

**Convention Center Floor Plan  
Fourth Floor**

## Welcome Message from the Chairpersons

Welcome to the 2011 International Instrumentation and Measurement Technology Conference (I2MTC) and to Hangzhou, China! As a most important forum for academic exchange in the field of instrumentation and measurement, this year's I2MTC is to be held for the first time in China. We are delighted that this 28th annual event is held in Hangzhou, which was acclaimed as "the most splendid and luxurious city in the world" by Marco Polo, the Italian traveler in the 13th century.

This year's technical program continues its series of successful scientific and technical sessions, covering all aspects of theory and practice of metrology, measurement technology, instrumentation, and related applications. The technical program includes more than 360 papers from all over the world organized in five parallel oral presentation sessions and five poster sessions. Parallel technical sessions will begin after the keynote address on Tuesday morning and will continue through Thursday afternoon. There are also eight tutorial sessions to be held on Monday. In addition, the parallel oral presentation sessions include seven special sessions which are consistent with the conference theme of this year's I2MTC - "Instrumentation and Measurement for Improving Quality of Life". In particular, special sessions on Advanced Sensors and Instrumentation for Healthcare and on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring have attracted overwhelming response from the presenters at this conference.

We are delighted to have Professor Jian Chu, the Vice President of Zhejiang University, as our keynote speaker. Prof. Chu has made outstanding contributions to process measurement and control and its industrial applications, and has been awarded numerous prestigious prizes and awards, including the National Prizes for Advances in Science and Technology of China, the National Technological Invention Prize of China, and the National Standard Innovation Contribution Prize of China. His keynote presentation will be very informative and stimulating.

The organization of such a reputable and large-scale conference is a very demanding and complex task. Many people have devoted their time and energy to promote the event, solicit and review the submissions, shape the technical program, organize the exhibits, compile conference proceedings, arrange the logistics, and organize the social functions. We would like to take this opportunity to thank all of the contributors to the conference organization. Our special thanks go to the main sponsors of IEEE I2MTC 2011: The IEEE Instrumentation and Measurement Society and Zhejiang University.

Again, we welcome you to the 2011 I2MTC and this wonderful city of Hangzhou. We hope your participation in this important annual event will be an enjoyable and memorable experience.

**Hongjian Zhang and Kang Lee**  
General Conference Co-Chairs



**Yong Yan and Ruth Dyer**  
Technical Program Co-Chairs



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## I<sup>2</sup>MTC 2011 Keynote Speaker



**Professor Jian Chu** was born in Zhejiang Province, China, in 1963. He received both B.Sc. and M.Sc. degrees in industrial process control from Zhejiang University, China, in 1982 and 1984, respectively, and his PhD Degree through a China-Japan (Kyoto University) Joint PhD Program in 1989. From 1989 to 1991, he was a Post-Doctoral Research Fellow at Zhejiang University. He has been a faculty member at Zhejiang University since 1991 and was promoted to a Full Professor and PhD Advisor in 1993 and 1994 respectively. He was appointed as the

Yangzhe Scholar Professor in 1999 in its first round competition of its kind. He is now the Vice President of Zhejiang University, Director of the Institute of Cyber-Systems and Control and Director of the State Key Laboratory of Industrial Control Technology at Zhejiang University, and Deputy Director of National Engineering Research Center for Industrial Automation, China. He is also a Committee member of Control System Design Committee, IFAC (International Federation of Automatic Control), and holds a leading position in 863 CIMS Program Committee of China.

His research interests include sensor networks, system modeling, advanced process control, optimization and fault diagnosis for a variety of large-scale industrial systems. He has authored or co-authored five books and more than 300 journal papers. He and his research team developed novel robust model predictive control and optimization systems from methodology to industrial applications. During past two decades Professor Chu has made significant contributions to distributed control systems (DCS), advanced process control (APC), modeling and optimization, computer networking and communications. The research team led by Prof Chu developed the first heat-redundancy technology based distributed control system in China in 1993 and the first multi-field-bus based distributed network control systems in 1997. These control system products have been successfully applied in thousands of enterprises across China and beyond. Professor Chu also led a team to constitute the National Standard GB/T 20171-2006 "EPA system architecture and communication specifications for use in industrial control and measurement systems" and EPA international standard accepted and posted by IEC 61158-3-14/-4-14/-5-14/-6-14.

In recognition of his significant contributions in science and technology, Professor Chu has been awarded numerous prestigious prizes and awards. These include the third and second National Prizes for Advance in Science and Technology in 1996 and 2000, respectively. He was awarded the IEE Heaviside Premium in 1998. In 2008 he won the first place of the National Standard Innovation Contribution Prizes. In 2009 he received the second National Technological Invention Prize. His research team also received Innovation Research Group Funding from Natural Science Foundation in 2007, and more than ten ministry level Science and Technology Awards.

## I<sup>2</sup>MTC 2011 Exhibitors

### SUPCON Group Co., Ltd

# SUPCON

SUPCON Group Co., Ltd. (SUPCON in short), established in 1993, is one of the leading high-tech enterprises in China with focus on research & development, manufacturing, marketing, engineering services and system integration for industrial total solutions with innovative industrial control and information technologies. Their products and industrial solutions have been widely employed in process and manufacturing industries, such as chemicals, oil refineries, petrochemicals, mining and metals, electric power, pulp and paper and robotics, etc and public business systems, such as intelligent traffic, environment, water treatment, digital medical, building automation and education.

<http://en.supcon.com/index.asp>

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### Hangzhou Grean Water S&T Co.,Ltd

# GREAN

Hangzhou Grean Water S&T Co.,Ltd was established in 2008 and has been a leading industrial organization<sup>1</sup> in R & D, manufacturing and marketing of water quality testing and monitoring instruments. In 2008 the company acquired the U.S. IBR Particle Counting instrument product line, including the IBR series of intellectual property rights, brands, global sales and service channels. Hangzhou Grean also produce and market on-line multi-parameter monitoring systems, bio-monitoring systems and real-time algae monitoring systems. Such systems are used to provide drinking water testing, water treatment process monitoring and early warning system network of urban water supply systems, including other security solutions and integration services.

<http://www.grean.com.cn/english/index.php>

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\* We would like to give a special acknowledgement to the **K.C. WONG Education Foundation** for their generous support of I<sup>2</sup>MTC 2011.

## 2010 IEEE Instrumentation and Measurement Society Awards

Each year the IEEE Instrumentation and Measurement Society accepts nominations for its Awards. The AdCom Awards Committee manages the nominations process, reviews the candidates, and recommends a slate. The slate of candidates is then submitted to the Society AdCom for approval and the awards are presented at our annual Awards Banquet held as part of the I<sup>2</sup>MTC conference. The Awards Committee is pleased to announce the 2010 winners.

### IEEE Instrumentation and Measurement Society Andy Chi Best Paper Award

The I&M Society Andy Chi Best Paper Award is awarded to recognize an author or authors of a paper published in the IEEE Transactions on Instrumentation and Measurement.

The 2010 Andy Chi Best Paper Award recipient is:

**Jenny Wirandi**, Manager of System Engineering, Electrical and I&C Engineering, Sweden

*For the paper "An Adaptive Quality Assessment System – Aspect of Human Factor and Measurement Uncertainty"*

Secondary authors: **Wlodek Kulesza** and **Jiandan Chen**



**Dr. Jenny Wirandi** received the B.Sc. degree in electrical engineering from the University of Kalmar, Kalmar, Sweden, in 1997 and the Ph.D. degree in electrical measurement from the Lund University, Lund, Sweden, in 2007. In 2007, she joined the Blekinge Institute of Technology, Karlskrona, Sweden as a post-doc.

In 2008 she joined Oskarshamn Nuclear Power Plant, Oskarshamn, Sweden, as a System Engineer in the Electrical and Instrumentation Section and since 2011 she has been the head of that section. Her research interests are modern measurement concepts and their applications to industry, including traceable calibration, measurement uncertainty, and the role of the operator in the measurement system.



## IEEE Instrumentation and Measurement Society Outstanding Young Engineer Award

The I&M Outstanding Young Engineer Award recognizes an outstanding young I&M member who has distinguished him or herself through achievements, which are technical, of exemplary service to the I&M Society, or a combination of both, early in their career. The nominee must not have reached their 39th birthday and must be an I&M member at the time of nomination.

The 2010 Outstanding Young Engineer Award recipient is:

**Yan Zhai**, Micron Technology Corporation, USA

*For advancement in stochastic signal processing for real-time data acquisition and surveillance measurements*



**Dr. Yan Zhai** received the BS in Electromechanical Engineering from Tsinghua University (Beijing, China), the MS in Mechanical Engineering from Oklahoma State University (Stillwater, Oklahoma USA), and the PhD in Electrical and Computer Engineering from the University of Oklahoma (Norman, Oklahoma USA). He joined Schlumberger Technology Corporation after graduation and is now employed by Micron Technology Corporation, where he is an algorithm development specialist. His work at Schlumberger involved signal processing and control algorithms for energy industry applications; his work at Micron Technology involves development of advanced signal and image processing algorithms for CMOS imaging sensors and micro-display panels. His present research activity involves image processing, image analysis, and computer vision algorithms to promote interactive human interface and intelligent sensing. Dr. Zhai is an active reviewer for a number of IEEE Transactions, co-author of multiple journal articles and conference papers, and co-author of a book on non-linear filtering.

## IEEE Instrumentation and Measurement Society Technical Award

The I&M Technical Award is given to an individual or group of individuals for outstanding contribution or leadership in advancing instrumentation design or measurement technique.

The 2010 Technical Award recipient is:

**Abdulmotaleb El Saddik**, University of Ottawa, Canada

*For outstanding contributions to multimedia computing.*



**Dr. El Saddik** is a Professor and University Research Chair at the School of Information Technology and Engineering (SITE) at the University of Ottawa. He has made outstanding contributions to multimedia computing, in particular, in the field of ambient intelligence and haptic audio visual environments, which will significantly change the human-to-human and human-computer interaction technologies and their applications.

Dr. El Saddik has authored several books and book chapters, filed 2 patents, and over 250 refereed papers. He is the recipient of numerous awards and grants.

He has been selected as an IEEE I&M Distinguished Lecturer and he has been invited as a keynote speaker for more than 15 major events. Recently, he was elected Fellow of renowned national and international Societies and Institutions. He also received prestigious national and international awards and honors.

## IEEE Instrumentation and Measurement Society Distinguished Service Award

The I&M Society Distinguished Service Award is presented each year to an individual who has given outstanding service to the Society and to the profession.

The 2010 Distinguished Service Award recipient is:

**Robert C. Rassa**, Raytheon, USA

*For many years of invaluable dedication to the Instrumentation and Measurement Society.*



**Bob Rassa** received the BS in Electrical Engineering from the University of California - Berkeley. Bob's technical activity has emphasized system engineering, automatic test, process improvement, and interactive cooperation with technical groups in defense and commercial enterprises throughout the United States and around the world. His technical efforts were recognized by his election as IEEE Fellow in 2004.

As noteworthy and numerous as his technical activities are, Bob is honored today for his exceptional service to the IEEE I&M Society and to the IEEE as a whole. It is difficult to find a position Bob has not held in the I&M Society. He has chaired numerous administrative, coordinating, and technical committees – including the Committees on Technical and Standards Activities, Awards and Membership Recognition, Meetings, Nominations and Appointments, and Finance. Bob served multiple terms on the Society's AdCom and was Society President during 2004-2005. He spent seven years on the I2MTC board of directors as member and chair, and was I2MTC 2008 Conference chair. His leadership at AUTOTESTCON spans more than 20 years, and he has been the I&M Society's voice on a number of IEEE committees – including the Standards, Conferences, and Critical Infrastructure Protection Committees.

Bob's service to IEEE and the Instrumentation and Measurement Society has been unselfish, long-standing, and exemplary in scope. His citation for the 2010 Distinguished Service Award reads, in part, "for many years of invaluable dedication" – an accolade that is, if anything, barely sufficient to describe his service to the Society.

## IEEE Instrumentation and Measurement Society Career Excellence Award

The I&M Society Career Excellence Award is awarded to recognize a lifetime career of meritorious achievement and outstanding technical contribution by an individual in the field of instrumentation and measurement.

The 2010 Career Excellence Award recipient is:

**Asad M. Madni**, BEI Technologies, Inc., USA

*For an extraordinary career of enlightened leadership in and pioneering contributions to the development and commercialization of intelligent sensors, systems and instrumentation.*



**Dr. Asad M. Madni** served as President, Chief Operating Officer & CTO of BEI Technologies Inc. headquartered in Sylmar, California, from 1992 until his retirement in 2006. He led the development and commercialization of intelligent micro-sensors and systems for aerospace, military, commercial and transportation industries, including the Extremely Slow Motion Servo Control System for Hubble Space Telescope's Star Selector System.

Prior to joining BEI he was with Systron Donner Corporation (a Thorn/EMI Company) for 18 years in senior technical & executive positions, eventually as Chairman, President & CEO. Here he made seminal and pioneering contributions in the development of RF & Microwave Systems and Instrumentation.

He is credited with over 150 refereed publications in archival journals, conference proceedings and book chapters; over 100 keynote addresses, invited lectures, chairs and panels; and 67 issued or pending patents.

Dr. Madni is also the recipient of numerous national and international awards and honors. In 2011 Dr. Madni was elected to the US National Academy of Engineering "for contributions to development and commercialization of sensors and systems for aerospace and automotive safety". He is also a Chartered Engineer and a Fellow of numerous technical Institutions and Societies

## 2011 IEEE Joseph F. Keithley Award in Instrumentation and Measurement

The IEEE Joseph F. Keithley Award in Instrumentation & Measurement was established in 2001. It replaced the IEEE Morris E. Leeds Award. Recipient selection is administered by the Technical Field Awards Council of the IEEE Awards Board.

The 2011 IEEE Joseph F. Keithley Award in Instrumentation and Measurement recipient is:

**Reza Zoughi**, Missouri University of Science & Technology, USA

*For contributions to microwave and millimeter wave measurement techniques for nondestructive testing and evaluation*



**Dr. Reza Zoughi's** efforts, in the past two decades, in expanding the utility of microwave and millimeter wave inspection techniques has brought significant recognition to the field of Nondestructive Testing and Evaluation (NDT&E). Dr. Zoughi's research team has developed millimeter wave imaging systems and methods for inspecting the spray-on foam insulation (SOFI) of the space shuttle's external fuel tank, in addition to a real-time, high-resolution and portable microwave camera that is expected to find widespread utility. He has played a leading role in developing near-field microwave and millimeter wave techniques and developed near-field measurement systems using open-ended waveguide and other

more sophisticated probes for evaluating a host of defects in thin and thick and layered composite structures. An IEEE Fellow and a Fellow of the American Society for Nondestructive Testing (ASNT) Dr. Zoughi is currently the Schlumberger Distinguished Professor of Electrical and Computer Engineering at Missouri University of Science and Technology (Missouri S&T), Rolla, Missouri, USA.

## Instrumentation & Measurement Society 2011 Fellows

The IEEE Fellows Program was established to recognize and honor outstanding members for their significant accomplishments in the advancement or application of engineering, science, and technology and for their contributions to the mission of the IEEE: to advance global prosperity by fostering technological innovation, enabling members' careers and promoting community worldwide.

The IEEE Fellows are an elite group from around the globe. The IEEE looks to the Fellows for guidance and leadership as the world of electrical and electronic technology continues to evolve.

The Instrumentation and Measurement Society Fellows Identification and Evaluation Committees identify candidates, gather references from their peers, and submit detailed applications to the IEEE Fellow Committee in a confidential process typically extending over several years. After a further rigorous evaluation and selection process by the IEEE Fellow Committee, each year a slate of candidates for elevation to Fellow is proposed to the IEEE Board of Directors for approval.

Per IEEE rules, the number of successful candidates, in any year, must not exceed one-tenth percent of the IEEE voting membership on record as of 31 December of the preceding year.

**The Instrumentation and Measurement Society members elevated to Fellow in 2011 are:**

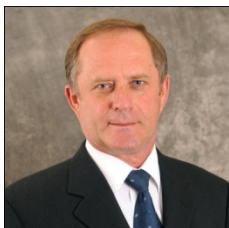


**Voicu Zamfir Groza**  
*University of Ottawa*  
Ottawa, Canada

*For contributions to floating-point analog-to-digital conversion*

**Dr. Voicu Groza** received the Dipl. Eng. in Computer Engineering from the Polytechnic Institute of Timisoara, Romania in 1972. He received the Dr. Eng. degree in Electrical Engineering from the same institution in 1985. His faculty career began in 1979 at the Polytechnic Institute of Timisoara where he became Professor in the Department of Computer Engineering and Dean of the Faculty of Automation and Computers. After brief assignments as visiting and part-time faculty at Eidgenössische Technische Hochschule (Zürich, Switzerland) and Sheridan College, (Toronto, Canada), Dr. Groza joined the faculty of the University of Ottawa where he is presently Associate Professor and Coordinator of the Computer Engineering Program in the School of Information Technology and Engineering. He is author or co-author of more than 200 refereed articles in journals and conference proceedings, author of two books, and holds two patents. His publications reflect his two dominant research interests, which are high-speed data acquisition and dynamically reconfigurable embedded systems.

Dr. Groza is active in the IEEE in a number of different capacities and societies. Within in the IEEE Instrumentation and Measurement Society, he has been General Chair and Technical Program Co-Chair of several workshops and symposia. He is a member of the I&M Society's AdCom and Chair of the AdCom's Conferences Finance Committee, and is a member of the I&M Magazine's editorial board. He is also a member of the IEEE's Computational Intelligence Society, the IEEE Standards Association, and the Association of Professional Engineers of Ontario.



**Sergiy N. Kharkovskiy**

*Missouri University of Science & Technology  
Rolla, MO, USA*

*For contributions to microwave techniques for the evaluation of materials and structures*

**Dr. Sergiy Kharkivskiy** (professional name Sergey Kharkovsky) received the Diploma in Electronics Engineering from Kharkov National University of Radioelectronics, Ukraine, in 1975, and his Ph.D. and D.Sc. degrees in radiophysics from the Kharkov National University, Ukraine, and from the Institute of Radio-Physics and Electronics (IRE) of National Academy of Sciences of Ukraine, Kharkov, in 1985 and 1994, respectively.

Prior to joining Missouri S&T he was a Member of the Research Staff at IRE from 1975 to 1998, and a Professor in the Electrical and Electronics Engineering Department at the Cukurova University, Adana, Turkey, from 1998 to 2003.

He joined Missouri S&T in 2003. Currently he is a Research Associate Professor in the Applied Microwave Nondestructive Laboratory (AMNTL), the Electrical and Computer Engineering Department at Missouri University of Science and Technology (Missouri S&T).

He has authored and co authored more than 120 publications in the microwave and millimeter wave physics and engineering, material characterization and nondestructive evaluation. He holds 11 USSR patents and 3 US patents. He is an Associate Editor for the IEEE Transactions on Instrumentation and Measurement where he is also a member of Best Paper Award Committee. He is a member of the American Society for Nondestructive Testing (ASNT) and a member of the ASNT University Programs Award Committee. He served as the Guest Editor for the ICONIC09 special issue of the IEEE Transactions on Instrumentation and Measurement, 2010. He is also a member of Steering Committee of the IEEE International Symposium on Medical Measurements and Applications (MeMea 2011), Bari, Italy, and a co-technical chair for the IEEE International Instrumentation and Measurement Technology Conference (I2MTC2013) "Innovation in Measurement for Medical and Industrial Technology," which will be held in Minneapolis, USA.

His research interests are microwave and millimeter sensor technologies, nondestructive evaluation and imaging of composite structures, material characterization, and instrumentation and measurement.



