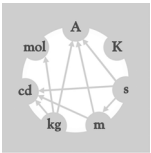
IMEKO XIX WORLD CONGRESS

September 6-11, 2009 • Lisbon, Portugal

Fundamental and Applied Metrology

instituto de telecomunicações



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CHAIRMAN'S WELCOME MESSAGE

As General Chairman of the IMEKO XIX World Congress it is an honour and a privilege to welcome you to Lisbon, capital of Portugal, the western continental European country that in, the 15th century, *gave new worlds to the World*.

The theme chosen for the Congress is "Fundamental and Applied Metrology". By choosing this theme, the organization wants to stress the importance of both Fundamental Metrology, which encompasses the bases of Metrology, and all the Metrology aspects more closely related to applications. More than ever, everyday life and trade rely and depend on the development of state-of-the-art technological-based metrology. The theme is clearly broad and opens the possibility of participating to all people working in Metrology coming either from academia or industry, from scientists to engineers, from mathematicians to chemists and physicists, from instrumentation designers to measuring techniques developers. The emphasis on Fundamental and Applied Metrology is also present in the subjects of the five invited talks that we hope will constitute hallmarks of the IMEKO XIX World Congress.

The Programme Committee and the Organizing Committee did their best to put-up a Congress at least as successful as the previous ones, namely of the 2006 XVIII World Congress in Rio de Janeiro, Brazil. Special attention was paid to the reviewing process in order to maintain and try to increase the quality of the accepted papers and, thus, of the Congress. I do hope that such goal was achieved and that we were able to further contribute to the continued effort of reaching excellence in IMEKO events.

It is my special pleasure to host this IMEKO XIX World Congress for you. I hope that you find it technically fulfilling and highly entertaining and that it will constitute an opportunity for useful interaction and communications with colleagues.

Beyond the technical contents of the Congress, I do hope that you will have the opportunity to enjoy Lisbon and its surroundings as well as the many cultural and recreational activities available in Portugal.

Welcome to Portugal! Welcome to Lisbon! Welcome to the IMEKO XIX World Congress!

Pedro Silva Girão

Instituto Superior Técnico/Instituto de Telecomunicações - Portugal

VICE-CHAIRMAN'S WELCOME MESSAGE

On behalf of the Organizing Committee it is a privilege to welcome you to Lisbon, site of the IMEKO XIX World Congress. The Congress will take place in a modern Congress Centre located in the riverbanks of the Tagus River where the EXPO98 was organized.

As Vice-Chairman of the Congress I must thank all the authors that submitted papers, the chairmen of the Technical Committees of IMEKO and in particular the 198 reviewers who contributed with their valuable time and expertise.

Overall, 694 papers from 48 countries were originally submitted. Of these, 610 were accepted, 34 were rejected and 50 were conditionally accepted pending a second review of the final paper. In the end, 551 accepted full papers were received for publication. The Congress program is divided into oral and poster sessions with 389 papers to be presented in the oral sessions and 162 in poster sessions. In addition to the regularly submitted papers, five invited speakers were selected. Their presentations cover different topics in metrology, instrumentation and measurement. Proposed by the TC chairmen, four workshops are included in the program. The topics include the new definition of the kilogram, the VIM, analog-to-digital converters and on measuring the impossible – measurement of characteristics related to human perception and interpretation. Round tables on the VIM, on continuous and dynamic calibration in force and torque, on traceability in chemistry, health, food and nutrition and on higher education in the 21st century are also included in the Congress program. I hope you find this final program, rich and diverse as is the tradition of IMEKO.

To complement the technical program and to underline the strong connection between IMEKO and industries, an exhibition is also present in the halls of the congress centre. Although the Organizing Committee hoped for a larger number of exhibitors, the worldwide economic situation has forced many companies to reduce their budgets which has prevented their participation in the Congress. Nevertheless, we must thank all the exhibitors who showed their confidence in the organization and whose participation, we believe, will help make this Congress a success.

Finally, I must thank the members of the Organizing Committee for their contribution in the Congress Organization.

Pedro M. Ramos

Instituto Superior Técnico/Instituto de Telecomunicações - Portugal

IMEKO

IMEKO is a non-governmental federation of 39 Member Organizations individually concerned with the advancement of measurement technology. Its fundamental objectives are the promotion of international interchange of scientific and technical information in the field of measurement and instrumentation and the enhancement of international co-operation among scientists and engineers from research and industry. Founded in 1958, the Confederation has consultative status with UNESCO and UNIDO and is one of the five Sister Federations within FIACC (Five International Associations Co-ordinating Committee), further consisting of

- IFAC- International Federation of Automatic Control,
- IFIP - International Federation for Information Processing,
- IFORS - International Federation of Operational Research Societies and
- IMACS - International Association for Mathematics and Computers in Simulation.

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ADDRESSES

IMEKO Secretariat
Ms. Karolina Havrilla
P. O. Box 457
H-1371 Budapest
Hungary
Phone/Fax: +36 1 353 1562
Email: imeko@t-online.hu
imeko.ime@mtesz.hu

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TC4	Measurement of Electrical Quantities (P. Daponte, Italy)
TC5	Hardness Measurement (G. Bahng, Korea)
TC6	Vocabulary Committee
TC7	Measurement Science (L. Mari, Italy)
TC8	Traceability in Metrology (C. Ferrero, Italy)
TC9	Flow Measurement (M. J. Reader-Harris, United Kingdom)
TC10	Technical Diagnostics (L. Monostori, Hungary)
TC11	Metrological Infrastructures (M. Boršić, Croatia)
TC12	Temperature and Thermal Measurements (F. Righini, Italy)
TC13	Measurements in Biology and Medicine (P. Kneppo, Czech Republic)
TC14	Measurement of Geometrical Quantities (A. Weckenmann, Germany)
TC15	Experimental Mechanics (L. Borbás, Hungary)
TC16	Pressure and Vacuum Measurement (Jorge C. Torres-Guzmán, Mexico)
TC17	Measurement in Robotics (S. Tachi, Japan)
TC18	Measurement of Human Functions (K. Ito, Japan)
TC19	Environmental Measurements (P. Silva Girão, Portugal)
TC20	Measurement Techniques for the Construction Industry (K. Hariri, Germany)
TC21	Mathematical Tools for Measurements (F. Pavese, Italy)
TC22	Vibration Measurement (T. Bruns, Germany)
TC23	Metrology in Food and Nutrition (G. V. Iyengar, United States of America)
TC24	Chemical Measurements (P. Charlet, France)

