

MMS

2010

METU, Northern Cyprus Campus

25-27
August
2010

10TH MEDITERRANEAN MICROWAVE SYMPOSIUM

10TH MMS 2010



www.mms.ncc.metu.edu.tr

10th Mediterranean Microwave Symposium

MMS'2010

25-27 August 2010

Middle East Technical University - Northern Cyprus Campus
Guzelyurt, Northern Cyprus



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Binboga Siddik Yarman

Levent Sevgi

Cemal Kaplan

Kerem Ok

Welcome Message from URSI National Committee of Turkey

International Union of Radio Science (URSI) is a non-profit, non- governmental organization to bring together radio scientists studying all aspects of electromagnetic waves and fields.

The mission of URSI can be summarized as "to stimulate and coordinate studies, research, applications, scientific exchange and communication in the field of radio science. In this respect, it encourages and promotes international activity in radio science and its applications for the benefit of humanity. Also, it represents radio science to the general public, and to private and public organizations. "

Therefore, conferences are an important dimension of URSI activities, and we are very pleased to organize 10th MMS in the beautiful Mediterreanean Island of North Cyprus in cooperation with Prof. Essaïdi of Abdussalam Essaïdi University of Morocco. Prof. Essaïdi is the founder and General Chair of all MMS conference series.

We are very thankful to the METU NCC Administration for opening up all the facilities for the conference. We are also very thankful for the people who took part in the local organization and technical committees. We are very well aware of the time and effort that goes into a successful conference organization.

We also thank all sponsors for their help.

We wish all participants a fruitful conference and a successful stay.

URSI National Committee of Turkey

Welcome to the Mediterranean Microwave Symposium 2010



Dear Colleagues,

On behalf of the Organizing Committee, it gives me a great pleasure to welcome you to the Mediterranean Microwave Symposium (MMS) 2010.

It is our privilege to host this year's event at Middle East Technical University Northern Cyprus Campus, where the sun merges with deep blue water of Mediterranean.

Thanks to Prof. Essaïdi who initiated MMS. This year, that is, at 2010, we are celebrating 10th anniversary of the Symposium. Isn't it lovely? It is historical...

Opening session of the symposium is devoted to the **Memory of H. J. Carlin** of Cornell University who passed away on February 9, 2009. H. J. Carlin was one of the great names in the development of modern design tools to construct active and passive microwave circuits known as Real Frequency Techniques. He was also one of the leading names who made the scattering parameters available to microwave engineers. I am delighted to announce that **Mrs. Carlin** honors the opening session.

Over a decade, MMS has built its own world reputation with warm and friendly atmosphere formed with excellent people from Industry and Academia. As usual, *an extraordinary technical program* was prepared for the participants, and it is enhanced with keynote lecturers, invited speakers and tutorials.

Beyond our excellent technical program, our *Local Committee* organized wonderful historical/social programs. Details can be found on the web page <http://www.mms.ncc.metu.edu.tr> as well as on the flyers distributed by the information desk during the symposium.

The Welcome reception (August 25) will be hosted by President Turgut Tumer of Middle East Technical University, Northern Cyprus Campus. The Gala Dinner (August 26) and the student paper award ceremony will be held at Dome Hotel of Girne, the colorful city of Northern Cyprus by the sea side. On the same evening, we will have a nice cultural program performed by the local artist of the island.

MMS 2010 would not be possible with the immense work of *Technical and Local Organizing Committees* and the financial support of AVEA, the Gold Sponsor, SAVRONIK, the silver sponsor, and AKTIF NESER Ltd.

Special thanks are extended to keynote, tutorial and invited speakers, and paper contributors who formed outstanding technical content of the Symposium.

I hope you enjoy MMS 2010 and related events during your stay in North Cyprus.

Prof. Dr. Binboga Siddik Yarman
Co-Chair of MMS 2010

Dear Guests and Authors,

Middle East Technical University-Northern Cyprus Campus (METU-NCC) in the beautiful Mediterranean island of Cyprus is proud to host the 10th edition of the prestigious Mediterranean Microwave Symposium (MMS-2010). First of all, we would like to thank Turkish National Committee of Union Radio Scientificque Internationale (URSI) for granting us the opportunity to host MMS-2010 in conjunction with the 5th National Congress of URSI.

We would like to thank to our Campus President Prof. Turgut Tumer and General Secretary Dr. Erdal Onurhan for their continuous help and support. We also would like extend our thanks to the General Chair of MMS-2010, Prof. Mohamed Essaaidi, Chair Prof. Hamit Serbest, Co-Chair Prof. Siddik Yarman, Technical Program Committee (TPC) Chair Prof. Levent Sevgi, Honorary Chair Prof. Erol Kocaoglan, TPC, International Steering and Organizing Committee Members, without their contributions it would have been impossible to accomplish the organization of MMS-2010.

We have authors and guests from all continents all over the world and more than 110 technical papers. It is an honor for us to have the support of the following world famous invited and keynote speakers:

Prof. Bhaskar Gupta, Jadavpur University, India.

Prof. Duran Leblebici, Technical University of Istanbul, Turkey.

Prof. Fadhel Ghannouchi, University of Calgary, Canada.

Prof. Franco Maloberti, University of Pavia, Italy.

Prof. Levent Sevgi, Doğuş University, Turkey.

Prof. Pier Paolo Civalleri, Politecnico di Torino, Italy.

Prof. Raj Mittra, EMC Lab, Penn State University, USA

Prof. Siddik Yarman, Istanbul University, Turkey.

URSI, IEEE-MTT, IEEE-ED and IEEE-AP Societies are technical co-sponsors of MMS-2010. The accepted IEEE-Xplore compliant papers that are presented in MMS-2010 will be published in IEEE Digital Library and Conference Proceedings. The support of The European Microwave Association (EuMA) in sponsoring the Awards for students' best papers and the support of IEEE-Turkey in supporting IEEE student members have given us strength to facilitate the attendance of our student authors.

Last but not least, thank you all for being here, welcome, enjoy the conference and our beautiful Mediterranean Island of Cyprus. We hope you will have a wonderful and fruitful three days. We are looking forward to seeing you at all the meetings and activities. We assure you that MMS-2010 will be an excellent scientific event. If you have any requests during the conference or after please do not hesitate informing us, we remain at your disposal.

