Selleri</p>
<p><u>15:00-17:20</u></p> <p><b>Session 26</b> <b>IEEE APWC</b></p> <p>LOW-PROFILE AND UWB ANTENNAS AND SYSTEMS</p> <p>Chairs: I.D. Hinostroza Sáenz B. You</p>	<p><u>15:00-17:20</u></p> <p><b>Session 28</b> <b>ICEAA</b></p> <p>ANTENNA ARRAY MODELLING</p> <p>Organized by M.M. Botha C. Craeye</p> <p>Chairs: M.M. Botha C. Craeye</p>	<p><u>13:40-15:20</u></p> <p><b>Session 31</b> <b>ICEAA</b></p> <p>EMC OF ELECTRONIC PRODUCTS FOR COMMUNICATIONS</p> <p>Organized by Y. Wen</p> <p>Chair: Y. Wen</p>	
		<p><u>15:20-17:40</u></p> <p><b>Session 32</b> <b>ICEAA</b></p> <p>CROSSING BORDERS IN RESEARCH: A GERMAN-COLOMBIAN SUCCESS STORY ON CIRCUIT DESIGN, ANTENNAS AND VERY, VERY HIGH FREQUENCY SYSTEMS</p> <p>Organized by D. Dudek</p> <p>Chairs: D. Dudek F. Vega</p>	<p><u>14:20-17:00</u></p> <p><b>Session 35</b> <b>ICEAA</b></p> <p>MATHEMATICAL ADVANCES IN ELECTROMAGNETICS</p> <p>Organized by J. Arnold P.D. Smith</p> <p>Chairs: B.P. de Hon P.D. Smith</p>

**Coffee break 10.00-10.20 - Lunch break 12.20-13.40 - Coffee break 15.40-16.00**

## FRIDAY, SEPTEMBER 14, 2018

SALON NUEVA GRANADA B	SALON NUEVA GRANADA C	SALON NUEVA GRANADA D	ROOM PORTAL 3D
<p>8:40-11:00</p> <p><b>Session 36 ICEAA</b></p> <p>NOVEL AND COMPLEX ELECTROMAGNETIC PHENOMENA, AND APPLICATIONS</p> <p>Organized by F. Capolino</p> <p>Chair: F. Capolino</p>	<p>8:40-12:20</p> <p><b>Session 38 ICEAA</b></p> <p>MICROWAVE AND MMWAVE SENSORS FOR ADVANCED APPLICATIONS</p> <p>Organized by C. Baer</p> <p>Chairs: C. Baer K. Haddadi</p>	<p>8:40-12:20</p> <p><b>Session 39 IEEE APWC</b></p> <p>PROPAGATION</p> <p>Chairs: S. E. Barbin A. Navarro</p>	<p>8:40-12:40</p> <p><b>FREE HALF DAY SHORT COURSE</b></p> <p>ON HIGHER ORDER METHOD OF MOMENTS FOR PARALLEL AND ACCURATE SOLUTION OF MULTISCALE STRUCTURES</p> <p>Instructor: T.K. Sarkar (with participation from Y. Zhang, D. Donoro, W. Zhao and M. Salazar)</p>
<p>11:00-12:40</p> <p><b>Session 37 ICEAA</b></p> <p>ELECTROMAGNETIC MEASUREMENTS</p> <p>Chairs: F. Capolino K. Sieczkarek</p>			

**Coffee break** 10.00-10.20

# FINAL PROGRAM

MONDAY, SEPTEMBER 10 2018 - 13:40 SALON NUEVA GRANADA B

## SESSION 01 - ICEAA

### INVERSE PROBLEMS AND NONLINEAR MEDIA

Organized by Y. Shestopalov

Chair: Y. Shestopalov

13:40-14:00

#### **EXACT SOLUTION FOR THE ELECTROMAGNETIC FIELD EXCITED BY A PULSED FILAMENTARY ELECTRIC CURRENT IN A NONLINEAR NONDISPERSIVE MEDIUM**

*A.V. Kudrin, E.Yu. Petrov, University of Nizhny Novgorod, Russia;*

14:00-14:20

#### **COMPLEX WAVES IN MULTI-LAYERED METAL-DIELECTRIC WAVEGUIDES**

*E.A. Kuzmina, Moscow Technological University (MIREA), Russia; Y.V. Shestopalov, University of Gävle, Sweden;*

14:20-14:40

#### **NUMERICAL STUDY OF MULTILAYER NONLINEAR INHOMOGENEOUS GOUBAU LINES**

*Y. Shestopalov, University of Gävle, Sweden; E. Smolkin, M. Snegur, Penza State University, Russia;*

14:40-15:00

#### **SYNTHESIS OF 1-BIT DIGITAL ANISOTROPIC IMPEDANCE CYLINDRICAL METASURFACE FOR MONOSTATIC RCS REDUCTION**

*A.I. Semenikhin, D.V. Semenikhina, Y.V. Yukhanov, P.V. Blagovisnyy, Southern federal university, Russia, Russia;*

15:00-15:20

#### **CHARACTERISTICS OF VIVALDI ANTENNAS IN THE RADIATION AND SCATTERING MODE**

*Yu.V. Yukhanov, T.Yu. Privalova, E.V. Kriuk, Southern federal university, Russia;*

15:20-15:40

#### **THE EFFECT OF INSERTS UPON PROPAGATION MODES IN A WAVEGUIDE**

*P.D. Smith, E.D. Vinogradova, Macquarie University, Australia; Y.V. Shestopalov, University of Gävle, Sweden;*

16:00-16:20

#### **THE RADIATION AND SCATTERING CHARACTERISTICS OF THE UWB LOW-PROFILE DIPOLE ANTENNA**

*A.V. Gevorkyan, E.V. Kryuk, Southern federal university, Russia;*

16:20-16:40

#### **THE RADIATION CHARACTERISTICS OF THE TWO-ELEMENT VIVALDI ANTENNA, WHICH LOCATED ON THE SURFACE OF THE SPHERE-CONE-SPHERE ADJUNCTION**

*A.V. Gevorkyan, Yu.V. Yukhanov, Southern federal university, Russia;*

MONDAY, SEPTEMBER 10 2018 - 16:40 SALON NUEVA GRANADA B

**SESSION 02 - IEEE APWC**

**DOA ESTIMATION**

Chairs: G. Castellanos Y. Shestopalov

16:40-17:00

**TRAINING MODEL FOR LOCALIZATION OF INTERFERING AND ILLEGAL TRANSMISSION FOR MILITARY FORCES IN UHF BANDS**

*D. Diaz, L. Vargas, G. Castellanos, Escuela Colombiana de Ingenieria, Colombia;*

17:00-17:20

**EFFICIENT RSS-BASED DOA ESTIMATION FOR ESPAR ANTENNAS USING MULTIPLANE SDR CALIBRATION APPROACH**

*M. Groth, L. Leszkowska, L. Kulas, Gdansk University of Technology, Poland;*

MONDAY, SEPTEMBER 10 2018 - 13:40 SALON NUEVA GRANADA C

**SESSION 03 - IEEE APWC**

**WIRELESS COMMUNICATIONS AND SENSORS**

Chairs: F. Ellinger A. Seidel

13:40-14:00

**AN ULTRA-COMPACT 0.17 MM<sup>2</sup> 2.4 GHZ LOW-VOLTAGE CLASS-E POWER AMPLIFIER IN 28 NM CMOS**

*A. Seidel, M. Kreißig, F. Ellinger, TU Dresden, Germany;*

14:00-14:20

**PERFORMANCE OF EQUATORIAL TIME DIVERSITY SYSTEMS EVALUATED FROM RAIN RATE TIME SERIES**

*J. Brito, M. D'Amico, Politecnico di Milano, Italy; B. Ramos, A. Núñez, I. Nolivos, Escuela Superior Politécnica del Litoral (ESPOL), Ecuador;*

14:20-14:40

**DUAL-POLARIZED INTEGRATED MMWAVE ANTENNA FOR HIGH-SPEED WIRELESS COMMUNICATION**

*B. Klein, R. Hahnel, D. Plettemeier, Technische Universität Dresden, Germany;*

14:40-15:00

**MODEL DEFINITION FOR INTERFERENCE PROTECTION BETWEEN DTT AND TVWS**

*G. Castellanos, T. Giraldo, Escuela Colombiana de Ingenieria, Colombia;*

15:00-15:20

**MULTILAYER FLAT SPIRAL RESONATORS FOR LOW FREQUENCY WIRELESS POWER TRANSFER**

*J. Alberto, University of Coimbra, Portugal; G. Puccetti, U. Reggiani, University of Bologna, Italy; L. Sandrolini, University of Bologna, Italy; A. Tacchini, University of Modena and Reggio Emilia, Italy;*

15:20-15:40

**24 GHZ BICMOS SINGLE-STAGE RECTIFIER**

*A. Brönnner, Alexander Wiegand SE & Co. KG, Germany; P. Sakalas, F. Ellinger, Technische Universität Dresden, Germany;*



16:00-16:40

**REVIEW OF FAST, EFFICIENT AND BENDABLE RADIO-FREQUENCY INTEGRATED RECEIVERS FOR THE WIRELESS COMMUNICATION SYSTEMS OF THE FUTURE**

*F. Ellinger, C. Tzschoppe, D. Fritsche, P. Staerke, K. Ishida and T. Meister, Technische Universität Dresden, Germany;*

16:40-17:00

**TDOA EMITTER LOCATION ENHANCEMENT IN NLOS SCENARIO USING MULTI-PATH RAY TRACING FINGERPRINT AND MACHINE LEARNING**

*M. Nogueira de Sousa, Ilmenau University of Technology, Germany; E. F. S. Correa, Ivanildo Barboza, Instituto Militar de Engenharia, Brazil; R. Thomä, Ilmenau University of Technology, Germany;*

17:00-17:20

**A PERFORMANCE COMPARISON OF WIRELESSHART AND ZIGBEE IN OIL REFINERY**

*B. Ramos, Espol, Ecuador; S. Savazzi, CNR-IEIT, Italy; J.M. Winter, E-Aware Technologies, Brazil; V. Ojeda, M. Chalen, E. Del Rosario, M. Alvarez, Espol, Ecuador;*

17:20-17:40

**PERFORMANCE OF SPECTRUM SENSING BASED ON ENERGY DETECTION FOR COGNITIVE RADIOS**

*E.E.A. Medina, S.E. Barbin, University of São Paulo, Brazil;*

MONDAY, SEPTEMBER 10 2018 - 13:40 SALON NUEVA GRANADA D

**SESSION 04 - ICEAA**

**ELECTROMAGNETIC THEORY AND EDUCATION**

Chairs: A. Delgado P.L.E. Uslenghi

13:40-14:00

**MAGNETICALLY COUPLED CIRCUIT WITH NONLINEAR INDUCTOR**

*A. Delgado, Universidad Nacional de Colombia, Colombia;*

14:00-14:20

**A NEW AUGMENTED-REALITY PLATFORM FOR ELECTROMAGNETIC EDUCATION**

*C. Mateo-Segura, Heriot Watt University, United Kingdom;*

14:20-14:40

**SCATTERING BY TWO VERTICAL THIN METALLIC WIRES TRUNCATED BY A HORIZONTAL METAL PLANE**

*P.L.E. Uslenghi, University of Illinois at Chicago, USA*

14:40-15:00

**TWO-PARAMETER EXPANSIONS AND RAY REPRESENTATION OF THE FIELDS DIFFRACTED AT THIN-TO-THICK CURVED DIELECTRIC LAYERS AND CONDUCTING BODIES**

*I.O. Sukharevsky, TU Munich, Germany;*

15:00-15:20

**CHARACTERIZATION AND SIMULATION OF ELECTROMAGNETIC BEAMS TRUNCATED BY FINITE APERTURES IN MILLIMETER AND SUBMILLIMETER WAVELENGTHS**

*T. Viana de Sousa, M. Zamboni-Rached, H. E. Hernández-Figueroa, E. Recami, University of Campinas, Brazil*

15:20-15:40

**THE PHYSICS OF SELF-COMPLEMENTARY METASURFACES**

*J.D. Mateus, Universidad Nacional de Colombia, Colombia; J. P. del Risco, Universidad Sergio Arboleda, Colombia; A. Sayanskiy, S. B. Glybovski, ITMO University, Russia; J. D. Baena, Universidad Nacional de Colombia, Colombia;*

MONDAY, SEPTEMBER 10 2018 - 16:00 SALON NUEVA GRANADA D

**SESSION 05 - ICEAA**

**RECENT ADVANCEMENT OF ELECTROMAGNETIC THEORY**

**Organized by H. Shirai**

Chairs: S.Y. Kim H. Shirai

16:00-16:20

**SALIENT FEATURES OF TEMPORAL AND SPATIO-TEMPORAL METAMATERIALS**

*V. Pacheco-Pena, Y. Kiasat, B. E. Edwards, N. Engheta, University of Pennsylvania, USA;*