**Subhas Chandra Mukhopadhyay**

*Massey University  
Palmerston North, New Zealand*

*For development of low-cost smart sensors and sensing systems*

**Dr. Subhas Chandra Mukhopadhyay** graduated from Jadavpur University, Calcutta, India with a Gold medal and received the Master of Electrical Engineering from Indian Institute of Science, Bangalore, India. He has PhD (Eng.) degree from Jadavpur University, India and Doctor of Engineering degree from Kanazawa University, Japan.

Currently he is working as an Associate professor in the School of Engineering and Advanced Technology, Massey University, Palmerston North, New Zealand. He has made outstanding contributions to research in the field of sensor and sensing technology.

He has authored/co-authored over 240 papers in different international journals, conferences and book chapters. He also received various awards and honors. He is a Fellow of IET (UK) and an Associate editor of IEEE Journals. He is the co-Editor-in-chief of the International Journal on Smart Sensing and Intelligent Systems and the General chair/co-chair of many international conferences.



**Yong Yan**  
*University of Kent*  
Farningham, United Kingdom

*For contributions to pulverized fuel flow metering and combustion flame imaging*

**Dr. Yong Yan** is a Professor of Electronic Instrumentation, the Head of Instrumentation, Control and Embedded Systems Research Group, and the Director of Research at the School of Engineering and Digital Arts, at the University of Kent, Canterbury, U.K. He received the BEng and MSc degrees in instrumentation and control engineering from Tsinghua University, Beijing, China in 1985 and 1988, respectively, and his PhD degree in gas-solids flow measurement from the University of Teesside, Middlesbrough, UK in 1992. Dr. Yan started his academic career in 1988 as an Assistant Lecturer at Tsinghua University. In 1989 he joined the University of Teesside as a Research Assistant. After a short period of postdoctoral research, he worked as a lecturer at Teesside during the period 1993-1996, and then as a senior lecturer, reader and professor with the University of Greenwich, U.K. during the period 1996-2004. He joined the University of Kent in 2004.

His research interests include sensors, instrumentation, measurement, condition monitoring, and digital signal and image processing. Dr. Yan has published more than 260 research papers in refereed journals and conference proceedings in addition to 12 research monographs and book chapters. He serves as a member of the editorial boards for Flow Measurement and Instrumentation, Measurement Science and Instrumentation, and Chinese Journal of Scientific Instruments. He is a member of the Innovation R&D Metrology Working Group and the Engineering and Flow Working Group of the UK Government since 2006. Dr. Yan is a Fellow of the Institution of Engineering Technology (formerly IEE), the Institute of Physics, and the Institute of Measurement and Control, U.K. He has held the positions of Kuang-Piu Guest Professor at Zhejiang University since 2004 and Yangtze Scholar Professor at Tianjin University since 2005. In recognition of his contributions in pulverised fuel flow metering and combustion flame imaging, Dr. Yan was awarded the Achievement Medal by the IEE in 2003, the Engineering Innovation Prize by the IET in 2006, and the Rushlight Commendation Award in 2009. Dr. Yan has been teaching electronic instrumentation and related modules at both undergraduate and postgraduate levels for 20 years. His contribution in engineering education was recognized by a national award from the Royal Academy of Engineering in 2007.



## I<sup>2</sup>MTC TRADITION

The first *IEEE Instrumentation and Measurement Technology Conference* was held in 1984 aboard the Queen Mary in Long Beach, California, but its origins stretch back nearly 20 years earlier to the *Electrical and Electronic Measurement and Test Instrument Conference* held each year from 1966 until 1981 in Ottawa, Canada. The latter was revived by the IEEE Instrumentation and Measurement Society with a new focus on all aspects of instrumentation and measurement. During 26 years I<sup>2</sup>MTC traveled first across the states of USA, and since 1994 across three continents of the world. The following list contains locations and themes of the I<sup>2</sup>MTC conferences:

- 1984 – Long Beach, CA, USA, *Automation-Quality-Productivity*
- 1985 – Tampa, FL, USA, *Measurement Science*
- 1986 – Boulder, CO, USA, *Standards of Excellence*
- 1987 – Boston, MA, USA, *The Changing Face of I&M Technologies*
- 1988 – San Diego, CA, USA, *Intelligence in Instrumentation*
- 1989 – Washington, DC, USA, *Persuasive I&M Technology – A Resource*
- 1990 – San Jose, CA, USA, *Emerging Measurement Technologies*
- 1991 – Atlanta, GA, USA, *Enhancing Productivity with Instrumentation and Measurement Technologies*
- 1992 – Meadowlands, NJ, USA, *Smart People, Smart Instruments, Smart Measurements*
- 1993 – Irvine, CA, USA, *Innovative Ideas for Industry*
- 1994 – Hamamatsu, JAPAN, *Advanced Technologies in Instrumentation and Measurement*
- 1995 – Waltham, MA, USA, *I3C – Integrating Intelligent Instrumentation and Control*
- 1996 – Brussels, BELGIUM, *Quality Measurements – The Indispensable Bridge between Theory and Reality (No Measurements? No Science!)*
- 1997 – Ottawa, CANADA, *Sensing, Processing, Networking*
- 1998 – St. Paul, MN, USA, *Where Instrumentation is Going*
- 1999 – Venice, ITALY, *Measurements for the New Millennium*
- 2000 – Baltimore, MD USA, *Smart Connectivity: Integrating Measurement and Control*
- 2001 – Budapest, HUNGARY, *Rediscovering Measurement in the Age of Informatics*
- 2002 – Anchorage, AK, USA, *The Frontier of Instrumentation and Measurement*
- 2003 – Vail, CO, USA, *Instrumentation and Measurement at the Summit*
- 2004 – Lake Como, ITALY, *From the Electrometer to the Networked Instruments: A Giant Step toward a Deeper Knowledge*
- 2005 – Ottawa, CANADA, *The 22nd Reunion*
- 2006 – Sorrento, ITALY, *A View on the New Technologies for Instrumentation and Measurement*
- 2007 – Warsaw, POLAND, *Synergy of Science and Technology in Instrumentation and Measurement*
- 2008 – Victoria, British Columbia, CANADA, *Advances in the Science of Measurement Technology*
- 2009 – Singapore, *Always On: Instrumentation and Measurement in the Networked World*
- 2010 – Austin, *Innovative and Integrated Applications of I&M*
- 2011 – Binjiang, Hangzhou, CHINA, *Instrumentation and Measurement for Improving Quality of Life*

## I<sup>2</sup>MTC Tutorials

		<b>Room: A</b>	<b>Room: B</b>
<b>Time</b>	<b>Activity</b>	<b>Speakers and Topics</b>	<b>Speakers and Topics</b>
<b>7:30-8:30</b>	REGISTRATION AND COFFEE		
<b>8:30-9:30</b>	TUTORIALS	Mr. Kim Fowler <i>Medical Instrument Development</i>	Dr. Reza Zoughi <i>Advances in Microwave and Millimeter Wave Imaging for Nondestructive Testing Applications</i>
<b>9:30-9:45</b>	BREAK		
<b>9:45-10:45</b>	TUTORIALS	Dr. Dario Petri <i>Fundamentals of Measurement Theory</i>	Dr. Phil Bartley <i>Permittivity Measurement Techniques and Applications</i>
<b>10:45-11:00</b>	BREAK		
<b>11:00-12:00</b>	TUTORIALS	Dr. Fang Xu <i>ADC and DAC Architectures, Selection, and Evaluation</i>	Dr. Branislav Djokić <i>AC Current Measurements Using Rogowski Coils</i>
<b>12:00-1:00</b>	LUNCH		
<b>1:00-2:00</b>	TUTORIALS	Dr. Fang Xu <i>ADC and DAC Architectures, Selection, and Evaluation</i>	Dr. Shervin Shirmohammadi <i>Distributed Measurement Schemes for Internet Latency Estimation</i>
<b>2:00-2:15</b>	BREAK		
<b>2:15-3:15</b>	TUTORIALS	Dr. Dongqin Feng <i>EPA - Ethernet for Plant Automation</i>	Dr. Guang Li <i>Biosensors – Design, Fabrication and Applications</i>
<b>3:15-3:30</b>	BREAK		
<b>3:30-4:30</b>	TUTORIALS	Dr. Wuqiang Yang <i>Electrical Capacitance Tomography and Imaging Industrial Processes</i>	Dr. Kang Lee <i>Smart Sensor Network and Time Synchronization Standards</i>

**Tuesday, May 10**

	Ballroom (5th Floor)	Room 1 (4th Floor)	Room 2 (4th Floor)	Room 3 (4th Floor)	Room 6/7 (4th Floor)	Room 10/11 (4th Floor)	Room 4/5 (4th Floor)
8:30 AM - 10:30 AM	Welcome, Keynote, Announcements						
10:30 AM - 10:45 AM							Coffee Break
10:45 AM - 12:30 PM	A/D and D/A Converters and Electronic Devices	Special Session on Advanced Sensors and Instrumentation for Healthcare I	Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring I	Analog & Mixed Signal Processing I	Digital Image Processing I		
12:30 PM - 1:45 PM	Lunch						
1:45 PM - 3:30 PM	Measurement Uncertainty I	Special Session on Advanced Sensors and Instrumentation for Healthcare II	Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring II	Analog & Mixed Signal Processing II	Digital Image Processing II	Poster Session I	
3:30 PM - 3:45 PM							Coffee Break
3:45 PM - 5:30 PM	Measurement Uncertainty II	Special Session on Advanced Sensors and Instrumentation for Healthcare III	Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring III	Special Session on Intelligent Robotics: Making Human Life Better	Digital Image Processing III	Poster Session I (cont.)	
6:00 PM - 8:00 PM	Reception						

Wednesday, May 11								
	Ballroom (5th Floor)	Room 1 (4th Floor)	Room 2 (4th Floor)	Room 3 (4th Floor)	Room 6/7 (4th Floor)	Room 10/11 (4th Floor)	Room 4/5 (4th Floor)	Boardroom (3rd Floor)
8:00 AM - 9:45 AM		Modeling of Signals and Systems I	Special Session on Advanced Sensors and Instrumentation for Healthcare IV	Special Session on Advanced Non- stationary Signal Processing for Condition Monitoring, Diagnosis and Prognosis of Mechanical Systems	Dielectric and Magnetic Measurements I	Digital Signal Processing I	Poster Session II	
9:45 AM - 10:00 AM							Coffee Break	
10:00 AM - 11:45 AM		Modeling of Signals and Systems II	Sensor Array Processing	Special Session on Navigation Technologies and Related Applications	Dielectric and Magnetic Measurements II	Digital Signal Processing II	Poster Session II (cont.)	
11:45 AM - 1:30 PM	Awards Lunch						Coffee Break	
1:30 PM - 3:15 PM		Modeling of Signals and Systems III	Optical, Chemical, and Biological Sensors I	Special Session on Personalized Wireless Health Monitoring and Decision Making Systems	Electrical and Power Measurements I	Digital Signal Processing III	Poster Session III	
3:15 PM - 3:30 PM							Coffee Break	
3:30 PM - 5:15 PM		Telecommunications	Optical, Chemical, and Biological Sensors II	Remote Sensing and Soft-Computing	Electrical and Power Measurements II	Distributed and Resilient Measurement Systems	Poster Session III	Graduate Student Panel Discussion (3:30 p.m. -5:30 p.m.)
6:00 PM - 6:30 PM	Reception							
6:30 PM - 9:30 PM	Gala Dinner							

Thursday, May 12							
	Ballroom (5th Floor)	Room 1 (4th Floor)	Room 2 (4th Floor)	Room 3 (4th Floor)	Room 6/7 (4th Floor)	Room 10/11 (4th Floor)	Room 4/5 (4th Floor)
8:00 AM - 9:45 AM		Multiphase Flow Measurement	Sensor Applications I	Wireless Sensors	Electrical and Power Measurements III	Imaging Systems, Inverse Problems and Signal Reconstruction I	Poster Session IV
9:45 AM - 10:00 AM							Coffee Break
10:00 AM - 11:45 AM		Virtual Measurement Systems and Human Computer Interface	Sensor Applications II	Optical Measurements	Mechanical Measurements	Imaging Systems, Inverse Problems and Signal Reconstruction II	Poster Session IV (cont.)
11:45 AM - 1:00 PM	Lunch						
1:00 PM - 2:45 PM		Smart Sensors and Sensor Networks	Sensor Applications III	Non-Invasive Measurement Systems	Special Session on Sensors and Instrumentation for the Environment and Climate Change Monitoring	Integrated and Virtual Measurement Systems	Poster Session V

## **Monday, May 9 - Tutorials**

**7:30 AM - 8:30 AM** – *Registration and Coffee*

**8:30 AM - 9:30 AM**

### **Medical Instrument Development**

*Presenter: Mr. Kim Fowler*

*Room: 6*

### **Advances in Microwave and Millimeter Wave Imaging for Nondestructive Testing Applications**

*Presenter: Dr. Reza Zoughi*

*Room: 7*

**9:30 AM – 9:45 AM**– *Break*

*Room: 4/5*

**9:45 AM – 10:45 AM**

### **Fundamentals of Measurement Theory**

*Presenter: Dr. Dario Petri*

*Room: 6*

### **Permittivity Measurement Techniques and Applications**

*Presenter: Dr. Phil Bartley*

*Room: 7*

**10:45 AM – 11:00 AM** – *Break*

*Room: 4/5*

**11:00 AM – 12:00 PM**

### **ADC and DAC Architectures, Selection, and Evaluation**

*Presenter: Dr. Fang Xu*

*Room: 6*

### **AC Current Measurements Using Rogowski Coils**

*Presenter: Dr. Branislav Djokić*

*Room: 7*

**12:00 PM - 1:00 PM** - *Lunch*

*Room: Ballroom*

**1:00 PM – 2:00 PM**

### **ADC and DAC Architectures, Selection, and Evaluation**

*Presenter: Dr. Fang Xu*

*Room: 6*

### **Distributed Measurement Schemes for Internet Latency Estimation**

*Presenter: Dr. Shervin Shirmohammadi*

*Room: 7*

**2:00 PM- 2:15 PM – Break**

**Room:** 4/5

**2:15 PM – 3:15 PM**

**EPA - Ethernet for Plant Automation**

**Presenter:** *Dr. Dongqin Feng*

**Room:** 6

**Biosensors – Design, Fabrication and Applications**

**Presenter:** *Dr. Guang Li*

**Room:** 7

**3:15 PM - 3:30 PM - Break**

**Room:** 4/5

**3:30 PM – 4:30 PM**

**Electrical Capacitance Tomography and Imaging Industrial Processes**

**Presenter:** *Dr. Wuqiang Yang*

**Room:** 6

**Smart Sensor Network and Time Synchronization Standards**

**Presenter:** *Dr. Kang Lee*

**Room:** 7

## Tuesday, May 10

**8:30 AM - 10:30 AM** – Welcome, Keynote, Announcements

**Room:** Ballroom

**10:30 AM - 10:45 AM** – Coffee Break

**Room:** 4/5

**Tuesday, May 10**

**10:45 AM - 12:30 PM**

### **A/D and D/A Converters and Electronic Devices**

**Chair:** Izzet Kale (University of Westminster, United Kingdom)

**Room:** 1

#### **A Low-Cost First-Order Sigma-Delta Converter Design and Analysis**

Ma Li Ya (Inetrnational Islamic University Malaysia, Malaysia)

Sheroz Khan (Inetrnational Islamic University Malaysia, Malaysia)

Anis Nurashikin Nordin (International Islamic University Malaysia, Malaysia)

Ahm Zahirul Alam (Inetrnational Islamic University Malaysia, Malaysia)

Jamaludin Omar (Inetrnational Islamic University Malaysia, Malaysia)

Kahlid A. S. Al-Khateeb (Inetrnational Islamic University Malaysia, Malaysia)

Muhammad Rafiqul Islam (Inetrnational Islamic University Malaysia, Malaysia)

Ahmed Wathik Naji (Inetrnational Islamic University Malaysia, Malaysia)

#### **Digital to Analog Converters test based on time to voltage conversion**

Aldo Baccigalupi (University of Naples Federico II, Italy)

Annalisa Liccardo (University of Naples Federico II, Italy)

Domenico Grimaldi (University of Calabria, Italy)

Domenico Luca Carni (University of Calabria, Italy)

#### **Microcontroller Testing using on-Load-Board DAC**

Serge Demidenko (RMIT International University Vietnam, Vietnam)

Zahir Mohtar (Shell Exploration & Production, Malaysia)

Kok Hua Lee (Freescale Semiconductor, Malaysia)

#### **Design and Performance Evaluation of a Digital Wideband Receiver on a Hybrid Computing Platform**

Kiran George (California State University, USA)

Chien-In Henry Chen (Wright State University, USA)



**Special Session on Advanced Sensors and Instrumentation for Healthcare I**

**Chair:** *Din Ping Tsai (National Taiwan, China University, Taiwan, China)*

**Room:** 2

**A Multi-parameter Assessment Tool for Upper Limb Motion in Neurorehabilitation**

Lu Bai (University of Kent, United Kingdom)

Matthew Pepper (University of Kent, United Kingdom)

Yong Yan (University of Kent, United Kingdom)

Sarah Spurgeon (University of Kent, United Kingdom)

Mohamed Sakel (East Kent Hospitals University Foundation Trust, United Kingdom)

Malcolm Phillips (East Kent Hospitals University Foundation Trust, United Kingdom)

**Development of a 3D Optical Measurement System based on Fringe Projection for Facial Prosthesis**

Xiaobo Chen (Shanghai Jiao Tong University, China)

Jin Sun (Shanghai Jiao Tong University, China)

Juntong Xi (Shanghai Jiao Tong University, China)

Yaoyang Xiong (Shanghai Ninth People Hospital, China)

Jing Qiu (Shanghai Jiao Tong University, China)

Xiaoyu Gu (Shanghai Ninth People Hospital, China)

**Multi-usage of Microwave Doppler Radar in Pervasive Healthcare Systems for Elderly**

Octavian Postolache (Instituto de Telecomunicações, Portugal)

Pedro Girão (Instituto de Telecomunicações, Portugal)

E. Pinheiro (Instituto de Telecomunicações, Portugal)

R. Madeira (Instituto Politecnico de Setúbal, Portugal)

Jose Pereira (Instituto Politecnico de Setúbal, Portugal)

J. Mendes (Universidade Atlantica, Portugal)

Gabriela Postolache (Universidade Atlantica, Portugal)

C. Moura (Universidade Atlantica, Portugal)

**Instrumentation for Healthcare and Better Life An Overview of the Biomedical Instrumentation Development in Taiwan**

Shu Wen Li (National Applied Research Laboratories, Taiwan, China)

Juo Wen Wang (National Applied Research Laboratories, Taiwan, China)

Fong Zhi Chen (National Applied Research Laboratories, Taiwan, China)

Chi-Hung Hwang (National Applied Research Laboratories, Taiwan, China)

Don Yau Chiang (National Applied Research Laboratories, Taiwan, China)

Din Ping Tsai (National Applied Research Laboratories, Taiwan, China)

**Tuesday, May 10**

**10:45 AM - 12:30 PM**

**Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring I**

**Chair:** *Gui-Yun Tian (Newcastle University, UK)*

**Room:** 3

**Thickness measurement of nano-metallic film with electromagnetic sensor under large sensor-sample distance**

Qian Zhao (Tsinghua University, China)

Qiang Yu (Tsinghua University, China)

Ziliian Qu (Tsinghua University, China)

Lina Si (Tsinghua University, China)

Xinchin Lu (Tsinghua University, China)

Yonggang Meng (Tsinghua University, China)

**Application of the Dual-Loaded Modulated Scatterer Technique to Multilayered Material Evaluation**

Kristen M. Donnell (Missouri University of Science and Technology, USA)

Reza Zoughi (Missouri University of Science and Technooogy, USA)

**Feasibility Studies on Microwave Heating for Non-Destructive Evaluation of Glass Fibre Reinforced Plastic Composites**

Liang Cheng (Newcastle University, United Kingdom)

Gui Yun Tian (Newcastle University, United Kingdom)

