

CONFERENCE

Organized by the International University of Sarajevo

Computational Methods and Telecommunication in Electrical Engineering and Finance

May 6-9, 2018

Sarajevo, Bosnia and Herzegovina

CMTEEF CONFERENCE PROGRAM



INTERNATIONAL
UNIVERSITY OF SARAJEVO

Social Program

May 6th Sunday: Sarajevo city tour
May 7th Monday: Mostar-Počitelj-Blagaj



Blagaj - Dervish house



Blagaj - Dervish house



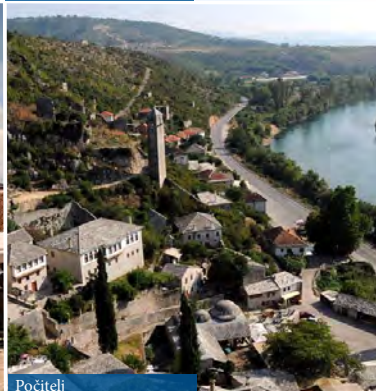
Blagaj - Dervish house



Mostar - Old Bridge



Sarajevo - Sebilj



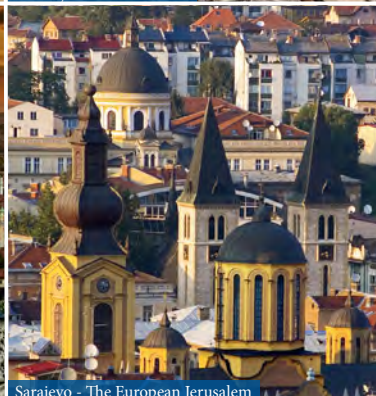
Počitelj



Počitelj scenery



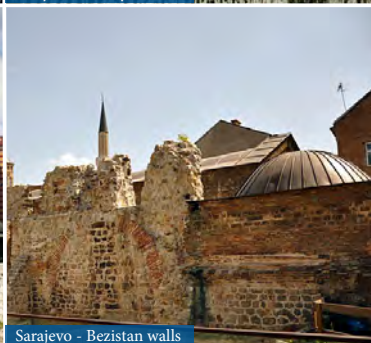
Sarajevo scenery



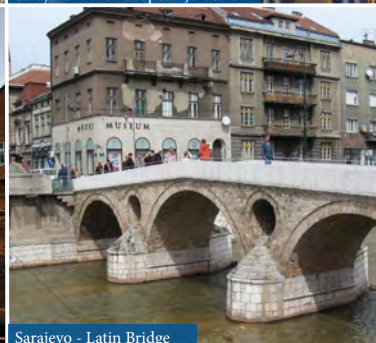
Sarajevo - The European Jerusalem



Sarajevo - Vijećnica



Sarajevo - Bezistan walls



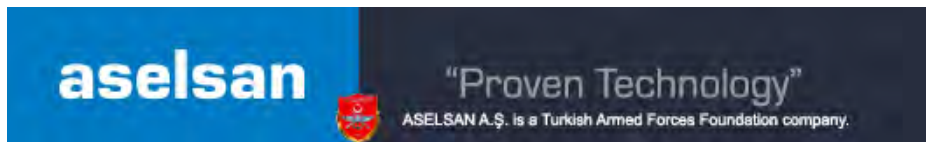
Sarajevo - Latin Bridge

COMPUTATIONAL METHODS AND
TELECOMMUNICATION IN
ELECTRICAL ENGINEERING AND
FINANCE



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TOPICS

The topics include, but are not limited to, the following technical areas:

Computational Methods: Integral Equations/Differential Equations

- Low Frequency/Asymptotic and High Frequency
- Time Domain/Frequency Domain
- Parallel and GPU Computations
- Financial Optimization Techniques, New Disruptive Technologies in Math and Finance.