16:20-16:40

**HIDDEN RAY-TRACING ON THE SHADOW BOUNDARY OF PENETRABLE WEDGES**

*S.Y. Kim, Korea Institute of Science and Technology, Korea, South;*

16:40-17:00

**IMAGE RECONSTRUCTION AND PROCESSING ALGORITHM OF GPR FOR HUMANITARIAN DEMINING SENSOR ALIS**

*M. Sato, K. Kikuta, Tohoku Univesrity, Japan;*

17:00-17:20

**SCATTERING OF A BEAM WAVE FROM A DIELECTRIC GRATING WITH FINITE EXTENT**

*A. Komiyama, Osaka Electro-Communication University, Japan;*

17:20-17:40

**EM WAVE SCATTERING BY A WINDOW ON A WALL**

*H. Shirai, M. Shimuzu, Chuo University, Japan;R. Sato, Niigata University, Japan;*

TUESDAY, SEPTEMBER 11 2018 - 8:40 SALON NUEVA GRANADA B

**SESSION 06 - APWC**

**ANTENNAS APWC**

Chairs: D. Filipovic S. Selleri

08:40-09:00

**DESIGN, SIMULATION AND OPTIMIZATION OF A SLOTTED WAVEGUIDE ARRAY WITH CENTRAL FEED AND LOW SIDELOBES**

*L. Ripoll-Solano, L. Torres-Herrera, Universidad del Norte, Colombia; M. Sierra-Perez, Universidad Politécnica de Madrid, Spain;*

09:00-09:20

**PERFORMANCE STUDY OF LOCALIZATION TECHNIQUES: HYBRID VS. NON HYBRID TDOA/DOA**

*T. Sanchez, R.C.Hincapie, C.Gomez, Univesidad Pontificia Bolivariana, Colombia*

09:20-09:40

**EXPERIMENTAL VERIFICATION OF 3D PRINTED LOW-CONDUCTIVITY GRAPHENE-ENHANCED PLA ABSORBERS FOR BACK LOBE SUPPRESSION IN APERTURE-COUPLED ANTENNAS**

*I. Piekarz, J. Sorocki, I. Slomian, K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;*

09:40-10:00

**BROADBAND ANTENNA SELECTION FOR VEHICLE-MOUNTED JAMMING SYSTEM AGAINST RCIEDS**

*T. M. D. Tran, M. Piette, Royal Military Academy, Belgium;*

10:20-10:40

**INFLUENCE OF NON-IDEAL COMPONENTS IN A DYNAMIC DIRECTIONAL MODULATION SYSTEM**

*E. A. Cabrera-Hernández, J. Parrón-Granados, Universitat Autònoma de Barcelona, Spain; A. Tennant, The University of Sheffield, United Kingdom;*

10:40-11:00

**HIGH ISOLATION DIPLEXER-FREE DUAL-POLARIZED ARRAY FOR GEOSTATIONARY SATELLITES**

*E. Tianang, M. Elmansouri, D. Filipovic, University of Colorado Boulder, USA;*

11:00-11:20

**DUAL-BAND KU-BAND SCANNING LEAKY-WAVE ANTENNA FOR SATELLITE COMMUNICATIONS**

*M. Poveda-Garcia, J. L. Gomez-Tornero, Universidad Politecnica de Cartagena, Spain; S. Rotenberg, C. Mateo-Segura, Heriot Watt University, United Kingdom;*

11:20-11:40

**A QUADRI-BAND PBG ANTENNA CROSS-SHAPED FOR WIRELESS COMMUNICATIONS**

*B.O. Andrade, L. M. Mendonca, Federal University of Rio Grande del Norte, Brazil;*

11:40-12:00

**RECONFIGURABLE PRINTED YAGI-UDA STAR ARRAY FOR RF POWER TRANSMISSION AND HARVESTING SYSTEMS**

*H. Raad, Xavier University, USA; A. Hammoodi, A. Issac, University of arkansas Little Rock, USA;*

12:00-12:20

**AN OPTIMIZED AND INTEGRATED ANTENNA DESIGN FOR THE FUTURE JAMMING SYSTEM AGAINST RCIEDS**

*T. M. D. Tran, M. Piette, Royal Military Academy, Belgium;*

TUESDAY, SEPTEMBER 11 2018 - 13:40 SALON NUEVA GRANADA B

**SESSION 07 - IEEE APWC**

**RFID TECHNOLOGIES**

Chairs: M. Longhi S. Selleri

13:40-14:00

**60 GHZ ON-CHIP BICMOS BOW-TIE ANTENNA**

*A. Brönnner, Alexander Wiegand SE & Co. KG, Germany; F. Schwarze, F. Ellinger, Technische Universität Dresden, Germany;*

14:00-14:20

**DESIGN OF HIGHLY DISTINGUISHABLE LETTERS FOR INKJET-PRINTED CHIPLESS RFID TAGS**

*M.A. Demir, F. Mutlu, O. Ergul, Middle East Technical University, Turkey;*

14:20-14:40

**RFID-BASED LOCALIZATION FOR MONITORING IN GREENHOUSES USING MAVS**

*M. Longhi, University of Rome 'Tor Vergata', Italy; Z. Taylor, M. Popovic, J. Nieto, R. Siegwart, ETH Zurich, Switzerland; G. Marrocco, University of Rome 'Tor Vergata', Italy;*

TUESDAY, SEPTEMBER 11 2018 - 14:40 SALON NUEVA GRANADA B

**SESSION 08 - ICEAA**

**RADAR, IMAGING, INVERSE SCATTERING AND REMOTE SENSING**

Chairs: L. Klinkenbusch M. Sato

14:40-15:00

**ESTIMATING PARTICLE DIMENSIONS IN STREAMS USING A MULTISTATIC RADAR SYSTEM**

*A. Reinhardt, H. Bruens, L. Klinkenbusch, M. Hoeft, Kiel University, Germany;*

15:00-15:20

**A JOINT INVERSION METHOD FOR BREAST IMAGING USING ELECTROMAGNETIC AND ACOUSTICS WAVES**

*Ö. Özdemir, Istanbul Technical University, Turkey; K.W.A. van Dongen, Delft University, Netherlands; A. Oncu, Bogazici University, Turkey*

15:20-15:40

**DIFFERENCES IN POLARIMETRY PROPERTIES BETWEEN BACKWARD AND FORWARD SCATTERED MICROWAVE WAVES FROM VARIOUS POLLUTIONS ON SEA SURFACE**

*P. Kabacik, A. Byndas, M. Hofman, WRUST Wroclaw University of Science and Technology, Poland;*

16:00-16:20

**ELECTRIC FIELDS PRODUCED BY LIGHTNING STROKES OBTAINED BY RAY-TRACING METHOD**

*A. Parra, F. Vega, Universidad Nacional de Colombia, Colombia; F. Rachidi, École Polytechnique Fédérale de Lausanne, Switzerland;*

16:20-16:40

**EVALUATION OF ALIS GPR FOR HUMANITARIAN DEMINING IN COLOMBIA AND CAMBODIA**

*M.Sato, K. Kikuta, Tohoku Univesrity, Japan; R. Bustemante, Universidad de los Andes, Colombia;*

16:40-17:00

**EXPERIMENTAL VERIFICATION OF IN-DOOR GROUND BASED SAR USING BEAM SPACE MUSIC ALGORITHM**

*B. Omuz, Bogazici University, Turkey; F. Oz, M LTEK Ar-Ge ltd. co., Turkey; O. Ozdemir, Istanbul Technical University, Turkey; A. Oncu, Bogazici University, Turkey;*

17:00-17:20

**ASSESSING THE PERFORMANCE OF THREE TYPE OF UWB ANTENNAS FOR FMCW GPR IMAGING**

*H. J. Martínez, S. Alvarez, M. A. Yarlequé, Pontificia Universidad Católica del Perú, Peru;*

TUESDAY, SEPTEMBER 11 2018 - 8:40 SALON NUEVA GRANADA C

**SESSION 09 - ICEAA**

**NUMERICAL METHODS IN ELECTROMAGNETICS**

**Organized by R.D. Graglia, D.R. Wilton**

Chairs: R.D. Graglia D.R. Wilton

08:40-09:00

**SIIE-DDM BASED DIRECT AND ITERATIVE SOLVERS FOR MULTISCALE PROBLEMS**

*M. Jiang, Z. Rong, L. Lei, J. Hu, University of Electronic Science and Technology of China, China;*

09:00-09:20

**EQUIVALENCE PRINCIPLE ALGORITHM FOR POTENTIAL INTEGRAL EQUATIONS**

*A. Farshkaran, O. Ergul, Middle East Technical University, Turkey;*

09:20-09:40

**SIMPLIFIED TREATMENT OF THREE-MEDIA JUNCTIONS USING THE METHOD OF MOMENTS**

*D. Tihon, H. Bui Van, H. A. Kayani, C. Craeye, ICTEAM institute, UCL, Belgium;*

09:40-10:00

**DEEP THINNING OF MOM MATRICES WITH THE BALANCED ELECTROMAGNETIC ABSORBER METHOD IN THREE DIMENSIONS**

*R. Kastner, Tel Aviv University, Israel; D. S. Weile, University of Delaware, USA;*

10:20-10:40

**A HYBRID TIME-FREQUENCY DOMAIN ALGORITHM FOR BROADBAND MONOSTATIC RCS COMPUTATION OF LARGE AND DEEP OPEN CAVITIES**

*K.D. Zhang, University of Illinois, USA; C.F. Wang, National University of Singapore, Singapore; J.M. Jin, University of Illinois, USA;*

10:40-11:00

**THE FLAMMER SOLUTION FOR THE CIRCULAR PEC DISK: COMPUTATIONS AND COMPARISONS**

*A. F. Peterson, Georgia Tech, USA; M. M. Bibby, Georgia Tech, USA;*

11:00-11:20

**REDUCING THE DIMENSIONALITY OF VOLUME-VOLUME (6-D) INTEGRALS FOR NUMERICAL EVALUATION BY MULTIPLE APPLICATIONS OF THE DIVERGENCE THEOREM**

*J. Rivero, F. Vipiana, Politecnico di Torino, Italy; D. R. Wilton, University of Houston, Italy; W.A. Johnson, Consultant, USA;*

11:20-11:40

**LEGO BRICK BOUNDARY WITH A PENETRATING PEC STRUCTURE**

*R. Bojanic, B.P. de Hon, M.C. van Beurden, Eindhoven University of Technology, Netherlands;*

11:40-12:00

**A STOCHASTIC GREEN'S FUNCTION - INTEGRAL EQUATION METHOD FOR COMMUNICATION IN DIFFUSE MULTIPATH ENVIRONMENTS**

*S. Lin, E. Dohme, Z. Peng, University of New Mexico, USA;*

12:00-12:20

**ANALYTICAL TREATMENT OF THE NEAR FIELD TERM OF THE GREEN FUNCTION OF PLANARLY STRATIFIED MEDIA**

*E.H. Bleszynski, M.K. Bleszynski, T. Jaroszewicz, Monopole Research, USA; W.A. Johnson, Consultant, USA; J. Rivero, Istituto Superiore Mario Boella, Italy; F. Vipiana, Politecnico di Torino, Italy; D. Wilton, University of Houston, USA;*

13:40-14:00

**NUMERICAL MODELING OF A WIND TURBINE BLADE DEFLECTION SENSING SYSTEM USING THE MOVING FRAME FDTD METHOD**

*O. Franek, Aalborg University, Denmark;*

14:00-14:20

**AN EFFICIENT GALERKIN SCHEME TO SOLVE THE TIME DOMAIN INTEGRAL EQUATION FOR WIRE-GRID MODELS INVOLVING MULTIPLE INCIDENT PULSES**

*S.M. Rao, Naval Research Laboratory, USA;*

14:20-14:40

**ACCURACY-CONTROLLED AND STRUCTURE-PRESERVED H<sup>2</sup>-MATRIX-MATRIX PRODUCT IN LINEAR COMPLEXITY**

*M. Ma, D. Jiao, Purdue University, USA*

14:40-15:00

**FOURIER SCHEME FOR THE FIBER LOOP MIRROR TEMPERATURE SENSOR BASED ON INDIUM-FILLED SIDE-HOLE PHOTONIC CRYSTAL FIBER**

*E. Reyes-Vera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia; M. Varón, P. Torres, Engineering Universidad Nacional de Colombia, Colombia;*

15:00-15:20

**PERFORMANCE ANALYSIS OF A MACH-ZEHNDER INTERFEROMETER BASED ON DUAL-CORE TRANSVERSALLY CHIRPED MICROSTRUCTURED OPTICAL FIBER FOR BIOSENSING APPLICATIONS**

*J. Montoya-Cardona, Instituto Tecnológico Metropolitano, Colombia; E. Reyes-Vera, Universidad Nacional de Colombia, Colombia; B. Huertas-Herrera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia; J. Úsuga-Restrepo, Instituto Tecnológico de Aeronáutica (ITA), Brazil; N. Gómez-Cardona, Instituto Tecnológico Metropolitano, Colombia; P. Torres, Universidad Nacional de Colombia, Colombia;*

15:20-15:40

**FAST AND ACCURATE TIME-DOMAIN SIMULATION OF PASSIVE PHOTONIC SYSTEMS**

*Y. Ye, D. Spina, Y. Xing, W. Bogaerts, T. Dhaene, Ghent University, Belgium;*

16:00-16:20

**A NOVEL INTERFEROMETRIC SENSOR BASED ON A DUAL-CORE TRANSVERSALLY CHIRPED MICROSTRUCTURED OPTICAL FIBER FOR MEASURING GLUCOSE CONCENTRATION**