Barbara Szymanik (West Pomeranian University of Technology, Poland)

**Application of Multi-sensor Data Fusion in Defects Evaluation based on EvidenceTheory**

Li Guohou (Zhejiang University, China)

Huang Pingjie (Zhejiang University, China)

Chen Peihua (Zhejiang University, China)

Hou Dibo (Zhejiang University, China)

Zhang Guangxin (Zhejiang University, China)

Zhou Zekui (Zhejiang University, China)

**Tuesday, May 10**

**10:45 AM - 12:30 PM**

**Analog & Mixed Signal Processing I**

**Chair:** *Ruqiang Yan (Southeast University, China)*

**Room:** 6/7

**High-performance eddy current sensor interface for small displacement measurements**

Mohammad Reza Nabavi (Delft University of Technology, The Netherlands)

Ruimin Yang (Delft University of Technology, The Netherlands)

Stoyan Nihtianov (Delft University of Technology, The Netherlands)

**Design and Implementation of High Performance DAQ System for IRFPA Testing**

Wang Yonggang (University of Science and Technology of China, China)

Huang Dajun (University of Science and Technology of China, China)

Zhang Lijun (University of Science and Technology of China, China)

Zhu Wensong (University of Science and Technology of China, China)

Lu Xiaoming (University of Science and Technology of China, China)

### **Study On FPGA-based Multi-channel Digitizing Method For Nuclear Pulse Amplitude**

Chen Jun (University of Science and Technology of China, China)  
Wang Yonggang (University of Science and Technology of China, China)  
Huang Dajun (University of Science and Technology of China, China)  
Zhang Lijun (University of Science and Technology of China, China)  
Zhu Wensong (University of Science and Technology of China, China)

### **A Multiplexer System for Multi-Channel Charge Signal Processing in In-Shoe Force Measurement**

Zhiguang Geng (University of Kent, United Kingdom)  
Matthew Pepper (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)

**Tuesday, May 10**

**10:45 AM - 12:30 PM**

### **Digital Image Processing I**

**Chair:** George C Giakos (*The University of Akron, USA*)

**Room:** 10/11

### **Three-dimensional Reconstruction of Combustion Flames through Optical Fiber Sensing and CCD Imaging**

Md. Moinul Hossain (University of Kent, United Kingdom)  
Gang Lu (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)

### **A Physical Simulation Approach for Active Photogrammetric 3D Measurement Systems**

Sebastian von Enzberg (Otto-von-Guericke University Magdeburg, Germany)  
Erik Lilienblum (Otto-von-Guericke University Magdeburg, Germany)  
Bernd Michaelis (OvG University Magdeburg, Germany)

### **Temperature measurement of streams of molten pig iron during pouring using infrared computer vision**

Ruben Usamentiaga (University of Oviedo, Spain)  
Luis Perez (University of Oviedo, Spain)  
Julio Molleda (University of Oviedo, Spain)  
Daniel F. Garcia (University of Oviedo, Spain)  
Sergio Huerta (ArcelorMittal, Spain)

### **Integrated Video Camera System for Peripheral Vision**

Eduardo Zurek Varela (Universidad del Norte, Colombia)  
Carlos Rios Vertel (Universidad del Norte, Colombia)  
Paul Smit Caballero (Universidad del Norte, Colombia)

**12:30 PM - 1:45 PM - Lunch**

**Room:** Ballroom

**Tuesday, May 10**

**1:45 PM - 3:30 PM**

**Measurement Uncertainty I**

**Chair:** *Ferdinanda Ponci (RWTH Aachen University, Germany)*

**Room:** 1

**The effect of IEC grouping algorithms on the measurement uncertainty of harmonic distortion indices**

Dalibor Brnobic (University of Rijeka, Croatia)

Sasa Vlahinic (University of Rijeka, Croatia)

Nino Stojkovic (University of Rijeka, Croatia)

**Determination of the stray capacitance of single layer solenoids**

Andrea Mariscotti (University of Genova, Italy)

**A Timing Optimization Technique for Nanoscale CMOS Circuits Susceptible to Process Variations**

Kumar Yelamarthi (Central Michigan University, USA)

Chien-In Henry Chen (Wright State University, USA)

**Fuzzy vs probability uncertainty analysis of seismic displacement measurements issued from D-InSAR and SAR image correlation measurements**

Yajing Yan (Université de Savoie, France)

Emmanuel Trouvé (Université de Savoie, France)

Gilles Mauris (Université de Savoie, France)

Virginie Pinel (Université de Savoie, France)

**Tuesday, May 10**

**1:45 PM - 3:30 PM**

**Special Session on Advanced Sensors and Instrumentation for Healthcare II**

**Chair:** *Wlodek Kulesza (Blekinge Institute of Technology, Sweden)*

**Room:** 2

**Ambulatory Physiologic Monitoring System Supporting EMA with Self-Administered Visual Evoked Potential Recording at Randomized Intervals**

Roger Ellingson (RM Ellingson Design & Development, USA)

Barry Oken (Oregon Health & Science University, USA)

**A Measurement Device for the Comparative Evaluation of Proximal Teeth Contact Strengths**

Christian Deinhammer (Graz University of Technology, Austria)

Christian Wallinger (Graz University of Technology, Austria)

Markus Brandner (Graz University of Technology, Austria)

Barbara Buchgraber (Medical University of Graz, Austria)

Peter Staedtler (Medical University of Graz, Austria)

**Development of an Actigraph System for Sleep-Wake Identification**

Sheng-Fu Liang (National Cheng Kung University, Taiwan, China)

Chung-Ping Young (National Cheng Kung University, Taiwan, China)

Da-Wei Chang (National Cheng Kung University, Taiwan, China)

Fu-Zen Shaw (National Cheng Kung University, Taiwan, China)

You-De Liu (National Cheng Kung University, Taiwan, China)

Yi-Che Liu (National Cheng Kung University, Taiwan, China)

Jin-Jhong Chen (National Cheng Kung University, Taiwan, China)

### **The Pulse Excitation of UV LED Source for Fluorescence Detection**

Kuo-Cheng Huang (National Applied Research Laboratories, Taiwan, China)  
Chun-Li Chang (National Applied Research Laboratories, Taiwan, China)  
Han Chao Chang (National Applied Research Center, Taiwan, China)  
Chung-Hsing Chang (Kaohsiung Medical University, Taiwan, China)

**Tuesday, May 10**

**1:45 PM - 3:30 PM**

### **Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring II**

**Chair:** Rong-Sheng Lu (Hefei University of Technology, China)

**Room:** 3

### **Thickness Measurement Using Transient Eddy Current Techniques**

Jakub Král (Czech Technical University in Prague, Czech Republic)  
Radislav Smid (Czech Technical University in Prague, Czech Republic)  
Helena Ramos (Instituto de Telecomunicações, Portugal)  
Artur Lopes Ribeiro (Instituto de Telecomunicações, Portugal)

### **Handheld Instrument to Detect Defects in Conductive Plates with a Planar Probe**

Dário Pasadas (Instituto de Telecomunicações, Portugal)  
Helena Ramos (Instituto de Telecomunicações, Portugal)  
Francisco Alegria (Instituto de Telecomunicações, Portugal)

### **Rolling Bearing Defect Severity Evaluation Using Recurrence Plot Entropy**

Ruqiang Yan (Southeast University, China)  
Yuning Qian (Southeast University, China)  
Zhouli Huang (Southeast University, China)  
Robert X. Gao (University of Connecticut, USA)

### **Integrated Design of a Compact Ka-band One-Port Vector Reflectometer**

Mojtaba Fallahpour (Missouri University of Science and Technology, USA)  
Mark Baumgartner (Missouri University of Science and Technology, USA)  
Mohammad T. Ghasr (Missouri University of Science and Technology, USA)  
Reza Zoughi (Missouri University of Science and Technology, USA)  
David Pommerenke (Missouri University of Science and Technology, USA)

**Tuesday, May 10**

**1:45 PM - 3:30 PM**

### **Analog & Mixed Signal Processing II**

**Chair:** Abdulmotaleb El Saddik (University of Ottawa, Canada)

**Room:** 6/7

### **Zoom-in Frontend for Power-efficient High-speed and High-resolution Capacitive Sensor Measurement System**

Sha Xia (Delft University of Technology, The Netherlands)  
Stoyan Nihitjanov (Delft University of Technology, The Netherlands)

### **A Faster Method for Accurate Spectral Testing without Requiring Coherent Sampling**

Minshun Wu (Xi'an Jiaotong University, China)  
Degang Chen (Iowa State University, USA)

### **A 2-FFT Method for On-Chip Spectral Testing without Requiring Coherency.**

Siva Sudani (Iowa State University, USA)  
Degang Chen (Iowa State University, USA)  
Randy Geiger (Iowa State University, USA)

### **Fundamentals and Waveform Digitizer for Non-uniformly Sampled Very Fast Burst-like Signals**

Wei-Da Hao (Texas A&M University-Kingsville, USA)  
Chung Leung (Texas A&M University-Kingsville, USA)  
Sung-won Park (Texas A&M University-Kingsville, USA)

**Tuesday, May 10**

**1:45 PM - 3:30 PM**

### **Digital Image Processing II**

**Chair:** Gang Lu (University of Kent, United Kingdom)

**Room:** 10/11

### **Automatic Detection of Internal defects in Solar Cells**

Wu-Ja Lin (National Formosa University, Taiwan, China)  
Yu-Hsien Li (National Formosa University, Taiwan, China)  
Chih-Hsien Huang (National Formosa University, Taiwan, China)

### **A RANSAC-based Fast Road Line Detection Algorithm for High-speed Wheeled Vehicles**

Daniele Fontanelli (University of Trento, Italy)  
Marianela Cappelletti (University of Trento, Italy)  
David Macii (University of Trento, Italy)

### **Acquisition and Evaluation of Illumination Series for Unsupervised Defect Detection**

Robin Gruna (Karlsruhe Institute of Technology (KIT), Germany)  
Jürgen Beyerer (Fraunhofer IOSB, Germany)

### **Near Infrared Light Interaction with Lung Cancer Cells**

George C Giakos (The University of Akron, USA)  
S. Marotta (The University of Akron, USA)  
C. Narayan (The University of Akron, USA)  
J. Peterman (The University of Akron, USA)  
S. Sestra (The University of Akron, USA)  
D. Pingili (The University of Akron, USA)  
S.A. Tsokoktsidis (The University of Akron, USA)  
D.B. Sheffer (The University of Akron, USA)  
W. Xu (The University of Akron, USA)  
M. Zervakis (Technical University of Crete, Greece)  
G. Livanos (Technical University of Crete, Greece)  
M. Kounelakis (Technical University of Crete, Greece)

**Tuesday, May 10**

**1:45 PM - 5:30 PM**

### **Poster Session I**

**Chair:** Sunil R. Das (University of Ottawa, Canada)

**Room:** 4/5

### **Networked Electrophysiology Sensor-On-A-Chip**

Tsai Chen (Worcester Polytechnic Institute, USA)  
John McNeill (Worcester Polytechnic Institute, USA)

### **Simultaneous A/D and D/A Converters Linearity Testing with Deterministic Dithering**

Attilio Di Nisio (Politecnico di Bari, Italy)  
Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)  
Mario Savino (Politecnico di Bari, Italy)

### **Determination of Blood Pressure Using Bayesian Approach**

Soojeong Lee (University of Ottawa, Canada)  
Sreeraman Rajan (University of Ottawa, Canada)  
Hilmi R. Dajani (University of Ottawa, Canada)  
Voicu Z. Groza (University of Ottawa, Canada)  
Miodrag Bolic (University of Ottawa, Canada)

### **A novel rapid-reaction nucleic-acid amplification device using micro-volume chips**

Tsung-Tao Huang (Instrument Technology Research Center, Taiwan, China)  
Jun-Sheng Wang (Instrument Technology Research Center, Taiwan, China)  
Chih-Sheng Yu (Instrument Technology Research Center, Taiwan, China)  
Yi-Chiuen Hu (Instrument Technology Research Center, Taiwan, China)

### **A New Method for Power Flicker Measurement based on Interpolated DFT**

Jin Haibin (Beijing Orient Institute of Metrology and Measurement Technology, China)  
Bin Wang (Beijing University of Aeronautics & Astronautics, China)  
Jing Wu (Beijing University of Aeronautics & Astronautics, China)  
Kai Jia (Beijing University of Aeronautics & Astronautics, China)

### **Low-cost Stand-alone System for Eddy Current Testing of Metallic non-Ferromagnetic Plates**

Tiago Rocha (Instituto de Telecomunicações, Portugal)  
Artur Lopes Ribeiro (Instituto de Telecomunicações, Portugal)  
Helena Ramos (Instituto de Telecomunicações, Instituto Superior Tecnico, Portugal)

### **Analytical calculation and analysis for meander-coil electromagnetic acoustic transducers**

Kuansheng Hao (Tsinghua University, China)  
Songling Huang (Tsinghua university, China)  
Wei Zhao (Tsinghua University, China)  
Rujiao Duan (Tsinghua University, China)

### **Rail Defect Inspection Using Alternating Current Excitation Coils with Digital Demodulation Algorithm**

Ze Liu (Beijing Jiaotong University, China)  
Wei Jia (Beijing Jiaotong University, China)  
Lixiong Zhu (Beijing Jiaotong University, China)  
Xiaofei Zhang (Beijing Jiaotong University, China)

### **Time-Frequency Vibration Representation for Steel Mill Condition Monitoring**

Fei Hu (University of Science and Technology of China, China)  
Qingbo He (University of Science and Technology of China, China)  
Fanrang Kong (University of Science and Technology of China, China)

### **Problem of Insufficient Sampling Rate in EMD**

Dishan Huang (Shanghai University, China)  
Yulin Xu (Shanghai University, China)

### **High Positioning Accuracy of a Dual-axis Feeding System Enhanced by Using Error Compensation Methods for UV Laser Processing System**

Wen-Tse Hsiao (Instrument Technology Research Center, Taiwan, China)  
Shih-Feng Tseng (Instrument Technology Research Center, Taiwan, China)  
Donyau Chiang (Instrument Technology Research Center, Taiwan, China)  
Kuo-Cheng Huang (Instrument Technology Research Center, Taiwan, China)  
Ming-Fei Chen (National Changhua University of Education, Taiwan, China)

### **Illuminance from Luminance Measurement Experimental Results**

Pietro Fiorentin (University of Padova, Italy)  
Alessandro Scroccaro (University of Padova, Italy)

### **Flexible and Low Cost Laser Scanner for Automatic Tyre Inspection**

Iuri Frosio (University of Milan, Italy)  
Alberto Borghese (University of Milan, Italy)  
Paolo Tirelli (University of Milan, Italy)  
Gianfranco Venturino (ALTA-Lab, Italy)  
Giuseppe Rotondo (ALTA-Lab, Italy)

### **Improving Data Acquisition for Characterization of Soft Magnetic Ferrites via Volt-Amperometric Technique**

Francesco Adamo (Polytechnic of Bari, Italy)  
Filippo Attivissimo (Polytechnic of Bari, Italy)  
Mirko Marracci (University of Pisa, Italy)  
Bernardo Tellini (University of Pisa, Italy)

### **Wavelet Packet Entropy Feature Extraction and Characteristics Analysis for Gas/Liquid Two-Phase Flow Regimes**

Chun Fu (Tianjin University, China)  
Feng Dong (Tianjin University, China)  
Chun Fu (Tianjin Vocational Institute, China)

### **Image Based Size Distribution Measurement of Gravel Particles**

Ismo Kinnunen (University of Oulu, Finland)  
Anssi Mäkynen (University of Oulu, Finland)

### **A New Edge Detection Algorithm for Flame Image Processing**

Tian Qiu (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)  
Gang Lu (University of Kent, United Kingdom)

### **Contour-based Image Segmentation for On-line Size Distribution Measurement of Pneumatically Conveyed Particles**

Lingjun Gao (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)  
Gang Lu (University of Kent, United Kingdom)

### **Visual Object Tracking Based on Filtering Methods**

Kun Wang (Carleton University, Canada)  
Xiaoping P. Liu (Carleton University, Canada)

### **3D Tracking Using Particle Filters**

Yasir Salih (Universiti Teknologi Petronas, Malaysia)  
Amir S Malik (Universiti Teknologi Petronas, Malaysia)



### **Optimized Acquisition Geometry for X-ray Inspection**

Iuri Frosio (University of Milano, Italy)  
Alberto Borghese (University of Milano, Italy)  
Fabio Lissandrello (ALTA-Lab, Italy)  
Gianfranco Venturino (ALTA-Lab, Italy)  
Giuseppe Rotondo (ALTA-Lab, Italy)

### **Fingerprint Segmentation and Quality Map using a Combined Frequency Model**

Sebastian Bodó (Westcoast University Heide, Germany)  
Thorsten M. Buzug (Institute of Medical Engineering, Germany)

### **BEMD and Wavelet Denoising Based Classification for Hyperspectral Image**

Zhi He (Harbin Institute of Technology, China)  
Jing Jin (Harbin Institute of Technology, China)  
Miao Zhang (Harbin Institute of Technology, China)  
Yi Shen (Harbin Institute of Technology, China)  
Yan Wang (Harbin Institute of Technology, China)

### **Geometrical Active Contour Model Based on Structure Tensor**

Xiaofeng Li (Beijing Jiaotong University, China)  
Yanfeng Yang (Beijing Jiaotong University, China)

### **Study of Mutual Information Registration based on modified Simplex Optimization Method**

Yu Wang (North University of China, China)  
Mingquan Wang (North University of China, China)  
Zhijie Zhang (North University of China, China)  
Wenlian Wang (North University of China, China)

### **Depth Map Measurement and Generation for Multi-view Video System**

Yu-Cheng Fan (National Taipei University of Technology, Taiwan, China)  
Wei-Lun Chien (National Taipei University of Technology, Taiwan, China)  
Jan-Hung Shen (National Taipei University of Technology, Taiwan, China)

### **Improved Sigma-Delta Ultrasound Beamformers with Adaptive Low-Pass Decimation Filters**

Gunes Damla Altinok (University of Westminster, United Kingdom)  
Mohammed Al-Janabi (University of Westminster, United Kingdom)  
Izzet Kale (University of Westminster, United Kingdom)

### **Home Self-monitoring of Blood Flow Velocity based on LabVIEW Mobile Environment**

Chih-Chieh Wu (National Applied Research Laboratories, Taiwan, China)  
Chien-Hung Chen (National Applied Research Laboratories, Taiwan, China)  
Tai-Shan Liao (National Applied Research Laboratories, China)  
Chi-Hung Hwang (National Applied Research Laboratories, Taiwan, China)

### **Ultrasensitive Multi-function detection system**

Chih-Sheng Yu (National Applied Research Laboratories, Taiwan, China)  
Chih-Chung Yang (National Applied Research Laboratories, Taiwan, China)  
Yu-Cheng Ou (National Applied Research Laboratories, Taiwan, China)  
Chien-Hung Chen (National Applied Research Laboratories, Taiwan, China)  
Sheng-Yi Hsiao (National Applied Research Laboratories, Taiwan, China)  
Jiann-Shiun Kao (National Applied Research Laboratories, Taiwan, China)

**3:30 PM - 3:45 PM - Coffee Break**

**Room: 4/5**

**Tuesday, May 10**

**3:45 PM - 5:30 PM**

**Measurement Uncertainty II**

**Chair:** Feng Dong (Tianjin University, China)

**Room:** 1

**Performance Comparison of the Three-Parameter and the Four-Parameter Sine-Fit Algorithms**

Daniel Belega (University of Timisoara, Romania)

Dominique Dallet (University Bordeaux, France)

Dario Petri (University of Trento, Italy)

**Direct Discrete Variational Curve Reconstruction from Derivatives and its Application to Track Subsidence Measurements**

Paul O'Leary (University of Leoben, Austria)

Matthew Harker (University of Leoben, Austria)