Best wishes,



Dr. Tayfun Nesimoglu



Dr. Ozlem Ozgun



(On behalf of the organizing committee)

Social Events of MMS 2010 and V URSI-Turkey Symposium 2010

24 August 2010

10.00-17.00 Historical Tour of Nicosia: For

- i. Selimiye Mosque
- ii. Lunch at Buyuk Han
- iii. Bandabulya (Grandbazaar)
- iv. Arasta Bazaar

19.00-23.00 Social Gathering

19.00-20.30 Dinner at Cafeteria

20.30-21.00 Campus tour (starts from the Cafeteria)

21.00-23.00 Happy hour and Evening drinks at Open Theater

Slide-show during the event

Music on Upright Piano by who can play

25 August 2010

19.00-23.00 Welcome Reception of the President of METU by the Swimming Pool

26 August 2010

19.00-23.00 Gala Dinner at Dome Hotel-Girne (URSI and MMS 2010)

- Best Paper Award sponsored by European Microwave Association (EuMA)
- Thanks to Sponsors
- Thanks to Distinguished/Invited Speakers
- Social Program for Dinner
 - i. Live Folk Music
 - ii. Cyprus Folk Dance group
 - iii. Entertainment Music for Dance

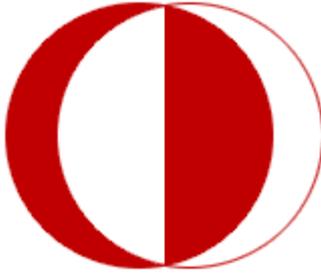
27 August 2010

14.00 - 19.00

- i. Historical Sight Seeing tour
- ii. Half Day Beach Party

(For more details please contact with information desk of ASTERYA at the Conference Center)

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METU-NCC MAP



Mediterranean Microwave Symposium

25-27 August 2010

Guzelyurt, Northern Cyprus

MMS-2010 Program

Program at a glance

	Morning	Afternoon
24 August		14H00 – 18H00 Registration
25-27 August	08H00 – 12H30 Registration	13H30 – 16H00 Registration
Wednesday, August 25	Opening Ceremony Keynote Talks Technical Sessions	Tutorial I Technical Sessions
Thursday, August 26	Tutorial II Technical Sessions, CST Workshop	Tutorial III, Tutorial IV Technical Sessions
Friday, August 27	Tutorial V, Tutorial VI Technical Sessions	Social Event : Guided visit (by registration)

08H30-09H00 Opening Ceremony
 09H00-10H00 Keynote Talks, Tutorial II, Tutorial V, Tutorial VI
 10H00-10H30 Coffee Break
 10H30-12H30 Technical Sessions, CST Workshop
 12H30-14H00 Lunch Break
 14H00-15H00 Tutorial I, Tutorial III, Tutorial IV
 15H00-15H30 Coffee Break
 15H30-17H30 Technical Sessions

Tuesday, August 24, 2010, Evening, 19H00-23H00, Social Gathering at Open Theatre

Wednesday, August 25, 2010 (Day 1)

08H30-09H00 Opening Ceremony (Culture and Convention Centre, Main Hall)

Chair: Ozlem Ozgun, Middle East Technical University, Northern Cyprus Campus.

Speakers: Turgut Tumer (Rector of METU-NCC), Mohammed Essaaidi (General Chair of MMS), Hamit Serbest (General Chair of URSI Turkey), Tayfun Nesimoglu (Local Chair of MMS) presenting the general activities of the Symposiums.

09H00-10H00 Keynote Talks (Main Hall)

Chair: Siddik Yarman, Istanbul University.

- "Prof. H.J. Carlin as a researcher, as an educator, as a father and as a philosopher", Prof. Dr. Pier Paolo Civalieri, Politecnico di Torino, Torino, Italy.
- "Real Frequency Techniques to design Ultra Wideband Circuits", Prof. Dr. Siddik Yarman, Istanbul University, Istanbul, Turkey.

10H00-10H30 Coffee Break

10H30 – 12H30 Technical Sessions

Session 1: Propagation, Scattering and Diffraction (Seminar Room 6)

Chair: Gokhan Apaydin, Zirve University.

1. Path Loss Model Tuning at GSM 900 for a Single Cell in Nablus City, Allam Mousa.
2. Propagation of Microwaves in Periodic Layered Media, Abdurrahman Öztürk, Rauf Süleymanlı and Bekir Aktas.
3. Slow Light Propagation in Stacked Complementary Metasurfaces at Microwave Frequencies, Mariem Aznabet, Otman El Mrabet and Mohamed Essaaidi.
4. New Closed-Form Green's Functions for Microstrip Structures Based on Ge-Esselle's Method, Zaker Hossein Firouzeh, Rouzbeh Moini Mazandaran, Seyed Hossein Hesamedin Sadeghi and Reza Faraji-Dana.

5. **Two-Way Split-Step Parabolic Equation Algorithm for Tropospheric Propagation: Tests and Comparisons**, Ozlem Ozgun, Gokhan Apaydin, Mustafa Kuzuoglu and Levent Sevgi.
6. **Using Adaptive Dynamic Surfaces for Shape Reconstruction of Perfect Electric Conductors in Presence of a Ground Plane**, Reza Safian, Mohammadreza Eskandari and Hoda Elhami.

Session 2 : Microwave and Millimeter-Wave Circuits – I (Seminar Room 7)

Chair: Fadhel Ghannouchi, University of Calgary.

1. **A 35 GHz Coplanar Waveguide Power Divider**, Ozan Doğan Gürbüz.
2. **Optimum Design of a Modified 3-Way Bagley Rectangular Power Divider**, Homayoon Oraizi and Seyyed Amir Ayati.
3. **Comparing Miniaturization Techniques for Microstrip 180° Hybrid Ring Junctions**, Dimitra Psychogiou and Jan Hesselbarth.
4. **Design of a Two Layer Aperture-Coupled Unequal Power Divider**, Ozgehan Sahin and Simsek Demir.
5. **Wideband Phase Shifter Design using Lange Coupler and Radial Stubs**, Gokhan Boyacioglu and Simsek Demir.
6. **S-Band Hybrid 4 Bit Phase Shifter**, Eser Erkek and Şimşek Demir.