EM Modeling and Wireless Applications: Small Antennas

- Wideband and Multiband Antennas
- Terahertz Antennas
- Antenna Arrays
- Dielectric Resonator Antennas
- Printed and Conformal Antennas
- RFID antennas/systems
- Space and satellite antennas
- Antennas with advanced/complex/artificial materials and processes
- Bio-Electromagnetics
- Wearable antennas
- implantable antennas
- Body channel modeling
- Radio propagation modeling and channel estimation
- EMC
- Wireless communication, power and RF energy harvesting
- MEMS and MMIC
- Large-area printing, inkjet printing and 3D printing technology
- Microwave remote sensing
- SAR algorithms and systems
- Inverse scattering
- Radar techniques

TOPICS

Optimization and Design: Deterministic Methods

- Stochastic Methods
- Neural Networks
- Artificial Intelligence and Expert Systems
- Others

Electrical Devices and Power Applications: Electric Machines and Drives

- Nondestructive Testing
- Induction Heating
- Power Electronics Devices
- Microsystems
- Biomedical Applications
- Fusion Machines
- Electromagnetic Compatibility
- Others

CONFERENCE ORGANIZERS

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International University of Sarajevo

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International University of Sarajevo

Short Course/Tutorial Chair:

Atef Elsherbeni

Colorado School of Mines

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KEYNOTE SPEAKERS



PROF. DR. ERCÜMENT ARVAS
Medipol University, Istanbul-Turkey

Ercument Arvas was born in 1953, in Catak, Van, Turkey. He received the B.Sc. and M.Sc. degrees from the Middle East Technical University, Ankara, Turkey in 1976 and 1979, respectively, and the Ph.D. degree from Syracuse University, Syracuse, New York, in 1983, all in Electrical Engineering. From 1983 to 1984, he was with the Electrical Engineering

Department of Yildiz Technical University, Istanbul, Turkey. Between 1984 and 1987 he was with Rochester Institute of Technology, Rochester, New York, and from 1987 to 2014 he was with Syracuse University, Syracuse, New York. Professor Arvas is now teaching at the Electronics Engineering Department of Istanbul Medipol University, Istanbul, Turkey. Dr. Arvas did consulting activity for AFOSR, Digital Equipment Co., Phillips Broadband, RIT Research Corp., Syracuse Research Corp., ANAREN Microwaves, Inc., General Electric Co., STM and TUBITAK. He developed and thought 33 different courses including 15 courses in PhD level. He supervised 33 PhD dissertations and 14 MSc thesis. His projects worth more than 10 million USD. He authored 2 books, 5 book chapters and 236 selected academic papers. He was an invited speaker at 7 different conferences. His research interests are in electromagnetics scattering and microwave devices. He is a member of ACES and a Fellow of IEEE and the Electromagnetics Academy.

PRESENTATION TOPIC

A Tutorial on MoM “Method of Moments”

ABSTRACT: Method of Moments (MOM) is a numerical technique used to approximately solve linear operator equations such as differential equations, or integral equations. The unknown function is approximated by a finite series of known expansion functions with unknown expansion coefficients. The approximate function is substituted in the original operator equation and the resulting approximate equation is tested so that the residual is minimized in some sense. This results into a number of simultaneous algebraic equations for the unknown coefficients. These equations are then solved using matrix calculus. MOM has been used to solve vast number of electromagnetic problems during the last five decades.

KEYNOTE SPEAKERS



PROF. DR. ATEF ELSHERBENI
Colorado School of Mines, Colorado-USA

Atef Z. Elsherbeni received his Ph.D. degree in Electrical Engineering from Manitoba University, Winnipeg, Manitoba, Canada, in 1987. Dr. Elsherbeni was with the University of Mississippi from 1987 to 2013. He was a Finland Distinguished professor from 2009 to 2011.