Johann Golser (GeoData, Austria)

**Advanced Metering the Signal Activity of Combined Signal in Sparse Data Condition**

Wen-Hui Lo (National Chiao Tung University, Taiwan, China)

Sin-Horng Chen (National Chiao Tung University, Taiwan, China)

**Development of a Calculable Capacitor**

Yicheng Wang (NIST, USA)

Rae Duk Lee (NIST, USA)

Andrew Koffman (NIST, USA)

Mathieu Durand (NIST, USA)

John Lawall (NIST, USA)

Jon Pratt (NIST, USA)

**Tuesday, May 10**

**3:45 PM - 5:30 PM**

**Special Session on Advanced Sensors and Instrumentation for Healthcare III**

**Chair:** Kang B Lee (NIST, USA)

**Room:** 2

**Novel Interdigital Sensors: Analysis, Measurement and Evaluations**

A.R. Mohd Syaifudin (Massey University, New Zealand)

P.I. Yu (Massey University, New Zealand)

Subhas Mukhopadhyay (Massey University, New Zealand)

Michael J. Haji-Sheikh (Northern Illinois University, USA)

Cheng-Hsin Chuang (Southern Taiwan University, Taiwan, China)

**A Novel Method for the Measurement of Oxygen Saturation in Arterial Blood**

K. Ashoka Reddy (Indian Institute of Technology Madras, India)

Boby George (Indian Institute of Technology Madras, India)

Madhu N. Mohan (Indian Institute of Technology Madras, India)

Jagadeesh V. Kumar (Indian Institute of Technology Madras, India)

**Wheelchair User's Cardiovascular Evaluation System to Support Physiotherapy Sessions**

Eduardo Pinheiro (Institute of Telecommunication, Portugal)

Octavian Postolache (Institute of Telecommunication, Portugal)

Pedro Girão (Institute of Telecommunications (IT), Portugal)

Joaquim Gabriel Mendes (IDMEC Pólo FEUP, Portugal)

Cláudia Maia e Moura (Universidade Atlantica, Portugal)

Gabriela Postolache (Universidade Atlantica, Portugal)

## **Design and Realization of an Array Pulse Detecting Tactile Sensor**

Yuning Qian (Southeast University, China)

Aiguo Song (Southeast University, China)

Ruqiang Yan (Southeast University, China)

**Tuesday, May 10**

**3:45 PM - 5:30 PM**

## **Special Session on Advanced Measurement and Instrumentation for NDT&E and Structural Health Monitoring III**

**Chair:** Pawel Niewczas (*University of Strathclyde, United Kingdom*)

**Room:** 3

## **Investigation on Contribution of Conductivity and Permeability on Electrical Runout Problem of Eddy Current Displacement Sensor**

Yu Yating (*University of Electronic Science and Technology of China, China*)

Du Pingan (*University of Electronic Science and Technology of China, China*)

Yang Tuo (*University of Electronic Science and Technology of China, China*)

## **Optical Fiber Sensors for High Temperature Harsh Environment Sensing**

Tao Wei (*Missouri University of Science and Technology, USA*)

Xinwei Lan (*Missouri University of Science and Technology, USA*)

Hai Xiao (*Missouri University of Science and Technology, USA*)

Yukun Han (*Missouri University of Science and Technology, USA*)

Hai-Lung Tsai (*Missouri University of Science and Technology, USA*)

## **Microwave Resonant Out-of-Plane Fed Elliptical Slot Antenna for Imaging Applications**

Sergey Kharkovsky (*Missouri University of Science and Technology, USA*)

Mohammad T. Ghasr (*Missouri University of Science and Technology, USA*)

Keong Kam (*Missouri University of Science and Technology, USA*)

Reza Zoughi (*Missouri University of Science and Technology, USA*)

Mohamed A Abou-Khousa (*Robarts Research Institute, Canada*)

## **Impact of Wavelet Basis on Vibration Analysis for Rolling Bearing Defect Diagnosis**

Ruqiang Yan (*Southeast University, China*)

Robert X. Gao (*University of Connecticut, USA*)

**Tuesday, May 10**

**3:45 PM - 5:30 PM**

## **Special Session on Intelligent Robotics: Making Human Life Better**

**Chairs:** Serge Demidenko (*RMIT International University Vietnam & Saigon South campus, Vietnam*), Gourab Sen Gupta (*Massey University, New Zealand*)

**Room:** 6/7

## **Sensors for an Omni-Directional Mobile Platform**

Ryan Thomas (*Massey University, New Zealand*)

Gourab Sen Gupta (*Massey University, New Zealand*)

Ken Mercer (*Massey University, New Zealand*)

## **Review of Sensors and Sensor Integration for the Control of a Humanoid Robot**

Gourab Sen Gupta (*Massey University, New Zealand*)

Peter Barlow (*Massey University, New Zealand*)

Sanjay David (*Massey University, New Zealand*)

## **M2M Infrastructure to Integrate Humans, Agents and Robots into Collectives**

Eric Matson (Purdue University, USA)

Byung-Cheol Min (Purdue University, USA)

## **Trajectory Planning for Redundant Manipulator Using Evolutionary Computation Technique**

Subramaniam Parasuraman (Monash University, Malaysia)

Sai-Cheong Fok (The Petroleum Institute, UAE)

## **Statically Balanced Walking of a Crawler Robot**

Subramaniam Parasuraman (Monash University, Malaysia)

Foo Jin Hang (Monash University, Malaysia)

**Tuesday, May 10**

**3:45 PM - 5:30 PM**

## **Digital Image Processing III**

**Chair:** Annamaria R. Varkonyi-Koczy (Obuda University, Hungary)

**Room:** 10/11

## **A Novel Predictor Coefficient Interpolation Approach for Lossless Compression of Images**

Vinit Jakhethiya (LNM Institute of Information Technology, India)

Sunil Prasad Jaiswal (LNM Institute of Information Technology, India)

Anil Kumar Tiwari (Indian Institute of Technology, India)

## **Reconstruction of Rising Bubble With Digital Image Processing Method**

Yuchen Bian (Tianjin University, China)

Feng Dong (Tianjin University, China)

Hongyi Wang (Tianjin University, China)

## **Bidimensional Empirical Mode Decomposition and Non-Uniform sampling based Ultrasonic Images Compression**

Yipeng Liu (Harbin Institute of Technology, China)

Jing Jin (Harbin Institute of Technology, China)

Qiang Wang (Harbin Institute of Technology, China)

Shen Yi (Harbin Institute of Technology, China)

## **A Computationally Efficient Context Based Switched Image Interpolation Algorithm for Natural Images**

Vinit Jakhethiya (LNM Institute of Information Technology, India)

Sunil Prasad Jaiswal (LNM Institute of Information Technology, India)

Anil Kumar Tiwari (Indian Institute of Technology, India)

**6:00 PM - 8:00 PM – Reception**

**Room:** Ballroom

**Wednesday, May 11**

**8:00 AM - 9:45 AM**

**Modeling of Signals and Systems I**

**Chair:** Rik Pintelon (*Vrije Universiteit Brussel, Belgium*)

**Room:** 1

**SPICE Simulation of Coupled Core Fluxgate Magnetometers**

Bruno Andò (University of Catania, Italy)

Salvatore Baglio (University of Catania, Italy)

Salvatore La Malfa (University of Catania, Italy)

Adi R. Bulsara (Space and Naval Warfare Center, USA)

**Model of Measuring Slop from Raw Data of Full-waveform Topographic lidar**

Xiaolu Li (Beihang University, China)

Lijun Xu (Beihang University, China)

Zhongyi Quan (Beihang University, China)

Chaozeng Zhang (Beihang University, China)

**Model Verification and Parameter Evaluation for a Pneumatic Gauging Method for Vented Tanks**

Rudolf Brunnader (Graz University of Technology, Austria)

Gert Holler (Graz University of Technology, Austria)

Georg Brasseur (Graz University of Technology, Austria)

**Fast FRF Measurement of Multivariable Systems Using Periodic Excitations**

Rik Pintelon (*Vrije Universiteit Brussel, Belgium*)

Gerd Vandersteen (*Vrije Universiteit Brussel, Belgium*)

Johan Schoukens (*Vrije Universiteit Brussel, Belgium*)

Yves Rolain (*Vrije Universiteit Brussel, Belgium*)

**Wednesday, May 11**

**8:00 AM - 9:45 AM**

**Special Session on Advanced Sensors and Instrumentation for Healthcare IV**

**Chair:** Voicu Z. Groza (*University of Ottawa, Canada*)

**Room:** 2

**A Digital Instrument for Venous Muscle Pump Test**

Gopalan Bhooma (Pondicherry Engineering College, India)

Subramanian Kokila (Pondicherry Engineering College, India)

Kaliyaperumal Jayanthi (Pondicherry Engineering College, India)

Jagadeesh V Kumar (Indian Institute of Technology Madras, India)

**Hamon: An Activity Recognition Framework for Health Monitoring Support at Home**

Mohammed Alhamid (University of Ottawa, Canada)

Jamal Saboune (University of Ottawa, Canada)

Atif Alamri (King Saud University, Saudi Arabia)

Abdulmoteleb El Saddik (University of Ottawa, Canada)

**Low Cost Timing Interval Analyzers for Quantum Key Distribution**

Richard Nock (University of Bristol, United Kingdom)

Naim Dahnoun (University of Bristol, United Kingdom)

John Rarity (University of Bristol, United Kingdom)

### **Non-invasive estimation of arterial compliance**

Jayaraj Joseph (Indian Institute of Technology Madras, India)  
Jayashankar Venkataraman (Indian Institute of Technology Madras, India)  
Jagadeesh V Kumar (Indian Institute of Technology Madras, India)  
S. Suresh (Mediscan Systems, India)

**Wednesday, May 11**

**8:00 AM - 9:45 AM**

### **Special Session on Advanced Non-stationary Signal Processing for Condition Monitoring, Diagnosis and Prognosis of Mechanical Systems**

**Chair:** Zhongkui Zhu (*School of Urban Rail Transportation, Soochow University, China*)

**Room:** 3

### **Real-time detection of resonant frequency in semi-active suspensions**

Gerardo Acocella (Spring-off s.r.l., Italy)  
Consolatina Liguori (University of Salerno, Italy)  
Vincenzo Paciello (University of Salerno, Italy)  
Alfredo Paolillo (University of Salerno, Italy)

### **Time-Frequency Manifold for Gear Fault Signature Analysis**

Qingbo He (University of Science and Technology of China, China)  
Yongbin Liu (University of Science and Technology of China, China)  
Jun Wang (University of Science and Technology of China, China)  
Jianjun Wang (University of Science and Technology of China, China)  
Chang Gong (University of Science and Technology of China, China)

### **The Elimination of Cross-terms based on the Fusion of Time-frequency Features and its Application in Machine Fault Diagnosis**

Kai Zhao (Soochow University, China)  
Haijin Gong (Soochow University, China)  
Shibin Wang (Soochow University, China)  
Huang Weiguo (Soochow University, China)  
Zhongkui Zhu (Soochow University, China)

### **Empirical Mode Decomposition Based Reducing False Alarm Filter for Built-In Test Signal**

Miao Zhang (Harbin Institute of Technology, China)  
Yi Shen (Harbin Institute of Technology, China)  
Xin Li (Harbin Institute of Technology, China)  
Zhibo Wang (Harbin Institute of Technology, China)  
Xiaolei Zhang (Harbin Institute of Technology, China)  
Yanchao Gao (Harbin Institute of Technology, China)  
Yanju Ji (Harbin Institute of Technology, China)

**Wednesday, May 11**

**8:00 AM - 9:45 AM**

### **Dielectric and Magnetic Measurements I**

**Chair:** Ze Liu (*Beijing Jiaotong University, China*)

**Room:** 6/7

### **Pulsed Magnetic Flux Leakage Sensor Systems and Applications**

Tao Zhang (Ordinance Engineering College, China)  
Guiyun Tian (Newcastle University, United Kingdom)  
Xianzhang Zuo (Ordinance Engineering College, China)

## **Two-dimension Localization of Passive RFID Tags Using AOA Estimation**

Junru Zhou (Zhejiang University, China)  
Hongjian Zhang (Zhejiang University, China)  
Lingfei Mo (Zhejiang University, China)

## **Accurate Permittivity and Permeability Measurement of Composite Broadband Absorbers at Microwave Frequencies**

Anjali Sharma (Tufts University, USA)  
Mohammed N. Afsar (Tufts University, USA)

## **Magnetic field measurements on small magnets by vibrating wire systems**

Pasquale Arpaia (Università del Sannio, Italy)  
Marco Buzio (CERN, Switzerland)  
Juan Perez (CERN, Switzerland)  
Giancarlo Golluccio (CERN, Switzerland)  
Carlo Petrone (CERN, Switzerland)  
Louis Walckiers (CERN, Switzerland)

**Wednesday, May 11                      8:00 AM - 9:45 AM**

## **Digital Signal Processing I**

**Chair:** *Likun Xu (Beihang University)*

**Room:** 10/11

## **Fast OOMP Algorithm and its Application in Compressed Sensing**

Shen Yi (Harbin Institute of Technology, China)  
Li Bo (Harbin Institute of Technology, China)  
Zhenghua Wu (Harbin Institute of Technology, China)

## **Real-time Estimation of R, L, and C Parameters Under non Sinusoidal Conditions: A proposal**

Luigi Ferrigno (University of Cassino, Italy)  
Marco Laracca (University of Cassino, Italy)  
Consolatina Liguori (University of Salerno, Italy)  
Antonio Pietrosanto (University of Salerno, Italy)

## **Performance Comparison of Advanced Techniques for Voltage Dip Detection**

Antonio Moschitta (University of Perugia, Italy)  
Paolo Carbone (University of Perugia, Italy)  
Carlo Muscas (University of Cagliari, Italy)

## **A Subband MUSIC/ESPRIT Technique for Estimating Harmonics in Power Signals**

Jae-Jun Yun (Chungbuk National University, Korea)  
Young-Bin Lim (Chungbuk National University, Korea)  
Jeongkyu Lee (Chungbuk National University, Korea)  
Sang-Wook Sohn (Chungbuk National University, Korea)  
Hyeon-Deok Bae (Chungbuk National University, Korea)

**Poster Session II**

**Chair:** Baoliang Wang (Zhejiang University, China)

**Room:** 4/5

**FPGA-based implementation of Prony Demodulation in the Multi-frequency EIT System**

Yi Zeng (Beihang University, China)  
Lijun Xu (Beihang University, China)  
Zhang Cao (Beihang University, China)  
Shuilong Ma (Daqing Logging & Testing Services Company, China)

**A Multi-Frequency Ultrasonic Flowmeter Applicable To Liquid With Gas Bubbles**

Shunjie Fan (Siemens Ltd., China)  
Zhuo Yue (Siemens Ltd., China)

**Design of experiments for power measurement method in wireless communications systems**

Leopoldo Angrisani (University of Naples Federico II, Italy)  
Rosario Schiano Lo Moriello (University of Naples Federico II, Italy)  
Massimo D'Apuzzo (University of Naples Federico II, Italy)  
Mauro D'Arco (University of Naples Federico II, Italy)

**Design of a Software-Defined Radio for use in the IEEE L- and S-band**

Kevin Voet (Vrije Universiteit Brussel, Belgium)  
Wendy Van Moer (Vrije Universiteit Brussel, Belgium)

**Direct Image Reconstruction For Electromagnetic Tomography(EMT) by Using the Dbar Method**

Zhang Cao (Beihang University, China)  
Lijun Xu (Beihang University, China)  
Xingbin Liu (Daqing Logging & Testing Services Company, Daqing, China)

**An image reconstruction algorithm based on preconditioned LSQR for 3D EIT**

Wenru Fan (Tianjin University, China)  
Huaxiang Wang (Tianjin University, China)

**A Modified Orthogonal Matching Algorithm Using Correlation Coefficient for Compressed Sensing**

Ning Fu (Harbin Institute of Technology, China)  
Liran Cao (Harbin Institute of Technology, China)  
Xiyuan Peng (Harbin Institute of Technology, China)

**Efficient Sensor Network Based Acoustic Localization**

Gergely Vakulya (University of Pannonia, Hungary)  
Gyula Simon (University of Pannonia, Hungary)

**Development of a Volumetric Meter for Low Gas Flow Rate**

Pedro Augusto Lopes Abreu (Federal University of Maranhão, Brazil)  
Sebastian Yuri Catunda (Universidade Federal do Maranhão, Brazil)  
Flavio Henrique Vasconcelos (Federal University of Minas Gerais, Brazil)  
Raimundo Freire (Universidade Federal de Campina Grande, Brazil)



### **Uncertainty Analysis in 3D Shape Measurement of Steel Strips Using Laser Range Finding**

Julio Molleda (University of Oviedo, Spain)  
Ruben Usamentiaga (University of Oviedo, Spain)  
Daniel F. Garcia (University of Oviedo, Spain)  
Francisco Bulnes (University of Oviedo, Spain)  
Laura Ema (ArcelorMittal, Spain)

### **Uncertainty Evaluation of Camera Model Parameters**

Giuseppe Di Leo (University of Salerno, Italy)  
Alfredo Paolillo (University of Salerno, Italy)

### **Evaluation of Timestamping Uncertainty in a Software-based IEEE1588 Implementation**

Paolo Ferrari (University of Brescia, Italy)  
Alessandra Flammini (University of Brescia, Italy)  
Stefano Rinaldi (University of Brescia, Italy)  
Andrea Bondavalli (University of Florence, Italy)  
Francesco Brancati (University of Florence, Italy)

### **Multilayer Measuring System and Uncertainty Analysis Using Ultrasonic Sensors with Wavelet Transform**

Nestor S. Castro Ingaroca (National University of Engineering, Peru)  
Juan M. Mauricio Villanueva (National University of Engineering, Peru)  
Sebastian Yuri Catunda (Universidade Federal do Maranhão, Brazil)  
Jose Guzman Santiago (University National of Engineering, Peru)  
Carlos Enrique Tisza Vargas (University National of Engineering, Peru)

### **Analysis of the Uncertainty of the Double-diode Model of a Photovoltaic Panel**

Francesco Adamo (Politecnico di Bari, Italy)  
Filippo Attivissimo (Politecnico di Bari, Italy)  
Attilio Di Nisio (Politecnico di Bari, Italy)  
Maurizio Spadavecchia (Politecnico di Bari, Italy)

### **Uncertainty evaluation in face recognition algorithms**

Giovanni Betta (University of Cassino, Italy)  
Domenico Capriglione (University of Cassino, Italy)  
Consolatina Liguori (University of Salerno, Italy)  
Alfredo Paolillo (University of Salerno, Italy)

### **Type A Uncertainty in Jitter Measurements in Communication Networks**

Leopoldo Angrisani (University of Naples Federico II, Italy)  
Domenico Capriglione (University of Cassino, Italy)  
Luigi Ferrigno (University of Cassino, Italy)  
Gianfranco Miele (University of Cassino, Italy)

### **Real-time Correction for Sensor's Dynamic Error Based on DSP**

Jian Wu (North University of China, China)  
Zhijie Zhang (North University of China, China)  
Ganggang Dong (North university of china, China)  
Wenlian Wang (North University of China, China)

### **Issues Concerning the Propagation of Uncertainty in ADC Figures of Merit in the Frequency Domain**

Eulalia Balestrieri (University of Sannio, Italy)  
Pasquale Daponte (University of Sannio, Italy)  
Luca De Vito (University of Sannio, Italy)  
Sergio Rapuano (University of Sannio, Italy)  
David Slepicka (Czech Technical University in Prague, Czech Republic)

### **The simulation of vortex flowmeter detector based on ANSYS and the design of anti-resonance piezoelectric detector**

Hongjun Sun (Tianjin University, China)  
Meng Sun (Tianjin University, China)  
Chao Wang (Tianjin University, China)  
Huaxiang Wang (Tianjin University, China)