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A. J. Wallard (United Kingdom)
J. G. Webster (United States of America)
A. Weckenmann (Germany)

VENUE

The XIX IMEKO World Congress will take place on the river banks of the Tagus river on the site of World Expo 98. The Venue is the FIL Meeting Centre.

"FIL Meeting Centre has a unique view near River Tagus and an architectonic beauty that lends the Meeting Centre very particular and modern characteristics, unique in the city of Lisbon. Only 7 minutes away from Lisbon International airport and 20 minutes from downtown, the FIL Meeting Centre benefits with the Parque das Nações characteristics, providing its events with a sign of quality and improvement." - From the FIL Meeting Centre Website

LISBON

Most likely founded by the Phoenicians, styled by the Moors and certainly enriched by the spice trade in the golden age of its oversea empire, Lisboa is a historic capital, a potpourri of unusual character and charm, an amalgam of 800 years of cultural influences mingle with modern trends and life style creating intricate and spectacular contrasts.
Spread across seven hills always opening a window towards the majestic Tagus river, Lisboa invites you.

ACCESSIBILITY

Lisboa International Airport located 6 km from the city centre, and about 20/30 minutes driving from Estoril, is served by all major international airlines from all over the world.

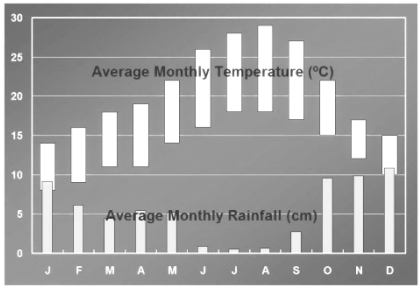
CHECK IN/OUT POLICY

To guarantee occupancy of the hotel rooms before 13:00, they should be booked for the previous night too. Check out time is 12:00.

CLIMATE

The climate, through its effect on vegetation, divides Portugal. Such as in Spain, three sets of influences are involved: Atlantic, continental and Mediterranean. The former predominates overall, putting most of the country into the humid zone of the Iberian Peninsula, but is especially true in the Northwest, where it gives a mild, rainy climate.
The maritime winds certainly influence Portugal, especially through its long 700 km coastline. As long as we move away from the coast, the humidity diminishes, the interior areas being quite 'fair', with the exception of the Tagus North valley, where the climate is wet and soft. The Northern region benefits from the Atlantic cyclones, while South and East are dominated by the subtropical anticyclone, that allows temperatures to rise up to 40º C during the Summer. The climate varies according to the altitude and the highest temperatures are more likely in the lower regions of the South.
Lisboa has a warm climate, with sunny spring and summer days when temperatures frequently reach 85ºF (30 ºC) or above. Winters are wet and windy, temperatures averaging around 50ºF (10 ºC). In September the minimum average temperature is 17 ºC, the maximum average temperature is 26 ºC and the rainfall is usually below 30 mm (1.2 inches).

AVERAGE TEMPERATURE AND RAINFALL



CURRENCY

As a member of the European Monetary System, since the 1st of January 2002, the local currency Escudo was replaced by the "Euro".

DRIVING

Vehicles drive on the right side of the road. The use of safety belts is compulsory, and children under 12 must ride in the back seats.
Portugal has a large freeway network crossing the whole country from the North to the South in Algarve, and from the Ocean front to the border with Spain.
Valid driving licenses from EU countries, the USA, Canada and other major countries are acceptable for use in Portugal up to 6 months stay.

ELECTRIC CURRENT

European type 2 pin sockets with 230 V AC at 50 Hz are used. The phase 380 V is normally available in meeting and exhibition rooms.

ENTERTAINMENT

Lisboa has a variety of theatres and venues catering for most tastes. Opera, ballet, plays, concerts, etc. take place on a regular basis all year round.
Portuguese Fado and Folklore shows are popular, and an international show at Casino Estoril (the largest in Europe), with glittering cabaret complements the many discos and other night spots (Bairro Alto, Av. 24 de Julho, Docas).

EXCHANGE

Major credit cards are accepted in most hotels, shops and restaurants. Travellers cheques and currency can be changed at hotels or at a bank - these are open Monday to Friday from 08:30 to 15:00. Automatic changing and cash dispensing machines linked to international networks are also widely available.

HEALTH REQUIREMENTS

With the exception of vaccination certificates for persons coming from areas where yellow fever is endemic actually there are no special health requirements.

LANGUAGE

The official language is Portuguese. English and French are widely spoken.

MEALS

There are a wide variety of restaurants and cafés in Lisboa ranging from elegant and sophisticated to casual and inexpensive. Take-away and fast food is also available from many outlets.
Restaurants, bars, some with live music, and discos along the river Tagus, at Docas area, Alcântara and at the Nations Park site, are very popular meeting spots especially at weekend nights.
Breakfast is normally served between 7:30 and 10:00, lunch from 12:30 to 15:00, and dinner from 19:30 to 22:00.

MEDICAL CARE

Clinics and hospitals provide round the clock emergency service. The national emergency phone number is 112. For health related questions there is a hotline called “Saúde 24” with telephone number 808 242 424.
Hotels have a doctor on call through the reception. Reciprocal E.C. cover is available at out-patient departments, otherwise private consultation fees are charged.