Session 3: Antenna Theory and Measurement – I (Hall 1)

Chair: Lale Alatan, Middle East Technical University.

1. **Single Stub Tuning Application via Semi-Rigid Coaxial Cables for VHF and UHF Monopole Antennas on RASAT**, Emrah Oncu and Volkan Akan.
2. **A Small Quarter Wavelength Microstrip Antenna for HF and VHF Band Applications**, Hong-Kyun Ryu, Gichul Jung and Jong-Myung Woo.
3. **Low-Profile Structured Antenna for Ultra-Wideband Communication Systems**, Mostafa Abdel Fattah, Abdel Megid Allam and Shoukry Ibrahim.
4. **A Compact, Symmetric Branched Chain Monopole for Dual Wide Band Operation**, Hazem Awadalla, Abdelmegid Allam and Shoukry Ibrahim.
5. **Broadband Antenna for GSM, UMTS and LTE Wi- Max Applications**, Mehmet Abbak and İbrahim Akduman.
6. **Dual-Band Loop-Loaded Printed Dipole Array**, Adnan Sondas, Mustafa H. B. Ucar and Yunus E. Erdemli.

Session 4: Antenna Theory and Measurement – II (Seminar Room 8)

Chair: Ozlem Aydin Civi, Middle East Technical University.

1. **Determining of a Subsurface Target by Using Numerical Modeling of GPR**, Levent Seyfi and Ercan Yaldiz.
2. **Model of an Ultra-Wideband Dipole Antenna**, A. Khireddine.
3. **An Exact Time Domain Evaluation for Radiated Fields from a Hertz Dipole**, Ahmet Arif Ergin and Soner Karaca.
4. **Study on Circular Planar Antenna**, Harish Kumar, Garima Chandel and Madhur deo Upadhayay.
5. **Analysis of the Relation between Printed Strip Monopole and Dielectric Coated Thin Cylindrical Monopole**, Volkan Akan and Erdem Yazgan.
6. **Effect of Photonic Band Gap Structure on Planar Antenna Configuration**, Navdeep Arora, Sarabjeet Singh, Dharvendra Pratap Yadav and R. K. Sarin.

12H30-14H00 Lunch Break

14H00-15H00 Tutorial I (Main Hall)

Chair: Franco Maloberti, University of Pavia.

- **“SDR Based Power amplifiers /Transmitters for Advanced Wireless and Satellite Communications”**, Fadhel Ghannouchi, Department of Electrical and Computer Engineering Schulich School of Engineering, University of Calgary, Canada.

15H00-15H30 Coffee Break

15H30 – 17H30 Technical Sessions

Invited Session 1: Software Defined Radio Enabling Technologies (Hall 1)

Chair: T. Nesimoglu, Middle East Technical University, Northern Cyprus Campus.

1. **A Review of Software Defined Radio Enabling Technologies**, T. Nesimoglu.

2. **Configurable Microwave Structures for Software Defined (and Cognitive) Radio Front Ends**, Paul Warr and Geoff Hilton.
3. **1-bit RF-MEMS-Reconfigurable Elementary Cell for Very Large Reflectarray**, Simone Montori, Luca Marcaccioli, Roberto Vincenti Gatti and Roberto Sorrentino.
4. **A Tunable X-Band SiGe HBT Single Stage Cascode LNA**, Mustafa Doğan and İbrahim Tekin
5. **Synthesis Techniques for some Tunable Notch Filter Topologies**, Sacit Oruc, Bulent Alicioglu and Nevzat Yildirim.
6. **Tunable Compact Filters Based on Stub-Loaded Parallel-coupled Resonators**, F. Burdin, E. Pistono, and P. Ferrari.
7. **35 GHz Phased Array Antenna using DMTL Phase Shifters**, Caner Guclu, Cagri Cetintepe, Ozlem Aydin Civi, Simsek Demir and Tayfun Akın.

Session 5: Antenna Theory and Measurement – III (Seminar Room 6)

Chair: Gulbin Dural, Middle East Technical University.

1. **A Low Wind Load Lightweight Foldable/Deployable Base Station Antenna for Mobile TV, CDMA and GSM**, Mohamed Sanad and Noha Hassan.
2. **Combined Fractal Geometries for the Design of Wide Band Microstrip Antennas with Circular Polarization**, Homayoon Oraizi and Shahram Hedayati.
3. **Improvement of Rectangular Microstrip Patch Antenna Performances using Rectangular Slot in Ground Plane**, Mouloud Challal, Arab Azrar and Mokrane Dehmas.
4. **Enhancement of ISM Band RFID System Performance with Varactor-Loaded Compact RFID Tag Antenna**, Yusuf Sevinç and Adnan Kaya.
5. **Autonomous Use of Fractal Structure in Low Cost, Multiband and Compact Navigational Antenna**, Rajeev Kumar Kanth, Waqar Ahmad, Subarna Shakya, Pasi Liljeberg, Lirong Zheng and Hannu Tenhunen.
6. **Implementation and Field Test of a Broadband ESPAR Antenna**, Bashir Shami and Hassan Aboulmour.

Session 6: Microwave and Millimeter-Wave Circuits – II (Seminar Room 7)

Chair: Osman Palamutcuogullari, Istanbul Technical University.

1. **Miniature DBR with Series Capacitive Loading**, Hamza Issa, Jean-Marc Duchamp, Soubhi Abou-Chahine and Philippe Ferrari.
2. **Design Constraints in Conical Line Power Combiners**, Dirk de Villiers, P.W. van der Walt and Petrie Meyer.
3. **A Dual-band Bandpass Filter Using a Dual-mode Ring Resonator with Two Short-circuited Stubs**, ByungChang Choi, WuSeong Lee, HaChul Kim and HyunChul Choi.
4. **A Compact and Wide Stop-Band Low-Pass Filter Using a Wire Wound Chip-Inductor**, GiMoon Lee, WuSeong Lee, HaChul Kim and HyunChul Choi.
5. **Design of a Novel Band-Pass Compact Microstrip Filter for UWB Applications**, Abdol Aziz Kalteh.

Session 7: Antenna Theory and Measurement – IV (Seminar Room 8)

Chair: Erdem Yazgan. Hacettepe University.