*C. Jimenez-Durango, Instituto Tecnológico Metropolitano, Colombia; E. Reyes-Vera, Universidad Nacional de Colombia, Colombia; J. Úsuga-Restrepo, Instituto Tecnológico de Aeronáutica (ITA), Brazil; J. Montoya-Cardona, B. Huertas-Herrera, J. F. Restrepo, N. Gómez-Cardona, Instituto Tecnológico Metropolitano, Colombia; M. Varón, Universidad Nacional de Colombia, Colombia;*

16:20-16:40

**NOVEL WIDE-BANDWIDTH POLARIZATION FILTER BASED ON H-SHAPED MICRO-STRUCTURED OPTICAL FIBER WITH GOLD NANO-STRIP**

*N. Gomez-Cardona, E. Reyes-Vera, C. Jiménez-Durango, Instituto Tecnológico Metropolitano, Colombia; J. Usuga-Restrepo, Instituto Tecnológico de Aeronáutica (ITA), Brazil; P. Torres, Universidad Nacional de Colombia, Colombia;*

16:40-17:00

**LIQUID-CORE PHOTONIC CRYSTAL FIBER FOR SUPERCONTINUUM GENERATION BASED ON HYBRID SOLITON DYNAMICS**

*N. Munera, S. Vergara, C.A. Alvarez, R. Acuna, National University of Colombia - Medellin, Colombia;*

17:00-17:20

**A NOVEL APPROACH FOR DESIGNING OMNIDIRECTIONAL SLOTTED-WAVEGUIDE ANTENNA ARRAYS**

*H.R.D. Filgueiras, INATEL, Brazil; I.F. da Costa, Antenna Company, Netherlands; S. Jr. Arismar Cerqueira, INATEL, Brazil; J.R. Kelly, 2ICS/5GIC, The University of Surrey, UK; P.Xiao, 2ICS/5GIC, The University of Surrey, UK;*

**SESSION 11 - ICEAA**

**LIGHTNING ELECTROMAGNETICS**  
**Organized by F. Rachidi, M. Rubinstein**  
Chairs: F. Rachidi M. Rubinstein

08:40-09:00

**AN UPDATE ON THE CHARACTERISTICS OF POSITIVE FLASHES MEASURED AT THE SÁNTIS TOWER**

M. Azadifar, M. Rubinstein, Heig vd, Switzerland; F.Rachidi, EPFL, Switzerland;

09:00-09:20

**NATURAL LIGHTNING OBSERVATORIES IN COLOMBIA**

D. Aranguren, Keraunos sas, Colombia, J. Lopez, J. Montanya, Technical University of Catalonia, Spain, H. Torres, Keraunos sas, Colombia;

09:20-09:40

**AN EXPERIMENTAL APPROACH ON THE TRANSIENT RESPONSE OF EARTHING SYSTEMS BASED ON SOIL ENHANCING COMPOUNDS AND NON-CONVENTIONAL ELECTRODES**

E. Castellanos, J. Rodriguez, J. Ramirez, I. Acosta, J. Bermudez, Y. Mendez Hernandez, Universidad Simon Bolivar, Venezuela;

09:40-10:00

**AKUNU: OPEN LIGHTNING DETECTION AND ATMOSPHERIC DATA COLLECTION SYSTEM**

G. Nicora, UNIDEF, Argentina; M. Rubinstein, M. Azadifar, J. Brechet, A. Perez Quintana, University of Applied Sciences Western Switzerland, Switzerland; F. Rachidi, EPFL, Switzerland; V. Cooray, University of Uppsala, Sweden; F. Roman, Nacional University of Colombia, Colombia; M. Fernando, University of Colombo, Sri Lanka; E. E. Avila, Universidad Nacional de Córdoba, Argentina;

TUESDAY, SEPTEMBER 11 2018 - 10:20 SALON NUEVA GRANADA D

**SESSION 12 - ICEAA**

**ELECTROMAGNETIC MODELING OF DEVICES AND CIRCUITS**  
Chairs: F. Vega T. Yin

10:20-10:40

**MODELING OF AN ELECTROMAGNETIC ACTUATOR BY MEANS OF RELUCTANCE NETWORK WITH THE SATURATION EFFECT INCLUDED**

T. Yin, C. Shuai, Y. Li, Naval University of Engineering, China;

10:40-11:00

**THREE-SECTION ASYMMETRIC DIFFERENTIALLY-FED BROADBAND COUPLED-LINE DIRECTIONAL COUPLER**

K. Janisz, I. Piekarz, A. Rydosz, K. Wincza, S. Gruszczynski, AGH University, Poland;

11:00-11:20

**ANALYTICAL MODELING OF A COAXIAL PROBE IN A WAVEGUIDE DEVICE**

D. Tami, C. Rego, G. Lopes Ramos, Federal University of São João del-Rei, Brazil;

11:20-11:40

**INVESTIGATION OF MULTILEVEL ADAPTIVE CROSS APPROXIMATION (MLACA) ACCELERATION FOR SUPERCONDUCTING CIRCUIT ANALYSIS**

B.A.P. Nel, M.M. Botha, Stellenbosch University, South Africa;

11:40-12:00

**NON-MAGNETIC ON BOARD TRANSISTOR-FREE PI TOPOLOGY BASED CIRCULATOR**

E. G. Sousa, S. R.M.J. Rondineau, University of Brasília, Brazil;

12:00-12:20

**PARAMETRIC MODELING OF THE FRONT DOOR COUPLING BETWEEN TWO NEARBY PARABOLIC ANTENNAS**

*J. F. Vega, J. M. Becerra, J. A. Rangel, Z. Y. Lopez, National University of Colombia, Colombia; M. L. Suárez, R. Martinez, National Agency of the Spectrum, Colombia;*

TUESDAY, SEPTEMBER 11 2018 - 13:40 SALON NUEVA GRANADA D

**SESSION 13 - ICEAA**

**RECENT ADVANCES IN ELECTROMAGNETICS FOR MRI**

**Organized by D. Erricolo, G. Carluccio**

Chairs: G. Carluccio A. O. Rodriguez

13:40-14:00

**TRAVELLING-WAVE MRI FOR SMALL-BORE IMAGER AT 15.2T**

*F. Vazquez, S. E. Solis-Najera, UNAM, Mexico; J. Lazovic, L. M. Zopf, Campus Science Support Facilities GmbH, Austria; R. Martin, L. Medina, Faculty of Sciences, UNAM, Mexico; O. Marrufo, INN MVS, Mexico; A. O. Rodriguez, UAM, Mexico;*

14:00-14:20

**SNR IMPROVEMENT WHEN A HIGH PERMITTIVITY MATERIAL HELMET-SHAPED FORMER IS USED WITH A CLOSE-FITTING HEAD ARRAY**

*G. Carluccio, G. Haemer, C.M. Collins, New York University, USA;*

14:20-14:40

**BORE-LINING SLOT ANTENNAS FOR 7T BODY MRI**

*L. Alon, New York University School of Medicine, USA;*

14:40-15:00

**THEORETICAL PERFORMANCE OF A METAMATERIAL-INSPIRED ANTENNA FOR MRI**

*R. Martin, S. E. Solis-Najera, F. Vazquez, Faculty of Sciences, UNAM, Mexico; O. Marrufo, INN MVS, Mexico; A. O. Rodriguez, UAM Iztapalapa, Mexico;*

15:00-15:20

**A TOOL FOR COIL SENSITIVITY ANALYSIS FOR AN ARBITRARY SURFACE COIL NEAR ARBITRARY SPHERICAL SAMPLE**

*G. Carluccio, C.M. Collins, New York University, USA;*

15:20-15:40

**DESIGN OF AN 8 CHANNEL DIPOLE TRANSMIT ARRAY FOR HEAD IMAGING WITH THE USE OF A HIGH PERMITTIVITY MATERIAL HELMET SHAPED FORMER**

*G.G. Haemer, G. Carluccio, C.M. Collins, NYU Langone Health, USA;*

TUESDAY, SEPTEMBER 11 2018 - 16:00 SALON NUEVA GRANADA D

**SESSION 14 - ICEAA**

**ELECTROMAGNETIC APPLICATIONS TO BIOMEDICINE**

Chairs: G. Carluccio A. O. Rodriguez

16:00-16:20

**EVALUATION OF THE INTERFERENCE IN THE MAGNETIC RESONANCE OF THE 3.0 TESLA FIELD NEXT TO A 1.5 TESLA FIELD -A CASE STUDY**

*T.M.B Farias, K. A.C. Daros, C. H. Murata, L. C. Carmelo, N. Abdala, H. Carrete Jr, Universidade Federal de São Paulo, Brazil;*



16:20-16:40

**FIRST EXPERIMENTAL ASSESSMENT OF A MICROWAVE IMAGING PROTOTYPE FOR CEREBROVASCULAR DISEASES MONITORING**

*J.A. Tobon Vasquez, Politecnico di Torino, Italy; R. Scapatucci, CNR-IREA, Italy; G. Turvani, Politecnico di Torino, Italy; G. Dassano, Politecnico di Torino, Italy; N. Joachimowicz, Université Paris-Diderot, France; B. Duchêne, Université Paris-Saclay, France; M.R. Casu, Politecnico di Torino, Italy; L. Crocco, CNR-IREA, Italy; F. Vipiana, Politecnico di Torino, Italy*

TUESDAY, SEPTEMBER 11 2018 - 8:40 ROOM PORTAL 3D

**SESSION 15 - ICEAA**

**ADVANCED ARCHITECTURES SUPPORTING RADIATIONLESS ANAPOLE MODES IN ELECTRODYNAMICS AND NANOPHOTONICS**

**Organized by A. Basharin , L. Matekovits**

Chairs: A. Basharin L. Matekovits

08:40-09:00

**SUBWAVELENGTH CLOAKING DEVICE DUE TO ANAPOLE MODE EXCITATION**

*A. K. Ospanova, NUST MISiS, Russia; G. Labate, L. Matekovits, Politecnico di Torino, Italy; A. A. Basharin, NUST MISiS, Russia;*

09:00-09:20

**TUNABLE LENS BASED ON GRAPHENE METASURFACE FOR CIRCULAR POLARIZATION**

*Z. Hamzavi-Zarghani, Politecnico di Torino, Italy; A. Yahaghi, Shiraz University, Iran; L. Matekovits, Politecnico di Torino, Italy;*

09:20-09:40

**ALL-DIELECTRIC METAMATERIALS IN VISIBLE SPECTRAL RANGE. ANAPOLE MODE EXCITATION**

*I.V. Stenishchev, A.K. Ospanova, A.A. Basharin, National University of Science and Technology (MISiS), Russia;*

09:40-10:00

**WAVE PROPAGATION IN CYLINDRICALLY STRATIFIED DIELECTRIC MEDIA AND APPLICATION TO RCS CHARACTERIZATION**

*K. Naishadham, Georgia Institute of Technology, USA; L. Matekovits, Politecnico di Torino, Italy;*

TUESDAY, SEPTEMBER 11 2018 - 10:20 ROOM PORTAL 3D

**SESSION 16 - ICEAA**

**EMC/EMI/EMP**

Chairs: L.R. Arnaut F. Roman

10:20-10:40

**PROBABILITY DISTRIBUTION OF DISSIPATED ENERGY IN ELECTRICALLY LARGE CAVITIES**

*L.R. Arnaut, Queen Mary University London, United Kingdom; M.I. Andries, DB Technology, United Kingdom;*

10:40-11:00

**HIGH CURRENT TESTS OVER CONDUCTIVE FABRICS**

*J. A. Cristancho, J. E. Rodriguez, C. A. Rivera, F. J. Roman, J. J. Pantoja, Universidad Nacional de Colombia, Colombia;*

11:00-11:20

**PREDICTING DEVIATIONS IN SOFTWARE EXECUTION PATHS DUE TO EMI INJECTION VIA REACHABLE SETS AND RANDOM DELAYS**

*L. Valbuena, University of New Mexico, USA; G. L. Heileman, University of Kentucky, USA; S. Hemmady, Edl Schamiloglu, University of New Mexico, USA;*

11:20-11:40

**EVALUATION OF INTERFERENCE DUE TO RAIN IN MILLIMETER WAVES**

*T.M. Surco Espejo, L. da Silva Mello, Pontificia Universidade Catolica do Rio de Janeiro, Brazil;*

11:40-12:00

**THE FINITE GROUND PLANE EFFECT ON THE RECONSTRUCTION OF EQUIVALENT SOURCES FOR ELECTROMAGNETIC COMPATIBILITY APPLICATIONS**

*H. Zhao, C. Li, S. Tao, UESTC, China; Z. Chen, Dalhousie University, Canada; J. Hu, UESTC, China;*

