Chapter Chatter

Dennis Lewis, Associate Editor

Are you ready for the 2019 symposium in New Orleans? It's time to start submitting your technical papers and workshop/tutorial proposals. New for next year will be a focused track on Industry Standards.

Although when I think about New Orleans, music, food and art come to mind, I recently learned the city has developed into one of the most exciting technology markets in the United States. New Orleans has been leading the U.S. in startups-per-capita, providing opportunities for college graduates and job-seekers in the tech world. Forbes Magazine called New Orleans "America's #1 Brainpower City," and it earned "Coolest Start-up City in America" from Inc. Magazine. On the banks of the Mississippi River, and a short walk to the French Quarter, you will find yourself in the midst of history and culture. New Orleans is the perfect site for the 2019 IEEE International Symposium on EMC and Signal/Power Integrity!

Chengdu

On July 21, 2018, Professor Buon Kiong Lau of Lund University gave a technical talk on the topic of "Terminal Antenna Design for Future Wireless" at the Wangjiang Campus, Sichuan University. In this talk, Professor Lau gave an overview of conventional terminal antenna design and commented on its limitations. Then, current trends in terminal antenna design for 4G systems were outlined. Professor Lau also introduced a new antenna design paradigm that has the potential to dramatically improve 5G performance. In particular, the paradigm takes into account the interactions of the antenna system with its near-field and far-field surroundings and provides a powerful framework to optimize these interactions. Finally, some practical techniques were provided to take advantage of this design paradigm, where each technique offers promising performance gains over the state-of-the-art.

On May 10, 2018, Professor Costas D. Sarris of the University of Toronto gave a seminar on Computational Electromagnetics for Emerging Wireless Technologies in Qingshuihe Campus, University of Electronic Science and Technology of China (UESTC). This talk presented a background on "smart" cities, in which transforming metropolitan areas requires the large-scale deployment of enabling information and communication technologies. The financial feasibility of installing and maintaining such networks of access points, meeting standards for "green" (energy efficient) and safe (in terms of radiation exposure of the population) operation, depends on the availability of computational planning tools integrating the physics of radio wave propagation with communication theory and network protocol design. Professor Sarris presented recent research on computational electromagnetic techniques formulated to address some of these challenges:

- Hybrid propagation models (combining vector parabolic equation and ray-tracing methods) for train stations and subway tunnels and their use in the deployment of communication-based train control (CBTC) systems, which are aimed at replacing conventional rail signaling with wireless train control enabled by the communication between the train and a network of access points.
- Integration of such models with network protocol design.

-Uncertainty quantification techniques for such models, efficiently incorporating various uncertainties in the geometry specification of real-life models of indoor and outdoor environments; extensions of these techniques for fabrication uncertainties arising in microwave and optical devices were discussed.

- Robust optimization methods for multiple-input, multiple-output wireless power transfer systems, illuminating their rich underlying physics and the possibility for "power networking", whereby multiple distributed transmitters would be coordinated to charge multiple devices in a cooperative fashion.

Chicago

The Chicago Chapter was well represented at the annual 2018 EMC+SIPI Symposium in Long Beach, California. Chapter Chair Jack Black presented at the Chapter Chair Training Workshop. Louann Mlekodaj (Devine)

On July 21, 2018, Professor Buon Kiong Lau of Lund University gave a technical talk on the topic of "Terminal Antenna Design for Future Wireless" at the Wangjiang Campus, Sichuan University.

In this talk, Professor Lau gave an overview of conventional terminal antenna design and commented on its limitations. The Chengdu EMC Chapter organized the meeting.

Professor Lau discussed current trends in terminal antenna design for 4G systems. Students appreciated hearing about a new antenna design paradigm that has the potential to dramatically improve 5G performance.

Team EMC bicyclists, including a few Chicago EMC Chapter members wearing exclusive custom jerseys, head for the beach and quiet trails in Long Beach, California.

co-lead the brand new Young Professionals (YP) "Speed Networking" event, where Chicago Chapter Officers Jack Black, Tom Braxton (Programs), Craig Fanning (Publicity) and Jerry Meyerhoff (Secretary) were among the "elder" representatives. The 10 minute rotations were very exciting and both the elders and YPs learned from one another. The venue, food and beverages were outstanding. Craig Fanning sat on the automotive test expert's panel taking on pointed questions from the large audience in the exhibit hall. Tom Braxton co-chaired the TC1 Friday workshop on Leadership and EMC Management where Louann Mlekodaj delivered her talk "Product Design to Meet Standards: Whose job is it?" Tom also gave a TC2 talk on "IEC Transient Immunity Testing". Jerry Meyerhoff presented at the 8th EMC Consultant's Tool Kit Workshop. The Gala Banquet on the Queen Mary afforded tours of the engine room where we gear-heads and companions enjoyed close access to the grand Victorian era technology.