1. **Compact Corner Truncated Triangular Patch Antenna for WiMax Application**, Navdeep Arora, Dharvendra Pratap Yadav, Sarabjeet Singh and R. K. Sarin.
2. **3x3 Microstrip Beam Forming Network for Multibeam Triangular Array**, Aitor Novo García and María Vera Isasa.
3. **Semi Directional Circular Monopole Antenna for Ultra-Wideband Applications**, Ferdows Zarrabi and Behzad Boroomandi.
4. **Dual Wideband CPW-fed Split-Ring Monopole Antenna for WLAN Applications**, S. Cumhuri Basaran.
5. **An Internal EBG Antenna for Indoor Reception of UHF Terrestrial Digital TV Broadcasting**, Mohamed Sanad and Noha Hassan.

19H30-22H00 Welcome Cocktail (by Swimming Pool)

Thursday, August 26, 2010 (Day 2)

09H00-10H00 Tutorial II (Main Hall)

Chair: Mustafa Kuzuoglu, Middle East Technical University.

- “Some Non-traditional Approaches to Computational Electromagnetics for Solving a Class of Real-world Antenna and Scattering Problems”, Raj Mittra of EMC Lab, Penn State University, USA

10H00-10H30 Coffee Break

10H30 – 12H30 Technical Sessions and Workshop

Invited Session 2 : Inverse Scattering and Microwave Imaging (Hall 1)

Chair: Salvatore Caorsi, University of Pavia, Italy

1. **An Automatic Feature Extraction Technique for GPR Data Processing in Electromagnetic Inverse Scattering**, Salvatore Caorsi and Mattia Stasolla.
2. **An Improved Electromagnetic Imaging Procedure using Non-Radiating Sources**, G. L. Gragnani and M. Diaz Mendez.
3. **The use of Indirect Holographic Techniques for Microwave Imaging**, David Smith, Michael Elsdon, Michael Fernando and Stephen Foti.
4. **Target Recognition by Self-Organizing Map Type Unsupervised Clustering using Electromagnetic Scattered Signals in Resonance**, Gonul Sayan, Taylan Katilmis and Eren Sayan.

Session 8: Microwave and Millimeter-Wave Circuits – III (Seminar Room 6)

Chair: Simsek Demir, Middle East Technical University.

1. **A Low-Distortion GaAs Receiver Front-end using a Lithium-Niobate Highly-Image-Rejection Microstrip SAW Filter**, Ameneh Habibzadeh, Farshad Eshghabadi and Massoud Dousti.
2. **Switched Multiplexer Design using Parallel Coupled Line Three Ports**, Bulent Alicioglu and Nevzat Yildirim.
3. **Miniaturized Lowpass/Bandpass Filter using Multilayer Technique with Mixed U's and Square Head DGS**, Mohamed Alsharkawy, Omar Luxor and Fatma Alheffnawi.
4. **Dual-band Microstrip Notch Filters using Slotted Square Patch Resonators**, Homayoon Oraizi and Mehdi Hamidkhani.
5. **A Narrow Bandwidth Microstrip Bandpass Filter Suitable for System-on-Package Integration**, Ahmet Cagri Ulusoy, Gang Liu, Till Feger, Andreas Trasser and Hermann Schumacher.
6. **A Novel Approach for Reduction of In-band Intermodulation Products Caused by Adjacent Channel Signals**, Ilteris Demirkiran, Donald D. Weiner and Andrew Drozd.

Session 9: Microwave and Millimeter-Wave Circuits – IV (Seminar Room 7)

Chair: Narendra Kumar, Motorola.

1. **Effect of EMI between Wireless Interconnects and Metal Interconnects on CMOS Digital Circuits**, Ankit More and Baris Taskin.
2. **Compact LHM-based Band-Stop Filter**, Merih Palandöken and Heino Henke.
3. **In Fiber Resonance Breaking Mechanism**, Osman Akin and M. Salih Dinleyici.
4. **Develop Procedure for Designing Fourth Order Microstrip Dual-Mode Bandpass Filters**, Abdulla Rabeea, Fred Barlow and Aicha Elshabini.
5. **Wideband Matching Circuit Design for Differential Output Systems by using Real Frequency Technique**, Osman Ceylan, H. Bulent Yagci and B. Siddik Yarman.
6. **Real-Frequency Design of an Integrated Lumped Element Broadband Impedance Transforming Filter**, Nicodimus Retdian, Narendra Kumar and Siddik Yarman.

Workshop: Aktif Nesor, Workshop on CST (Seminar Room 4)

12H30-14H00 Lunch Break

14H00-14H30 Tutorial III (Main Hall)

Chair: Siddik Yarman, Istanbul University.

- “Historical Perspective on RF Electronics; Evolving Demands and Technologies”, Duran Leblebici, Technical University of Istanbul, Turkey.

14H30-15H00 Tutorial IV (Main Hall)

Chair: Siddik Yarman, Istanbul University.

- “Development of Wearable and Implantable Antennas in the Last Decade: A Review”, Bhaskar Gupta, Jadavpur University, Kolkata, India.

15H00-15H30 Coffee Break

15H30 – 17H30 Technical Sessions

Session 10 : Microwave and Millimeterwave Devices and Systems (Hall 1)

Chair: Paragash Chacko, Motorola.

1. **Analysis and Design of a Push-Push Oscillator in S-Band**, Sevda Abadpour, Reza Abbasi Asl and Gholamreza Moradi.
2. **An Ultra Wide-Band Low-Noise Amplifier: Design and Simulation using ED02AH and RFCMOS 0.18**, Hamid Hassani, Amin Alahyari, Ameneh Habibzadeh and Massoud Dousti.
3. **A Nonlinear Model for Amplifiers with Memory**, Ahmet Hayrettin Yuzer and Simsek Demir.
4. **OIP3 Estimation Based on DC Power Conditions**, Jakub Duchon, Jari Kangas and Olli-Pekka Lunden.
5. **An Integrated Homeland Security Surveillance System**, Sener Uysal, Mustafa Konca, Hasan Demirel and Aykut Hocanin.
6. **Broadband Signal Search and Direction Finding at UHF Frequencies**, Volkan Turgul, Meltem Dirim, Sukru B. Bilgin, Halil I. Gok and Tayfun Nesimoglu.