### **Measurements, FEM Simulation and Spice Modeling of a Thermal Conductivity Detector**

Fabio Rastrello (University of Perugia, Italy)  
Pisana Placidi (University of Perugia, Italy)  
Andrea Scorzoni (University of Perugia, Italy)  
Enrico Cozzani (CNR-IMM Bologna, Italy)  
Marco Messina (CNR-IMM Bologna, Italy)  
Ivan Elmi (CNR-IMM Bologna, Italy)  
Stefano Zampolli (CNR-IMM Bologna, Italy)  
Gian Carlo Cardinali (CNR-IMM Bologna, Italy)

### **A simplified model for non-destructive thickness measurement immune to the lift-off effect**

Yuting Wu (Beihang University, China)  
Zhang Cao (Beihang University, China)  
Lijun Xu (Beihang University, China)

### **Effects of System Parameters on Particle Statistics in Aerosol Charge and Size Measurement in Oscillatory Electric Fields**

Janusz Kulon (University of Glamorgan, United Kingdom)  
Lu Zhang (University of Glamorgan, United Kingdom)  
Mohammed Roula (University of Glamorgan, United Kingdom)

### **Indirect Evaluation of Active Fiber Parameters from the Measurement of Fiber Laser Threshold**

Andrea Braglia (Politecnico di Torino, Italy)  
Alessandra Neri (Politecnico di Torino, Italy)  
Guido Perrone (Politecnico di Torino, Italy)  
Daniele Tosi (Politecnico di Torino, Italy)  
Alberto Vallan (Politecnico di Torino, Italy)

### **Clustered Complex Echo State Networks for Traffic Forecasting with Prior Knowledge**

Peng Yu (Harbin Institute of Technology, China)  
Lei Miao (Harbin Institute of Technology, China)  
Guo Jia (Harbin Institute of Technology, China)

### **Modeling and Stochastic Control of Networked Control System with Packet losses**

Shichao Liu (Carleton University, Canada)  
Xiaoping P. Liu (Carleton University, Canada)  
Abdulmotaleb El Saddik (University of Ottawa, Canada)  
Shafiqul Islam (University of Ottawa, Canada)

### **A 6-bit Low Power Folding and Interpolating ADC**

Vinayashree Hiremath (Wright State University, USA)

Saiyu Ren (Wright State University, USA)

### **Weighted LS Estimation of Spectral Contents and Periodicity of Signals Comprising Multi-Frequency Components**

Mikaya Lumori (University of San Diego, USA)

Johan Schoukens (Vrije Universiteit Brussel, Belgium)

John Lataire (Vrije Universiteit Brussel, Belgium)

### **Continuous-Time Identification of a PWM Aerated Bench Scale Activated Sludge Reactor Using State-Variable Filters**

Freud Sebastian Bach Carvalho Lima (Federal University of Maranhão, Brazil)

Francisco Jadilson dos Santos Silva (Federal University of Maranhão, Brazil)

Sebastian Yuri Catunda (Universidade Federal do Maranhão, Brazil)

João Viana da Fonseca Neto (University Federal of the Maranhão, Brazil)

### **Resolution of Skin Auto-fluorescence for Non-invasive Application**

Yu-Zheng Su (National Applied Research Laboratories, Taiwan, China)

Min-Wei Hung (National Applied Research Laboratories, Taiwan, China)

Kuo-Cheng Huang (National Applied Research Laboratories, Taiwan, China)

Li-Wu Lin (National University of Kaohsiung, Taiwan, China)

**9:45 AM - 10:00 AM - Coffee Break**

**Room: 4/5**

**Wednesday, May 11**

**10:00 AM - 11:45 AM**

### **Modeling of Signals and Systems II**

**Chair:** Kurt Barbé (VUB, Belgium)

**Room: 1**

### **Estimation of Nonparametric Harmonic Transfer Functions for Linear Periodically Time-Varying Systems Using Periodic Excitations**

Ebrahim Louarroudi (Vrije Universiteit Brussel, Belgium)

Rik Pintelon (Vrije Universiteit Brussel, Belgium)

John Lataire (Vrije Universiteit Brussel, Belgium)

Gerd Vandersteen (Vrije Universiteit Brussel, Belgium)

### **Weighting Function-Based Coil Size Optimization for Electromagnetic Flowmeter**

Lijun Xu (Beihang University, China)

Qi Ling (Beihang University, China)

Zhang Cao (Beihang University, China)

Zhicong Peng (Beihang University, China)

Gang Wang (Sichuan Instrument Complex Co. LTD., China)

### **Methodology analysis of a computational tool used in electronic circuit design**

Tiago Almeida (State University of São Paulo - UNESP, Brazil)

Alexandre C. Rodrigues da Silva (State University of São Paulo - UNESP, Brazil)

Ian Grout (University of Limerick, Ireland)

### **ADC Integral Non-Linearity Testing with Low Linearity Monotonic Signals**

Bharath Karthik Vasan (Iowa State University, USA)

Degang J. Chen (Iowa State University, USA)

Randall L. Geiger (Iowa State University, USA)

**Wednesday, May 11**

**10:00 AM - 11:45 AM**

**Sensor Array Processing**

**Chair:** Vedran Bilas (University of Zagreb, Croatia)

**Room:** 2

**Electrical Resistance Tomography System based on CompactPCI for Multiphase Flow Measurement**

Cong Xu (Tianjin University, China)

Feng Dong (Tianjin University, China)

**Experimental research on adaptive multichannel equalization for underwater communications**

Guosong Zhang (Norwegian University of Science and Technology, Norway)

Hefeng Dong (Norwegian University of Science and Technology, Norway)

**A Novel Receive Beamforming Approach of Ultrasound Signals Based on Distributed Compressed Sensing**

Minfen Shen (Shantou University, China)

Qiong Zhang (Shantou University, China)

Jinyao Yang (Shantou Institute of Ultrasonic Instruments Co., Ltd, China)

**Beamspace Sparse Representation Weighting Beamforming for Plane Wave Emission Ultrasound Instrument**

Minfen Shen (Shantou University, China)

Qiong Zhang (Shantou University, China)

Delai Li (Shantou Institute of Ultrasonic Instruments Co., Ltd, China)

Jinyao Yang (Shantou Institute of Ultrasonic Instruments Co., Ltd, China)

**Wednesday, May 11**

**10:00 AM - 11:45 AM**

**Special Session on Navigation Technologies and Related Applications**

**Chair:** Xi-Yuan Chen (Southeast University, China)

**Room:** 3

**Node Localization in Wireless Sensor Network Using Dynamic Distance Prediction Algorithm**

Yuan Xu (Southeast University, China)

Xiyuan Chen (Southeast University, China)

**Comparison between Strobe correlator and Narrow correlator on MBOC DLL tracking loop**

Xhu Xuefen (Southeast University, China)

Chen Xiyuan (Southeast University, China)

Chen Xin (Politecnico di Torino, Italy)

**The Two-Unit CADLL Structure Multipath Performance Investigation**

Xin Chen (Politecnico di Torino, Italy)

Xuefen Zhu (Southeast University, China)

**Random drift modeling and compensation for fiber optic gyroscope under vibration**

Chong Shen (Southeast University, China)

Xiyuan Chen (Southeast University, China)

Jing Yu (Southeast University, China)

Jun Wu (Southeast University, China)

**Wednesday, May 11**

**10:00 AM - 11:45 AM**

**Dielectric and Magnetic Measurements II**

**Chair:** Lorenzo Peretto (*University of Bologna, Italy*)

**Room:** 6/7

**Simulation on High Speed Rail Magnetic Flux Leakage Inspection**

Zhijun Chen (Nanjing University of Aeronautics and Astronautics, China)  
Jiaqing Xuan (Nanjing University of Aeronautics and Astronautics, China)  
Ping Wang (Nanjing University of Aeronautics and Astronautics, China)  
Haitao Wang (Nanjing University of Aeronautics and Astronautics, China)  
Guiyun Tian (University of Newcastle, United Kingdom)

**Measurement Data Analyses Using An Expert System For Oil-Paper Insulation Evaluation**

Sorin Dan Grigorescu (Politehnica University of Bucharest, Romania)  
Octavian Mihai Ghita (Politehnica University of Bucharest, Romania)  
Ion Potarniche (S.C. ICPE-Actel SA, Romania)  
Mircea Covrig (Politehnica University of Bucharest, Romania)

**Static Metrological Characterization of a Ferrimagnetic Resonance Transducer for Real-Time Magnetic Field Markers in Particle Accelerators**

Pasquale Arpaia (University of Sannio, Italy)  
Marco Buzio (CERN, Switzerland)  
Fritz Caspers (CERN, Switzerland)  
Giancarlo Golluccio (University of Sannio, Italy)  
Carlo Petrone (CERN, Switzerland)

**Virtual Instrument to Measure the Magnetic Properties of Annealed Components**

Srungavarapu Gopalakrishna (Indian Institute of Technology Madras, India)  
Boby George (Indian Institute of Technology Madras, India)  
Venkatraman Jayashankar (Indian Institute of Technology Madras, India)  
Jagadeesh V Kumar (Indian Institute of Technology Madras, India)

**Wednesday, May 11**

**10:00 AM - 11:45 AM**

**Digital Signal Processing II**

**Chair:** Aamir Farooq Malik (*Universiti Teknologi PETRONAS, Malaysia*)

**Room:** 10/11

**Robust Heart Rate Estimation from Cardiovascular Signals Unobtrusively Acquired in a Wheelchair**

Eduardo Pinheiro (Instituto Superior Tecnico, Portugal)  
Octavian Postolache (Institute of Telecommunications, Portugal)  
Pedro Girão (Instituto Superior Tecnico, Portugal)

**Hilbert-Huang Transform based Electrostatic Signal Analysis for Characterization of Dilute Gas-Solid Two-Phase Flow**

Wenbiao Zhang (Tianjin University, China)  
Chao Wang (Tianjin University, China)  
Huaxiang Wang (Tianjin University, China)

## **Characterizing The Out-Of-Band Nonlinear Behaviour Of RF Devices: The Key To Success**

Charles Nader (University of Gävle, Sweden)  
Wendy Van Moer (Vrije Universiteit Brussel, Belgium)  
Kurt Barbé (Vrije Universiteit Brussel, Belgium)  
Niclas Björnell (University of Gävle, Sweden)  
Peter Händel (Royal Institute of Technology, Sweden)

## **Effects of Statistical Distribution on Nonlinear Correlation Coefficient**

Zhiyuan Shen (Georgia Institute of Technology, USA)  
Qiang Wang (Harbin Institute of Technology, China)  
Yi Shen (Harbin Institute of Technology, China)

**11:45 AM - 1:30 PM - Awards Lunch**

**Room:** Ballroom

**Wednesday, May 11**

**1:30 PM - 3:15 PM**

## **Modeling of Signals and Systems III**

**Chair:** Bernardo Tellini (University of Pisa, Italy)

**Room:** 1

## **Improving Classification Performance of RFID Gates using Hidden Markov Models**

Michael Goller (RF-IT Solutions GMBH, Austria)  
Markus Brandner (Graz University of Technology, Austria)

## **Transient conditions and overlapping sub-records: an excellent pair for FRF measurements**

Kurt Barbé (Vrije Universiteit Brussel, Belgium)  
Laurent Vanbeylen (Vrije Universiteit Brussel, Belgium)  
Wendy Van Moer (Vrije Universiteit Brussel, Belgium)

## **On the efficiency loss of the Local Polynomial method for single experiment MIMO Frequency Response Matrix extraction**

Gerd Vandersteen (Vrije Universiteit Brussel, Belgium)  
Diana Ugryumova (Vrije Universiteit Brussel, Belgium)  
Yves Rolain (Vrije Universiteit Brussel, Belgium)  
Ludwig De Locht (Vrije Universiteit Brussel, Belgium)  
Rik Pintelon (Vrije Universiteit Brussel, Belgium)  
Johan Schoukens (Vrije Universiteit Brussel, Belgium)

## **Mirrored parallel Hammerstein predistortion for multitone generation**

Kevin Voet (Vrije Universiteit Brussel, Belgium)  
Peter Händel (Royal Institute of Technology, Sweden)  
Niclas Björnell (University of Gävle, Sweden)  
Wendy Van Moer (Vrije Universiteit Brussel, Belgium)

**Wednesday, May 11**

**1:30 PM - 3:15 PM**

**Optical, Chemical, and Biological Sensors I**

**Chair:** Octavian Adrian Postolache (*Institute of Telecommunication - IT/IST & Escola Superior de Tecnologia de Setubal, Portugal*)

**Room:** 2

**Series Resistance Optimization of High-Sensitivity Si-based VUV Photodiodes**

Lei Shi (Delft University of Technology, The Netherlands)  
Lis Nanver (Delft University of Technology, The Netherlands)  
Agata Šakić (Delft University of Technology, The Netherlands)  
Tihomir Knežević (University of Zagreb, Croatia)  
Stoyan Nihitjanov (ASML Netherlands B.V., The Netherlands)  
Alexander Gottwald (Physikalisch-Technische Bundesanstalt, Germany)  
Udo Kroth (Physikalisch-Technische Bundesanstalt, Germany)

**Video-Bandwidth Electric field sensing using coherence modulation of light**

Joel Santos-Aguilar (INAOE, Mexico)  
Celso Gutierrez-Martínez (INAOE, Mexico)  
Raul Ocha-Valiente (INAOE, Mexico)  
Misaël Santiago-Bernal (INAOE, Mexico)

**POF sensors for gas monitoring in the presence of ionizing radiations**

Simone Corbellini (Politecnico di Torino, Italy)  
Sabrina Grassini (Politecnico di Torino, Italy)  
Marco Parvis (Politecnico di Torino, Italy)  
Luigi Benussi (Laboratori Nazionali di Frascati, Italy)  
Stefano Bianco (Laboratori Nazionali di Frascati, Italy)  
Stefano Colafranceschi (Laboratori Nazionali di Frascati, Italy)  
Davide Piccolo (Laboratori Nazionali di Frascati, Italy)

**Plastic Optical Fiber Sensor for Displacement Monitoring with Dual-Wavelength Compensation of Power Fluctuations**

Maria Luisa Casalicchio (Politecnico di Torino, Italy)  
Massimo Olivero (Politecnico di Torino, Italy)  
Guido Perrone (Politecnico di Torino, Italy)  
Alberto Vallan (Politecnico di Torino, Italy)

**Wednesday, May 11**

**1:30 PM - 3:15 PM**

**Special Session on Personalized Wireless Health Monitoring and Decision Making Systems**

**Chair:** Ratko Magjarevic (*University of Zagreb, Croatia*)

**Room:** 3

**Mobile Software Apps Support Personalized-SRO and Serial Monitoring with Results Indicating Early Detection of Hearing Loss**

Roger Ellingson (RM Ellingson Design & Development, USA)  
Wendy Helt (USA)  
Patrick Helt (USA)  
Debra Wilmington (USA)  
Jane Gordon (USA)  
Stephen Fausti (, USA)

### **Pedestrian Navigation System with Fall Detection and Energy Expenditure Calculation**

Chansik Park (Chungbuk National University, Korea)  
Jae-Won Suh (Chungbuk National University, Korea)  
Eun-Jong Cha (Chungbuk National University, Korea)  
Hyeon-Deok Bae (Chungbuk National University, Korea)

### **A Capacitive Intrabody Communication Channel from 100 kHz to 100 MHz**

Željka Lučev (University of Zagreb, Croatia)  
Igor Krois (University of Zagreb, Croatia)  
Mario Cifrek (University of Zagreb, Croatia)

### **Trial & Experimentation Of A Smart Home Monitoring System For Elderly**

Anuroop Gaddam (Massey University, New Zealand)  
Subhas Mukhopadhyay (Massey University, New Zealand)  
Gourab Sen Gupta (Massey University, New Zealand)

**Wednesday, May 11**

**1:30 PM - 3:15 PM**

### **Electrical and Power Measurements I**

**Chair:** Carmine Landi (Second University of Naples, Italy)

**Room:** 6/7

### **A Software-only PTP Synchronization for Power System State Estimation with PMUs**

Marco Lixia (University of Cagliari, Italy)  
Andrea Benigni (RWTH Aachen University, Germany)  
Alessandra Flammini (University of Brescia, Italy)  
Carlo Muscas (University of Cagliari, Italy)  
Ferdinanda Ponci (RWTH Aachen University, Germany)  
Antonello Monti (RWTH Aachen University, Germany)

### **Considerations on the design of a power system decentralized dynamic observer**

Andrea Benigni (RWTH Aachen University, Germany)  
Junqi Liu (RWTH Aachen University, Germany)  
Ferdinanda Ponci (RWTH Aachen University, Germany)  
Antonello Monti (RWTH Aachen University, Germany)  
Giuditta Pisano (University of Cagliari, Italy)  
Sara Sulis (University of Cagliari, Italy)

### **A New Type of Hall Current Sensor**

Weigang Chen (Corporate Technology Siemens Ltd. China, China)  
Feng Du (Corporate Technology Siemens Ltd. China, China)  
Yue Zhuo (Corporate Technology Siemens Ltd. China, China)  
Michael Anheuser (Siemens AG, Germany)

### **Use of IEEE 1588-2008 for a Sampled Value Process Bus in Transmission Substations**

David M. E. Ingram (Queensland University of Technology, Australia)  
Duncan Campbell (Queensland University of Technology, Australia)  
Pascal Schaub (Powerlink Queensland, Australia)



**Wednesday, May 11**

**1:30 PM - 3:15 PM**

**Digital Signal Processing III**

**Chair:** *Stephen A Dyer (Kansas State University, USA)*

**Room:** *10/11*

**Estimation of the Squared Amplitude in the Frequency Domain**

Dusan Agrez (University of Ljubljana, Slovenia)

**Flaw Detection in High Speed Train's Rail Based on EMD and PSD**

Xin Zhang (Harbin Institute of Technology, China)

Yan Wang (Harbin Institute of Technology, China)

Naizhang Feng (Harbin Institute of Technology, China)

Yi Shen (Harbin Institute of Technology, China)

**Phase sensitive frequency estimation algorithm for asynchronously sampled harmonically distorted signals**

Rado Lapuh (Metrology Institute of the Republic of Slovenia, Slovenia)

**Correlated noise unfolding on a Hadronic Calorimeter**

Miguel Fiolhais (University of Coimbra, Portugal)

**Wednesday, May 11**

**1:30 PM - 5:15 PM**

**Poster Session III**

**Chair:** *Haifeng Ji (Zhejiang University, China)*

**Room:** *4/5*

**A Virtual Conductivity Sensor for Environmental Measurements**

Miguel Costa Pereira (Institute of Telecommunications, Portugal)

Octavian Postolache (Institute of Telecommunications, Portugal)

Pedro Silva Girão (Institute of Telecommunications, Portugal)

**A Novel Low Power Multifunctional Ionospheric Sounding System**

Ming Yao (Nanchang University, China)

Xiaohua Deng (Nanchang University, China)

Yuhao Wang (Nanchang University, China)

Zhengyu Zhao (Wuhan University, China)

Gang Chen (Wuhan University, China)

Guobin Yang (Wuhan University, China)

Fanfan Su (Wuhan University, China)

Shipeng Li (Wuhan University, China)

**Classification of the green tea varieties based on Support Vector Machines using Terahertz Spectroscopy**

Xi-Ai Chen (Zhejiang University, China)

Guang-Xin Zhang (Zhejiang University, China)

Ping-Jie Huang (Zhejiang University, China)

Di-Bo Hou (Zhejiang University, China)

Xu-Sheng Kang (Zhejiang University, China)

Ze-Kui Zhou (Zhejiang University, China)

### **Subject Independent Computational Framework for Myoelectric Signals**

Rita Chattopadhyay (Arizona State University, USA)

Gaurav Pradhan (Arizona State University, USA)

Sethuraman Panchanathan (Arizona State University, USA)