Twenty "Team EMC" bicyclists including Jerry Meyerhoff, wearing their spiffy custom jerseys, headed to the beach then rode 10 miles of pleasant trails.

Chicago's September season kick-off at SHURE in Niles, Illinois featured the customary plentiful buffet dinner and social hour. Then Louann Mlekodaj delivered her EMC Society Product Design talk in more depth with Q & A. She emphasized that product design is a TEAM effort and there are many statistical tools available to help guide the process. October 17 will be the annual October Fest hosted at ELITE Electronic Engineering. Chicago is looking for-

Craig Fanning (far right) of the Chicago EMC Chapter sat on the Automotive "Ask the Experts" panel held during the Long Beach Symposium.

Chicago EMC Chapter member Louann Mlekodaj (far left) welcomes the Young Professionals to the Speed Networking Event held during the 2018 IEEE EMC SIPI Symposium in Long Beach.

Chicago EMC Chapter Companion Joanne Meyerhoff tours the Queen Mary engine room with Barbara Staggs and Rosemary Hoolihan (from left) during the Long Beach Symposium.

Participants are shown registering for the EMC Society Madras Chapter half-day free technical seminar on May 10, 2018 titled "Wireless MIMO Near and Far Field Measurement Challenges."

The Madras seminar was organized with the SAMEER Centre for Electromagnetics, Chennai and Society of EMC Engineers (India), Chennai Chapter. Some 90 participants attended, including scientists, engineers, and engineering students.

Madras seminar attendees enjoyed high tea with the distinguished speakers between presentations.

The technical seminar keynote address on August 4 was given by Dr. T. R. Suresh Kumar, Associate Professor School of Electronics Sciences (SENSE), VIT University and Treasurer, IEEE EMC Madras Chapter.

Shri V. Venkatesan, Shri G. Mahesh, Shri Mahesh Chaluvadi of SAMEER-CEM, Chennai, and speaker Shri Dheena Moongilan are shown at the conclusion of the successful seminar on wireless topics.

Participants of the technical seminar "Electromagnetic Compatibility (EMC) – Education, Industrial and Research Perspectives" at Narasu's Sarathy Institute of Technology, Salem on August 4, 2018.

Mr. Rajneesh Raveendran, Engineering Manager, Product Compliance, Seagate Technology, Bengaluru delivered a lecture on EMC testing. He also awarded participation certificates to the seminar attendees.

The Prathyusha Engineering College, Chennai organized an event on September 19, 2018, at which the IEEE EMC Society Student Chapter along with other society chapters were inaugurated. Salil P. is shown with Dr. Moorthi, Ms. Premalatha and Excom members of the Prathyusha Engineering College EMC Chapter at the Madras event.

ward to another great year of regular monthly meetings. Check out our activities at www.emcchicago.org.

Madras

The EMC Society Madras Chapter organized a half-day free technical seminar titled "Wireless MIMO Near and Far Field Measurement Challenges" jointly with SAMEER Centre for Electromagnetics, Chennai and Society of EMC Engineers (India), Chennai Chapter on May 10 , 2018. The seminar was attended by 90 participants including scientists/engineers, faculties, engineering students as well as IEEE members from the region.

The event commenced with the welcome address by Shri G. Mahesh, Vice chairman, IEEE EMC Madras Chapter. This was followed by the inaugural address by Shri V. Venkatesan, Programme Director, SAMEER-CEM, Chennai. The seminar was delivered by Shri. Dheena Moongilan, Distinguished Member of Technical Staff at Bell Laboratories of Nokia, USA. He discussed near-field conditions for MIMO and SISO antenna systems, regulatory compliance methods for 5G massive MIMO systems and techniques for generating uniform field area over the coverage area in the test frequency range to assess the electromagnetic hardening capability of MIMO systems. The lecture was combined with an interactive question session, which saw good participation and enthusiasm from the audience. A vote of thanks was delivered by Shri Mahesh Chaluvadi, Member, IEEE EMC Madras Chapter. The event concluded with high tea and refreshments during which participants interacted with the speaker.