Session 11: Microwave and Millimeter-Wave Circuits – V (Seminar Room 6)

Chair: Gonul Turhan Sayan, Midle East Technical University.

1. **Discrete Component Design of Broadband Impedance Transforming Filter for Distributed Power Amplifiers**, Narendra Kumar, Prakash Chacko, Rolf Jansen and Siddik Yarman. (Invited Paper)
2. **X-Band High Power Ferrite Phase Shifter**, Hakkı İlhan Altan, Özlem Aydın Civi and Şimşek Demir.
3. **A Frequency Tunable Amplifier for DCS-1800, PCS-1900, DECT and UMTS**, Tayfun Nesimoglu.
4. **Composition of Non-concentric Triangular Split Ring Resonators and Wire Strip for Dual-Band Negative Index Metamaterials**, Cumali Sabah.
5. **Design of a Defected Ground Beam Forming Network**, Ozgehan Sahin and Simsek Demir.
6. **Microwave Measurement Techniques as Non-Destructive Testing Technique for Historic Buildings in Seismic Areas and Prospective Applications for Turkish Architectural Heritage**, Asli Er Akan, Hilal Tuğba Örmecioğlu, Bilge Küçükdoğan, Volkan Akan, Emrah Öncü and Erdem Yazgan.

Session 12: Computer Aided Design of Microwave Circuits (Seminar Room 7)

Chair: Paul Warr, University of Bristol.

1. **A Multiline Material Parameter Extraction Method**, Hannu Sillanpää, Arttu Rasku and Riku Mäkinen.
2. **Application of Charge Simulation Method for Determination of Stripline Capacitance**, Branko Koprivica and Alenka Milovanovic.
3. **A Simple Microwave Method for Thickness-Invariant Complex Permittivity Determination**, Ugur Cem Hasar.
4. **Application of the Moment Method in the Characterization of Planar Microstrip Discontinuities**, Nejla Oueslati and Taoufik Aguil.
5. **Rigorous Solution by Analytical Regularization Method to the Problem of 3D Tm-Phi Wave Diffraction by a Set of Axially Symmetrical Annular PEC Surfaces**, Huseyin Yigit, Fatih Dikmen, Olga A. Suvorova and Yuri A. Tuchkin.
6. **A New Method for the Characterizing and Modeling of Arbitrarily Shaped Multiport Junctions**, Ourabia Malika, Touhami Rachida, Henri Baudrand.

Session 13: RF and Wireless Technology (Seminar Room 8)

Chair: Bhaskar Gupta, Jadavpur University.

1. **Novel Maritime Communications Technologies**, Fritz Bekkadal.
2. **Statistical Analysis of Real Radio Frequencies Exposure in a Realistic Environment**, Zaher Mahfouz, Azeddine Gati, Man-Fai Wong, Joe Wiart, David Lautru and Victor Fouad Hanna.
3. **A Simplified Method for Computation of Scattered Fields by the Lamp Posts along a Boulevard used for Wireless Communications in 2-GHz Band**, Hamed Sadeghi and Forouhar Farzaneh.
4. **Residual Power and Traffic Density Balancing Routing Algorithm**, Kubilay Demir, Arif Dolma and Mehmet Yakut.
5. **Probability of Error Performance of Free Space Optical MIMO Systems in Severe Atmospheric Turbulence Channels**, Salma Abd El Aziz, Moustaf H. Aly and Ahmed AboulSeoud.

18H30-23H00 Conference Banquet

09H00-09H30 Tutorial V (Main Hall)

Chair: Birsen Saka, Hacettepe University.

- “**Modeling and Simulation in Electromagnetic Engineering: Validation, Verification and Calibration**”, Levent Sevgi, Doğuş University, Istanbul, Turkey.

09H30-10H00 Tutorial VI (Main Hall)

Chair: Birsen Saka, Hacettepe University.

- “**Technology Scaling and Analog Design Modern and Future Ultra-Deep-Submicron Technologies**”, Franco Maloberti, University of Pavia, Italy.

10H00-10H30 Coffee Break

10H30 – 12H30 Technical Sessions

Session 14: Electromagnetic Properties of Materials/Tissues (Seminar Room 6)

Chair: Mohammed Essaaidi, Abdelmalek, Essaadi University.

1. **Microwave Irradiation as a Rapid Alternative for Soil Disinfestation and Measurement of Soil Microorganisms**, Appasaheb Jambhale, Ajit Barbadekar and Balaji Barbadekar.
2. **Computation of the Temperature-Rise in the Human Head due to Different Mobile Phone Models**, Salah Al-Mously.
3. **A Wireless Microwave Sensor for Remote Monitoring of Heart and Respiration Activity**, Sawsan Sadek, Lama Ghattas and Lama Fawaz.
4. **Novel Hilbert Soil-Moisture Sensor Based on the Phase Shift Method**, Vasa Radonic, Goran Kitic and Vesna Crnojevic-Bengin.
5. **Foetal ECG Extraction using Broadband Signal Subspace Decomposition**, Soydan Redif and Umur Fahrioglu.
6. **A Suspended Microstrip Resonator for Complex Permittivity Measurement of Medium Loss liquids Using 3D-FDTD**, Mohamad Mosalanejad, Gholamreza Moradi and Abdolali Abdipour.

Session 15: RF and Wireless Applications (Seminar Room 7)

Chair: Ali Kilinc, Okan University.

1. **Channel Characterization of Mobile Radio Channel Over Sea at 2 GHz**, Kun Yang, Terje Røste, Fritz Bekkadal and Torbjorn Ekman.
2. **Utilizing ISAR Imagery to Analyze the Diffraction Effects from Leading and Trailing Edges of a Target**, Ugur Saynak, Alper Colak, Deniz Bolukbas, Ismail Tayyar and Caner Ozdemir.
3. **New Types of Line for Telecommunication in Enclosed Spaces and Tunnels**, Evgeniya Arsenyeva and Vadim Kaloshin.
4. **Design of Impedance Matching Network for B&K 8104 Hydrophone via Direct Computational Technique for Underwater Communication**, Murat Kuzlu, Metin Şengül, Ali Kılınç, Hasan Dinçer, İlker Yağlıdere and Siddik Yarman.
5. **Novel Compact Dual-and Tri-Band Filters Using Stepped Impedance Resonators**, Rachida Moussa, Mohamed Essaaidi and Mohamed Aghoutane.
6. **An Inverted Microstrip Resonator for Complex Permittivity Measurement of Medium Loss liquids using 3D-FDTD Simulation**, Mohamad Mosalanejad, Gholamreza Moradi and Abdolali Abdipour.