### **Motion Detection in Infrared Retinal Image Sequences**

Lucas R ScharDOSim (Universidade Federal do Rio Grande do Sul, Brazil)

Jacob Scharcanski (Universidade Federal do Rio Grande do Sul, Brazil)

Daniel dos Santos Jr. (Opto Eletronica S.A., Brazil)

Jose Stuchi (Opto Eletronica S.A., Brazil)

### **Development of Three-tip Fluxgate Magnetometer Applied on Ship Magnetic Field Measure**

Gu Wei (Shanghai Maritime University, China)

Chu Jianxin (Shanghai Maritime University, China)

Huang Hui (Shanghai Maritime University, China)

### **Completely polarized electromagnetic wave measurement by linear component method**

J. A. Nascimento (Federal University of Campina Grande, Brazil)

Glauco Fontgalland (Federal University of Campina Grande, Brazil)

Romulo Valle (Federal University of Campina Grande, Brazil)

Silvio E. Barbin (University of Sao Paulo, Brazil)

### **In-line measurement of dissolved acetone using a nanostructured optical sensor**

Marta Valledor (University of Oviedo, Spain)

Juan C. Campo Rodriguez (University of Oviedo, Spain)

Francisco Ferrero Martín (University of Oviedo, Spain)

N. Fernandez (University of Oviedo, Spain)

E. Sotelo (University of Oviedo, Spain)

J.M. Costa (University of Oviedo, Spain)

A. Sanz-Medel (University of Oviedo, Spain)

### **Fully Analog Self-Mixing Laser Vibrometer**

Michele Norgia (Politecnico di Milano, Italy)

Alessandro Pesatori (Politecnico di Milano, Italy)

### **Realization of an Optical Fiber Bragg Grating Microphone**

Daniele Tosi (Politecnico di Torino, Italy)

Andrea Braglia (Politecnico di Torino, Italy)

Alessandra Neri (Politecnico di Torino, Italy)

Guido Perrone (Politecnico di Torino, Italy)

Alberto Vallan (Politecnico di Torino, Italy)

### **New Type Small-Angle Sensor Based on the Surface Plasmon Resonance Technology in Heterodyne Interferometry**

Shinn-Fwu Wang (Ching Yun University, Taiwan, China)

Fu-Hsi Kao (Ching Yun University, Taiwan, China)

An-Li Liu (Ching Yun University, Taiwan, China)

Jyh-Shyan Chiu (Ching Yun University, Taiwan, China)

Wesley Lai (Ching Yun University, Taiwan, China)

Meng-Feng Hsieh (Ching Yun University, Taiwan, China)

Hung-Chen Chung (Ching Yun University, Taiwan, China)

### **Novel Displacement Reconstruction Method for Vibration Measurements**

Alessandro Magnani (Politecnico di Milano, Italy)

Alessandro Pesatori (Politecnico di Milano, Italy)

Michele Norgia (Politecnico di Milano, Italy)

### **A Test Target for Estimating the Resolution of a Holographic Microscope**

Ville Kaikkonen (University of Oulu, Finland)

Anssi Mäkinen (University of Oulu, Finland)

### **Phthalocyanine based sensors for detection of pesticides in liquid and their surface morphology investigation**

Mika Harbeck (TÜBITAK Marmara Research Center, Turkey)

Dilek Erbahar (TÜBITAK Marmara Research Center, Turkey)

Ilke Guro (TÜBITAK Marmara Research Center, Turkey)

Emel Musluoglu (TÜBITAK Marmara Research Center, Turkey)

### **Geometric Aspects in a Novel Plastic Optical Fiber Biosensor System**

Fábio V. B. de Nazaré (Federal University of Rio de Janeiro, Brazil)

Carolina Beres (Federal University of Rio de Janeiro, Brazil)

Nathália Chagas de Souza (Federal University of Rio de Janeiro, Brazil)

Marcelo Werneck (Federal University of Rio de Janeiro, Brazil)

Marco Antônio Miguel (Federal University of Rio de Janeiro, Brazil)

### **Thick-film tilt sensors: feasibility study example using free convective motion of an heating air mass**

Damiano Crescini (University of Brescia, Italy)

M. Romani (University of Brescia, Italy)

### **Low-Cost Optical Odometry for Wheeled Mobile Robots**

Michael Maier (Graz University of Technology, Austria)

Markus Brandner (Graz University of Technology, Austria)

### **Low Cost Colour Sensors for Monitoring Plant Growth in a Laboratory**

Mark Seelye (Massey University, New Zealand)

Gourab Sen Gupta (Massey University, New Zealand)

Donald Bailey (Massey University, New Zealand)

John Seelye (New Zealand Institute for Plant & Food Research, New Zealand)

### **FBG-PZT sensor system for high voltage measurements**

Bessie Ribeiro (Federal University of Rio de Janeiro, Brazil)

Marcelo Werneck (Federal University of Rio de Janeiro, Brazil)

### **Analytical Study of High Pulse Current Shunts**

Roberto Ferrero (Politenico di Milano, Italy)

Mirko Marracci (University of Pisa, Italy)

Bernardo Tellini (University of Pisa, Italy)

### **An electrical current smart transducer based on PSoC platform and integrated spin-valve sensor with embedded thin film Ruthenium temperature sensor**

Jaime Sánchez (University of Valencia, Spain)

Manuel Morón (University of Valencia, Spain)

Diego Ramirez (University of Valencia, Spain)

Silvia Casans (University of Valencia, Spain)

Edith Navarro (University of Valencia, Spain)

### **Intelligent Sensor with Data Fusion to Improve the Care and Management of Water**

José Rivera-Mejía (Instituto Tecnológico de Chihuahua, Mexico)

Carlos Seáñez-Hernández (Instituto Tecnológico de Chihuahua, Mexico)

Alfonso Hernández-López (Instituto Tecnológico de Chihuahua, Mexico)

Alejandro López-Pérez (Instituto Tecnológico de Chihuahua, Mexico)

**GEMS: A WSN-based Greenhouse Environment Monitoring System**

Peng Yu (Harbin Institute of Technology, China)  
Yong Xu (Harbin Institute of Technology, China)  
Peng Xi-Yuan (Harbin Institute of Technology, China)

**Visual sensors for remote metering in public networks**

Luigi Ferrigno (University of Cassino, Italy)  
Vincenzo Paciello (University of Salerno, Italy)  
Antonio Pietrosanto (University of Salerno, Italy)

**Network Node With Wireless and Wired Interfaces – Nios II processor and uClimax to development of a NCAP embedded (IEEE 1451.1) with two interfaces, wireless (IEEE 1451.5) and wired (IEEE p1451.2)**

Tércio Filho (São Paulo State University, Brazil)  
Alexandre C. Rodrigues da Silva (State University of São Paulo - UNESP, Brazil)  
Ian Grout (University of Limerick, Ireland)  
Silvano Rossi (Universidad Nacional del Centro de Buenos Aires – UNCPBA, Argentina)

**N-Person Card Game Algorithm for Solving Set K-Cover Problem in WSN**

Yan Wenjie (Harbin Institute of Technology, China)  
Wang Qiang (Harbin Institute of Technology, China)  
Shen Yi (Harbin Institute of Technology, China)

**Extending Lifetime of Battery Operated Wireless Sensor Node With DC-DC Switching Converter**

Dinko Oletic (University of Zagreb, Croatia)  
Tomislav Razov (University of Zagreb, Croatia)  
Vedran Bilas (University of Zagreb, Croatia)

**miniTP: a Protocol for the Minimization of the Transmit Power in Wireless Networks**

Fernando Pianegiani (University of Trento, Italy)

**QoS-based Dynamic Allocation in Embedded Systems: a Methodology and a Framework**

Fernando Pianegiani (University of Trento, Italy)

**Evaluating DACs linearity and intermodulation errors through an ANOVA approach**

Mauro D'Arco (University of Naples Federico II, Italy)  
Annalisa Liccardo (University of Naples Federico II, Italy)  
Nicola Pasquino (University of Naples Federico II, Italy)

**3:15 PM - 3:30 PM - Coffee Break**

**Room: 4/5**

**Wednesday, May 11**

**3:30 PM - 5:15 PM**

**Telecommunications**

**Chair:** *Gerd Vandersteen (Vrije Universiteit Brussel, Belgium)*

**Room:** 1

**A GNU Radio-based signal detector for cognitive radio systems**

Niclas Björsell (University of Gävle, Sweden)

Luca De Vito (University of Sannio, Italy)

Sergio Rapuano (University of Sannio, Italy)

**Facing synchronization problems in MIMO measurement systems**

Leopoldo Angrisani (University of Naples Federico II, Italy)

Nicola Pasquino (University of Naples Federico II, Italy)

Rosario Schiano Lo Moriello (University of Naples Federico II, Italy)

Michele Vadursi (University of Naples "Parthenope", Italy)

**Instrumentation for exact packet timings in networks**

Daniel Freedman (Cornell University, USA)

Tudor Marian (Cornell University, USA)

Jennifer Lee (Cornell University, USA)

Ken Birman (Cornell University, USA)

Hakim Weatherspoon (Cornell University, USA)

Chris Xu (Cornell University, USA)

**Study on Tightly-Coupled GPS/SINS Integrated Navigation System by Using Software GPS Receiver**

Xiyuan Chen (Southeast University, China)

Jing Yu (Southeast University, China)

Mingwu Gu (Southeast University, China)

**Wednesday, May 11**

**3:30 PM - 5:15 PM**

**Optical, Chemical, and Biological Sensors II**

**Chair:** *Serge Demidenko (RMIT International University Vietnam & Saigon South campus, Vietnam)*

**Room:** 2

**Time of Flight Telemeter with Picosecond Modelocked Laser**

Michele Norgia (Politecnico di Milano, Italy)

Alessandro Pesatori (Politecnico di Milano, Italy)

Cesare Svelto (Politecnico di Milano, Italy)

Andrea De Marchi (Politecnico di Torino, Italy)

Massimo Zucco (Istituto Nazionale di Ricerca Metrologica, Italy)

Michal Stupka (Istituto Nazionale di Ricerca Metrologica, Italy)

**High-Speed Laser Velocimeter Realized by a Near-Field Grating**

Michele Norgia (Politecnico di Milano, Italy)

Alessandro Pesatori (Politecnico di Milano, Italy)

**A tunable CMOS Read-out Integrated Circuit for Carbon Nanotube-based Bio-Sensors**

George Yu-Heng Lee (Wright State University, USA)

Raiyu Ren (Wright state University, USA)

Sang Nyon Kim (Wright-Patterson AFB, USA)

Rajesh R. Naik (Wright-Patterson AFB, USA)

### **Detection and Tracking of Moving Objects in SLAM using Vision Sensors**

Yin-Tien Wang (Tamkang University, Taiwan, China)  
Ying-Chieh Feng (Tamkang University, Taiwan, China)  
Duen-Yan Hung (Tamkang University, Taiwan, China)

**Wednesday, May 11**

**3:30 PM - 5:15 PM**

### **Remote Sensing and Soft-Computing**

**Chair:** Niclas Björsell (University of Gävle, Sweden)

**Room:** 3

### **Impact Analysis of Random Measurement Errors on Airborne Laser Scanning Accuracy**

Jianjun Wang (Beihang University, China)  
Lijun Xu (Beihang University, China)  
Xiaolu Li (Beihang University, China)  
Xiangrui Tian (Beihang University, China)

### **Point Target Correction Coefficients For Absolute SAR Calibration**

Björn J. Döring (German Aerospace Center, Germany)  
Philipp Looser (German Aerospace Center, Germany)  
Matthias Jirousek (German Aerospace Center, Germany)  
Marco Schwerdt (German Aerospace Center, Germany)

### **A Dynamic Soft-Sensor Modeling Method Based on FC-GP for 4-CBA Content**

Fu Yongfeng (Zhejiang University of Technology, China)

### **Detection of Micro Nucleus in Human Lymphocytes Altered by Gaussian Noise Using Convolution Neural Network**

Ihor Paliy (Ternopil National Economic University, Ukraine)  
Francesco Lamonaca (University of Calabria, Italy)  
Volodymyr Turchenko (The University of Calabria, Italy)  
Domenico Grimaldi (University of Calabria, Italy)  
Anatoly Sachenko (Ternopil National Economic University, Ukraine)

**Wednesday, May 11**

**3:30 PM - 5:15 PM**

### **Electrical and Power Measurements II**

**Chair:** Lorenzo Peretto (University of Bologna, Italy)

**Room:** 6/7

### **On-line Analysis of Power Transformer Bushings**

Marco Faifer (Politecnico di Milano, Italy)  
Roberto Ottoboni (Politecnico di Milano, Italy)  
Loredana Cristaldi (Politecnico di Milano, Italy)  
Sergio Toscani (Politecnico di Milano, Italy)

### **FPGA-based Measurement and Evaluation of Power Analysis Attack Resistant Asynchronous S-Box**

Jun Wu (Missouri University of Science & Technology, USA)  
Yiyu Shi (Missouri University of Science & Technology, USA)  
Minsu Choi (Missouri University of Science and Technology, USA)

**Analysis and improvements of precision coaxial current shunts for direct measurement of ac current]**

Rado Lapuh (Metrology Institute of the Republic of Slovenia, Slovenia)  
Borut Pinter (Slovenian Institute for Quality and Metrology, Slovenia)  
Bostjan Voljc (Slovenian Institute for Quality and Metrology, Slovenia)  
Zoran Svetik (Slovenian Institute for Quality and Metrology, Slovenia)  
Matjaz Lindic (Slovenian Institute for Quality and Metrology, Slovenia)

**Analysis of frequency stability of 16.7 Hz railways**

Andrea Mariscotti (Università di Genova, Italy)  
David Slepicka (Czech Technical University in Prague, Czech Republic)

**Wednesday, May 11                      3:30 PM - 5:15 PM**

**Distributed and Resilient Measurement Systems**

**Chair:** *Alessandra Flammini (University of Brescia, Italy)*

**Room:** *10/11*

**Synchronization of Stand Alone Measurement Instruments by PDA and Embedded Hardware**

Domenico Grimaldi (University of Calabria, Italy)  
Francesco Lamonaca (University of Calabria, Italy)  
Alfonzo Nastro (University of Calabria, Italy)

**Ground Displacement Measurement by Radio Interferometric Ranging for Landslide Early Warning**

Peng Liu (PLA University of Science and Technology, China)  
Wangdong Qi (PLA University of Science and Technology, China)  
En Yuan (PLA University of Science and Technology, China)  
Yasong Zhu (PLA University of Science and Technology, China)  
Han Wang (PLA University of Science and Technology, China)

**Cascade Of Two-Input Nonlinear Logic In Designing Space Compression Networks In VLSI**

Sunil R. Das (University of Ottawa, Canada)  
Altaf Hossain (University of Ottawa, Canada)  
Voicu Z. Groza (University of Ottawa, Canada)  
Mansour H. Assaf (The University of the South Pacific, Fiji)

**A Method of Correcting the Shift Error of Multilevel Flash Memory by the Skill of Gray Code**

Der-Chen Huang (National Chung Hsing University, Taiwan, China)  
Hung-Ming Lin (National Chung Hsing University, Taiwan, China)

**3:30 PM - 5:30 PM – Graduate Student Panel Discussion**

**Room:** *Boardroom (3<sup>rd</sup> Floor)*

**6:00 PM - 6:30 PM – Reception**

**Room:** *Ballroom*

**6:30 PM - 9:30 PM – Dinner**

**Room:** *Ballroom*

Thursday, May 12

8:00 AM - 9:45 AM

### **Multiphase Flow Measurement**

**Chair:** Hongjian Zhang (Zhejiang University, China)

**Room:** 1

### **Data Fusion for Measurement of Water Holdup in Horizontal pipes by Conductivity Rings**

Chao Tan (Tianjin University, China)

Feng Dong (Tianjin University, China)

Yanyan Shi (Tianjin University, China)

### **Flow Regime Identification of Mini-Pipe Gas-Liquid Two-Phase Flow Based on Textural Feature Series**

Gang Huang (Zhejiang University, China)

Haifeng Ji (Zhejiang University, China)

Zhiyao Huang (Zhejiang University, China)

Baoliang Wang (Zhejiang University, China)

Haiqing Li (Zhejiang University, China)

### **Flow-Pattern Identification of Gas-Liquid Two-Phase Flow Based on Capacitively Coupled Contactless Conductivity Detection**

Lei Wang (Zhejiang University, China)

Zhiyao Huang (Zhejiang University, China)

Baoliang Wang (Zhejiang University, China)

Haifeng Ji (Zhejiang University, China)

Haiqing Li (Zhejiang University, China)

### **Helix-shaped CRLH-Mass Flow Detector for the Cross-sectional Detection of Inhomogeneous Distributed Pneumatic Conveyed Pulverized Solids**

Andreas Penirschke (Technische Universität Darmstadt, Germany)

Aleksandar Angelovski (Technische Universität Darmstadt, Germany)

Rolf Jakoby (Technische Universität Darmstadt, Germany)

Thursday, May 12

8:00 AM - 9:45 AM

### **Sensor Applications I**

**Chair:** Georg Brasseur (Graz University of Technology, Austria)

**Room:** 2

### **Measuring Electrical Properties of Microbeads by Dielectrophoretic Mobility**

Mikko Haapalainen (University of Oulu, Finland)

Anssi Mäkynen (University of Oulu, Finland)

### **A inertial sensor exploiting a spike shaped ferrofluid**

Bruno Andò (University of Catania, Italy)

Salvatore Baglio (University of Catania, Italy)

Angela Beninato (University of Catania, Italy)

### **Lateral cantilever beam in BESOI technology**

Salvatore Baglio (University of Catania, Italy)

Bruno Andò (University of Catania, Italy)

Gaetano L'Episcopo (University of Catania, Italy)



## **Development of Instrumentation to Capture Unsteady & Flutter Phenomena in the Fan Rotors of Gas Turbine Engines**

Bashishtha Kumar Jha (Gas Turbine Research Establishment, India)  
Anv Rao (Gas Turbine Research Establishment, India)  
Ajay Pratap (Gas Turbine Research Establishment, India)  
T. Rao Mohana (Gas Turbine Research Establishment, India)  
A.K. Singh (Defense Institute of Advance Technology, India)  
A.A. Khorikov (CIAM, Russia)

**Thursday, May 12**

**8:00 AM - 9:45 AM**

### **Wireless Sensors**

**Chair:** Marco Parvis (*Politecnico di Torino, Italy*)

**Room:** 3

### **Wireless measurement of open loop micro coils**

Adnan Yousaf (University of Freiburg, Germany)  
T. Jaeger (University of Freiburg, Germany)  
L. Reindl (University of Freiburg, Germany)  
Winifried Czech (HOPT GmbH, Germany)

### **Automatic monitoring of pest insects traps by Zigbee-based wireless networking of image sensors**

Paolo Tirelli (University of Milano, Italy)  
Alberto Borghese (University of Milano, Italy)  
Federico Pedersini (University of Milano, Italy)  
Giorgio Galassi (University of Milano, Italy)  
Roberto Oberti (University of Milano, Italy)

### **A New WSN Localization Algorithm Based on Regularization Method**

Wang Lei (Shandong University, China)  
Wang XiaoPeng (Shandong University, China)

### **An IEEE 1451.5-802.11 Standard-based Wireless Sensor Network with Embedded WTIM**

Eugene Song (NIST, USA)  
Kang B Lee (NIST, USA)  
Steven Fick (NIST, USA)  
Alkan Donmez (NIST, USA)

**Thursday, May 12**

**8:00 AM - 9:45 AM**

### **Electrical and Power Measurements III**

**Chair:** Jiyong Zhao (*University of Ottawa, Canada*)

**Room:** 6/7

### **Using Instrument Transformers in a Wider Frequency Range**

Karel Draxler (Czech Technical University, Czech Republic)  
Renata Styblikova (Czech Metrology Institute, Czech Republic)