The EMC Society Madras Chapter organized a technical seminar titled "Electromagnetic Compatibility (EMC) – Education, Industrial and Research Perspectives" jointly with Narasu's Sarathy Institute of Technology, Salem on August 4, 2018. The seminar series is organized by the EMC Chapter as an outreach activity to create awareness in EMC education among the engineering faculty, research scholars and student community. It's also aimed to motivate the engineering students to improve their technical knowledge in EMC design methodologies and skills needed for the current industrial scenario. The event commenced with the welcome address by Dr. M. Poonguzhali, Head, ECE Department. This was followed by the presidential address by Dr. V. Munusami Visvanathan, Principal of the institute. The keynote address was given by Dr. T. R. Suresh Kumar, Associate Professor School of Electronics Sciences (SENSE), VIT University and Treasurer, IEEE EMC Madras Chapter. He gave an introduction about the basics of EMI and EMC by pointing out practical examples. He also outlined the history of EMI/EMC, EMI mitigation techniques such as grounding, bonding, shielding and filtering. In his conclusion he stated the importance of EMC education in engineering and listed the job opportunities.

In the second session, Mr. Rajneesh Raveendran, Engineering Manager, Product Compliance, Seagate Technology, Bengaluru delivered a lecture on EMC testing. He listed various EMC standards and testing procedures adopted by the industry. He gave a brief discussion about the academic curriculum and how it relates to the skills expected from fresh graduates by industry.

In the final session, Mr. P. Salil, Scientist – E, SAMEER, Chennai, Chair, IEEE EMC Madras Chapter delivered a lecture on computational electromagnetics for EMC modeling. He emphasized that students need to make use of open source electromagnetic software tools and code to visualize the electromagnetic interactions. He demonstrated the shielding calculation of an enclosure using the analytical method and full wave solver. Mr. G. Dheepak, Associate Professor, Department of ECE coordinated the seminar. The seminar was attended by 40 participants from various engineering colleges in the region.

The Prathyusha Engineering College, Chennai organized an event on September 19, 2018, at which the IEEE EMC Society Student Chapter along with other society chapters was inaugurated. The other chapters inaugurated were the Robotics and Automation Society, the Computer Society, the Computational Intelligence Society and the Industrial Application Society. Salil P., Chairman, IEEE EMC Madras Chapter was the chief guest at the occasion. The event was coordinated by Dr. M. Moorthi, Professor and IEEE Student Branch Counselor. Over 70 participants including 50 IEEE Members comprised of faculty and students from the college participated in the event.

The event commenced with prayer song followed by the inauguration in a traditional way by lighting the kuthuvillakku (traditional lamp) by Salil P. along with Dr. M. Moorthi, G. Premalatha (Advisor, RAS), Dr. L. Vanitha (Advisor, EMCS), Selvaraj (Advisor, IAS), V. R. Kavitha (Advisor, CIS) and W. Thamba Meshach (Advisor, CS).

Ms. Premalatha, Head, Dept. of Electronics and Communication Engineering, delivered the welcome address followed by the presidential address by Dr. M. Moorthi, who introduced the chief guest to the participants. This was followed by the keynote address by Mr. Salil. He congratulated the team for the establishment of the chapters. He discussed the importance of the subject in the industry and skill set requirements in the field of EMI/EMC. He stated the importance of EMC education in engineering and listed the job opportunities in the country. He then delivered a talk titled "EMI/EMC - The History and the Evolution of the Discipline." In the presentation, he discussed the growth of EMI/EMC issues starting from the early 1900s, development of standards, testing methods, current scenario, etc.

Towards the end of the program, P. Salil with the chapter advisors distributed the IEEE membership cards to society student members. The event concluded with the vote of thanks delivered by V. R. Kavitha.

Southeastern Michigan

Joanna McLellan of EMC Productivity came to speak to the Southeastern Michigan EMC Society Chapter on June 21, 2018. Joanna spoke on the course given to "Make EMC a Team Sport!" Joanna said that they teach an EMC course to avail electromagnetic skills to a wider audience of engineers than traditionally understand the magical world of EMC. Human interaction factors with regard to cultural context are also covered in the course. It was an interesting talk.

Steve Laya of Elite Electronics came to the August 2018 Southeastern Michigan EMC Society meeting to inform us about "Wireless Connectivity and Transmitter Regulatory Compliance." Steve reviewed the wireless technology currently in place to enable connectivity solutions for a variety

Joanna McLellan of EMC Productivity presented "Make EMC a Team Sport!" at the Southeastern Michigan EMC Chapter meeting on June 21, 2018.