Session 16: Electromagnetic Applications (Seminar Room 8)

Chair: Raj Mittra, Penn State University.

1. **Slow-Wave Coplanar Waveguides in a Printed Circuit Technology**, Anne-Laure Franc, Asma Laraba, Emmanuel Pistono and Philippe Ferrari.
2. **Mutual Coupling Reduction of Microstrip Antenna using Novel Compact Defected Ground Structure**, Soroush Veisee, Ayaz Ghorbani, Saman Nasirahmadi and Gholamreza Moradi.
3. **Applying Contour Integral Method for Analysis of Substrate Integrated Waveguide Filters**, Taha Shahvirdi and Ali Banai.
4. **An Investigation on Zero Cut-off Frequency in a Rectangular Waveguide Periodically Loaded With MNG Metamaterial**, Ehsan Mobini and Farzad Mohajeri.

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5. **Modeling of Composite Material and their Replacement by Homogeneous Material**, Jana Jilkova and Zbynek Raida.

Session 17: Antenna Theory and Measurement V (Hall 1)

Chair: Homayoon Oraizi, Iran University of Science and Technology.

1. **Adjustment of Resonant Frequency of Rectangular Patch Antennas by Placing Metallic Walls or Vias Adjacent to their Edges**, Homayoon Oraizi and Ebrahim Forati.
2. **Microstrip Ring Antenna on Grooved Substrate for the Enhancement of Radiation Efficiency**, Homayoon Oraizi and Bahram Rezaei.
3. **Circular Multi-Directional Patch Antenna Array with Selectable Beams using a Novel Feed Structure and Equilateral Triangular Patches**, Mustafa Konca and Sener Uysal.
4. **5-GHz Band-Notched UWB Elliptical Slot Antenna fed by Microstrip Line**, Abdol Aziz Kalteh.
5. **Triple-Band Circularly Polarized Slotted Patch Antenna for GPS and UMTS Systems**, George Abdelsayed, Shoukry Ibrahim and Abdelmegid Allam.
6. **A Feed Network Technique for Simultaneous Antenna Beam Formation**, Ajay Thakare and Rajendra Shelke.

12H30-14H00 Lunch Break

14H00-22H00 Social Event (by registration)

KEYNOTE TALKS

Prof. H.J. Carlin as a researcher, as an educator, as a father and as a philosopher



Prof. Dr. Pier Paolo Civalleri of Politecnico di Torino,
Torino, Italy

BIOGRAPHY

Pier Paolo Civalleri received the degree of Professor (Libera Docenza) in Network Theory from Ministry of Public Education in 1966. From 1971 to 1975 he was research director at the Inst. Elettrotecnico Nazionale Galileo Ferraris. From 1967 to 1986 he was a professor of applied mathematics and and from 1975 to 1981 the Director of the Institute of Mathematics of the Polytechnic University of Turin. He has been a visiting professor at Cornell University in 1977, 1979, 1982, 1983 and 1986. Since 1989 he is a corresponding member of the Academy of Sc. of Turin.

Professor Civalleri was President of the IEEE North-Italy Section 1979-1980, and 1981-1983 President of the Turin section of the association of Italian electrical engineers (AIE), where he is currently a life member of the Board of Directors. During 1999-2001 he was President of the European Circuit Society (ECS). He is member of the editorial board of several scientific journals, and was recently the Editor of the IEEE Trans. on Circuits and Systems, Part I. In 1999 he was the General Chairman of the European Conference on Circuit Theory and Design (ECCTD).

Professor Civalleri's research interests are presently in the field of cellular neural networks and quantum circuits. He is author of numerous scientific papers. He is Fellow of the IEEE, and was awarded the IEEE Centennial Medal in 1984.

ABSTRACT

Opening session is devoted to **Memory of H.J. Carlin** of Cornell University who passed away on February 9, 2009.

H.J. Carlin was one of the great names in the development of modern design tools to construct active and passive microwave circuits know as Real Frequency Technique (RFT) . He was one of the leading names together with D.C Youla and L.J. Castriota who made scattering parameters available to microwave engineers. He came up with explicit formulas to design step line filters employing commensurate transmission line as unit elements. He also had significant contributions to dispersion problem for generation Soliton waves in fiber optic lines. It should be mentioned that Prof. Civalleri is the co-author of the book titled Wideband Circuit design of CRC, 1997 for which Prof. H.J. Carlin is the principal author.

Real Frequency Techniques to design Ultra Wideband Circuits



**Prof. Dr. Siddik Yarman of Istanbul University,
Istanbul, Turkey**

BIOGRAPHY

Received his B.Sc. in Electrical Engineering from Technical University of Istanbul (Feb. 1974), M.Sc. degree from Stevens Institute of Technology, NJ, USA (1978), Ph.D. degree from Cornell University, Ithaca, NY, USA (1982). He had been Member of Technical Staff at David Sarnoff Research Center where he was in charge of designing various satellite transponders for various commercial and military agencies in the US such as Air Force, Hughes Aircraft's, Bell Labs, Comsat, Intelsat, American Satcom of RCA etc. He returned to Turkey in 1984 and served as Assistant, Associate and full Professor at Anatolia University-Eskişehir, Middle East Technical University-Ankara, Technical University of Istanbul, and Istanbul University, Istanbul. He had been the chairperson of Department of Electronics Engineering, Defense Technologies and Director of School of Technical Sciences of Istanbul University over the years 1990-1996. He was the Founding President of Isik University.

He had been a visiting professor at Ruhr University, Bochum (1987-1994), Germany and Tokyo Institute of Technology, Japan (2006-2008). Currently, he is the chairman of Department of Electrical-Electronics Engineering and the Scientific Research Projects Coordinator of Istanbul University. Lately, he also serves as the member of Board of Trustees of Isik University.