He joined the Electrical Engineering and Computer Science Department at Colorado School of Mines in August 2013 as the Dobelman Distinguished Chair Professor. Currently he is the Head of the Electrical Engineering Department. His research interest includes the scattering and diffraction of EM waves, finite-difference time-domain analysis of antennas and microwave devices, field visualization and software development for EM education, interactions of electromagnetic waves with the human body, RFID and sensor integrated FRID systems, reflector and printed antennas and antenna arrays, and measurement of antenna characteristics and material properties. His academic achievements includes: Funded Research Grants with a total amount of \$11,413,903, 13 books, 29 book chapters, 171 journal publications, 15 developed software packages, 56 (35 MS and 21 PhD) graduate students advised, 40 invited presentations, 221 proceedings publications, 174 conference abstracts, 74 technical reports, 35 short courses offered, 43 invited talks. Dr. Elsherbeni is a Fellow member of IEEE and ACES. He is the Editor-in-Chief for ACES Journal. He was the general Chair for the 2014 APS-URSI Symposium and was the president of ACES Society from 2013 to 2015.

PRESENTATION TOPIC

Isoflux Phased Array Design for Cubesats

This talk will present the optimization and design process of an isoflux phased array for Cubesats in low Earth orbit (LEO) operating at the upper end of the X-band. At this frequency, the array becomes small enough to fit on the 1U face of a Cubesat based on a compromise between the number of elements needed to create a reasonable isoflux pattern and the aperture size of the array in wavelengths. The isoflux array allows for effective communication over a large portion of Earth's surface. Moreover, the array does not require any mechanical parts that can fail on launch or over the lifetime of the satellite, thus increasing reliability. An optimization process based on the genetic algorithm is used to create a multi-ring concentric circular phased array that creates a near-isoflux power pattern on the Earth surface.

KEYNOTE SPEAKERS



PROF. DR. ERTUĞRUL KARAÇUHA
İstanbul Technical University, Istanbul-Turkey

Karaçuha was graduated from Electronics and Telecommunication Engineering department of Istanbul Technical University in 1986. He received his master and doctorate degrees from Istanbul Technical University, Çukurova University and Istanbul University in 1990, 1992, 1993 and 1996 respectively. In 1988-1989, He worked as a research & development engineer in Teletaş, between 1989 and 1996 worked as a research assistant in Istanbul Technical University. From 1994 to 2001, Karaçuha was an assistant professor in Gebze Advanced Technology Institute. Between 2002 and 2013, he was the head of tariffs department and vice-president of Information and Communication Technologies Authority. He has been with Informatics Institute of Istanbul Technical University where he was appointed as a Professor and currently is the Dean of Informatics Institute.

PRESENTATION TOPIC

Electronic Mobile Communication Sector In Turkey: R&D and Domestic Product Use Obligations for Operators in Broadband Mobile Communication

In parallel with the rapid development of mobile electronic communications sector in the world, Turkey has been making progress in this sector as well. Mobile operators are obliged to comply with some Research & Development (“R&D”) and domestic product use obligations during the authorization process, and the effects of the obligations are deemed to be positive.

KEYNOTE SPEAKERS



PROF. DR. VEDAT AKGİRAY
Bogazici University, Istanbul-Turkey

Vedat Akgiray is currently a Professor of Finance and Director of the Center for Corporate Governance (CCG) at Bogazici University in Istanbul, Turkey. He directed the doctoral program in finance from 1992 to 2009, co-founded and directed the M.S. Program in Financial Engineering from 2002 to 2009. During his academic career, he has advised more than seventy graduate students, published and presented more than one hundred academic papers. In March 2009, he was sworn in as the Chairman of the Capital Markets Board of Turkey, where he served until December 2012. He was the leader of the team designing and writing the new Capital Markets Law, which was enacted in 2012. Between 2010 and the end of his tenure at the CMB, he also served as the Chairman of the Emerging Markets Committee of IOSCO, vice-Chairman of the IOSCO Board, member of the Financial Stability Board of G20, member of the Monitoring Board of the IFRS Foundation, member of the IIRC, and member of the IOSCO Expert Group on Financial Benchmarks. In these positions, he actively participated in work streams on re-designing the international regulatory architecture in the aftermath of the global financial crisis of 2008-2010.