Southeastern Michigan EMC Chapter members enjoyed a nice buffet dinner before the June meeting.

Steve Laya of Elite Electronics presented at the August 2018 Southeastern Michigan EMC Chapter meeting on the topic "Wireless Connectivity and Transmitter Regulatory Compliance."

Despite summer holiday travel, there was a good turnout for the August Southeastern Michigan EMC Chapter meeting featuring speaker Steve Laya of Elite Electronics.

of applications. He explained common radio protocols such as WiFi, Cellular, and Bluetooth then discussed how they are implemented either as modules or as integrated RF electronic systems. He discussed the upcoming RF modules made using controllers such as Arduino, which are pre certified by the Federal Communications Commission (FCC) in the US and by the Radio Equipment Directive in Europe. He discussed the regulatory certification process for North America and Europe and how to step through the process manufacturers need to complete in order to get their wireless enabled hardware to market.

Turkey

The Turkey AP/MTT/EMC/ED chapter continued technical activities in 2018 with two Distinguished Lecturer seminars and five scientific seminars.

IEEE APS Distinguished Lecturer Professor Jianming Jin visited Ankara, Turkey, and delivered two talks at the Middle East Technical University on the topic "The Fascinating World of Computational Electromagnetics" and at Bilkent University on the topic "Multiphysics Modeling in Computational Electromagnetics: Challenges and Opportunities." The chapter team also had the opportunity to give Professor Jin and Mrs. Jin a tour to historical places of Ankara.

The five technical seminars, each of which attracted both undergraduate and graduate students, included:

20 April 2018
Speaker: Professor Engin Tuncer, Middle East Technical University
Topic: "Acoustics and Video: Reflections on Engineering Research and Education"

4 May 2018
Speaker: Asst. Professor Ozan Keysan, Middle East Technical University
Topic: "An Introduction to Superconductivity and Its Applications in the Energy Area"

11 May 2018
Speaker: Assoc. Professor Klaus Werner Schmidt, Middle East Technical University
Topic: "Supervisory Control for Discrete Event Systems: Introduction, Methods and Applications"

16 May 2018
Speaker: Professor Levent Sevgi, Okan University
Topic: "Electromagnetic Diffraction Modeling and Simulation"

18 May 2018
Speaker: Dr. Salih Zengin, TUBITAK SAGE
Topic: "Hardware Based String Matching Architectures"

More information (photographs, YouTube links, etc.) on the past events, as well as the program for the upcoming activities, can be found on the Chapter website: http://aeme.ieee.metu.edu.tr

IEEE APS Distinguished Lecturer Professor Jianming Jin visited Ankara, Turkey, and delivered two talks on computational electromagnetics at the Middle East Technical University and at Bilkent University.

Turkey Chapter members enjoyed the opportunity to give Professor Jin and Mrs. Jin a tour of the historical places of Ankara. The weather was perfect for sightseeing!

Professor Engin Tuncer with Middle East Technical University presented "Acoustics and Video: Reflections on Engineering Research and Education" on April 20 for the Turkey Chapter.

On May 4, Asst. Professor Ozan Keysan with Middle East Technical University presented "An Introduction to Superconductivity and Its Applications in the Energy Area".

Assoc. Professor Klaus Werner Schmidt with Middle East Technical University presented "Supervisory Control for Discrete Event Systems: Introduction, Methods and Applications" to the Turkey Chapter on May 11.

On May 16, Professor Levent Sevgi with Okan University presented "Electromagnetic Diffraction Modeling and Simulation."

Ukraine

The IEEE Ukraine Section (Kharkiv) SP/AP/C/EMC/COM Joint Chapter organized and held the IEEE EMC Young Scientist School in O. S. Popov Odessa National Academy of Telecommunications (ONAT), Odessa, Ukraine, on September 6, 2018 with the support of the EMC Society.

The lectures "Think Physically to Help Understand the Fundamentals of Electronics and Electromagnetics" and "Techniques from the Arts and Humanities to Help Write Better Reports and Papers" were presented by Professor Alistair Duffy, IEEE EMC Society Board of Directors member, Professor of Electromagnetics, and Associate Dean of Research and Innovation in the Faculty of Technology at De Montfort University, Leicester, UK.