MUSEUMS

Most of the Museums are open Tuesdays to Sundays, from 10:00 to 17:00, closed on Mondays and public holidays. Please check with the Secretariat of the Congress for further information.

PASSPORT AND VISAS

A valid passport (or identity card for European Community nationals) is required. Visas are not necessary for citizens of EU countries, the U.S.A., Canada and the majority of countries. Please contact your local Portuguese Embassy, Consulate or your Travel Agency for further information.

POST AND TELECOMMUNICATIONS

Automatic direct dial telephone service is available to and from most countries in the world. Public phones accept either a pre-paid card, or coins (see signs on the booth). Credit systems such as AT&T are also available. Post offices are open Monday to Friday from 8:30 to 12:00 and 14:00 to 18:00.

PUBLIC TRANSPORTATION

There is a wide inexpensive network in all towns and cities. In Lisboa, city of the seven hills, you can choose between bus, underground metro, elevators, electric trams or railway, within the city or to the suburbs. Trains and express bus service also link the main towns of the country.

RECREATION

Excellent golf courses, tennis and squash courts, water sports and horse riding tempt the energetic delegates. There are also many noteworthy museums and monuments, sunny beaches to explore.

RELIGIOUS SERVICES

Portugal is predominantly Catholic, but a wide number of other religions (Protestant, Christian, Moslem, Jewish, and Hindu, among others) are also represented. Please inquire at hotel reception for times and places of services.

SALES TAX

Sales tax (VAT) is included in prices quoted. For non E.U. residents, tax free shopping schemes are available in many shops, which gives substantial savings to visitors.

SECURITY

Crime rates in Portugal are among the lowest in the world. Hotels have their own security staff, which is sufficient for most events. Specialist firms are also available if necessary, and the police provide special protection for visiting dignitaries and high risk individuals.

SHOPS

Shops are open from 9:00 to 13:00 and 15:00 to 19:00 Monday to Friday, and 9:00 to 13:00 on Saturdays. In major town centres and in many shopping malls, they stay open during lunch hours, and close later at night, including weekends. Fine leather goods, lead crystal ware, porcelain, vintage wines, golden and silver filigree, pottery and specialist textiles are considered excellent buys in Portugal.

SHOPPING AREAS

The city centre, “a Baixa”, bordered by the magnificent Praça do Comércio (Black Horse Square) facing the river Tejo, the Rua do Ouro, Rua Augusta and Rua da Prata finishing at Rossio Square, Avenida da Liberdade, and the "Chiado" leading to Bairro Alto
Some of the main Shopping Centres are Colombo (one of the biggest in Europe), Amoreiras, Vasco da Gama , Monumental and the Atrium Saldanha.

SMOKING

Smoking is forbidden by law in public transportation, and in closed public areas.

TIPPING

Tipping is optional, but normally 10% is customary in taxis, restaurants and bars.

INVITED TALKS

TERAHERTZ BASED IMAGING FOR INSPECTION AND SPECTROSCOPIC ANALYSIS

Tilo Pfeifer

Tilo Pfeifer, born 1939, received his Dipl.-Ing. degree in 1965 his Dr.-Ing. degree in 1968 and his postdoctoral lecture qualification (Habilitation) in 1972 form the RWTH Aachen University, Germany.

Between 1972 and 2004 he has been Professor and Director of WZL department "Metrology and Quality Management", RWTH Aachen University and from 1980 - 2004 Director at the Fraunhofer-Institute of Production Technology IPT, Aachen. He is now Professor Emeritus at RWTH Aachen University. Still he teaches graduate courses in "Metrology for Microsystems" at several Universities (e.g. RWTH Aachen University; Tsinghua University, Beijing; State University of Santa Catarina, Florianopolis, Brazil). His research topics are Optical/Laser Metrology and Quality Management.

Prof. Pfeifer received several awards e.g. Distinguished Service Award of IMEKO 1985, degree of Honory Doctor form Universidade Federal Santa Catarina, Brazil, 1989 and from University of Zaragoza, Spain 2003, Degree of Honory Professor from Tsinghua University, Beijing 1995 and from Jilian University, Hangzhou, China 2006, Herward-Opitz Gold Medal of Honour from the VDI association, Germany 2004.

Since 1973 Prof. Pfeifer is member of the General Council of IMEKO.

He is Academician of the International Academy of Quality (IAQ) and Academician of the International Academy of Production Engeneering(CIRP), member of the executive board of Federation for Quality (FQS), Germany and Chairman of the Scientific Council of the German Association for Quality (DGQ).

Prof. Pfeifer has published some 500 scientific papers, generally on optical/ laser measurement, coordinate measuring technology and quality management, numerous conference proceedings, several books and patents.

INVITED TALKS

WORLD METROLOGY - THE NEXT 10 YEARS

Andrew Wallard

Andrew Wallard has been the Director of the Bureau International des Poids et Mesures in Sèvres, France since January 2004.

He was awarded a first class honours degree in physics from St. Andrews University, Scotland in 1968, and a Ph.D. in 1972. He then worked as a laser physicist at the United Kingdom's National Physical Laboratory (NPL) until 1978. After that, he spent 12 years in various central Government positions, including the Prime Minister's Cabinet Office, and the Department of Trade and Industry where he was a special advisor to various Ministers. He has broad experience of science and technology policy and also managed several industrial programmes of research support which were operated by the United Kingdom Government and the European Community. He specialised in University/Industry collaboration.

He returned to the NPL in 1990 as Deputy Director and, subsequently, the NPL's Chief Metrologist. From 2005, was a member of the International Committee for Weights and Measures (CIPM).