Dr. Yarman published more than 300 scientific and technical papers in the field of Electrical/Electronics Engineering, Microwave Engineering, Computer Engineering, Mathematics and Management. He holds four US patents assigned to US Air Force.

He is the author of the books titled "Design of Ultra Wideband Antenna Matching Networks" by Springer 2008 and "Design of Ultra Wideband Power Networks" by Wiley 2010.

He received the Young Turkish Scientist Award in 1986, the Technology Award in 1987 of National Research and Technology Counsel of Turkey. He received the Research Fellowship award of Alexander Von Humboldt Foundation, Bonn, Germany, in 1987. He became the Member of New York Academy of Science in 1994. He was named as the "Man of the year in Science and Technology" in 1998 of Cambridge Biography Center, UK and elevated to IEEE Fellow for his contribution to "Computer Aided design of Broadband Amplifiers".

ABSTRACT

Prof. Dr. Siddik Yarman, who was a former Ph.D Student of H.J Carlin at Cornell University (1981), will cover the Real Frequency Techniques to design broadband matching networks as well as microwave amplifiers giving emphasis on current state of the art problems. In his talk, Prof. Yarman will summarize his new book titled Design of Ultra Wideband Power Transfer Networks via Real Frequency Techniques by John Wiley April 2010. Several real life solutions such as an ultra wideband filter from 100 MHz to 2.1 GHz with discrete components, ultra wideband microwave amplifier chip from 10 GHz to 22 GHz, A broadband matching network for a piezoelectric transducer T1350 , A broadband antenna matching network for an HF monopole antenna, will be presented. His book can be reached at <http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470319895.html>

TUTORIAL I

SDR Based Power amplifiers /Transmitters for Advanced Wireless and Satellite Communications



**Prof. Dr. Fadhel Ghannouchi, Fellow IEEE and Fellow IET
CORE Professor and Senior Canada Research Chair,
Director, iRadio Laboratory (www.ucalgary.ca)
Department of Electrical and Computer Engineering Schulich School of
Engineering,
University of Calgary, Canada**

The next wave in the information revolution will consist of bringing intelligence to the information and communication technology (ICT) sector, allowing seamless and intelligent networking and communication between different users using different services and operators. This will lead to the convergence of communication technologies, aiming at the development and deployment of cooperative and ubiquitous networks that involve existing and future wireless and satellite communications systems.

A critical element in enabling the convergence of different communication systems is the development of software defined radio (SDR) systems that can be used across different frequency bands and for multi-standard applications. This SDR has to be developed to support different frequency carriers and modulations schemes concurrently, in addition to being power- and spectrum-efficient, in order to be able handle high data rates, while being less energy-hungry and more environmentally friendly.

The design of power amplifiers as critical components in any SRD based communication terminal has to be considered closely together with the system architecture, in order to ensure optimal system level performances in terms of linearity and power efficiency. This implies the use of adequate transmitter architectures that convert the analog baseband information to architecture dependent amplifier driving signals, such as sigma-delta, EE&R, Polar and LINC architectures. This talk lays out the principles behind SDR systems and examines the design of software-enabled linear and highly efficient RF/DSP co-designed power amplifiers/transmitters for multi-standard and multi-band applications. Recent advances and practical realizations will also be presented and discussed.

TUTORIAL II

Some Non-traditional Approaches to Computational Electromagnetics for Solving a Class of Real-world Antenna and Scattering Problems



**Prof. Dr. Raj Mittra of EMC Lab,
Penn State University,
USA**

Raj Mittra is Professor in the Electrical Engineering department of the Pennsylvania State University. He is also the Director of the Electromagnetic Communication Laboratory, which is affiliated with the Communication and Space Sciences Laboratory of the EE Department. Prior to joining Penn State he was a Professor in Electrical and Computer Engineering at the University of Illinois in Urbana Champaign. He is a Life Fellow of the IEEE, a Past-President of AP-S, and he has served as the Editor of the Transactions of the Antennas and Propagation Society. He won the Guggenheim Fellowship Award in 1965, the IEEE Centennial Medal in 1984, the IEEE Millennium medal in 2000, the IEEE/AP-S Distinguished Achievement Award in 2002, the AP-S Chen-To Tai Distinguished Educator Award in 2004 and the IEEE Electromagnetics Award in 2006. He has been a Visiting Professor at Oxford University, Oxford, England and at the Technical University of Denmark, Lyngby, Denmark. He has also served as the North American editor of the journal *AEÜ*.

His professional interests include the areas of Communication Antenna Design, RF circuits, computational electromagnetics, electromagnetic modeling and simulation of electronic packages, EMC analysis, radar scattering, frequency selective surfaces, microwave and millimeter wave integrated circuits, and satellite antennas.

He has published about 1000 journal and symposium papers and more than 40 books or book chapters on various topics related to electromagnetics, antennas, microwaves and electronic packaging. He also has three patents on communication antennas to his credit. He has supervised over 100 Ph.D. theses, about 90 M.S. theses, and has mentored more than 50 postdocs and Visiting scholars. He has directed, as well as lectured in, numerous short courses on Computational Electromagnetics, Electronic Packaging, Wireless antennas and Metamaterials, both nationally and internationally.

TUTORIAL III
Historical Perspective on RF Electronics;
Evolving demands and technologies



**Prof. Dr. Duran Leblebici of Technical University of Istanbul,
Turkey**

In this talk, Prof. Leblebici will summarize the history of RF-tuned circuits and also introduce state of the art problems in the course of implementation of active and passive RF components employing the CMOS analog VLSI technologies. Prof. Leblebici will show several design examples together with the key issues encountered in real-world design scenarios. His talk will be based on his current book titled Fundamentals of High Frequency CMOS Analog Integrated Circuits by Cambridge University Press 2009.

TUTORIAL IV

Development of Wearable and Implantable Antennas in the Last Decade: A Review



**Prof. Dr. Bhaskar Gupta of Jadavpur University,
Kolkata, India**

Prof Bhaskar Gupta is a Professor in the Department of Electronics & Telecommunication Engineering, Jadavpur University, Kolkata, India where he has been teaching from 1985. He was born in Kolkata in 1960 and obtained his B.E.Tel.E., M.E.Tel.E. and Ph.D. (Engg.) degrees all from Jadavpur University in the years 1982, 1984 and 1996 respectively. He has published more than 100 research articles in refereed journals and conferences, as well as a book and contributed a chapter in B.S. Yarman's book titled Design of Ultra Wideband Antenna Matching Networks by Springer, 2008. He is a Fellow of IETE, Fellow of Institution of Engineers (India) and Life Member of SEMCE (I). His present area of interest is Planar Antennas, Photonic Band Gap Materials and Application of Artificial Intelligence Paradigms in Microwave Engineering and Antennas.