TUESDAY, SEPTEMBER 11 2018 - 13:40 ROOM PORTAL 3D

**SESSION 17 - ICEAA**

**ANTENNAS AND ELECTROMAGNETIC DEVICES INSPIRED BY ELECTROMAGNETIC BANDGAP AND METAMATERIALS**

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

Chairs: K. Esselle L. Matekovits

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13:40-14:00

**TOROIDAL DIPOLE MODES AND ANAPOLE STATES IN METAMATERIALS**

*A. Basharin, National University of Science and Technology, Russia*

14:00-14:20

**A LOW-PROFILE, PLANAR, POWER-EFFICIENT 2D BEAM-STEERING ANTENNA TECHNOLOGY**

*M. U. Afzal, K. P. Esselle, Macquarie University, Australia;*

14:20-14:40

**ANALYZE AND DESIGN OF THIN PLANAR HIGH IMPEDANCE SURFACE AS AN ANTENNA**

*A.T. Almutawa, H. Kazemi, F. Capolino, University of California, Irvine, USA;*

14:40-15:00

**SIDELobe SUPPRESSION IN RESONANT CAVITY ANTENNAS THROUGH NEAR-FIELD ANALYSIS**

*A. A. Baba, R. M. Hashmi, K. P. Esselle, Macquarie University, Australia; A. R. Weily, CSIRO, Australia; L. Matekovits, Politecnico di Torino, Italy;*

15:00-15:20

**SPECTRAL COMPOSITION OF THE SCATTERED FIELD FROM A LARGE METALLIC CLOAKED CYLINDER**

*B. Cappello, L. Matekovits, Politecnico di Torino, Italy;*

15:20-15:40

**SEMI-ANALYTICAL MODELING OF CYLINDRICALLY-LAYERED ANISOTROPIC METAMATERIAL DEVICES**

*G. Simon da Rosa, J. R. Bergmann, Pontifical Catholic University of Rio de Janeiro, Brazil;*

16:00-16:20

**A LOW-PROFILE PHASE CORRECTING SOLUTION TO IMPROVE DIRECTIVITY OF HORN ANTENNA**

*A. Kiyani, M. U. Afzal, R. M. Hashmi, K. P. Esselle, Macquarie University, Australia; L. Matekovits, Politecnico di Torino, Italy;*

16:20-16:40

**QUASI-TRANSPARENT AND CIRCULARLY POLARIZED PATCH ANTENNA USING METAMATERIAL INTEGRATED TO A SOLAR CELL FOR S-BAND CUBESAT APPLICATIONS**

*A. Ygnacio-Espinoza, D. Peñaloza-Aponte, J. Alvarez-Montoya, Universidad Nacional de Ingeniería, Peru; A. Quispe-Mesco, Universidad Nacional de San Antonio Abad del Cusco, Peru; M. Clemente-Arenas, Universidad Nacional de Ingeniería, Peru;*

WEDNESDAY , SEPTEMBER 12 2018 - 8:20 SALON NUEVA GRANADA B

**SESSION 18 - ICEAA**

**FAST COMPUTATIONAL METHODS FOR FORWARD AND INVERSE PROBLEMS**

**Organized by A. Boag, X. Chen, J.-M. Jin**

Chairs: A. Boag X. Chen, J.-M. Jin

08:20-08:40

**FAST CODES FOR MODELING THE MAGNETIZATION DYNAMICS IN MAGNETIC NANOSTRUCTURES**

*V. Lomakin, X. Wang, M. Kuteifan, I. Volvach, M. Menarini, Univerisity of California, USA;*

08:40-09:00

**ACCELERATING THE DOMAIN GREEN'S FUNCTION METHOD WITH THE EQUIVALENT DIPOLE-MOMENT TECHNIQUE**

*D. J. Ludick, Stellenbosch University, South Africa;*

09:00-09:20

**GENERALIZED SOURCE INTEGRAL EQUATIONS WITH IMPROVED SHIELDS**

*L. Klinckenbusch, Kiel University, Germany; A. Sharshesky, A. Boag, Tel Aviv University, Israel;*

09:20-09:40

**SELF-DUAL WIDEBAND ABSORBERS**

*N. Mohammadi Estakhri, N. Engheta, R. Kastner, University of Pennsylvania, USA;*

09:40-10:00

**BACK-PROJECTION CORTICAL POTENTIAL IMAGING USING A MULTI-RESOLUTION OPTIMIZATION ALGORITHM**

*D. Haor, R. Joffe, R. Shavit, A. Geva, Ben-Gurion University, Israel;*

10:20-10:40

**A PARALLELIZED MULTI-SOLVER ALGORITHM FOR SOLVING LARGE AND COMPLEX ELECTROMAGNETIC PROBLEMS**

*J. Guan, S. Yan, K.D. Zhang, J.M. Jin, University of Illinois, USA;*

10:40-11:00

**EFFECTS OF MULTIPLE SCATTERING ON RESOLUTION OF FULL-WAVE INVERSE-SCATTERING SOLVER**

*Z. Wei, X. Chen, National University of Singapore, Singapore;*

11:00-11:20

**FAST DIRECT SOLUTION OF ELECTROMAGNETIC SCATTERING WITH ENHANCED SKELETONIZATION SCHEME**

*Z. Rong, J. Hu, M. Jiang, University of Electronic Science and Technology of China, China;*

**SESSION 19 - ICEAA**

**ANTENNAS**

Chairs: L. Jonsson I. Syrytsin

11:20-11:40

**ON BOUNDS OF THE Q-FACTOR AS A FUNCTION OF ARRAY ANTENNA DIRECTIVITY**

*B. L. G. Jonsson, S. Shi, A. Ludvig-Osipov, KTH Royal Institute of Technology, Sweden;*

11:40-12:00

**DUAL MILLIMETER WAVE RECONFIGURABLE DIELECTRIC LENS ANTENNA**

*R. A. Santos, G. L. Fré, Federal University of Itajubá - UNIFEI, Brazil; F. B. Mejia, National Institute of Telecommunications - INATEL, Brazil; D. H. Spadoti, IESTL Brazil;*

12:00-12:20

**RECONFIGURABLE HEMISPHERICAL DIELECTRIC LENS ANTENNAS IN MM-WAVES**

*R. A. Santos, G. L. Fré, Federal University of Itajubá - UNIFEI, Brazil; F. B. Mejia, National Institute of Telecommunications - INATEL, Brazil; D. H. Spadoti, Federal University of Itajubá - UNIFEI, Brazil;*

13:40-14:00

**HIGH-GAIN CIRCULARLY POLARIZED CORPORATE-FEED TERAHERTZ ANTENNA ARRAY**

*D. Warmowska, Z. Raida, Brno University of Technology, Czech Republic;*

14:00-14:20

**EFFECTS OF PHONE CASE AND USER EFFECTS ON SWITCHED-BEAM HIGH GAIN ANTENNA SYSTEM FOR 5G MOBILE TERMINALS**

*I. Syrytsin, S. Zhang, G. Frølund Pedersen, Aalborg University, Denmark;*

14:20-14:40

**ANTENNA INTEGRATED WITH A MICROSTRIP FILTER FOR 5G MM-WAVE APPLICATIONS**

*I. Syrytsin, M. Shen, G. Frølund Pedersen, Aalborg University, Denmark;*

14:40-15:00

**ANTENNA PATTERN EFFECTS IN A LOW SIDELobe CIRCULARLY POLARIZED PLANAR ARRAY DUE TO ELEMENT ERRORS**

*P.M. Ruiz, CentraleSupélec, France; R.L. Haupt, Colorado School of Mines, USA; I.D. Hinojosa S'aenz, R. Guinvarc'h, CentraleSupélec, France;*

15:00-15:20

**DUAL-BAND MULTIBEAM ANTENNA ARRAY WITH DIFFERENT POLARIZATION PROPERTIES FED BY MODIFIED BUTLER MATRIX**

*I. Slomian, A. Rydosz, S. Gruszczynski, K. Wincza, AGH University of Science and Technology, Poland;*

15:20-15:40

**EVALUATION OF ADDITIVE MANUFACTURING PROCESSES FOR 3-D MULTIBAND ANTENNAS**

*G.A. Ramirez, J.L. Araque, Universidad Nacional de Colombia, Colombia;*

16:00-16:20

**ANTENNA FOR IN-BAND FULL-DUPLEX WIRELESS COMMUNICATIONS**

*D.O. Rodriguez-Duarte, J.L. Araque-Quijano, Universidad Nacional de Colombia, Colombia;*

16:20-16:40

**APERTURE-COUPLED MICROSTRIP ANTENNA INTEGRATED WITH A PET-G DIELECTRIC LENS**

*I. Slomian, J. Sorocki, I. Piekarz, K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;*

16:40-17:00

**INVESTIGATION ON THE REALIZATION OF COMPACT PATCH ANTENNAS ON MAGNETO-DIELECTRIC SUBSTRATE USING 3D PRINTING TECHNOLOGY WITH IRON-ENHANCED PLA FILAMENT**

*J. Sorocki, I. Piekarz, I. Slomian, S. Gruszczynski, K. Wincza, AGH University of Science and Technology, Poland;*

17:00-17:20

**DESIGN OF OMNIDIRECTINAL REFLECTOR FED BY A DIELECTRIC LENS ASSOCIATED WITH A COAXIAL FEED HORN**

*L. Saavedra, J.R. Bergmann, Pontifical Catholic University of Rio de Janeiro, Brazil;*

WEDNESDAY , SEPTEMBER 12 2018 - 8:40 SALON NUEVA GRANADA C

**SESSION 20 - ICEAA**

**MODERN PROBLEMS OF MATHEMATICAL AND COMPUTATIONAL ELECTROMAGNETICS AND THEIR ADVANCED APPLICATIONS**

**Organized by M.N. Georgieva Grosse, G.N. Georgiev**

Chairs: G.N. Georgiev M.N. Georgieva-Grosse

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08:40-09:00

**THEORY OF A LOOP ANTENNA LOCATED ON THE SURFACE OF A CIRCULAR COLUMN WITH UNIAXIAL ANISOTROPIC PERMITTIVITY AND GYROMAGNETIC PERMEABILITY**

*A.V. Kudrin, T.M. Zaboronkova, A.S. Zaitseva, University of Nizhny Novgorod, Russia;*

09:00-09:20

**CRITERION FOR PHASE SHIFTER OPERATION OF THE CIRCULAR WAVEGUIDE WITH AZIMUTHALLY MAGNETIZED FERRITE AND DIELECTRIC**

*M.N. Georgieva-Grosse, Consulting and Researcher in Physics and Computer Sciences, Germany; G.N. Georgiev, University of Veliko Tirnovo, Bulgaria*

09:20-09:40

**THE PATH FROM MONADIC TO TETRADIC GREEN'S FUNCTIONS**

*A. R. Baghai-Wadji, University of Cape Town & Xi'an University of Science and Technology, South Africa;*

09:40-10:00

**ADVANCED COMPUTATIONAL METHOD FOR ANALYSIS OF THE CIRCULAR WAVEGUIDE, LOADED WITH AN AZIMUTHALLY MAGNETIZED FERRITE TOROID AND A DIELECTRIC CYLINDER**

*G.N. Georgiev, University of Veliko Tirnovo, Bulgaria; M.N. Georgieva-Grosse, Consulting and Researcher in Physics and Computer Sciences, Germany;*

10:20-10:40

**DETECTION CAPABILITY OF SMALL TARGETS FLOATING ON SEA WATERS BY MM-WAVE RADAR**

*P. Kabacik, A. Byndas, M. Hofman, D. Sysak, T. Wasik, WRUST Wroclaw University of Science and Technology, Poland;*

**SESSION 21 - IEEE APWC**

**CHANNEL MODELLING AND MIMO SYSTEMS**

Chairs: L. Ahumada E. Zochmann

10:40-11:00

**STATISTICAL EVALUATION OF DELAY AND DOPPLER SPREAD IN 60 GHZ VEHICLE TO VEHICLE CHANNELS DURING OVERTAKING**

*E. Zochmann, TU Wien, Austria; M. Hofer, AIT, Austria; M. Lerch, TU Wien, Austria; J. Blumenstein, TU Brno, Czech Republic; S. Sangodoyin, USC, USA; H. Groll, S. Pratschner, S. Caban, TU Wien, Austria; D. Löschenbrand, L. Bernado, T. Zemen, AIT, Austria; A. Prokes, TU Brno, Czech Republic; M. Rupp, C. F. Mecklenbrauker, TU Wien, Austria; A. F. Molisch, USC, USA;*

11:00-11:20

**STUDYING THE DYNAMICS OF OUTDOOR-INDOOR WIRELESS LINKS AT 60 GHZ**

*E. Carreno, A. Anglès, D. Schkolnik, L. Ahumada, Universidad Diego Portales, Chile;*

11:20-11:40

**WIDEBAND CHANNEL SOUNDING USING MODULATED OFDM SIGNALS**

*M. Molina Silva, L. da Silva Mello, C. Rodríguez Ron, Pontificia Universidade Católica do Rio de Janeiro, Brazil; P. Gonzalez Castellanos, Universidade Federal Fluminense da UFF, Brazil;*

11:40-12:00

**CAPACITY GAINS OF (3X3)X(3X3) MIMO FIXED LINKS WITH PLANAR APERIODIC SPARSE ARRAYS IN PURE-LOS CHANNELS**

*A. A. Glazunov, University of Twente, Netherlands; N. Amani, A. Uz Zaman, M. V. Ivashina, R. Maaskant, Chalmers University of Technology, Sweden;*

12:00-12:20

**ANALYSIS OF SPATIAL OVERLAP CONSTELLATIONS IN HYBRID BEAMFORMING COMMUNICATION SYSTEMS**

*J. Eisenbeis, P. Ramos López, T. Mahler, T. Zwick, Karlsruhe Institute of Technology (KIT), Germany;*