Professor Wallard was subsequently elected as the Director of the International Bureau of Weights and Measures (BIPM). The BIPM co-ordinates world metrology and is an Inter-Governmental body under the Treaty of the Metre, supported by over 80 countries.

Andrew Wallard is a Professor at the University of Wales and has been awarded several national and international honours for his contribution to measurement science and technology.

He is a member of the Board of the National Conference of Standards Laboratories International (NCSLI), the Scientific Academy of Turin, the Russian Academy of |Metrology, the United Kingdom's Physical Society, and is a Fellow of the Institute of Physics, a Chartered Physicist, a Chartered Engineer, a Chartered Scientist, and a life Fellow of the Royal Society of Arts, Manufactures and Science.

He has published some forty refereed scientific papers, generally on laser physics and metrology, numerous conference proceedings, and has contributed to various books on metrology.

METROLOGY CHALLENGES FOR BIOFUELS

João Jornada

João A. H. da Jornada has been the President of INMETRO (the Brazilian National Metrology Institute), Rio de Janeiro, Brazil, since December 2004, and Director for Scientific and Industrial Metrology from 2000 to 2004.

He is Full Professor of Physics at Federal University of Rio Grande do Sul, Brazil, where he received his Ph.D. in Physics in 1979, with honour degree. He has been an active researcher in the fields of solid state physics, materials science, high-pressure physics and superhard materials, and has published some 90 papers in indexed international journals. He is a member of the Brazilian Academy of Sciences, and Fellow of the TWAS (Academy of Sciences for the Developing World, Trieste, Italy).

He was awarded the Grand Cross of National Order of Scientific Merit, Brazil, the Aeronautic Order of Merit, the Order of Rio Branco, and the Award for Outstanding Researcher in the field of Physics and Astronomy, FAPERGS, 1998.

CHALLENGES IN MEDICAL MEASUREMENTS

John Webster

John G. Webster received the B.E.E. degree from Cornell University, Ithaca, NY, United States of America in 1953, and the M.S.E.E. and Ph.D. degrees from the University of Rochester, Rochester, NY, United States of America in 1965 and 1967, respectively.

He is Professor Emeritus of Biomedical Engineering at the University of Wisconsin-Madison, United States of America. In the field of medical instrumentation he teaches undergraduate and graduate courses in bioinstrumentation and design. He does research on improving electrodes for ablating liver to cure cancer, on safety of electromuscular incapacitating devices and on a miniature hot flash recorder.

He is the editor of the most-used text in biomedical engineering: *Medical instrumentation: Application and Design*, Fourth Edition New York, John Wiley & Sons, 2009, and has developed 22 other books including the *Encyclopedia of Medical Devices and Instrumentation*, Second Edition, New York, John Wiley & Sons, 2006 and 200 research papers.

Dr. Webster is a fellow of the Institute of Electrical and Electronics Engineers, Instrument Society of America, American Institute of Medical and Biological Engineering, and Institute of Physics. He has been a member of the IEEE-EMBS Administrative Committee and the NIH Surgery and Bioengineering Study Section. He is the recipient of the 2001 IEEE-EMBS Career Achievement Award.

SPACE METROLOGY – A COSMIC VISION

André Tavares

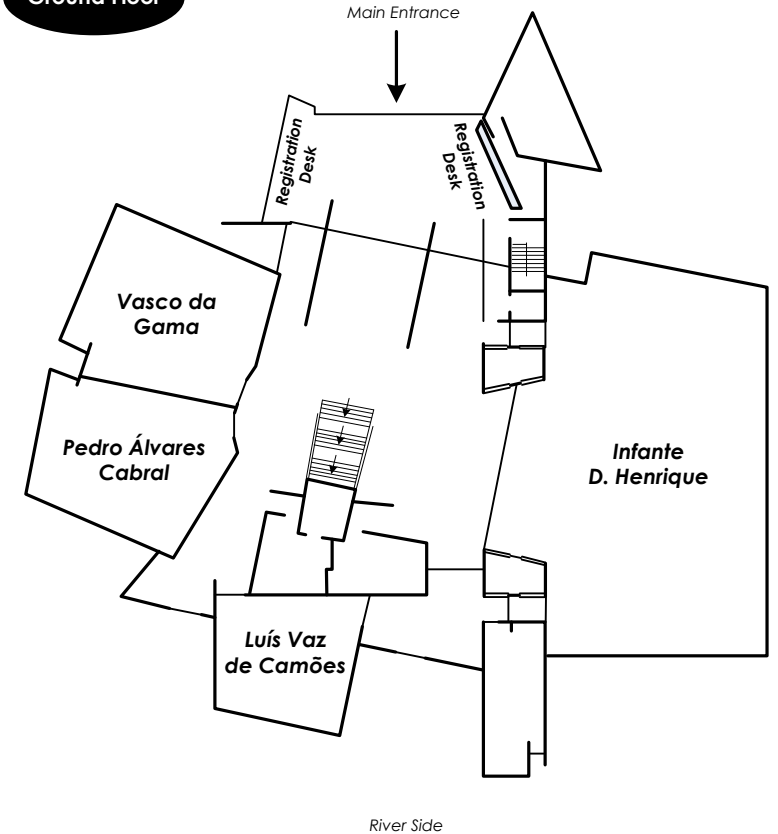
André T. N. Tavares, born in 1979 in Portugal, graduated in 2002 in Mechanical Engineering from *Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia* (UNL-FCT), Portugal. Since then he has been working for the Testing Division of the European Space Research and Technology Centre (ESTEC), of the European Space Agency (ESA), in The Netherlands.

He began to perform mechanical design of Mechanical Ground Support Equipment for Testing in the ESTEC's Engineering Services Section. He is now the technical responsible of the Metrology Laboratory of the same section, providing support in measurement applications, from concept to execution, to the ESTEC Test Centre and labs and to ESA projects, such as Galileo, MetOp, Herschel-Planck, Automated Transfer Vehicle, GOCE, Lisa-Pathfinder, AlphaBus, among others.