In addition to his life-time interest in mathematical finance, his current priority in research is in financial regulation and corporate governance as an integral part of “good” regulation. This includes building models of the relation between corporate governance and informational efficiency of financial markets, aiming to demonstrate the critical contribution of “economic-value-based” corporate governance to the sustainable growth of capital markets and hence to economic development globally.

He is currently writing a book to be titled “Good Finance”, which claims that financial crises are largely due to both “too much finance” and also “bad kind of finance.” The purpose is to explain what is wrong with finance and what may be done to transform finance into a more “humane” discipline. The basic problem globally is that economic and political elite are fully occupied with the question of “how” and almost never consider the more fundamental question of “why”.

PRESENTATION TOPIC

Finance, Mathematics, and New Disruptive Technologies

CONFERENCE PROGRAM

Day I - May 8th Tuesday

9.30 - 10.00

WELCOME message by IUS Rector

10.00 - 10.45

Invited talk “*Atef Elsherbeni*” - Isoflux Phased Array Design for Cubesats

10.45 - 11.15

Coffee break

11.15 - 12.00

Invited talk “*Ertuğrul Karaçuha*” - Electronic Mobile Communication Sector In Turkey: R&D and Domestic Product Use Obligations for Operators in Broadband Mobile Communication

12.00 - 13.00

Lunch in IUS Canteen

SESSION I

13.00 - 14.00

(Chair: Azra Yıldız)

SESSION II

14.00 - 15.00

(Chair: Azra Yıldız)

15.00 - 15.15

Coffee break

SESSION III

15.15 - 16.15

(Chair: Azra Yıldız)

SESSION IV

16.15 - 18.05

(Chair: Azra Yıldız)

CONFERENCE PROGRAM

Day II- May 9th Wednesday

10.00 - 10.45

Invited talk “*Ercümend Arvas*”- A Tutorial on MoM “Method of Moments”

10.45 - 11.15

Coffee break

11.15 - 12.00

Invited talk “*Vedat Akgiray*”- Finance, Mathematics, and New Disruptive Technologies

12.00 - 13.00

Lunch in IUS Canteen

SESSION V

13.00 - 15.00

(Chair: Naida Fetic)

15.00 - 15.15

Coffee break

SESSION VI

15.15 - 16.15

(Chair: Naida Fetic)

SESSION VII

16.15 - 18.05

(Chair: Naida Fetic)

CMTEEF Sessions Overview

DAY I - MAY 8TH TUESDAY

SESSION CHAIR: AZRA YILDIZ,

LOCATION: MAIN AMPHITHEATER, BUILDING A

Session I - COMPUTATIONAL FINANCE

13.00 - 13.15

Safa Mastouri, Ferhan Benli “ Evaluation of Systemic Risk between European and American financial markets”

13.15 - 13.30

M. Can, Sadi Fadda “Comparing the Estimates of SP500 Option Price by ANN and selective Black-Scholes”

13.30 - 13.45

M. Can, Sadi Fadda “Optimal Combination of Three Volatilities for Better Black-Scholes Option Pricing”

13.45 - 14.00

Ajla Kulaglic, B. Berk Ustundag “Stock Index Forecasting using Wavelet Decomposed Neural Networks”

Session II - ANTENNAS

14.00 - 14.15

Ilhami Unal, Bahattin Turetken “Microwave Imaging of Breast Cancer Tumor Using Vivaldi Antenna “

14.15 - 14.30

Bilal Tutuncu, Hamid Torpi, Taha Imeci “ Metamaterial superstrate design for MPA “

14.30 - 14.45

Bilal Tutuncu, Hamid Torpi, Taha Imeci “ Ku Band Triangular Metamaterial Unit Cell Design”

CMTEEF Sessions Overview

14.45 - 15.00

Orcun Kiris, Lokman Kuzu, Mesut Gokten, Kagan Topalli, Fahri Ozturk, Mehmet Unlu
“ A Reflectarray Unit Cell Design based on Split Ring Loaded with Triple Dipoles”.