**SESSION 22 - FEM**

**FEM WORKSHOP**

Chairs: B. Notaros S. Selleri

13:40-14:00

**AN EFFICIENT 2.5D FINITE ELEMENT - TRANSFORMATION OPTICS APPROACH TO MORPHED-BOR OBJECTS**

*G. G. Gentili, M. Khosrnonejad, Politecnico di Milano, Italy; R. Nesti, INAF - Osservatorio di Arcetri, Italy; G. Pelosi, S. Selleri, University of Florence, Italy;*

14:00-14:20

**APPLICATIONS OF ADJOINT SOLUTIONS FOR PREDICTING AND ANALYZING NUMERICAL ERROR OF FORWARD SOLUTIONS BASED ON HIGHER ORDER FINITE ELEMENT MODELING**

*B. M. Notaros, C. Key, A. Smull, D. Estep, Colorado State University, USA; T. Butler, University of Colorado Denver, USA;*

14:20-14:40

**CHARACTERIZING METAMATERIAL RESONATORS AND FINITE METASURFACES BY THE METHOD OF MOMENTS**

*J.L. Araque-Quijano, J.D. Baena, Universidad Nacional de Colombia, Colombia;*

14:40-15:00

**FINITE ELEMENTS ANALYSIS OF A THERMODYNAMIC MODEL OF A LIGHTNING-LIKE PLASMA CHANNEL**

*A.F. Escobar, F.J. Roman Campos, Universidad Nacional de Colombia, Colombia;*

15:00-15:20

**FEM-BASED DETECTION OF MOVING TARGETS VIA PARTICLE FILTERING AND ARTIFICIAL NEURAL NETWORK**

*G. Battistelli, L. Chisci, University of Florence, Italy; N. Forti, NATO Science and Technology Organization, Italy; L. Gao, University of Electronic Science and Technology of China, China; G. Pelosi, S. Selleri, University of Florence, Italy;*

15:20-15:40

**EFFICIENT ELECTROMAGNETIC MODELING OF WIRELESS SIGNAL PROPAGATION IN UNDERGROUND MINE TUNNELS**

*B. M. Notaros, C. Key, S. B. Manic, B. Troksa, M. M. Ilic, S. Savic, Colorado State University, USA;*

16:00-16:20

**NON-CONFORMAL DOMAIN DECOMPOSITION METHOD SUPPORTING HP DISCRETIZATIONS**

*A. Amor-Martín, L. García-Castillo, Universidad Carlos III de Madrid, Spain; D. García-Doñoro, Xidian University, China*

16:20-16:40

**CHECKERBOARD-LIKE LOW PROFILE ANTENNA OPTIMIZATION**

*M. Zucchi, Politecnico di Torino, Italy; G. Giordanengo, M. Righero, Istituto Superiore Mario Boella, Italy; J.L. Araque Quijano, Universidad Nacional de Colombia, Colombia; G. Vecchi, Politecnico di Torino, Italy;*

16:40-17:00

**DIELECTRIC CHARACTERIZATION OF FAME: GLYCEROL MIXTURES IN THE SEPARATION STAGE OF THE BIODIESEL PRODUCTION PROCESS**

*A.F. Uribe, D.A. Pulido, G.F. Giraldo, S.Velásquez, L. Muñoz, J.B. Bohórquez, N.M. Peña, Universidad de los Andes, Colombia*

WEDNESDAY, SEPTEMBER 12 2018 - 8:40 SALON NUEVA GRANADA D

**SESSION 23 - ICEAA**

**SIGNALS-OF-OPPORTUNITY BISTATIC RADAR**

**Organized by M. Moghaddam, J. Garrison**

Chairs: J. Garrison M. Moghaddam

08:40-09:00

**GNSS-R MODELING RESULTS OBTAINED WITH IMPROVED BISTATIC RADAR EQUATION**

*V. Zavorotny, A. Voronovich, NOAA Earth System Research Laboratory, USA;*

09:00-09:20

**SNOW DEPTH ESTIMATION USING PSEUDORANGE AND CARRIER PHASE OF GNSS SIGNALS**

*K. Yu, China University of Mining and Technology, China; Y. Li, X. Chang, S. Wang, Wuhan University, China; K. Zhang, China University of Mining and Technology, China;*

09:20-09:40

**A STUDY OF THE AMPLITUDE DISTRIBUTION OF NEAR-SPECULAR BISTATIC SEA CLUTTER**

*A. M. Balakhder, M. M. Al-Khalidi, J. T. Johnson, ElectroScience Lab, The Ohio State University, USA;*

09:40-10:00

**PROBING SOIL MOISTURE UP TO ROOT-ZONE BY USING MULTIPLE SIGNALS OF OPPORTUNITY**

*D.R. Boyd, M. Kurum, Mississippi State University, USA; J. Garrison, B. Nold, G. Pignotti, Purdue University, USA; J. Piepmeier, M. Vega, R. Bindlish, National Aeronautics and Space Administration, USA;*

10:20-10:40

**DETECTION AND MEASUREMENT OF MOVING TARGETS USING X-BAND DIGITAL SATELLITE TV SIGNALS**

*S. Ribó, E. Cardellach, F. Fabra, W. Li, V. Moreno, A. Rius, Institute of Space Sciences (ICE, CSIC), Spain;*

10:40-11:00

**COHERENCE PROPERTIES CHARACTERIZATION OF SIGNALS OF OPPORTUNITY OVER LAND SURFACE**

*R. Shah, S. Yueh, Jet Propulsion Laboratory, California Institute of Technology, USA; X. Xu, Jet Propulsion Laboratory, California Institute of Technology, USA; J. Garrison, Purdue University, USA;*

11:00-11:20

**GNSS SIGNALS INVERSION FOR AMPLITUDE ESTIMATION: A CONCEPT FOR HIGH-RATE REFLECTOMETRY**

*G. Stienne, ULCO, France; J.-C. Kucwaj, ULCO, France; M. Semmling, GFZ, Germany; S. Reboul, ULCO, France;*

11:20-11:40

**EXPERIMENTAL AND MODELLED GNSS REFLECTOMETRY RESPONSE OVER LAND**

*L. Guerriero, Tor Vergata University, Italy; N. Pierdicca, D. Comite, Sapienza University of Rome, Italy; F. Costantini, Deimos Space UK Ltd, United Kingdom; L. Dente, Tor Vergata University, Italy;*

11:40-12:00

**PRELIMINARY RESULTS OF A GNSS-R SIMULATION TO SENSE CANOPY PARAMETERS**

*O. Eroglu, M. Kurum, J. E. Ball, Mississippi State University, USA;*

12:00-12:20

**SIGNALS OF OPPORTUNITY: ENABLING NEW SCIENCE OUTSIDE OF PROTECTED BANDS**

*J.L. Garrison, Purdue University, USA; J. R. Piepmeier, NASA Goddard Space Flight Center, USA; R. Shah, Jet Propulsion Laboratory, USA;*

13:40-14:00

**RETRIEVING SNOW WATER EQUIVALENCE USING SIGNALS OF OPPORTUNITY BISTATIC RADAR**

*X. Xu, R. Shah, S. Yueh, JPL, USA; K. Elder, USA Forest Service, USA; H. Huang, L. Tsang, University of Michigan at Ann Arbor, USA;*

14:00-14:20

**SIGNALS OF OPPORTUNITY AIRBORNE DEMONSTRATOR: INSTRUMENT OVERVIEW, PERFORMANCE DURING FIRST FLIGHTS AND FUTURE INSTRUMENT CONCEPT**

*M.A. Vega, J.R. Piepmeier, NASA Goddard Space Flight Center, USA; J.L. Garrison, Purdue University, USA; J. Knuble, C. Du Toit, M.A. Fritts, NASA Goddard Space Flight Center, USA;*

14:20-14:40

**GNSS-R PARAMETER SENSITIVITIES FOR SOIL MOISTURE RETRIEVAL**

*J.D. Campbell, M. Moghaddam, University of Southern California, USA;*

WEDNESDAY, SEPTEMBER 12 2018 - 15:00 SALON NUEVA GRANADA D

**SESSION 24 - ICEAA**

**NOVEL FREQUENCY SELECTIVE STRUCTURES AND APPLICATIONS**

**Organized by Z. Shen**

Chair: Z. Shen

15:00-15:20

**ANALYSIS OF THZ BEAM PROPAGATION BETWEEN THE PEC PLANAR MIRRORS**

*W. Dou, H. Guo, N. Liu, Southeast University, China;*



15:20-15:40

**HIGHLY-INTEGRATED FOLDED REFLECTARRAY FOR GENERATION OF BESSEL BEAM CARRYING ORBITAL ANGULAR MOMENTUM**

*J. Yang, Y. Shen, S. Hu, Southeast University, China;*

16:00-16:20

**ADAPTIVE NARROWBAND ANTIJAM METHOD FOR SATELLITE NAVIGATION**

*K. Shi, Y. Jia, S. Fu, Z. Cao, P. Chen, Southeast University, China;*

16:20-16:40

**AN ULTRA-WIDEBAND AND HIGH-EFFICIENCY 90° POLARIZATION ROTATOR BASED ON DOUBLE SPLIT-RING RESONATORS**

*A. A. Omar, S. Y. Ho, Z. Shen, Nanyang Technological University, Singapore;*

THURSDAY, SEPTEMBER 13 2018 - 8:40 SALON NUEVA GRANADA B

**SESSION 25 - IEEE APWC**

**EMERGING ANTENNA TECHNOLOGIES AND WIDEBAND/MULTIBAND ANTENNAS**

**Organized by H. Nakano**

Chairs: T. Kawano H. Nakano

08:40-09:00

**SHORT CIRCULARLY POLARIZED METALINE ANTENNA**

*H. Nakano, T. Abe, J. Yamauchi, Hosei University, Japan;*

09:00-09:20

**A WIDEBAND PHASE-SHIFTERLESS SWITCHED-BEAM ARRAY ANTENNA**

*P. Ngamjanyaporn, Rangsit University, Thailand; C. Phongcharoenpanich, M. Krairiksh, King Mongkut's Institute of Technology Ladkrabang, Thailand;*

09:20-09:40

**A BENT UMBRELLA-SHAPED TRANSMISSION LINE ANTENNA WITH PARASITIC MONOPOLES**

*T. Kawano, National Defense Academy, Japan; H. Nakano, Hosei University, Japan*

09:40-10:00

**MILLIMETER WAVE BEAM STEERABLE/RECONFIGURABLE LIQUID METAL ARRAY ANTENNA**

*K. Yahya Alqurashi, C. Crean, University of Surrey, UK; H.R.D. Filgueiras, I.F. da Costa, A. Cerqueira S. Jr., Inatel, Brazil; P. Xiao, University of Surrey, UK; Z. Chen, H. Wong, City University of Hong Kong, China; J.R. Kelly, University of Surrey, UK;*

10:20-10:40

**DUAL BAND MACEY TYPE T COMPOSED OF THREE RADIATING GRIDS FOR WIFI 2/5 GHZ APPLICATION**

*S. Makino, K. Hirano, K. Itoh, K. Noguchi, T. Hirota, Kanazawa Institute of Technology, Japan;*

10:40-11:00

**DESIGN OF DUAL-BAND METASURFACE ANTENNA ARRAY USING CHARACTERISTIC MODE ANALYSIS (CMA) FOR 5G MILLIMETER-WAVE APPLICATIONS**

*T. Li, Z. N. Chen, National University of Singapore, Singapore;*

11:00-11:20

**DESIGN STRATEGIES ON BROADBAND CIRCULAR POLARIZATION GENERATION USING METASURFACE STRUCTURES**

*T. Fukusako, K. Furuya, R. Kuse, Kumamoto University, Japan;*

11:20-11:40

**A TRANSPARENT DOUBLE FOLDED LOOP ANTENNA FOR IOT APPLICATIONS**

*Y. Koga, M. Kai, Fujitsu Laboratories LTD., Japan;*

11:40-12:00

**LOW-PROFILE MAGNETOELECTRIC DIPOLE ANTENNA WITH DUAL COMPLEMENTARY SOURCES**

*H. Wong, Q.W. Lin, University of Hong Kong, China;*

12:00-12:20

**DESIGN OF WIDEBAND SLOT ARRAY ANTENNA BY GROOVE GAP WAVEGUIDE IN MILLIMETER WAVES**

*J. Liu, A. Uz Zaman, J. Yang, Chalmers University Technology, Sweden;*

13:40-14:00

**COMPACT AND WIDEBAND PRINTED MONOPOLE ANTENNA FOR CIRCULAR POLARIZATION**

*T. Fujimoto, T. Kawamoto, K. Shimizu, Y. Urushizaki, Nagasaki University, Japan;*

14:00-14:20

**MILLIMETER-WAVE ARRAY ANTENNAS BASED ON LIQUID CRYSTAL**

*S. Kaushal, Y. Hasegawa, R. Hosono, R. Yamamoto, N. Guan, Fujikura Ltd., Japan;*