He received an ESA Award Prize in 2006 for the alignment of the COROT Baffle, a space telescope successfully launched in end 2006.

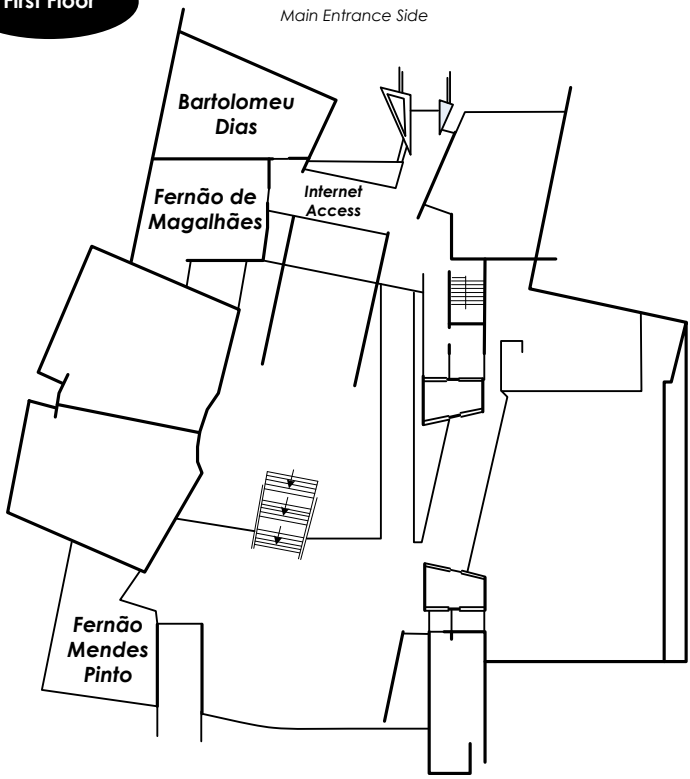
FLOORPLANS

Ground Floor



FLOORPLANS

First Floor



OVERALL SCHEDULE

	Monday, Sept. 7th	Tuesday, Sept. 8th	Wednesday, Sept. 9th	Thursday, Sept. 10th	Friday, Sept. 11th	
8:30	*Registration*	TC2 - TC Meeting		TC3 - Oral Session 6	TC3 - Oral Session 9	8:30
9:00		TC3 - Oral Session 2	TC2 - Oral Session 2	TC4 - Oral Session 10	TC4 - Oral Session 12	
		TC4 - WS ADC Ses. 1	TC3 - Oral Session 5	TC9 - TC Meeting	TC8 - TC Meeting	
		TC7 - Oral Session 1	TC4 - WS ADC Ses. 3	TC12 - Oral Session 2	TC14 - Oral Session 5	
	Opening Ceremony	TC11 - TC Meeting	TC14 - Oral Session 1	TC14 - Oral Session 2	TC21 - Oral Session 4	
		TC15 - Oral Session 1	TC18 - TC Meeting	TC16 - Oral Session 2	TC23 - TC Meeting	
		TC20 - Oral Session 1	TC22 - TC Meeting	TC19 - Oral Session 2		9:50
10:15		*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*	9:50 10:15
10:15	*Coffee Break*	**Invited Talk** *Andrew Wallard*	**Invited Talk** *João Jornada*	**Invited Talk** *John Webster*	**Invited Talk** *André Tavares*	10:15
11:00						11:00
11:00		WS VIM	TC1 - Oral Session 1	RT Traceability in ...	RT Higher Education...	11:00
		TC3 - Oral Session 3	RT Calibration Force...	TC3 - Oral Session 7		
	Invited Talk *Tilo Pfeifer*	TC4 - WS ADC Ses. 2	TC4 - WS ADC Ses. 4	TC12 - Oral Session 3	TC4 - Oral Session 13	
		TC5 - Oral Session 1	TC7 - Oral Session 3	TC13 - Oral Session 2	TC8 - Oral Session 1	
		TC13 - Oral Session 1	TC13 - TC Meeting	TC14 - TC Meeting	TC21 - Oral Session 5	
12:00		TC15 - TC Meeting	TC18 - Oral Session 1	TC16 - Oral Session 3	TC23 - Oral Session 1	
12:00		TC20 - TC Meeting			TC24 - TC Meeting	12:20
	Lunch	*Lunch*	*Lunch*	*Lunch*	*Lunch*	12:20
13:40						13:40
13:40	WS kilogram	RT on the VIM	TC4 - Oral Session 9	TC1 - TC Meeting	WS Measuring the ...	13:40
	TC4 - Oral Session 1	TC3 - Oral Session 4	TC7 - Oral Session 4	TC3 - Oral Session 8	TC3 - TC Meeting	
	TC4 - Oral Session 2	TC4 - Oral Session 5	TC12 - TC Meeting	TC9 - Oral Session 1		
	TC5 - TC Meeting	TC4 - Oral Session 6	TC16 - Oral Session 1	TC13 - Oral Session 3	TC8 - Oral Session 2	
	TC10 - Oral Session 1	TC5 - Oral Session 2	TC18 - Oral Session 2	TC14 - Oral Session 3	TC13 - Oral Session 5	
	TC17 - Oral Session 1	TC10 - Oral Session 2	TC22 - Oral Session 1	TC24 - Oral Session 1	TC14 - Oral Session 6	
15:40	TC21 - Oral Session 1	TC19 - TC Meeting	**POSTER SESSION 1**	**POSTER SESSION 3**	TC23 - Oral Session 2	15:40
15:40	*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*	15:40
16:20						16:20
16:20	TC3 - Oral Session 1	TC2 - Oral Session 1	TC1 - Oral Session 2	TC4 - Oral Session 11		16:20
	TC4 - Oral Session 3	TC4 - Oral Session 7	TC2 - Oral Session 3	TC7 - TC Meeting	*Closing Ceremony and Presentation of the XX World Congress*	
	TC4 - Oral Session 4	TC4 - Oral Session 8	TC4 - TC Meeting	TC9 - Oral Session 2		
	TC10 - TC Meeting	TC7 - Oral Session 2	TC12 - Oral Session 1	TC12 - Oral Session 4		17:00
	TC11 - Oral Session 1	TC19 - Oral Session 1	TC21 - Oral Session 3	TC13 - Oral Session 4		
	TC17 - TC Meeting	TC16 - TC Meeting	TC22 - Oral Session 2	TC14 - Oral Session 4		
18:20	TC21 - Oral Session 2	TC21 - TC Meeting	**POSTER SESSION 2**	**POSTER SESSION 4**		
				Congress Banquet		