### **ARM-Based Energy Management System using Smart Meter and Web Server**

Carmine Landi (Second University of Naples, Italy)  
Pietro Merola (Second University of Naples, Italy)  
Giacomo Ianniello (University of Naples Federico II, Italy)

### **Design and Implementation of a Socket with Ultra-Low Standby Power**

Cheng-Hung Tsai (National Taiwan University of Science and Technology, Taiwan, China)

Ying-Wen Bai (Fu Jen Catholic University, Taiwan, China)

Chun-An Chu (Fu-Jen Catholic University, Taiwan, China)

Chih-Yu Chung (Fu-Jen Catholic University, Taiwan, China)

Ming-Bo Lin (National Taiwan University of Science and Technology, Taiwan, China)

### **Interlaboratory Comparison of AC Voltage Ratio Standards in the Range up to 35 kV**

Renata Styblikova (Czech Metrology Institute, Czech Republic)

Valeriy Kikalo (SE Ukrmetrteststandard, Ukraine)

Karel Draxler (Czech Technical University, Czech Republic)

Vladimir Kopshyn (SE Ukrmetrteststandard, Ukraine)

**Thursday, May 12**

**8:00 AM - 9:45 AM**

### **Imaging Systems, Inverse Problems and Signal Reconstruction I**

Chair: Zhiyao Huang (Zhejiang University, China)

**Room:** 10/11

### **POEM: A Fast Defocus Estimation Method for Scanning Transmission Electron Microscopy**

Arturo Tejada (Delft University of Technology, The Netherlands)

Arnold J den Dekker (Delft University of Technology, The Netherlands)

### **Image Reconstruction Based on l1 Regularization for Electrical Impedance Tomography (EIT)**

Qi Wang (Tianjin University, China)

Huaxiang Wang (Tianjin University, China)

### **Stochastic Inversion Approach to Measurement of Tube Properties Using Remote Field Technique**

Darko Vasic (University of Zagreb, Croatia)

Vedran Bilas (University of Zagreb, Croatia)

**Thursday, May 12**

**8:00 AM - 11:45 AM**

### **Poster Session IV**

**Chair:** Jiandan Chen (Blekinge Institute of Technology, Sweden)

**Room:** 4/5

### **High-Precision Electrical Resistance Tomography With External and Internal Electrode Arrays**

Shangjie Ren (Tianjin University, China)

Feng Dong (Tianjin University, China)

Chao Tan (Tianjin University, China)

### **Spatial Selectivity of Linear Electrostatic Sensor Arrays**

Chuanlong Xu (Southeast University, China)

Shimin Wang (Southeast University, China)

Yong Yan (University of Kent, United Kingdom)

### **Monitoring of Freezing Processes in Liquid Nitrogen by Means of Passive RFID through Container Walls**

Gert Holler (Graz University of Technology, Austria)  
Michael J. Moser (Graz University of Technology, Austria)  
Hubert Zangl (Graz University of Technology, Austria)

### **A Testbed for the Evaluation of Low Power Protocols in Wireless Sensor Networks**

Pan Dawei (Harbin Institute of Technology, China)  
Peng Yu (Harbin Institute of Technology, China)  
Peng Xiyuan (Harbin Institute of Technology, China)

### **Fouling Detection using Hammer Impact Test and Wireless Communication**

Luiz Carlos Lemos Junior (Federal University of Campina Grande, Brazil)  
José Maurício Neto (Federal University of Campina Grande, Brazil)  
Jaidilson Silva (Federal University of Campina Grande, Brazil)  
J. S. Rocha Neto (Federal University of Campina Grande, Brazil)

### **New complex permittivity measurement method at low frequency for measuring low-loss materials using high Q-value LC resonator immersed in liquid nitrogen**

Hirosuke Suzuki (Keycom Corporation, Japan)  
Tsutomu Kobayashi (Keycom Corporation, Japan)  
Hidetoshi Takino (Keycom Corporation, Japan)  
Toshio Nojima (Hokkaido University, Japan)

### **Improving reliability of magnetic mutual impedance measurement at high excitation level**

Fanny Mesmin (Université de Grenoble, France)  
B. Ahmadi (Université de Grenoble, France)  
Herve Chazal (Université de Grenoble, France)  
A. Kedous-Lebouc (Université de Grenoble, France)  
F. Sixdenier (Université Lyon, France)

### **Vermiculite dielectric constant measurement using a volumetric water content probe**

Ivson F. dos Anjos (Federal University of Campina Grande, Brazil)  
Glaucio Fontgalland (Federal University of Campina Grande, Brazil)  
Raimundo Freire (Federal University of Campina Grande, Brazil)  
Silvio E. Barbin (University of Sao Paulo, Brazil)  
Belarmino Lira (Universidade Federal da Paraíba, Brazil)

### **Characterization of Magnetic Properties and Losses of Fe-9Cr Steel Under Transient Conditions**

Mirko Marracci (University of Pisa, Italy)  
Bernardo Tellini (University of Pisa, Italy)  
Ivan Alessio Maione (Karlsruhe Institute of Technology, Germany)

### **Implementation of Symmetric Cryptography in Embedded Systems for Secure Measurement Systems**

Piotr Bilski (Warsaw University of Life Sciences, Poland)  
Wiesław Winiecki (Warsaw University of Technology, Poland)  
Tomasz Adamski (Warsaw University of Technology, Poland)

### **Assessment of Human Annoyance Under Flicker Condition**

Maria Gabriella Masi (University of Bologna, Italy)  
Lorenzo Peretto (University of Bologna, Italy)  
Roberto Tinarelli (University of Bologna, Italy)  
Luigi Rovati (University of Modena and Reggio Emilia, Italy)

### **Comparison among photovoltaic technologies: an experimental case study**

Alessio Carullo (Politecnico di Torino, Italy)  
Alberto Vallan (Politecnico di Torino, Italy)  
Ugo Grimaldi (Ferrero S.p.A., Italy)  
Stefano Terreno (Energhe S.p.A., Italy)

### **Predicting PV Module Characteristics with Outdoor Measurements: Modeling Improvements**

Aime' Lay-Ekuakille (University of Salento, Italy)  
Ramiro Velazquez (Universidad Panamericana, Mexico)  
Patrizia Vergallo (University of Salento, Italy)  
Flavio Serrano (University of Salento, Italy)  
Amerigo Trotta (Politechnic of Bari, Italy)

### **Electronic Instrument Transducer for MV Networks with Fiber Optic Insulation**

Daniele Gallo (Second University of Naples, Italy)  
Carmine Landi (Second University of Naples, Italy)  
Mario Luiso (Second University of Naples, Italy)

### **In line estimation of the group delay due to pipeline ADCs in mixed signal system**

Lijing Chen (Tianjin University, China)  
Guang Chen (Tianjin University, China)  
Huaxiang Wang (Tianjin University, China)  
Wuliang Yin (Tianjin University, China)

### **Automatic Identification of Magnetic Component Equivalent Circuits Using Impedance Measurements**

Wenhua Tan (Universite de LilleNord de France, France)  
Carlos Cuellar (Universite de LilleNord de France, France)  
Xavier Margueron (Universite de LilleNord de France, France)  
Nadir Idir (Universite de LilleNord de France, France)

### **Development of a high-accuracy PC-based wattmeter with commercial data acquisition boards**

Antonio Cataliotti (University of Palermo, Italy)  
Valentina Cosentino (University of Palermo, Italy)  
Dario Di Cara (University of Palermo, Italy)  
Alessandro Lipari (University of Palermo, Italy)  
Salvatore Nuccio (University of Palermo, Italy)  
Ciro Spataro (University of Palermo, Italy)

### **Effects of PMU's uncertainty on voltage stability assessment in power systems**

Junjie Tang (RWTH Aachen University, Germany)  
Junqi Liu (RWTH Aachen University, Germany)  
Ferdinanda Ponci (RWTH Aachen University, Germany)  
Carlo Muscas (University of Cagliari, Italy)  
Sara Sulis (University of Cagliari, Italy)

### **Automatic inspection of the localizer slope based on improved Hough transform**

Duan Rujiao (Tsinghua University, China)  
Zhao Wei (Tsinghua University, China)  
Songling Huang (Tsinghua University, China)  
Chen Jianye (Tsinghua University, China)

#### **A finite element aided tool for the design of microwave resonant sensors**

Stefano Baruffolo (University of Brescia, Italy)  
Matteo Conforti (University of Brescia, Italy)  
Costantino De Angelis (University of Brescia, Italy)  
Alessandra Flammini (University of Brescia, Italy)  
Emiliano Sisinni (University of Brescia, Italy)

#### **A Linear Hall Effect Displacement Sensor Using a Stationary Two-pair Coil System**

Xiaotao Han (Huazhong University of Science and Technology, China)  
Quanliang Cao (Huazhong University of Science and Technology, China)  
Min Wang (China International Nuclear Fusion Energy Program Execution Center, China)

#### **In-Process Optical Characterization Method for Sub-100-nm Nanostructures**

Steffen Kieß (University of Stuttgart, Germany)  
Mohammed Zubair Shaikh (University of Stuttgart, Germany)  
Mireille Grégoire (University of Stuttgart, Germany)  
Tjark Bringewat (University of Stuttgart, Germany)  
Sven Simon (University of Stuttgart, Germany)  
Andreas Tausendfreund (University of Bremen, Germany)  
Martin Zimmermann (University of Bremen, Germany)  
Gert Goch (University of Bremen, Germany)

#### **Determination of Wood Moisture Content using Angularly, Spatially and Spectrally Resolved Reflectance**

Veli-Matti O. Törmänen (University of Oulu, Finland)  
Anssi Mäkynen (University of Oulu, Finland)

#### **A low-cost system and calibration method for veiling luminance measurement**

Stefano Cattini (University of Modena and Reggio Emilia, Italy)  
Costantino Grana (University of Modena and Reggio Emilia, Italy)  
Rita Cucchiara (University of Modena and Reggio Emilia, Italy)  
Luigi Rovati (University of Modena and Reggio Emilia, Italy)

#### **Response of Printing Coloured Ink to Light Exposure Measurement and Analysis**

Pietro Fiorentin (University of Padua, Italy)  
Elena Pedrotti (University of Padua, Italy)

#### **A Novel Nondestructive Determination of Refractive Indices and Thicknesses of Transparent Lenses**

Chia-Yen Chan (National Applied Research Laboratories, Taiwan, China)  
Po-Han Huang (National Applied Research Laboratories, Taiwan, China)  
Yu-Cheng Cheng (National Applied Research Laboratories, Taiwan, China)  
Shenq-Tsong Chang (National Applied Research Laboratories, Taiwan, China)  
Ting-Ming Huang (National Applied Research Laboratories, Taiwan, China)  
Chien-Liang Lin (National Applied Research Laboratories, Taiwan, China)

#### **A CMOS Phase to Digital Converter for Optical Encoders**

Cheng-Ta Chiang (National Chia Yi University, Taiwan, China)  
Kaun-Chun Hsieh (National Chiao Tung University, Taiwan, China)  
Yu-Chung Huang (National Chiao Tung University, Taiwan, China)

### **Development and characterization of low power perovskite CO gas sensors**

Ada Fort (University of Siena, Italy)  
Marco Mugnaini (University of Siena, Italy)  
Irene Pasquini (University of Siena, Italy)  
Santina Rocchi (University of Siena, Italy)  
Lorenzo Romualdi (University of Siena, Italy)  
Valerio Vignoli (University of Siena, Italy)  
Roberto Spinicci (University of Florence, Italy)  
Michele Gregorkiewitz (University of Siena, Italy)

### **Parameter calibration of a novel super-resolution model for a compressed-sensing measurement setup**

Torsten Edeler (Westcoast University Heide, Germany)  
Kevin Ohliger (Westcoast University Heide, Germany)  
Stephan Hussmann (Westcoast University Heide, Germany)  
Alfred Mertins (University of Luebeck, Germany)

### **Super Resolution Reconstruction Method for Time-of-Flight Range Data Using Complex Compressive Sensing**

Torsten Edeler (Westcoast University Heide, Germany)  
Kevin Ohliger (Westcoast University Heide, Germany)  
Stephan Hussmann (Westcoast University Heide, Germany)  
Alfred Mertins (University of Luebeck, Germany)

### **Harmonic Source Estimator for Distribution Systems by means of Bayesian and WLS approaches**

Gabriele D'Antona (Politecnico di Milano, Italy)  
Carlo Muscas (University of Cagliari, Italy)  
Paolo Attilio Pegoraro (University of Cagliari, Italy)  
Sara Sulis (University of Cagliari, Italy)

**9:45 AM - 10:00 AM - Coffee Break**

**Room: 4/5**

**Thursday, May 12**

**10:00 AM - 11:45 AM**

### **Virtual Measurement Systems and Human Computer Interface**

**Chair:** Jesus Ureña (University of Alcala, Spain)

**Room: 1**

### **Development and Experimental Validation of An Advanced Virtual Coordinate Measuring Machine**

Yang Hu (Brunel University, United Kingdom)  
Qingping Yang (Brunel University, United Kingdom)  
Xizhi Sun (Brunel University, United Kingdom)

### **Toward Real-Time Kernel Density Estimate Display for Instrumentation**

Lee Barford (Agilent Technologies, USA)  
Ivan Gibbs (University of Nevada, USA)  
Richard Kelley (University of Nevada, USA)

### **Computer Added Monitoring of Drilling Rig Systems**

Sorin Dan Grigorescu (Politehnica University of Bucharest, Romania)  
Octavian Mihai Ghita (Politehnica University of Bucharest, Romania)  
Ion Potarniche (S.C. ICPE-Actel SA, Romania)  
Mircea Covrig (Politehnica University of Bucharest, Romania)

### **Shielding Effectiveness of Composite and Aluminum Aircraft, Model and Measurement Comparison**

Brian Cordill (University of Kansas, USA)  
Sarah Seguin (University of Kansas, USA)  
Mark Ewing (University of Kansas, USA)

**Thursday, May 12**

**10:00 AM - 11:45 AM**

### **Sensor Applications II**

**Chair:** Kristen M Donnell (Missouri University of Science and Technology, USA)

**Room:** 2

### **A Multiple Loop Vehicle Detection System for Heterogeneous and Lane-less Traffic**

Sheik Mohammed Ali (Indian Institute of Technology Madras, India)  
Boby George (Indian Institute of Technology Madras, India)  
Lelitha Vanajakshi (Indian Institute of Technology Madras, India)  
Venkatraman Jayashankar (Indian Institute of Technology Madras, India)  
Jagadeesh V Kumar (Indian Institute of Technology Madras, India)

### **Trace Amount Formaldehyde Gas Detection for Indoor Air Quality Monitoring**

Gaozhi (George) Xiao (National Research Council, Canada)  
Zhiyi Zhang (National Research Council, Canada)  
John Weber (National Research Council, Canada)  
Heping Ding (National Research Council, Canada)  
Heather McIntosh (National Research Council, Canada)  
Diane Desrosiers (National Research Council, Canada)  
Gang Nong (National Research Council, Canada)  
Doyun Won (National Research Council, Canada)  
Jeffrey Dunford (National Research Council, Canada)  
Jim Tunney (National Research Council, Canada)

Ken Darcovich (National Research Council, Canada)  
Gerardo Diaz-Quijada (National Research Council, Canada)

### **A Method of Measuring Two Phase Flow Based on Segmented Capacitance Electrodes**

Zhiqiang Zhang (Tianjin University, China)  
Feng Dong (Tianjin University, China)

### **Flow Measurement of Pneumatically Conveyed Biomass-Coal Particles Using Multi-Channel Electrostatic Sensors**

Xiangchen Qian (Tianjin University, China)  
Yong Yan (University of Kent, United Kingdom)  
Alf Malmgren (RWE npower, United Kingdom)

**Thursday, May 12**

**10:00 AM - 11:45 AM**

## **Optical Measurements**

**Chair:** Consolatina Liguori (University of Salerno, Italy)

**Room:** 3

## **In-line Digital Holography for High Speed 4D Tracking of Particles**

Dmitry Ekimov (Petrozavodsk State University, Russia)

Anssi Mäkynen (University of Oulu, Finland)

## **Cyclic Time Domain Successive Approximation Time-to-Digital Converter (TDC) with sub-ps-level resolution**

Salim Al-Ahdab (University of Oulu, Finland)

Antti Mäntyniemi (University of Oulu, Finland)

Juha Kostamovaara (University of Oulu, Finland)

## **A Simple and accurate method for estimating bilirubin from blood**

Srinivas Rao Kudavelly (Philips Research Asia-Bangalore, India)

Payal Keswarpu (Philips Research Asia-Bangalore, India)

S. Balakrishnan (Philips Research Asia-Bangalore, India)

## **Filtering the spectrum of multi-longitudinal lasers by using optical retarders**

Joel Santos-Aguilar (INAOE, Mexico)

Misael Santiago-Bernal (INAOE, Mexico)

Celso Gutierrez-Martínez (INAOE, Mexico)

**Thursday, May 12**

**10:00 AM - 11:45 AM**

## **Mechanical Measurements**

**Chair:** Gaozhi Xiao (National Research Council Canada, Canada)

**Room:** 6/7

## **Diagnosis Method for Suspension-Errors Detection in Electro-Dynamic Loud-Speakers**

Vicens Sala (Technical University of Catalunya, Spain)

Miguel Delgado (Technical University of Catalunya, Spain)

Jordi Cusido (Technical University of Catalunya, Spain)

Luis Romeral (Technical University of Catalunya, Spain)

## **Linear peristaltic pump driven by three magnetic actuators: simulation and experimental results**

Arlindo G.S. Barreto Neto (Universidade Federal de Campina Grande, Brazil)

Antonio M.N. Lima (Universidade Federal de Campina Grande, Brazil)

Helmut Neff (Universidade Federal de Campina Grande, Brazil)

Caio Luiz Gomes (Universidade Federal de Campina Grande, Brazil)

Cleumar Moreira (Instituto Federal de Alagoas, Brazil)

## **Development of the micro displacement measurement system based on astigmatic method**

Wei-Yao Hsu (National Applied Research Laboratories, Taiwan, China)

Zong-Ru Yu (National Applied Research Laboratories, Taiwan, China)

Po-Jui Chen (National Applied Research Laboratories, Taiwan, China)

Ching-Hsiang Kuo (National Applied Research Laboratories, Taiwan, China)

Chi-Hung Hwang (Instrument Technology Research Center, Taiwan, China)



**Development of absolutely radiant flux measurements with electrical calibrated microbolometer**

Kuan Chou Hou (Natal Chiao-Tung University, Taiwan, China)  
Mang Ou-Yang (Natal Chiao-Tung University, Taiwan, China)  
Jin-Chern Chiou (Natal Chiao-Tung University, Taiwan, China)

**Thursday, May 12**

**10:00 AM - 11:45 AM**

**Imaging Systems, Inverse Problems and Signal Reconstruction I**

**Chair:** Huaxiang Wang (Tianjin University, China)

**Room:** 10/11

**CMOS active pixel sensor with variable dynamic range using a double-photodiode feedback structure**

Sung-Hyun Jo (Kyungpook National University, Korea)  
Myunghan Bae (Kyungpook National University, Korea)  
Joontaek Jung (Kyungpook National University, Korea)  
Jang-Kyoo Shin (Kyungpook National University, Korea)

**Image Reconstruction Of Electrical Resistance Tomography Based On Image Fusion**

Shouxiao Li (Tianjin University, China)  
Huaxiang Wang (Tianjin University, China)  
Lifeng Zhang (Tianjin University, China)  
Wenru Fan (Tianjin University, China)

**$\ell_1$  norm based reconstruction algorithm for particle sizing**

Lei Xin (Beihang University, China)  
Lijun Xu (Beihang University, China)  
Zhang Cao (Beihang University, China)