14:20-14:40

**WIDEBAND ANTENNA CHARACTERISTICS OF A SPIRAL ANTENNA WITH DOUBLE LAYER HIS REFLECTOR**

*M. Tanabe, Toshiba Infrastructure Systems & Solutions Coporation, Japan;*

14:40-15:00

**A WIDEBAND COMPRESSED SLOT ANTENNA WITH ENHANCING DIRECTIVITY**

*R. Zhang, Q.X. Chu, South China University of Technology, Guangzhou, China;*

THURSDAY, SEPTEMBER 13 2018 - 15:00 SALON NUEVA GRANADA B

**SESSION 26 - IEEE APWC**

**LOW-PROFILE AND UWB ANTENNAS AND SYSTEMS**

Chairs: I.D. Hinostroza Sáenz B. You

15:00-15:20

**RESONANCES IN RECEIVING TWO-ARM SPIRAL ANTENNAS**

*N. R. K. Devarapalli, Mahindra École Centrale, India; I. D. Hinostroza Saenz, R. Guinvarc'h, CentraleSupélec, France; R.L. Haupt, Colorado School of Mines, USA;*

15:20-15:40

**A LTCC ULTRA-WIDEBAND PERIODIC LEAKY-WAVE ANTENNA WITH WIDE SCANNING RANGE AT 60 GHZ**

*M. Emami, M.H. Rahmani, D. Deslandes, École de Technologie Supérieure, Canada;*

16:00-16:20

**A BROADBAND DUAL POLARIZED ANTENNA WITH L SHAPED SLOTS**

*W. Shi, Q.-X. Chu, South China University of Technology, China*

16:20-16:40

**A MONOPOLE ANTENNA WITH BUTTERFLY-LIKE COUPLING SLOT FOR MIMO APPLICATIONS**

*J. Zhou, X. He, J. Nie, B. You, W. Li, K. Zhang, Xiamen University, China;*

16:40-17:00

**A MULTI-BAND ANTENNA LOADED WITH G-LIKE NESTED-RING META-ELEMENTS FOR WLAN/WIMAX APPLICATIONS**

*B. You, B. Lin, J. Zhou, H. Xu, Xiamen University, China;*

17:00-17:20

**A NOVEL MODIFIED HEXAGONAL SHAPED FRACTAL ANTENNA WITH MULTI BAND NOTCH CHARACTERISTICS FOR UBW APPLICATIONS**

J. Benavides, R. Lituma, P. Chasi, L.F. Guerrero-Vásquez, Universidad Politécnica Salesiana, Ecuador;

THURSDAY, SEPTEMBER 13 2018 - 8:40 SALON NUEVA GRANADA C

**SESSION 27 - ICEAA**

**COMPLEX MEDIA AND MATERIALS**

Chairs: A. Boag Ph. Lambin

08:40-09:00

**ELECTRODYNAMICS OF GRAPHENE HETEROSTRUCTURES AND ELECTROMAGNETIC APPLICATIONS**

*Ph. Lambin, B. Majerus, University of Namur, Belgium; M. Lobet, Harvard University, USA; M. Sarrazin, M. Cormann, University of Namur, Belgium; T. Kaplas, Yu. Svirko, University of Eastern Finland, Finland; A. Paddubskaya, K. Batrakov, P. Kuzhir, Belarusian State University, Belarus;*

09:00-09:20

**EFFICIENT HYBRID AND SCREENED HYBRID DENSITY FUNCTIONAL CALCULATIONS OF CARBON AND SILICON NANOSTRUCTURES ELECTRONIC PROPERTIES**

*D. Gabay, Tel Aviv University, Israel; X. Wang, V. Lomakin, University of California, San-Diego, USA; A. Boag, Tel Aviv University, Israel; M. Jain, Indian Institute of Science, India; A. Natan, Tel Aviv University, Israel;*

09:20-09:40

**SERIES FEEDING NETWORK BASED ON METAMATERIAL COUPLED-LINE COUPLERS AND ZERO-DEGREE METAMATERIAL PHASE-SHIFTING COMPENSATION-LINES**

*D. Betancourt, A. Konforta, T. Bertuch, FHR, Germany;*

09:40-10:00

**METASURFACES WITH THERMAL HYSTERESIS**

*M. Clemente-Arenas, Universidad Nacional de Ingeniería, Peru; J. Urbina, A. Lakhtakia, The Pennsylvania State University, USA;*

10:20-10:40

**THE SCATTERING PARAMETERS OF BOREHOLED ANTENNAS IN THE UHF BAND**

*A. Badescu, I. Mocanu, UPB, Romania;*

10:40-11:00

**EARLY-TIME DIFFUSION IN IMAGING THROUGH OBSCURING RANDOM MEDIA: TWO-WAY PROPAGATION AND DEBLURRING**

*E. Bleszynski, M. Bleszynski, T. Jaroszewicz, Monopole Research, USA;*

11:00-11:20

**ENGINEERING OF GIANT MAGNETOIMPEDANCE EFFECT IN CO- RICH MICROWIRES BY JOULE HEATING**

*A. Zhukov, P. Corte-Leon, M. Ipatov, J.M. Blanco, J. Gonzalez, V. Zhukova, University of Basque Country, Spain*

11:20-11:40

**OPTIMIZATION OF GIANT MAGNETOIMPEDANCE EFFECT IN FE-RICH MICROWIRES**

*A. Zhukov, P. Corte-Leon, M. Ipatov, J.M. Blanco, J. Gonzalez, V. Zhukova, University of Basque Country, Spain*

11:40-12:00

**ON THE STUDY OF COFFEE'S COMPLEX PERMITTIVITY**

*J.C. Bohorquez Reyes, S. Velasquez, N. Peña, A. Cortes, N. Gutierrez, Universidad de los Andes, Colombia;*

12:00-12:20

**METAMATERIAL BASED MICROSTRIP SENSOR FOR DIELECTRIC CHARACTERIZATION OF SOLIDS**

*A. Soffiatti, Y. Max, L.M. Mendonca, Universidade Federal do Rio Grande do Norte, Brazil;*

13:40-14:00

**AN ALTERNATIVE METHOD BASED ON RF TO CLASSIFY POROUS CERAMIC MATERIALS**

*J.J. Choquehuanca-Zevallos, F.A. Huamán-Mamani, D. Mayta-Ponce, J. Ludeña-Choez, Universidad Católica San Pablo, Peru;*

14:00-14:20

**DIELECTRIC CHARACTERIZATION OF FAME: GLYCEROL MIXTURES IN THE SEPARATION STAGE OF THE BIODIESEL PRODUCTION PROCESS**

*D.S. Pulido Suarez, G.F. Giraldo Villa, L.C. Diaz Bautista, S. Velasquez Suarez, J.C. Bohorquez Reyes, N.M. Peña Traslaviña, Universidad de los Andes, Colombia;*

14:20-14:40

**BROADBAND CHARACTERIZATION OF 3D PRINTED SAMPLES WITH GRADED PERMITTIVITY**

*G.A. Ramirez, J.L. Araque, Universidad Nacional de Colombia, Colombia;*

14:40-15:00

**DETERMINATION OF PERMITTIVITY VALUES USING MICROWAVE DIELECTRIC SPECTROSCOPY FOR ASSESSING APPLE AND PURPLE SWEET POTATO QUALITY PARAMETERS**

*M. Yarlequé, Pontificia Universidad Católica del Perú, Peru; W. Castro, Universidad Privada del Norte, Peru; S. Chuquizuta, Universidad Nacional Toribio Rodriguez de Mendoza, Peru; A. Reyes, Pontificia Universidad Católica del Perú, Peru;*

THURSDAY, SEPTEMBER 13 2018 - 15:00 SALON NUEVA GRANADA C

**SESSION 28 - ICEAA**

**ANTENNA ARRAY MODELLING**

**Organized by M.M. Botha, C. Craeye**

Chairs: M.M. Botha C. Craeye

15:00-15:20

**PERFORMANCE OF A MASSIVELY PARALLEL HIGHER ORDER METHOD OF MOMENTS CODE USING THOUSANDS OF CPUS**

*Z.Lin, X.Zhao, Y.Zhang, Xidian University, Xian, China; T.K.Sarkar, Syracuse University, USA*

15:20-15:40

**PARALLEL FINITE ELEMENT METHOD SOLVER FOR ANTENNA ANALYSIS**

*D. Garcia-Donoro, Xidian University, China; L. E. Garcia-Castillo, M. Salazar-Palma, Universidad Carlos III de Madrid, Spain;*

16:00-16:20

**GRATING LOBE MITIGATION IN ULTRA-WIDEBAND PHASED ARRAYS**

*A. Boag, S. Zach, Tel Aviv University, Israel; Y. Gazit, Yehoshua Gazit Consulting Engineering, Israel; G. Zwiirn, Omnisys Ltd., Israel; A. Boag, Tel Aviv University, Israel;*

16:20-16:40

**MODELING, DESIGN, AND CHARACTERIZATION OF A 78.5 GHZ DUAL-POLARIZED PLANAR ANTENNA ARRAY CONSISTING OF SERIES-PARALLEL FED PATCH ANTENNA SUB-ARRAYS**

*G. F. Hamberger, U. Siart, T. F. Eibert, TUM, Germany;*

16:40-17:00

**FAST ITERATIVE TECHNIQUES FOR THE SIMULATIONS OF LARGE ANTENNA ARRAYS**

*H. Bui-Van, T. Pairon, C. Craeye, Universite catholique de Louvain, Belgium;*

17:00-17:20

**EFFICIENCY OF VARIOUS MACRO BASIS FUNCTION SCHEMES FOR ANTENNA ARRAY ANALYSIS**

*K. Sewraj, R.C. Beswick, M.M. Botha, Stellenbosch University, South Africa;*

**SESSION 29 - IEEE APWC**

**SPECTRUM MANAGEMENT EVOLUTION**

**Organized by A. Navarro**

Chairs: A. Navarro M. Pineda

09:00-09:20

**SPECTRUM OCCUPANCY MEASUREMENTS USING CYCLOSTATIONARY DETECTION IN GNU RADIO**

*A. Navarro, J. Aristizabal, L. Vargas, Universidad Icesi, Colombia;*

09:20-09:40

**ANTENNA PATTERN VERIFICATION FOR DIGITAL TV BROADCAST SYSTEMS IN ANDEAN COUNTRIES BASED ON UAV'S**

*A. Navarro, J. Aristizabal, Universidad Icesi, Colombia; M.D. Pineda, TESAmerica, Colombia;*

09:40-10:00

**SPECTRUM FORECASTING MODEL FOR IOT SERVICES**

*M. Perez, D. Jaramillo, Pontificia Universidad Javeriana, Colombia;*

*D. Pinzon, F. Herrera, Agencia Nacional del Espectro (ANE), Colombia;*

THURSDAY, SEPTEMBER 13 2018 - 10:20 SALON NUEVA GRANADA D

**SESSION 30 - IEEE APWC**

**COGNITIVE RADIO**

Chairs: J. Jr Abularach Arnez G. Ramirez

10:20-10:40

**A TIME-FREQUENCY SIGNAL ANALYSIS AND PROCESSING APPLICATION FOR COOPERATIVE SPECTRUM SENSING**

*J. J. Abularach Arnez, L. da Silva Mello, Pontifical Catholic University of Rio de Janeiro PUC Rio, Brazil; C. Medina, Military Institute of Engineering, Brazil;*

10:40-11:00

**REAL TIME SDR COGNITIVE RADIO SYSTEM FOR COOPERATIVE SPECTRUM SENSING IN THE 700 MHZ BRAZILIAN DIGITAL TV BAND**

*J. J. Abularach Arnez, L. da Silva Mello, C. Rodriguez Ron, Pontifical Catholic University of Rio de Janeiro PUC Rio, Brazil; C. Medina, Military Institute of Engineering, Brazil; P. Gonzalez Castellanos, Fluminense Federal University, Brazil;*

11:00-11:20

**OPPORTUNISTIC COMMUNICATION SYSTEM FOR THE FM BAND**

*M. Pérez, S. Losada, C. Paéz, R. Quiceno, Pontificia Universidad Javeriana, Colombia;*

11:20-11:40

**MODEL FOR MEASUREMENT OF RADIO ENVIRONMENT MAPS AND LOCATION OF WHITE SPACES FOR COGNITIVE RADIO DEPLOYMENT**

*M. Patino, Universidad Distrital Francisco Jose de Caldas, Colombia;*  
*F. Vega, Universidad Nacional de Colombia, Colombia;*

11:40-12:00

**ANALYSIS OF AN ENERGY DETECTION ALGORITHM FOR SPECTRUM SENSING**

*G.A. Ramirez, M.A. Saavedra, J.L. Araque, Universidad Nacional de Colombia, Colombia;*

12:00-12:20

**SPECTRUM OCCUPATION ASSESSMENT IN BOGOTÁ AND OPPORTUNITIES FOR COGNITIVE RADIO SYSTEMS**

*M. A. Saavedra, G. A. Ramirez, J. L. Araque, Universidad Nacional de Colombia, Colombia;*

**SESSION 31 - ICEAA**

**EMC OF ELECTRONIC PRODUCTS FOR COMMUNICATIONS**

**Organized by Y. Wen**

Chair: Y. Wen

13:40-14:00

**ELECTROMAGNETIC INTERFERENCE CHARACTERISTICS AND COUNTERMEASURES ON SUBWAY TRAIN**

*J. Yu, China; Y. Lu, China Academy of Railway Sciences, China; Y. Jiang, CRRC Changchun Railway Vehicles, China; H. Chen, Y. Wang, Y. Zhou, China Academy of Railway Sciences, China;*