SPECIAL EVENTS SCHEDULE

	Monday, Sept. 7th	Tuesday, Sept. 8th	Wednesday, Sept. 9th	Thursday, Sept. 10th	Friday, Sept. 11th	
08:30	*Registration*	Workshop on ADCs *TC4*	Workshop on ADCs *TC4*			08:30
09:00	*Opening Ceremony*					09:50
		Coffee Break	*Coffee Break*	*Coffee Break*	*Coffee Break*	09:50
10:15						10:15
10:15	*Coffee Break*	**Invited Talk** *Andrew Wallard*	**Invited Talk** *João Jornada*	**Invited Talk** *John Webster*	**Invited Talk** *André Tavares*	10:15
11:00						11:00
11:00	**Invited Talk** *Tilo Pfeifer*	Workshop on the VIM *TC1, TC7, TC21* Workshop on ADCs *TC4*	Round Table on Continuous and Dynamic Calibration in Force and Torque *TC3* Workshop on ADCs *TC4*	Round Table on Traceability in Chemistry, Health, Food and Nutrition *TC8, TC23, TC24*	Round Table on Higher Education in the 21st Century *TC1, TC7*	11:00
12:00						12:20
12:00	*Lunch*	*Lunch*	*Lunch*	*Lunch*	*Lunch*	12:20
13:40						13:40
13:40	Workshop on New Definition of the kilogram *TC3*	Round Table on the VIM *TC1, TC7, TC21*			Workshop on Measuring the Impossible: Measurement of Characteristics Related to Human Perception and Interpretation *TC7, TC18, TC21*	13:40
15:40						15:40
15:40	*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*	15:40
16:20						16:20
16:20					*Closing Ceremony and Presentation of the XX World Congress*	16:20
17:00						
18:20						

WORKSHOPS

WORKSHOP ON NEW DEFINITION OF THE KILOGRAM

Technical Committees: TC3
Monday, Sept. 7th, 13:40 - 15:40

WORKSHOP ON THE VIM

Technical Committees: TC1, TC7, TC21
Tuesday, Sept. 8th, 11:00 - 12:20

WORKSHOP ON ADC TESTING

Technical Committees: TC4
Mornings of Tuesday (Sept. 8th) and Wednesday (Sept. 9th)

WORKSHOP ON MEASURING THE IMPOSSIBLE: MEASUREMENT OF CHARACTERISTICS RELATED TO HUMAN PERCEPTION AND INTERPRETATION

Technical Committees: TC7, TC18, TC21
Friday, Sept. 11th, 13:40 - 15:40

ROUND TABLES

ROUND TABLE ON THE VIM

Technical Committees: TC1, TC7, TC21
Tuesday, Sept. 8th, 13:40 - 15:40

ROUND TABLE ON CONTINUOUS AND DYNAMIC CALIBRATION IN FORCE AND TORQUE

Technical Committees: TC3
Wednesday, Sept. 9th, 11:00 - 12:20

ROUND TABLE ON TRACEABILITY IN CHEMISTRY, HEALTH, FOOD AND NUTRITION

Technical Committees: TC8, TC23, TC24
Thursday, Sept. 10th, 11:00 - 12:20

ROUND TABLE ON HIGHER EDUCATION IN 21ST CENTURY

Technical Committees: TC1
Friday, Sept. 11th, 11:00 - 12:20

DETAILED PROGRAM

WORKSHOP ON NEW DEFINITION OF THE KILOGRAM

Co-Chairs: *Richard Davis, Head, Mass Section, Bureau International des Poids et Mesures, Sèvres, France*
Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany

TC4 – ADVANCED INSTRUMENTATION

Co-Chairs: *Helena Ramos, Instituto de Telecomunicações, Instituto Superior Técnico, Portugal*
Christian Eugène, Universite Catholique de Louvain, Belgium

13:40 On the Use of Dielectric Spectroscopy for Quality Control of Vegetable Oils (363)

Andrea Cataldo, Department of Engineering for Innovation, University of Salento, Italy
Emanuele Piuzzi, Sapienza University of Rome, Italy
Giuseppe Cannazza, Dept. of Engineering for Innovation, University of Salento, Italy
Egidio De Benedetto, Dept. of Engineering for Innovation, University of Salento, Italy
Luciano Tarricone, Dept. of Engineering for Innovation, University of Salento, Italy

14:00 Weld Testing Using Eddy Current Probes and Image Processing (438)

Octavian Postolache, Instituto de Telecomunicações, Portugal
Artur Lopes Ribeiro, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Helena Geirinhas Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

14:20 New Non-Destructive Test Technique on Metal Inspection (461)

Luís Rosado, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal
Telmo Santos, IDMEC, DEM, IST, UTL, Portugal
Moisés Piedade, Instituto Superior Técnico, Universidade Técnica de Lisboa, Portugal
Pedro M. Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Pedro Vilaça, IDMEC, DEM, IST, UTL, Portugal