TUTORIAL V

Modeling and Simulation in Electromagnetic Engineering: Validation, Verification and Calibration



**Prof. Dr. Levent Sevgi, Dođuş University,
Istanbul, Turkey**

BIOGRAPHY

Prof. Sevgi was born in Akhisar on 1st January 1958. He received his B.S.E.E., M.S.E.E. and Ph.D. degrees in Electronic Engineering from Istanbul Technical University (ITU) in 1982, 1984, and 1990, respectively. In 1982 he joined ITU as a research assistant. In 1987, while working on his Ph.D. he was awarded a fellowship that allowed him to work with Prof. L. B. Felsen at Weber Research Institute / New York Polytechnic University York for two years. His work at the Polytechnic concerned the propagation phenomena in non-homogeneous open and closed waveguides.

He became assistant, associate and full professor in 1991, 1996 and 2002, respectively. In 1990, he returned to the Electrical and Electronics Engineering Faculty of the ITU. He was with the Center for Defense Studies, ITUV-SAM from 1993 to 1997, for the Long Horizon (UZUN UFUK) Project studies for Turkish Navy. He was with the Scientific Research Group of Raytheon Systems Canada from Sep 1998 till Jun 1999, during the field trials of the Canadian East Coast Integrated Maritime Surveillance System based on surface wave HF Radars. He joined TUBITAK-MRC, Information Technologies Research Institute of the Turkish Scientific Research and Technology Council as the Chair of Electronic Systems Department in Jun 1999 and spent nearly two years. He was also with the Center for Defense Studies, ITUV-SAM for Vessel Traffic System installation for Turkish Straits from 2000 to 2002.

Prof. Sevgi has been with Electronics and Communication Engineering Department of Engineering Faculty since February 2002.

His research study has focused on propagation in complex environments, analytical and numerical methods in electromagnetic, radar systems, EMC/EMI modeling and measurement, surface wave HF radars, FDTD, TLM, SSPE and MoM techniques and their applications, RCS modeling, bio-electromagnetics. He is also interested in novel approaches in engineering education, teaching electromagnetics via virtual tools. He also teaches popular science lectures like Science, Technology and Society.

He is a Fellow member of the IEEE, a member of Turkish Chamber of Electrical Engineers (EMO), an assoc. Editor, of the IEEE Antennas and Propagation Magazine, Testing ourselves Column, member of the IEEE Antennas and Propagation Society Education Committee, a column Writer in the IEEE Region 8 Newsletter Scientific Literacy Column, in the Editorial Boards of ELEKTRİK, Turkish Journal of Electrical Engineering and Computer Sciences, American Journal of Food Technology,

IJAP, Int. Journal of Antennas and Propagation, (HINDAWI Publishing), Asian Journal of Management, (ACADEMIC Journals).

He is the author or co-author of more than 100 journal and 80 international conference papers. He has several books in English and Turkish.

ABSTRACT

Modeling and numerical simulation issues in electromagnetic engineering are discussed. Fundamental concepts like analytical, numerical, and hybrid methods, physics-based modeling, model validation, data verification, and code calibration (VV&C), etc., are reviewed. VV&C examples are presented through canonical tests and comparisons.

TUTORIAL VI

Technology Scaling and Analog Design of Modern and future ultra-deep-submicron technologies



**Prof. Dr. Franco Maloberti of University of Pavia,
Italy**

BIOGRAPHY

Franco Maloberti received the Laurea degree in physics (summa cum laude) from the University of Parma, Parma, Italy, in 1968, and the Doctorate Honoris Causa in electronics from the Instituto Nacional de Astrofísica, Óptica y Electrónica (Inaoe), Puebla, Mexico, in 1996. He was a Visiting Professor at The Swiss Federal Institute of Technology (ETH-PEL), Zurich, Switzerland and at the EPFL, Lausanne, Switzerland. He was the TI/J.Kilby Chair Professor at the A&M University, Texas and the Distinguished Microelectronic Chair Professor at the University of Texas at Dallas. Presently he is Professor of Microelectronics and Head of the Micro Integrated Systems Group, University of Pavia, Italy. His professional expertise is in the design, analysis, and characterization of integrated circuits and analog digital applications, mainly in the areas of switched-capacitor circuits, data converters, interfaces for telecommunication and sensor systems, and CAD for analog and mixed A/D design. He has written more than 400 published papers on journals or conference proceedings, four books, and holds 30 patents. Dr. Maloberti was the recipient of the XII Pedriali Prize for his technical and scientific contributions to national industrial production, in 1992. He was co-recipient of the 1996 Institute of Electrical Engineers Fleming Premium, the best Paper award, ESSCIRC-2007, and the best paper award, IEEJ Analog Workshop-2007. He was the President of the IEEE Sensor Council from 2002 to 2003 and Vice-President, Region 8, of the IEEE CAS Society from 1995 to 1997 and an Associate Editor of IEEE TCAS-II. Presently he is serving as VP-Publications of the IEEE CAS Society. He received the 1999 IEEE CAS Society Meritorious Service Award, the 2000 CAS Society Golden Jubilee Medal, and the 2000 IEEE Millennium Medal. He is an IEEE Fellow. In 2009 he received the title of Honorary Professor of the University of Macau.

ABSTRACT

In this talk, Prof. Maloberti will introduce challenging analog design via technology scaling. It Decrease of supply voltage, gate leakage current increases, diminished intrinsic MOS gain, high $1/f$ noise are some of the problems. Trend is to focus on interfaces and minimize analog pre-processing but it is required anyway designing op-amps or OTA with acceptable gain, obtaining comparators with good sensitivity and low offset, realizing suitable analog interfaces. After reviewing analog limits, design methods and various tricks for optimizing analog effectiveness are examined and discussed.