**Using Image Processing Methods to Reduce Dazzle in the Eyes from a Digital Projector**

Y. W. Bai (Fu Jen Catholic University, Taiwan, China)  
Yu-Cheng Liu (Fu Jen Catholic University, Taiwan, China)  
Cheng-Hung Tsai (Fu Jen Catholic University, Taiwan, China)

**11:45 AM - 1:00 PM - Lunch**

**Room:** Ballroom

**Thursday, May 12**

**1:00 PM - 2:45 PM**

**Smart Sensors and Sensor Networks**

**Chair:** Shervin Shirmohammadi (University of Ottawa, Canada)

**Room:** 1

**An Accurate Extrinsic Camera Self-calibration Method in Non-overlapping Camera Sensor Networks**

Qiang Wang (Harbin Institute of Technology, China)  
Yan Liu (Harbin Institute of Technology, China)  
Shen Yi (Harbin Institute of Technology, China)

**A Maximum Degree and Negotiation Strategy Based Clustering Algorithm for Wireless Sensor Networks**

Qiang Wang (Harbin Institute of Technology, China)  
Changhong Wang (Harbin Institute of Technology, China)  
Yan Wang (Harbin Institute of Technology, China)

**An Implementation of a Wireless Sensor Network Based on IEEE 1451.0 and 1451.5-6LoWPAN Standards**

Robert Seng (NIST, USA)  
Kang B Lee (NIST, USA)  
Eugene Song (NIST, USA)

**Experimental Characterization of Packet-level for Vehicular Wireless Network in Urban**

Yuhao Wang (Nanchang University, China)  
Xing Xing (Nanchang University, China)  
Henry Leung (University of Calgary, Canada)  
Siyeue Chen (University of Calgary, Canada)  
Ming Yao (Nanchang University, China)

**Thursday, May 12**

**1:00 PM - 2:45 PM**

**Sensor Applications III**

*Chair: Antonio Pietrosanto (University of Salerno & CEO of SPRING OFF srl, Italy)*

*Room: 2*

**On-line Non-intrusive Measurements of the Velocity and Particle Size Distribution of Pulverised Fuel on a Full Scale Power Plant**

Jiaqing Shao (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)  
Zhixin Lv (Shandong University, China)

**Near-Field, Mutual Coupling Degradation on Antenna Bandwidth for an Airborne Ice-Penetrating and Imaging Radar**

Kyle Byers (University of Kansas, USA)  
Sarah Seguin (University of Kansas, USA)  
Carl Leuschen (University of Kansas, USA)

**A Wearable Embedded Inertial Platform with Wireless Connectivity for Indoor Position Tracking**

Alessio Colombo (University of Trento, Italy)  
Daniele Fontanelli (University of Trento, Italy)  
David Macii (University of Trento, Italy)  
Luigi Palopoli (University of Trento, Italy)

**PIR-sensor-based Lighting Device with Ultra-low Standby Power Consumption**

Cheng-Hung Tsai (National Taiwan University of Science and Technology, Taiwan, China)  
Ying-Wen Bai (Fu Jen Catholic University, Taiwan, China)  
Chun-An Chu (Fu-Jen Catholic University, Taiwan, China)  
Chih-Yu Chung (Fu-Jen Catholic University, Taiwan, China)  
Ming-Bo Lin (National Taiwan University of Science and Technology, Taiwan, China)

Thursday, May 12

1:00 PM - 2:45 PM

### **Non-Invasive Measurement Systems**

*Chair: Wendy Van Moer (Vrije Universiteit Brussel, Belgium)*

*Room: 3*

### **Development and characterization of flexible electrodes for protective painting monitoring**

Simone Corbellini (Politecnico di Torino, Italy)

Marco Parvis (Politecnico di Torino, Italy)

Sabrina Grassini (Politecnico di Torino, Italy)

### **On the performance of AS-LMS based Adaptive Filter for Reduction of Motion Artifacts from PPG Signals**

M. Raghu Raghuram (Kakatiya Institute of Technology & Science, India)

K. Venu Madhav (Kakatiya Institute of Technology & Science, India)

E. Hari Krishna (Kakatiya University, India)

Nagarjuna Reddy Komalla (Govt. MGM Hospitals, India)

K. Ashoka Reddy (Kakatiya Institute of Technology & Science, India)

### **Application of Multiscale Principal Component Analysis (MSPCA) for enhancement of ECG signals**

K. Sharmila (Kakatiya Institute of Technology & Science, India)

E. Hari Krishna (Kakatiya University, India)

Nagarjuna Reddy Komalla (Govt. MGM Hospitals, India)

K. Ashoka Reddy (Kakatiya University, India)

### **Driving Pathfinding of Unmanned Autonomous Ground Vehicle Using Measurement Data Diffusion**

Hoseung Lee (Keimyung University, Korea)

Jaeik Lee (Keimyung University, Korea)

Seungyup Baek (Keimyung University, Korea)

Jae-Cheon Lee (Keimyung University, Korea)

Minso Choi (Missouri University of Science and Technology, USA)

Thursday, May 12

1:00 PM - 2:45 PM

### **Special Session on Sensors and Instrumentation for the Environment and Climate Change Monitoring**

*Chair: Subhas Mukhopadhyay (Massey University, New Zealand)*

*Room: 6/7*

### **A Zigbee Based Smart Sensing Platform for Monitoring Environmental Parameters**

M. Haefke (University of Rostock, Germany)

Subhas Mukhopadhyay (Massey University, New Zealand)

H. Ewald (University of Rostock, Germany)

### **Development of a Low Cost System for Nitrate and Contamination Detections in Natural Water Supply based on a Planar Electromagnetic Sensor**

Mohd Amri Md Yunus (Massey University, New Zealand)

Gerard Rudolph Mendez (Universiti Teknologi Malaysia, Malaysia)

Subhas Mukhopadhyay (Massey University, New Zealand)

### **Magnetic Resonance Measurements of Polar Sea Ice**

Robin Dykstra (Victoria University of Wellington, New Zealand)  
Achim Gadke (Victoria University of Wellington, New Zealand)

**Measurement and Monitoring of Performance Parameters of Distributed Solar Panels using Wireless Sensors Network**

C. Ranhitogamage (Massey University, New Zealand)  
Subhas Mukhopadhyay (Massey University, New Zealand)  
S.N. Garratt (Massey University, New Zealand)  
W.M. Campbell (Massey University, New Zealand)

**Thursday, May 12**                      **1:00 PM - 2:45 PM**

**Integrated and Virtual Measurement Systems**

**Chair:** *Vincenzo Piuri (University of Milan, Italy)*  
**Room:** 10/11

**Continuous Real-Time Optical Measuring of Strip Width and Edge Inspection in Stainless Steel Production Lines**

Carlos G. Spinola (University of Malaga, Spain)  
Juan Canero (University of Malaga, Spain)  
Gonzalo Moreno-Aranda (University of Malaga, Spain)  
Jose M. Bonelo (Acerinox S.A., Spain)  
Manuel Martin-Vazquez (Malaga University, Spain)

**A Subminiature Adjustable and Measurable Atomic Clock Based on Coherent Population Trapping**

Xiaosong Zhu (Electronic Engineering Institute, China)  
Chao Guan (Electronic Engineering Institute, China)  
Qun Zhou (Electronic Engineering Institute, China)

**Evaluation of the GM-PHD Filter for Multi-Target Tracking with a Stereo Vision System**

Jiandan Chen (Blekinge Institute of Technology, Sweden)  
Soheil Ghadami (Blekinge Institute of Technology, Sweden)  
Wlodek Kulesza (Blekinge Institute of Technology, Sweden)

**Research on Monitoring-object Oriented Measurement System Integration Architecture**

Pengpeng Chen (Ocean University of China, China)  
Zhongwen Guo (Ocean University of China, China)  
Chunrong Li (Ocean University of China, China)  
Mingxing Jiang (Ocean University of China, China)

**Thursday, May 12**                      **1:00 PM - 3:00 PM**

**Poster Session V**

**Chair:** *Guangxin Zhang (Zhejiang University, China)*  
**Room:** 4/5

**Sunlight based I-V Characterization of Solar PV Cells**

C.R. Jeevandoss (Indian Institute of Technology Madras, India)  
M. Kumaravel (Indian Institute of Technology Madras, India)  
Kumar V. Jagadeesh (Indian Institute of Technology Madras, India)

### **Experimental Analysis of LEDs'Reliability Under Combined Stress Conditions**

Andrea Albertini (University of Bologna, Italy)  
Maria Gabriella Masi (University of Bologna, Italy)  
Giovanni Mazzanti (University of Bologna, Italy)  
Lorenzo Peretto (University of Bologna, Italy)  
Roberto Tinarelli (University of Bologna, Italy)

### **Synchronization of Wireless Radio Testbed Measurements**

Sebastian Caban (Vienna University of Technology, Austria)  
Armin Disslbacher-Fink (Vienna University of Technology, Austria)  
José A. García-Naya (University of A Coruña, Spain)  
Markus Rupp (Vienna University of Technology, Austria)

### **Driver Drowsiness Monitoring Based on Yawning Detection**

Shabnam Abtahi (University of Ottawa, Canada)  
Behnoosh Hariri (University of Ottawa, Canada)  
Shervin Shirmohammadi (University of Ottawa, Canada)

### **Internet-based Teleoperation Systems with Time varying Communication Delay**

Shafiqul Islam (University of Ottawa, Canada)  
Peter Liu (Carleton University, Canada)  
Abdulmoteleb El Saddik (University of Ottawa, Canada)  
Shichao Liu (Carleton University, Canada)

### **Adding Emotional Tag to Augment Context-Awareness in Social Network Services**

Kazi Masudul Alam (University of Ottawa, Canada)  
Md. Abdur Rahman (Umm Al-Qura University, Saudi Arabia)  
Abdulmoteleb El Saddik (University of Ottawa, Canada)  
Wail Gueaieb (University of Ottawa, Canada)

### **Development of Telescope Emulator System**

Chun-Li Chang (National Applied Research Laboratories, Taiwan, China)  
Kuo-Cheng Huang (National Applied Research Laboratories, Taiwan, China)  
Wen-Hong Wu (National Applied Research Laboratories, Taiwan, China)  
Wen-Tse Hsiao (National Applied Research Laboratories, Taiwan, China)

### **An Environment for Visualizing Higher Dimensional Measured Data**

Lee Barford (Agilent Technologies, USA)  
Roberto Lopez-Hernandez (Ecole de technologie superieure, Canada)  
Michael McGuffin (Ecole de technologie superieure, Canada)

### **Helmet mounted data acquisition system for security and monitoring applications**

Giuseppe Donato (Brunel University, United Kingdom)  
Paolo Ferrari (University of Brescia, Italy)  
Alessandra Flammini (University of Brescia, Italy)

### **A Integrated Test Solution for Performance Evaluation of IMT-Advanced Systems**

Hui Xu (Shanghai Research Center for Wireless Communications, China)  
Jue Xu (Shanghai Research Center for Wireless Communications, China)  
Yang Yang (Shanghai Research Center for Wireless Communications, China)  
Xuliang Yuan (Agilent technologies, Co.Ltd, China)  
Dingqing Lu (Agilent technologies, Co.Ltd, China)

### **Design of an Embedded Patient's Breath Detection System by a Double Reflection from a Low-Power Laser Projection**

Ying-Wen Bai (Fu Jen Catholic University, Taiwan, China)  
You-Wei Chen (Fu Jen Catholic University, Taiwan, China)  
Siao-Cian Wu (Fu Jen Catholic University, Taiwan, China)

### **Four-terminal Scheme Used in a Two-terminal EIT System**

Jianjun Chen (Beihang University, China)  
Zhang Cao (Beihang University, China)  
Lijun Xu (Beihang University, China)

### **Current Transformer with Nanocrystalline Alloy Core for Measurement**

Thiago Batista (Universidade Federal de Campina Grande, Brazil)  
Benedito A. Luciano (Federal University of Campina Grande, Brazil)  
Raimundo Freire (Federal University of Campina Grande, Brazil)  
Sebastian Yuri Catunda (Universidade Federal do Maranhão, Brazil)

### **Optical muscle activation sensors for estimating upper limb force level**

Lejun Cen (KAIST, Korea)  
Hyonyoung Han (KAIST, Korea)  
Jung Kim (KAIST, Korea)

### **Estimation of Respiration Rate from ECG, BP and PPG signals using Empirical Mode Decomposition**

K. Venu Madhav (Kakatiya Institute of Technology & Science, India)  
M. Raghu Raghuram (Kakatiya Institute of Technology & Science, India)  
E. Hari Krishna (Kakatiya University, India)  
Nagarjuna Reddy Komalla (Govt. MGM Hospitals, India)  
K. Ashoka Reddy (Kakatiya University, India)

### **Frequency Optimization and Design of High Frequency Electromagnetic Tomography System**

Min He (Shanghai Maritime University, China)  
Xiaoyan Xu (Shanghai Maritime University, China)

### **A Methodology for Repeatable, Off-line, Closed-loop Wireless Communication System Measurements at Very High Velocities of up to 560 km/h**

Sebastian Caban (Vienna University of Technology, Austria)  
Javier Rodas (University of A Coruña, Spain)  
José A. García-Naya (University of A Coruña, Spain)

### **Antenna diversity measurements of DVB-T signals in mobility conditions: validation and improvement of the link budget model**

Leopoldo Angrisani (University of Naples Federico II, Italy)  
Mario Farias (TIS innovation park, Italy)  
Roberto Cavaliere (TIS innovation park, Italy)  
Danilo Izzo (TIS innovation park, Italy)

### **Thermal characterization of a microwave generator and its effects on the frequency stability**

Celso Gutierrez-Martínez (INAOE, Mexico)

### **Application Research on Digital Image Technology in the Measurement of Nozzle Spray Cone Angle**

Chengli Zhang (Central South University, China)  
Xuezhong Huang (Central South University, China)  
Zhiqiang Sun (Central South University, China)

### **Scalable Service configuration for ubiquitous health**

M. Shamim Hossain (University of Ottawa, Canada)  
M. Anwar Hossain (University of Ottawa, Canada)  
Abdulgataleb El Saddik (University of Ottawa, Canada)

### **Implementation and Evaluation of the Apparatus for Intelligent Energy Management to Apply to the Smart Grid at Home**

In-Ho Choi (Hanyang University, Korea)  
Joung-Han Lee (Hanyang University, Korea)  
Seung Ho Hong (Hanyang University, Korea)

### **LPS Self-Calibration Method using a Mobile Robot**

Jesus Ureña (University of Alcalá, Spain)  
Daniel Ruiz (University of Alcalá, Spain)  
Juan Carlos García (University of Alcalá, Spain)  
Juan J. García (University of Alcalá, Spain)  
Alvaro Hernández (University of Alcalá, Spain)  
Maria Carmen Perez (University of Alcalá, Spain)

### **Improving B-mode ultrasound medical images**

Anna Maria Lucia Lanzolla (Polytechnic of Bari, Italy)  
Gregorio Andria (Politecnico di Bari, Italy)  
Filippo Attivissimo (Polytechnic of Bari, Italy)  
Giuseppe Cavone (Politecnico di Bari, Italy)  
Nicola Giaquinto (Polytechnic of Bari, Italy)

### **Flowrate Measurement of Gas/Liquid Two-Phase Flow Base on the Double-Cone Flowmeter**

Dailiang Xie (China Jiliang University, China)  
Yue Zhu (China Jiliang University, China)  
Shan Tao (Hangzhou Vocational and Technical College, China)

### **The Cover Glass Thermal And Pressure Deformation Affect of Optical Performance in Space Image Sensor**

Mig-Ying Hsu (National Applied Research Laboratories, Taiwan, China)  
W.C. Lin (National Applied Research Laboratories, Taiwan, China)  
C.Y. Chen (National Applied Research Laboratories, Taiwan, China)  
C.F. Ho (National Applied Research Laboratories, Taiwan, China)  
S.T. Chang (National Applied Research Laboratories, Taiwan, China)  
T.M. Huang (National Applied Research Laboratories, Taiwan, China)

### **FMECA Technique on Photovoltaic Module**

Marcantonio Catelani (University of Florence, Italy)  
Lorenzo Ciani (University of Florence, Italy)  
Loredana Cristaldi (Politecnico di Milano, Italy)  
Marco Faifer (Politecnico di Milano, Italy)  
Massimo Lazzaroni (Università degli Studi di Milano, Italy)  
Paola Rinaldi (University of Bologna, Italy)

### **Annual Wind and Energy Loss Distribution for Two Variable Speed Wind Turbine Concepts of 3 MW**

Lucian Mihet-Popa (Politehnica University of Timisoara, Romania)  
Voicu Z. Groza (University of Ottawa, Canada)

### **Modeling Review of Structures and Locomotion Systems for Mobile Robots Four Case Studies**

Ramiro Velazquez (Universidad Panamericana, Mexico)  
Aime' Lay-Ekuakille (University of Salento, Italy)

**Combining Cryptography and Watermarking to Secure Revocable Iris Templates**

Marwa Fouad (University of Ottawa, Canada)  
Abdulmoteleb El Saddik (University of Ottawa, Canada)  
Jiying Zhao (University of Ottawa, Canada)  
Emil M. Petriu (University of Ottawa, Canada)

**Customized System for Vegetable Oils Quality Control Based on Dielectric Spectroscopy Analysis**

Giuseppe Cannazza (University of Salento, Italy)  
Andrea Cataldo (University of Salento, Italy)  
Egidio De Benedetto (University of Salento, Italy)  
Emanuele Piuze (Sapienza University of Rome, Italy)  
Filippo Attivissimo (Polytechnic of Bari, Italy)

**An User Identity Authentication Scheme Adaptive to Changes in Face Appearance**

Matheus Ribeiro (Universidade Federal do Rio Grande do Sul, Brazil)  
Jacob Scharcanski (Universidade Federal do Rio Grande do Sul Brazil)  
Adalberto Schuck (Universidade Federal do Rio Grande do Sul, Brazil)

**Measuring AC Power Based on Symmetry Principles**

Kempei Seki (Mitsubishi Electric Corporation, Japan)

**A Self Detection Technique in Fault Management in WSN**

Peng Yu (Harbin Institute of Technology, China)  
Jia Song (Harbin Institute of Technology, China)  
Peng Xi-Yuan (Harbin Institute of Technology, China)

**Polynomial Approximation: An alternative to Windowing in Fourier Analysis**

Paul O'Leary (University of Leoben, Austria)  
Matthew Harker (University of Leoben, Austria)

**Energy Harvesting Circuit Using Variable Capacitor for Power Systems**

Heider Florentino (Federal University of Campina Grande, Brazil)  
Raimundo C.S. Freire (Universidade Federal de Campina Grande, Brazil)  
Sebastian Yuri Catunda (Universidade Federal de Campina Grande, Brazil)  
Alan V.S. Sa (Universidade Federal de Campina Grande, Brazil)  
Dimitri Galayko (University Paris-VI, France)

**Design of Automatic System for Multiple-Gas Sensing**

Yingfeng Li (Northwest Normal University, China)  
Haisheng Song (Northwet Normal University, China)  
Haixia Chen (Northwest Normal University, China)  
Shuyi Ma (Northwest Normal University, China)

**Numerical Simulation Studies on a Microfluidic Oscillating Flowmeter**

Dai-Liang Xie (China Jiliang University, China)  
Ning Cheng (China Jiliang University, China)  
Yue Zhu (China Jiliang University, China)  
Shan Tao (Vocational and Technical College, China)

**TS Fuzzy Modeling Based Anytime Control Methodology for Situational Control**

Annamaria R. Varkonyi-Koczy (Obuda University, Hungary)  
Imre J. Rudas (Obuda University, Hungary)

**Novel built-in solution for data acquisition system resolution enhancement**

Leopoldo Angrisani (University of Naples Federico II, Italy)  
Mauro D'Arco (University of Naples Federico II, Italy)  
Giacomo Ianniello (University of Naples Federico II, Italy)  
Michele Vadursi (University of Naples "Parthenope", Italy)