14:40 Requirements of a Mechanical Positioning System for Biological Imaging Using Magnetic Induction Tomography (534)

Nuno B. Brás, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
P. A. F. Martins, IDMEC,IST, Portugal
Raul C. Martins, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
A. Cruz Serra, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

15:00 CAN Protocol: A Laboratory Prototype for Fieldbus Applications (535)

Mário Alves, LabIM/ESTSetúbal, Polytechnic Institute of Setúbal, Portugal
J. M. Dias Pereira, LabIM/ESTSetúbal, Polytechnic Institute of Setúbal/Instituto de Telecomunicações, Portugal
Helena Geirinhas Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

15:20 Large Number Library – The New LabVIEW Tool for Secure Measurement Systems (206)

Piotr Bobiński, Warsaw University of Technology, Poland
Wiesław Winiecki, Warsaw University of Technology, Poland

TC4 – Software Measurements

Co-Chairs: *Dusan Agrez, University of Ljubljana, Faculty of Electrical Engineering, Slovenia*
Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/ CERN European Organization for Nuclear Research, Italy

13:40 Multicore Implementation of the AES Algorithm in the Measurement System (196)

Piotr Bilski, Warsaw University of Life Sciences, Poland
Wiesław Winiecki, Warsaw University of Technology, Institute of Radioelectronics, Poland

14:00 Software Quality Characterization of the Flexible Framework for Magnetic Measurements at CERN (469)

Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Vitaliano Inglese, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II/CERN, Switzerland
Giuseppe La Commara, Dipartimento di Ingegneria - Università degli Studi del Sannio, Italy

14:20 A Multi-Touch Collaborative Solution for Measurement Data Visualisation (524)

Septimiu Crisan, Dep. of Electrical Measurement, Fac. of Electrical Eng., Tech. Univ. of Cluj-Napoca, Romania
Valentin Dan Zaharia, Dep. of Electrical Measurement, Fac. of Electrical Eng., Tech. Univ. of Cluj-Napoca, Romania
Leonard Voicu Brender, Dep. of Electrical Measurement, Fac. of Electrical Eng., Tech. Univ. of Cluj-Napoca, Romania
Titus Eduard Crisan, Dep. of Electrical Measurement, Fac. of Electrical Eng., Tech. Univ. of Cluj-Napoca, Romania

14:40 Design of the Prototype of PLD Auto Test Platform (85)

Senzu Shen, Wuhan Digital Engineering Institute, China
Hua Li, Wuhan Digital Engineering Institute, China
Zhengle Shi, Wuhan Digital Engineering Institute, China
Minghu Zhang, Wuhan Digital Engineering Institute, China
Qian Liu, Wuhan Digital Engineering Institute, China

15:00 Automatically-Generated User Interfaces for Measurement Software Frameworks: A Case Study on Magnetic Permability at CERN (611)

Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Marco Buzio, Dept. of Technology, Group of Magnets Superconductors Cryostats, CERN, Geneva, Italy
Lucio Fiscarelli, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Vitaliano Inglese, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II/CERN, Italy
Giuseppe La Commara, Dipartimento di Ingegneria - Università degli Studi del Sannio, Italy

TC5 – MEETING

Meeting of the Technical Committee

on

Hardness Measurement

TC5

TC10 – TECHNICAL DIGANOSTICS 1

Co-Chairs: Janusz Smulko, Gdańsk University of Technology, Poland

13:40 Integrated Management System for Testing, Monitoring and Diagnostic of Power Transformer Insulation (68)

Dragan Kovacevic, Electrical Engineering Institute "Nikola Tesla", Serbia
Jelena Lukic, Electrical Engineering Institute "Nikola Tesla", Serbia
Dragana Naumovic-Vukovic, Electrical Engineering Institute "Nikola Tesla", Serbia
Slobodan Skundric, Electrical Engineering Institute "Nikola Tesla", Serbia

14:00 Nondestructive Testing in Diagnostics of High-Voltage Varistors (353)

Lech Hasse, Gdańsk University of Technology, Poland
Janusz Smulko, Faculty of Electronics, Telecommunications and Informatics, Gdańsk Univ. of Technology, Poland

14:20 Automatic Diagnosis of Power Transformers Based on Dissolved Gas Analysis - First Level of Diagnosis using VAC and VSC Inference Methods (357)

Mladen Banovic, Croatia
Josip Butorac, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia

14:40 Automatization of Tampering Identification in Induction Electrical Power Meters (454)

Noara Foiatto, PPGEP/UFGRS and LABELO/PUCRS, Brazil
Christine Tessele Nodari, PPGEP/UFGRS, Brazil
João Miguel Lac Roehe, FENG/PUCRS, Brazil
Marcus Vinicius Viegas Pinto, LABELO/PUCRS, Brazil

15:00 Remote Monitoring of Incipient Faults Using GPRS in Power Transformers (655)

Marco A. M. Cavaco, Federal University of Santa Catarina, Brazil
Mauro Eduardo Benedet, Federal University of Santa Catarina, Brazil
César A. A. Nogueira, Federal University of Santa Catarina, Brazil
Régis H. Coelho, Centrais Elétricas de Santa Catarina, Brazil

TC17 – MEASUREMENT IN ROBOTICS

Co-Chairs: Susumu Tachi, The University of Tokyo, Keio University, Japan

13:40 Positioning Accuracy of Non-Conventional Production Machines (485)

Ľudovít Kolláth, Slovak University of Technology, Faculty of Mechanical Engineering, Slovakia
Martin Halaj, Slovak University of Technology, Faculty of Mechanical Engineering, Slovakia
Eva Kureková, Slovak University of Technology, Faculty of Mechanical Engineering, Slovakia

14:00 SIFT-Based Measurements for Vehicle Model Recognition (9)