14.45 - 15.15

COFFEE BREAK

Session III - COMPUTATIONAL ELECTROMAGNETICS

15.15 - 15.30

Kamil Karacuha, Sabahattin Eker “Determination of Power Lines Radius by Electromagnetic Wave Scattering”

15.30 - 15.45

Kamil Karacuha, Eldar Veliyev, Ertugrul Karacuha, Osman Dur”Fractional Derivative Method in the Problem of Diffraction of a Cylindrical Wave on An Impedence Strip”

15.45 - 16.00

Fatih Kaburcuk, Atef Elherbeni “Effect of RF Fields Radiated by a Base Station on a Human Head”

16.00 - 16.15

Hulusi Acikgoz, Burak Uzman, Adem Yilmaz “Recent Advances in Cancer Treatment using Intertitial Microwave Antennas”

Session IV STUDENT PAPERS-1

16.15 - 16.25

Ahmed Babic, Adin Poljak, Elmedin Skopljak”Design and Analysis of Hairpin Bandpass Filter”

16.25 - 16.35

Emina Fajic, Suleyman Luzic, Merjema Mehmedovic”Angled Coupledline Bandpass Filter”

16.35 - 16.45

Muammer Buco, Meliso Kunovac, Adna Mesenovic”Design and Simulation of a High-Frequency 10dB Directional Microstrip Coupler”

CMTEEF Sessions Overview

16.45 - 16.55

Nermin Sejdic, Zemir Drinjak, Haris Pasic "Coupled-line Bandpass Microstrip Filter"

16.55 - 17.05

Alminko Kasibovic, Ilham Husic, Aida Bubalo "2.4 GHz Microstrip Patch Antenna for WiFi Applications"

17.05 - 17.15

Said Cosic, Yusuf Alper, Mahir Cengic "Design, Optimization and Parametric Assessment of a Diamond-Hammer-Shaped Microstrip Patch Antenna"

17.15 - 17.25

Furkan Gecekuşu, Ahmet Uğur Kökcü, Fatih Akgeyik, Muhammed Zafer Şahintürk, Azra Yildiz, Taha Imeci"

A Combined Triple U-shaped Microstrip Patch Antenna for Ku-Band operation"

17.25 - 17.35

Elif Demirpolat, Fatih Tat, Gülsüm Gizem Aktaş, Enver Eren Altınışık, Ömer Kürşad Çayır, Azra Yildiz, Taha Imeci"

Design and Simulation of Band stop Filter using Sonnet Software"

17.35 - 17.45

Murat Doğan, Ertuğrul Çelik, Mehmet Metin, Azra Yildiz, Taha Imeci"

Designing and Optimization of Inset Fed Rectangular Microstrip Patch Antenna (RMPA) for Varying Inset Length and Inset Gap"

17.45 - 17.55

Abdul malek Naes, Ahmad Aljalmoud, Ahmad Al Khas, Khaled Tawakol, Fatih Macit, T Imeci "E-S haped Microstrip Patch Antenna Design For Wlan Applications"

17.55 - 18.05

Abdul malek Naes, Ahmad Aljalmoud, Ahmad Al Khas, Khaled Tawakol "Inset fed multi slots T-shaped patch antenna"

CMTEEF Sessions Overview

DAY II - MAY 9TH WEDNESDAY

SESSION CHAIR: Naida Fetic,

LOCATION: MAIN AMPHITHEATER, BUILDING A

Session V - COMMUNICATION SYSTEMS

13.00 - 13.15

Esma Mine Yildiz, Sebahattin Eker "Design and Simulation of Modified X Band Vivaldi Antenna for Radar Applications"

13.15 - 13.30

Muberra Arvas, Mohammad Alsunaidi "A Multi-pole Model for Oxygen Absorption of 60 GHz Frequency Band Communication Signals"

13.30 - 13.45

Nur H Kaplan Isin Erer "Lattice Filtering Based Fusion of CT and MR Images"