The young scientists of Odessa of physical and radio engineering specialties (students and young scientists of O. S. Popov Odessa National Academy of Telecommunications, Odessa I.I. Mechnikov National University) took part in this event. Also, the

Dr. Salih Zengin, with TUBITAK SAGE, presented "Hardware Based String Matching Architectures" on May 18.

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participants of the 2018 9th International Conference on Ultrawideband and Ultrashort Impulse Signals (UWBUSIS-2018), which was held in ONAT in the close dates (4-7 of September) had the possibility to attend not only the special UWBUSIS-2018 Conference Young Scientist School, but the IEEE EMC Young Scientist School too. The young school participants took part in the discussion at the end of each lecture. Participants and organizers of the IEEE EMC Young Scientist School wish to thank Professor Alistair Duffy for the interesting and useful lectures.

Professor Alistair Duffy, Professor of Electromagnetics, and Associate Dean of Research and Innovation in the Faculty of Technology at De Montfort University, Leicester, UK presented two lectures to the Ukraine Section.

Professor Duffy's lecture "Think Physically to Help Understand the Fundamentals of Electronics and Electromagnetics" prompted many questions from the attendees.

The lecture "Techniques from the Arts and Humanities to Help Write Better Reports and Papers" by Professor Duffy also generated discussion with the attendees.

Students and young scientists of the O. S. Popov Odessa National Academy of Telecommunications, Odessa I.I. Mechnikov National University, took part in the Ukraine event.

Participants and organizers of the IEEE EMC Young Scientist School wish to thank Professor Alistair Duffy for the interesting and useful lectures!

The Ukraine students proudly showed their "Certificates of Attendance" at the conclusion of the IEEE event.

Xi'an

The Workshop on Electromagnetic Time Reversal and Applications was held in the city of Xi'an on August 13 to 14, 2018. This workshop aimed to strengthen academic exchanges and promote international cooperation in the field of Electro Magnetic Time Reversal (EMTR) and lightning. More than 20 scholars and engineers from universities and industry attended this meeting.

The invited keynote speakers included Prof. Farhad Rachidi from Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, Prof. Marcos Rubinstein from HES-SO Haute Ecole Spécialisée de Suisse Occidentale, Switzerland, Prof. Andrea Cozza from CentraleSupélec, France, Prof. Lihua Shi from the E3OE Lab, Nanjing, China, Prof. Yanzhao Xie and Qi Li from Xi'an Jiaotong University, China.

Prof. Yanzhao Xie, as the organizer of this workshop, gave a warm welcome speech. Four topics were included, which were the fundamental theory of EMTR techniques, the application of EMTR in fault location of transmission lines, the application of EMTR in the location of spatial radiation sources, e.g. IEMI and lightning, and the latest progress about lightning phenomena. The participants benefited a lot from the talks and discussions.

To further promote the international cooperation on EMTR techniques and applications in the power industry, Prof. Yanzhao Xie, Prof. Farhad Rachidi, and Prof. Marcos Rubinstein signed an agreement. Prof. Andrea Cozza will join the cooperation as well. Meanwhile,

Group photo of the 2018 Workshop on Electro Magnetic Time Reversal in Xi'an, China.

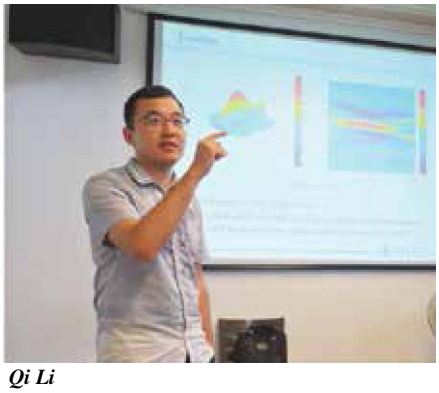
Prof. Farhad Rachidi

Prof. Marcos Rubinstein

Prof. Andrea Cozza

Prof. Yanzhao Xie

Prof. Lihua Shi



Qi Li

Discussions during the break.

some companies from the power industry wished to offer corresponding validation platforms for EMTR techniques.

The workshop was organized by the State Key Lab of Electrical Insulation and Power Equipment, National Center for International Research on Transient Electromagnetics and Applications (TEA), Xi'an Jiaotong University as well as the IEEE EMC Xi'an Chapter. This workshop was supported by the Program of Introducing Talents of Discipline to Universities, China. **EMC**

Signing the agreement to promote international cooperation on EMTR techniques and applications in the power industry.