14:00-14:20

**RESEARCH ON THE UNCERTAINTY OF RADIATED EMISSION TEST SYSTEM OF HIGH SPEED TRAIN**

*F. Su, J. Yu, China Academy of Railway Sciences, China; Z. Wang, China Railway Corporation, China; H. Xue Hou, CRCC Tangshan CO., LTD., China; Y. Lu, H. Chen, China Academy of Railway Sciences, China;*

14:20-14:40

**SOLUTION FOR OVERCOMING INTERFERENCE - RADIATION PATTERN RECONFIGURABLE ANTENNAS**

*Q. Zeng, Nanjing University of Aeronautics and Astronautics, China*

14:40-15:00

**STUDY ON THE ELECTROMAGNETIC SUSCEPTIBILITY OF BALISE TRANSMISSION MODULE**

*Y. Wen, Q. Geng, J. Xiao, Y. Zhu, D. Zhang, Beijing Jiaotong University, China;*

15:00-15:20

**STUDY ON GROUNDING AND LIGHTNING PROTECTION FOR HIGH-SPEED EMS MAGLEV**

*D. Wu, S. Xiao, Y. Xu, G. Deng, CRRC Qingdao Sifang Co., LTD, China;*

**SESSION 32 - ICEAA**

**CROSSING BORDERS IN RESEARCH: A GERMAN-COLOMBIAN SUCCESS STORY ON CIRCUIT DESIGN, ANTENNAS AND VERY, VERY HIGH FREQUENCY SYSTEMS**

**Organized by D. Dudek**

Chairs: D. Dudek F. Vega

15:20-15:40

**DEVICE TECHNOLOGY AND CIRCUIT DESIGN IN RESEARCH. FUNDAMENTAL SCIENCE IN ELECTRICAL ENGINEERING AND FUNDING OPPORTUNITIES IN GERMANY**

*D. Dudek, DFG, German Research Foundation, Germany;*

16:00-16:20

**HUMANITARIAN RESEARCH: A FOUNDATION FOR INTERNATIONAL COLLABORATIONS**

*C. Baer, Ruhr-University Bochum, Germany; F. Vega, Universidad Nacional de Colombia, Colombia*

16:20-16:40

**A DYNAMIC MULTI-LAYER SELF-HEALING ALGORITHM FOR WSN USING CONTIKI OS**

*D. Mendez, D. Santos, Pontificia Universidad Javeriana, Colombia*

16:40-17:00

**IMPACT OF MULTIPATH IN A HYBRID TDOA/DOA SPARSE RADIOLOCALIZATION FRAMEWORK**

*R. Hincapie, C. Gomez, L. Betancur, Universidad Pontificia Bolivariana, Colombia; A. Lavrenko, Technische Universitat Ilmenau, Germany; J. Schmitz, Aachen University, Germany*

17:00-17:20

**INTERDISCIPLINARY RESEARCH ACTIVITIES FOR BIOMEDICAL SENSORS – COOPERATION POSSIBILITIES AND STUDENT EXCHANGE WITHIN INTERNATIONAL MASTER PROGRAM AT ULM UNIVERSITY, GERMANY**

*C.Damm, M. Muh, M. Puentes, Ulm University, Germany; H.U. Goeringer, Technische Universitaet Darmstadt, Germany*

17:20-17:40

**LOW POWER CMOS THERMAL AND TAMPER SENSOR FOR SMART CARDS PROTECTION**

*L.A. Cartagena, University of Sao Paulo, Brazil; S.E. Barbin, University of Sao Paulo, Brazil;*

THURSDAY, SEPTEMBER 13 2018 - 8:40 ROOM PORTAL 3D

**SESSION 33 - ICEAA**

**ANTENNA SYSTEMS FOR RADIO ASTRONOMY AND COSMOLOGY**

**Organized by D.B. Davidson, E. Carretti, H. Pienaar**

Chair: H. Pienaar

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08:40-09:00

**ELECTROMAGNETIC SIMULATION OF DENSE CONNECTED VIVALDI ANTENNA ARRAYS**

*S. Younes, R. Sarkis, Université Antonine, Lebanon; D. S. Prinsloo, ASTRON, Netherlands; C. Craeye, Université Catholique de Louvain, Belgium;*

09:00-09:20

**ANTENNA DESIGN FOR THE SKA1-LOW AND HERA SUPER RADIO TELESCOPES**

*E. de Lera Acedo, H. Pienaar, N. Fagnoni, University of Cambridge, United Kingdom;*

09:20-09:40

**PRACTICAL POLARISATION DIVERSITY FOR A SPARSE APERTURE ARRAY STATION**

*H. Pienaar, Cambridge University, United Kingdom; C. Craeye, Universit catholique de Louvain, Belgium; E. de Lera Acedo, Cambridge University, United Kingdom;*

09:40-10:00

**TOWARDS FULL-SCALE ENVIRONMENTAL MODELLING: A UTD HACK FOR FINITE DIELECTRIC GROUND PLANES IN FEKO**

*T.J. Phiri, S.O. Kuja, P.G. Wiid, Stellenbosch University, South Africa; D.B. Davidson, Curtin University, Australia;*

10:20-10:40

**MEERKAT PRIMARY BEAM MODELS: DERIVATION AND APPLICATION IN CALIBRATION AND IMAGING**

*O.M. Smirnov, K.M.B. Asad, Rhodes University, South Africa; J.N. Girard, CEA, France; M. de Villiers, SKA SA, South Africa; K. Iheanetu, T. Ansah-Narh, Rhodes University, South Africa; S. Makhathini, B. Hugo, SKA SA, South Africa; M. Santos, University of the Western Cape, South Africa; K. Kenyon, Rhodes University, South Africa; S.J. Perkins, SKA SA, South Africa; C. Tasse, Observatoire de Paris Meudon, France;*

10:40-11:00

**CHARACTERISTIC BASIS FUNCTION PATTERN MODELING OF WIDEBAND REFLECTOR ANTENNA BEAM PATTERN FREQUENCY VARIATIONS**

*D.I.L. de Villiers, Stellenbosch University, South Africa;*

11:00-11:20

**A METHOD TO EVALUATE THE FAR-FIELD PATTERN FROM SCATTERED NEAR-FIELD DATA ACQUIRED WITH AN UNMANNED AERIAL VEHICLE**

*M. Righero, LINKS Foundation, Italy; G. Giordanengo, ISMB, Italy; F. Paonessa, G. Virone, O. Peverini, G. Addamo, L. Ciorba, CNR, Italy; P. Bolli, INAF, Italy; G. Vecchi, Politecnico di Torino, Italy;*

11:20-11:40

**COMPACT DUAL-POLARIZATION CRYOGENIC RECEIVER MODULE FOR THE 75-116 GHZ BAND**

*A. Navarrini, INAF-Astronomical Observatory of Cagliari, Italy; G. Valente, ASI, Italy; P. Serres, IRAM, France; F. Schaefer, MPIfR, Germany; F. Thome, IAF, Germany; O. Garnier, IRAM, France;*

11:40-12:00

**ANALYSIS OF SURFACE WAVES MODES IN PLANAR CONNECTED ARRAYS FOR RADIO ASTRONOMY**

*R. Baelemans, A. Sutinjo, Curtin University, Australia; B. Smolders, TU/e, Netherlands; D. Davidson, Curtin University, Australia; U. Johannsen, TU/e, Netherlands; R. Wayth, Curtin University, Australia;*

THURSDAY, SEPTEMBER 13 2018 - 12:00 ROOM PORTAL 3D

**SESSION 34 - ICEAA**

**RADIO ASTRONOMY**

Chairs: H. Pienaar S. Selleri

12:00-12:20

**CONCEPT DEMONSTRATOR FOR 14.5 TO 20 GHZ EXTENSION OF THE SKA MEERKAT RADIO TELESCOPE**

*S. Mundia, R. Geschke, University of Cape Town, South Africa; S. Malan, SARA0, South Africa;*

13:40-14:00

**ANALYSIS OF RADIO FREQUENCY INTERFERENCE MITIGATION USING TWO REFERENCE ANTENNAS AND CLOSURE RELATIONS IN INTERFEROMETRIC ARRAYS**

*B. Nguyen, A. T. Sutinjo, R. Wayth, ICRAR, Curtin University, Australia;*

14:00-14:20

**PROFILED CORRUGATED HORN FOR COMPACT AND HIGH EFFICIENCY FEEDS**

*S. Maddio, University of Florence, Italy; R. Nesti, Italian National Institute for Astrophysics, Italy; M. Righini, G. Pelosi, S. Selleri, University of Florence, Italy;*

THURSDAY, SEPTEMBER 13 2018 - 14:20 ROOM PORTAL 3D

**SESSION 35 - ICEAA**

**MATHEMATICAL ADVANCES IN ELECTROMAGNETICS**

Organized by J. Arnold, P.D. Smith

Chairs: B.P. de Hon P.D. Smith

14:20-14:40

**SCATTERING BY TWO PARALLEL METAL WIRES OVER A CONDUCTING GROUND PLANE**

*P.L.E. Uslenghi, University of Illinois at Chicago, USA*

14:40-15:00

**SURFACE DISTRIBUTION AND FIELD DEPENDENCY UPON THE RADIUS OF CURVATURE AT SMOOTHED CORNERS OF A SCATTERER**

*P.D. Smith, A.J. Markowskei, Macquarie University, Australia;*

15:00-15:20

**ON A PERSPECTIVE OF DISCOVERING WAVE INTERACTION IN CANONICAL OPEN METAL-DIELECTRIC WAVEGUIDES**

*Y. Shestopalov, University of Gävle, Sweden;*

15:20-15:40

**MULTIPLE SCATTERING OF E-POLARIZED PLANE WAVES FROM A FINITE NUMBER OF SINUSOIDAL CORRUGATED STRIPS**

*E.D. Vinogradova, Macquarie University, Australia; K. Kobayashi, Chuo University, Japan;*



16:00-16:20

**WILSON BASIS EXPANSION OF ELECTROMAGNETIC FIELDS AND SOURCE DISTRIBUTIONS - WAVE DECOMPOSITION AND PROPAGATION TOOLS FOR OPTICAL FIBRE SCATTERING**

*B.P. de Hon, Eindhoven University of Technology, Netherlands;S.J. Floris, TE Connectivity, Netherlands;*

16:20-16:40

**A RIGOROUS APPROACH TO MULTIPLE PLANE WAVE SCATTERING BY ARBITRARY CYLINDRICAL CAVITIES WITH LONGITUDINAL SLITS: ENSEMBLES OF COUPLED RESONATORS**

*E.D. Vinogradova, P.D. Smith, Macquarie University, Australia;*

16:40-17:00

**AXISYMMETRIC ELECTROMAGNETIC OSCILLATIONS IN OPEN PERFECTLY CONDUCTING SPHERICAL CAVITIES**

*E.D. Vinogradova, Macquarie University, Australia;*

FRIDAY, SEPTEMBER 14 2018 - 8:40 SALON NUEVA GRANADA B

**SESSION 36 - ICEAA**

**NOVEL AND COMPLEX ELECTROMAGNETIC PHENOMENA, AND APPLICATIONS**

**Organized by F. Capolino**

Chair: F. Capolino

08:40-09:00

**FORCE ON DIPOLES AND HIDDEN MOMENTUM**

*A.D. Yaghjian, Electromagnetics Research, USA;*

09:00-09:20

**ON THE ELECTRODYNAMICS OF ROTATING STRUCTURES AND METAMATERIALS IN THEIR REST FRAME OF REFERENCE**

*I. Kazma, B. Z. Steinberg, Tel-Aviv University, Israel;*

09:20-09:40

**HIGHER-ORDER, PARITY-TIME-SYMMETRIC ELECTROMAGNETIC SENSORS**

*P. Y. Chen, University of Illinois at Chicago, USA;*

09:40-10:00

**HUYGENS' METASURFACES COVERING FROM WAVEPLATES TO PERFECT ABSORBERS**

*J.L. Araque-Quijano, Universidad Nacional de Colombia, Colombia; J.P. del Risco, Universidad Sergio Arboleda, Colombia;M.A. Londoño, Universidad Nacional de Colombia, Colombia; A. Sayanskiy, S.B. Glybovski, ITMO University, Russia;J.D. Baena, Universidad Nacional de Colombia, Colombia;*

10:20-10:40

**VARIOUS TOPOLOGIES OF COUPLED-MODE STRUCTURES EXHIBITING EXCEPTIONAL POINTS OF DEGENERACY**

*M. Y. Nada, A. F. Abdelshafy, T. Mealy, F. Yazdi,H. Kazemi,A. Figotin, F. Capolino, University of California, Irvine (UCI), USA;*

10:40-11:00

**FREQUENCY SELECTIVE SURFACE WITH TWO NOTCH FREQUENCIES AND GOOD INCIDENCE ANGLE STABILITY FOR SCREENING APPLICATIONS**

*A. De Sabata, Politehnica University Timi oara, Romania;L. Matekovits, Politecnico di Torino, Italy;A.M. Silaghi, Politehnica University Timi oara, Romania;*

**SESSION 37 - ICEAA**

**ELECTROMAGNETIC MEASUREMENTS**

Chairs: F. Capolino K. Sieczkarek

11:00-11:20

**IMPACT OF ANTENNA INCLINATION ANGLE DURING SCANNING PROCESS ON RADIATED EMISSION MEASUREMENTS IN THE ANECHOIC CHAMBERS UP TO 1 GHZ**