13.45 - 14.00

Nur H Kaplan Isin Erer "Weighted Additive Wavelet Transform for Ultrasonic Image Despeckling"

14.00 - 14.15

Afan HASAN, Oya Kalipsız, Selim Akyokus "Application of Machine Learning Techniques for the Prediction of Financial Market Direction on BIST 100 Index"

14.15 - 14.30

Huseyin Savci, Fatih Kocan "An Energy Starving Radio for Integrated Bio-Sensors and Actuators"

14.30 - 14.45

Hassan Sajjad, Sana Khan, Ahsan Altaf, Serhend Arvas, Tuncer Baykas, Mehmet Kemal Ozdemir, and Ercument Arvas "Direction Finding Using 2x2 Horn Antenna Monopulse System"

CMTEEF Sessions Overview

14.45 - 15.15

COFFEE BREAK

Session VI - SPECIAL TOPICS in CIRCUIT DESIGN, MACHINE LEARNING, COMPUTATIONAL METHODS

15.15 - 15.30

Fatma Sarica, Avni Morgul “Voltage-mode CMOS Ternary Inverter Circuit”

15.30 - 15.45

Rialda Spahic, Kanita Hadziabdic “Class Level Code Smell Detection using Machine Learning Methods”

15.45 - 16.00

Kemal Turan, Muhammed Hadziabdic “Wind Flow Computation Over Hilly Terrain With Advanced RANS Turbulence Model”

16.00 - 16.15

Özgür Alaca, Gamze Kirman, Ali Boyacı, Serhan Yarkan “Empirical Analysis of The Performance of Radiometer for Digitally Modulated Signals”

Session VII STUDENT PAPERS-2

16.15 - 16.25

Abdulwahab HAJAR, Mohamedou ABEWA, Youcef BELLALOU, Sana BELHADJ, Ihab YASİN, Mustafa Imeci, Taha Imeci “Design of a Tri-Resonance Coupled Microstrip Filter “

16.25 - 16.35

Mustafa ÇAĞLAR, Ege İLHAN, Zikri G. DEMİREZEN, Sıla KOÇER, Refik Can BİLGİÇ, Mustafa Imeci, Taha Imeci “Design of a T Shaped Microstrip Bandpass Filter”

16.35 - 16.45

Yigit Can Yılmaz, Omur Akbaba, Kaan Atasaven, Yagız Tolunay, Oguzhan Salih Gungor, S. Taha Imeci “ Parallel Coupled Lines Microstrip Bandpass Filter in 1.86-2.0 GHz”

16.45 - 16.55

Veysel Ercağlar, Fatih Develi, Ibrahim Berber, Muhammet Edip Akay, Oguzhan Salih Gungor, S. Taha Imeci “ Microstrip Lowpass Filter At 5.35 GHz”

CMTEEF Sessions Overview

16.55 - 17.05

Omer Ates, Ethem Yigit Gurer “3dB Branchline Coupler Design”

17.05 - 17.15

Hasen Ahmed M. Al Werfali, Bahattin Türetken, İlhami Unal “Design of An Implantable Antenna for ISM and WMTS Band Biomedical Applications”

17.15 - 17.25

T. Imeci, E. Yaldiz, M Unlarsen”An Empirical Formulation for Estimation of the Seljuk Star Patch Antenna Dimensions for a Given Frequency”

17.25 - 17.35

Turgay Temel “A Simple Architecture, High-Performance Current-Mode LTA-MIN Circuit”

17.35 - 17.45

Turgay Temel, Taha Imeci “A New High-Performance Current-Mode WTA-MAX Circuit”

17.45 - 17.55

Turgay Temel “A New LVQ Classification Algorithm and its Application to Recognition of Handwritten Characters”

17.55 - 18.05

G. Kemal Oğuz, B. Furkan Genç, Göksel Çankaya, R. Muhammed Genç, Ş. Taha Imeci “T Shaped Circular Sector Patch Antenna”