*K. Sieczkarek, A. Mackowiak, Institute of Logistics and Warehousing, Poland;*

11:20-11:40

**SIMULATION PROCEDURES FOR A CYLINDRICAL NEAR-FIELD TO FAR-FIELD TRANSFORMATION WITH PROBE COMPENSATION AND GAIN DETERMINATION**

*T. Vaupel, Fraunhofer FHR, Germany;*

11:40-12:00

**FULL-WAVE SIMULATION OF PARTIAL DISCHARGE IN POWER TRANSFORMERS**

*D. Galindo, J. Araque, Universidad Nacional, Colombia;*

12:00-12:20

**MICROWAVE-BASED SENSORS FOR EXHALED ACETONE AND ETHANOL DETECTION**

*A. Rydosz, AGH University of Science and Technology, Poland; E. Maciak, Silesian Univ. of Technology, Poland; K. Wincza, S. Gruszczynski, AGH University of Science and Technology, Poland;*

12:20-12:40

**ANTENNA POLARIZATION CHARACTERIZATION WITH VECTOR NETWORK ANALYZER MEASUREMENTS**

*G. G. S. Forte, Federal University of Campina Grande, Brazil; G. Fontgalland, Federal University of Campina Grande, Brazil; S. E. Barbin, University of São Paulo, Brazil;*

**SESSION 38 - ICEAA**

**MICROWAVE AND MMWAVE SENSORS FOR ADVANCED APPLICATIONS**

**Organized C. Baer**

Chairs: C. Baer K. Haddadi

08:40-09:00

**STATUS OF SIX-PORT TECHNOLOGY FOR WIRELESS SENSING APPLICATIONS**

*K. Haddadi, C. Loyez, University of Lille France; S. Lallemand, SEGULA, France; S. Gong, University of Linkoping, Sweden; A. Koelpin, Brandenburg University of Technology, Germany;*

09:00-09:20

**SIX-PORT TECHNOLOGY FOR 5G MILLIMETER-WAVE LOCALIZATION SYSTEMS**

*C. Loyez, M. Boquet, K. Haddadi, University of Lille - IEMN, France;*

09:20-09:40

**122 GHZ MONOSTATIC RADAR ALTIMETER FOR AUTOMATED UAV LANDING**

*P. Hügler, B. Driemeyer, T. Chaloun, C. Waldschmidt, Ulm University, Germany;*

09:40-10:00

**A SIMULATOR FOR THE PERFORMANCE INVESTIGATION OF NONIDEAL PSEUDO-RANDOM BINARY CODED SIGNALS**

*G. Notzon, R. Storch, T. Musch, M. Vogt, Ruhr-University Bochum, Germany;*

10:20-10:40

**COMPARISON OF REAL AND SIMULATED AUTOMOTIVE RADAR TARGETS MEASURED WITH A REFERENCE RADAR**

*S. Buddappagari Jayapal Gowdu, M. Ehtisham Asghar, Technische Universitaet Ilmenau, Germany; J. Nagel, Daimler AG, Germany; M. Rozmann, mirosys GmbH, Germany; R. Stephan, M. Hein, Technische Universitaet Ilmenau, Germany;*

10:40-11:00

**TUNABLE TARGET DESIGN FOR A DIELECTRIC-WAVEGUIDE-BASED RADAR TARGET GENERATOR**

*C. Schulz, C. Baer, Ruhr-University Bochum, Germany;*

11:00-11:20

**HUMANITARIAN MICROWAVE DETECTION OF IMPROVISED EXPLOSIVE DEVICES IN COLOMBIA**

*C. Baer, C. Schulz, Ruhr-University Bochum, Germany; T. Just, TU Ilmenau, Germany; S. Gutierrez, Universidad Nacional de Colombia, Colombia; K. Orend, J. Barowski, Ruhr-University Bochum, Germany; D. Martinez, Universidad Nacional de Colombia, Colombia; B. Hattenhorst, J. Jebramcik, Ruhr-University Bochum, Germany; J. Pantoja, Universidad Nacional de Colombia, Colombia; T. Musch, I. Rolfes, Ruhr-University Bochum, Germany; J. Sachs, TU Ilmenau, Germany; F. Vega, Universidad Nacional de Colombia, Colombia;*

11:20-11:40

**SPIN RATE ESTIMATION OF PROJECTILES FROM MICROWAVE SIGNALS**

*H. Covic, R. Adam, C. Thomas, F. Saada, L. Bernard, A. Schneider, ISL, France;*

11:40-12:00

**SENSITIVITY EVALUATION FOR REFLECTION PHASE MEASUREMENTS OF RESONANT MICROWAVE NEAR-FIELD SENSORS WITH ARTIFICIAL TRANSMISSION LINES**

*B. Hattenhorst, C. Baer, T. Musch, Ruhr-University Bochum, Germany;*

12:00-12:20

**DIELECTRIC PROPERTIES ENGINEERING OF COPLANAR WAVEGUIDES ON POROUS SILICON UP TO 67 GHZ**

*K. Ziouche, K. Haddadi, University of Lille - IEMN, France;*

FRIDAY, SEPTEMBER 14 2018 - 8:40 SALON NUEVA GRANADA D

**SESSION 39 - IEEE APWC**

**PROPAGATION**

Chairs: S. E. Barbin A. Navarro

08:40-09:00

**SCATTERING MODEL FOR RAY LAUNCHING TOOL, AND VALIDATION IN 5.4GHZ INDOOR**

*D. Guevara, B. Medina, Universidad Francisco de Paula Santander, Colombia; A. Navarro, Universidad Icesi, Colombia;*

09:00-09:20

**MEASUREMENTS OF REFLECTION AND PENETRATION LOSS OF CONSTRUCTION MATERIALS AT 28 GHZ AND 38 GHZ**

*C.E. Orihuela Vargas, L. Da Silva Mello, PUC-RIO, Brazil;*

09:20-09:40

**INITIAL RESULTS OF MILLIMETER WAVE OUTDOOR PROPAGATION MEASUREMENTS IN A CAMPUS ENVIRONMENT**

*C.E. Orihuela Vargas, M.M.Silva, J.J. Abularach Arnez, L. Da Silva Mello, PUC-RIO, Brazil;*

09:40-10:00

**SITE SPECIFIC INDOOR PROPAGATION ASSESSMENT IN A 802.11AC WLAN BY SITE SURVEY AND RAYTRACING SIMULATION**

*J.M. Pardo, Universidad Manuela Beltran, Colombia;G.A. Ramirez, D.O. Rodriguez-Duarte, Universidad Nacional de Colombia, Colombia;*

10:20-10:40

**SITE SPECIFIC URBAN PROPAGATION UNSING THE VARIABLE TERRAIN RADIOWAVE PARABOLIC EQUATION MODEL**

*P.E. Cadette, W.L. Jones, University of Central Florida, USA;*

10:40-11:00

**A COMPARATIVE STUDY FOR RADIOELECTRIC COVERAGE MODELS APPLIED TO MOBILE COMMUNICATION SYSTEMS PERFORMANCE ANALYSIS**

*A.L. Reis, C.G. do Rego, Federal University of Minas Gerais, Brazil; M.L. Nunes, Brazilian National Telecommunication Agency, Brazil;D.C.T. Lopez, Federal University of Minas Gerais, Brazil;*

11:00-11:20

**HIGH FREQUENCY METHODS BASED IN PARABOLIC EQUATION AND RAY LAUNCHING IN ELECTROMAGNETIC WAVES PROPAGATION PREDICTIONS**

*H. Triana, A. Navarro, Universidad Icesi, Colombia;*

11:20-11:40

**APPROXIMATE MODELING OF ELECTROMAGNETIC PROPAGATION THROUGH VEGETATION**

*O. R. Montero, L. Araque, Universidad Nacional de Colombia, Colombia;*

11:40-12:00

**ATTENUATION OF RADIOFREQUENCY WAVES DUE TO VEGETATION IN COLOMBIA**

*O. Montero, J. J. Pantoja, M. Patiño,E. Pineda, D. Martinez, Universidad Nacional de Colombia, Colombia; G. Angel, J. Cruz, M. Suarez, Agencia Nacional del Espectro, Colombia; F. Vega, Universidad Nacional de Colombia, Colombia;*

12:00-12:20

**USING TDR-TIME DOMAIN REFLECTOMETRY MEASUREMENTS TO COMPARING RIBBON BUSBAR VERSUS WIRE BUSBAR CONNECTIONS IN POLYCRYSTALLINE SOLAR CELLS: THE SIGNATURE APPROACH**

*A.Silveira, University of Campinas,Brazil; S.E. Barbin, University of Sao Paulo, Brazil; L.C. Kretly, University of Campinas, Brazil;*

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# MAP OF CARTAGENA - COLOMBIA





**1** CARTAGENA WALLS

**2** SAN FELIPE CASTLE

**3** CLOCK TOWER GATE

**4** CARTAGENA CATHEDRAL

**5** CALLE SANTO DOMINGO

**6** BOCAGRANDE

**7** PALACE OF THE INQUISITION

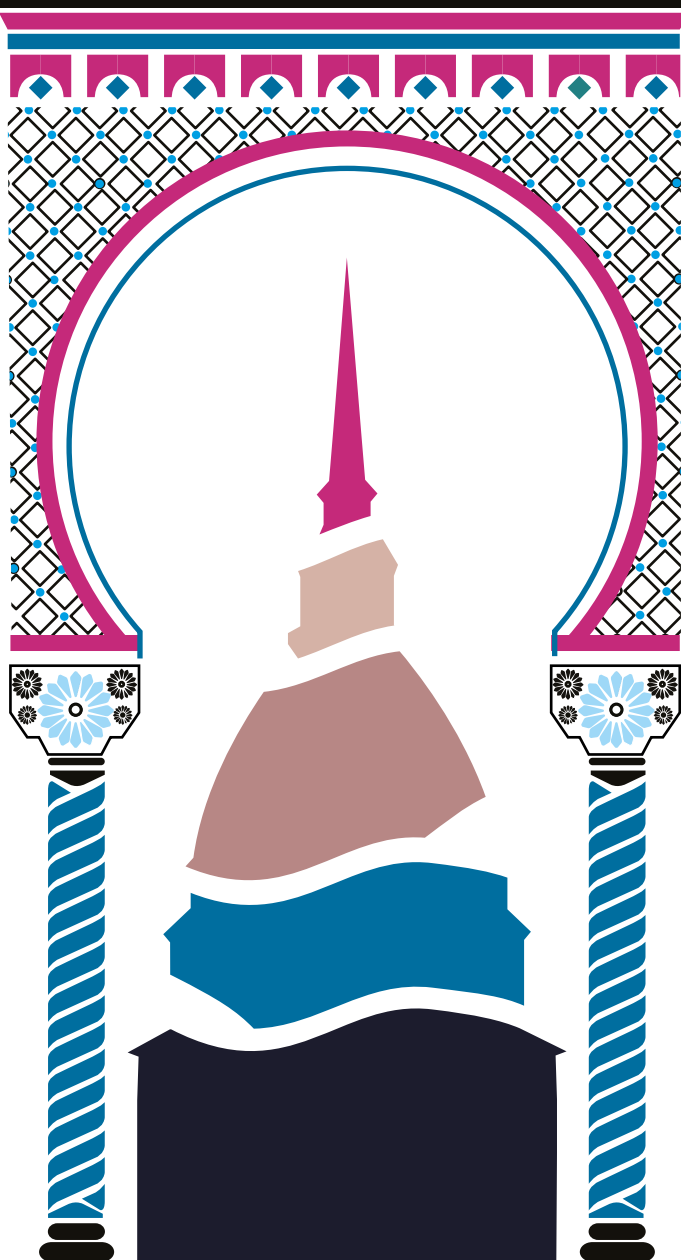
**8** SAN DIEGO

**9** PLAZA SAN PEDRO CLAVER

**10** HOUSE OF GABRIEL GARCIA MARQUEZ

**ICEAA '19**

**IEEE APWC '19**



**September 9-13, 2019 - Granada, Spain**



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Authors must submit a full-page abstract electronically by March 8, 2019. Authors of accepted contributions must submit the full paper, executed copyright form and registration electronically by June 3, 2019. Instructions are found on the website. Each registered author may present no more than two papers. All papers must be presented by one of the authors. Please refer to the website for details.

### Deadlines:

Abstract submission	March 8, 2019
Notification of acceptance	April 12, 2019
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### All inquiries should be directed to:

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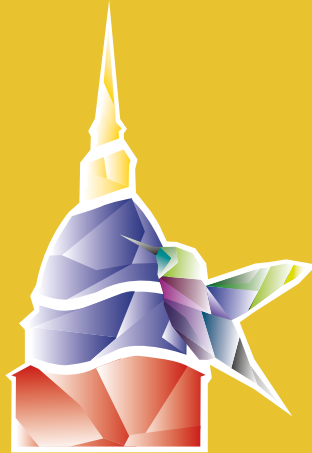
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**Prof. Piergiorgio L. E. Uslenghi** / Chair of Scientific Committee Department of ECE (MC 154) University of Illinois at Chicago 851 South Morgan Street Chicago, Illinois 60607-7053, USA - [uslenghi@uic.edu](mailto:uslenghi@uic.edu)









## **ICEAA 18**

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