Apostolos Psyllos, Electrical and Computer Engineering School, National Technical University of Athens, Greece
Christos Anagnostopoulos, Cultural Technology & Communication Department, University of the Aegean, Greece
Eleftherios Kayafas, Electrical and Computer Engineering School, National Technical University of Athens, Greece

14:20 Mobile Robot Localization from Landmark Bearings (84)

Toshifumi Tsukiyama, Tokyo Denki University, Japan

TC21 – Dynamical Measurements

Co-Chairs: *Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Peter Hessling, SP Technical Research Institute of Sweden, Measurement Technology, Sweden

13:40 Analysis of Dynamic Measurements: New Challenges Require New Solutions (211)

Trevor Esward, National Physical Laboratory, United Kingdom
Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany
Jan Peter Hessling, SP Technical Research Institute of Sweden, Sweden

14:00 Uncertainty Evaluation of Dynamic Measurements in Line with the GUM (57)

Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany
Sascha Eichstädt, Physikalisch-Technische Bundesanstalt (PTB), Germany
Alfred Link, Physikalisch-Technische Bundesanstalt (PTB), Germany

14:20 Statistical Characterisation of Dynamic Propagation Environments for Mobile Wireless Communication Systems (208)

Luk Arnaut, National Physical Laboratory, United Kingdom

14:40 Dynamic Measurement Uncertainty of HV Voltage Dividers (325)

Jan Peter Hessling, SP Technical Research Institute of Sweden, Measurement Technology, Sweden
Anders Mannikoff, SP Technical Research Institute of Sweden, Measurement Technology, Sweden

15:00 Optimisation of Orthogonal Polynomial Signals for Direct Identification of Equivalent Circuit Parameters (258)

Marek Niedostatkiewicz, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland
Romuald Zielonko, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland

15:20 Enhancing the Interpretability of Terahertz Data Through Unsupervised Classification (637)

Henrike Stephani, Fraunhofer Institute for Industrial Mathematics (ITWM), Kaiserslautern, Germany
Michael Herrmann, Fraunhofer Institute for Physical Measurement Techniques (IPM), Kaiserslautern, Germany
Karin Wiesauer, RECENDT GmbH, Linz, Austria
Stefan Katletz, RECENDT GmbH, Linz, Austria
Bettina Heise, Johannes Kepler Univ., Department of Knowledge-Based Mathematical Systems, Linz, Austria

TC3 – MASS I

Co-Chairs: Richard Davis, Head, Mass Section, Bureau International des Poids et Mesures, Sèvres, France

16:20 Determination of the Atomic Mass Constant by Ion Accumulation (49)

Christian Schlegel, Physikalisch-Technische Bundesanstalt (PTB), Germany
Michael Gläser, Physikalisch-Technische Bundesanstalt (PTB), Germany
Frank Schlolz, Physikalisch-Technische Bundesanstalt (PTB), Germany
Gabriela Bethke, Physikalisch-Technische Bundesanstalt (PTB), Germany
Michael Mecke, Physikalisch-Technische Bundesanstalt (PTB), Germany

16:40 Analysis on the Effects of Stiffness in Mass Measurement Using Relay Feedback of Displacement (77)

Takeshi Mizuno, Saitama University, Japan
Yuji Ishino, Saitama University, Japan
Masaya Takasaki, Saitama University, Japan

17:00 Density Measurement System of 50 kg Weights by Method A in OIML R111 (2004) at CMS (99)

Feng-Yu Yang, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Sheau-shi Pan, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan

17:20 Cleaning of Silicon Density Standards (173)

Horst Bettin, Physikalisch-Technische Bundesanstalt (PTB), Germany
Detlef Schiel, Physikalisch-Technische Bundesanstalt (PTB), Germany
Martin Vogtmann, Physikalisch-Technische Bundesanstalt (PTB), Germany
Henning Niemann, Physikalisch-Technische Bundesanstalt (PTB), Germany

17:40 Development and Realisation of a Fully Automatic Testing Facility for Determining the Volume of E1 Weights Up to 50 kg Based on Hydrostatic Weighing (261)

Christian Buchner, BEV- Bundesamt für Eich- und Vermessungswesen, Austria

TC4 – AUTOMATED TEST AND MEASUREMENT SYSTEMS

Co-Chairs: Grzegorz Lentka, Gdańsk University of Technology, Poland
Co-Chairs: Damir Ilić, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

16:20 Portable Analyzer for Impedance Spectroscopy (61)

Jerzy Hoja, Gdańsk University of Technology, Poland
Grzegorz Lentka, Gdańsk University of Technology, Poland

16:40 An Application of TCRBF Neural Network in Multi-Node Fault Diagnosis Method (340)

Zbigniew Czaja, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland
Michal Kowalewski, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland

17:00 Power Quality Measurement Analysis of the Electrostatic Precipitator (434)

Aleksandar Nikolic, Electrical Engineering Institute "Nikola Tesla", Serbia
Ilija Stevanovic, Electrical Engineering Institute "Nikola Tesla", Serbia

17:20 Evaluation of IEEE1588 Applied to Synchronized Acquisition in Marine Sensor Networks (MSN) (462)

Joaquín del Río, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Daniel Toma, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Antoni Mànuel, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Helena Geirinhas Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

17:40 Using a Mouse Pointer as a Positioning Device in Eddy Current Testing (652)

Artur Lopes Ribeiro, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Octavian Postolache, Instituto de Telecomunicações, Portugal
Helena Geirinhas Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
M. Simões, Instituto Superior Técnico, Portugal
J. Pimentel, Instituto Superior Técnico, Portugal
P. Maurício, Instituto Superior Técnico, Portugal
J. Calvário, Instituto Superior Técnico, Portugal
A. Carvalho, Instituto Superior Técnico, Portugal
T. Rocha, Instituto Superior Técnico, Portugal

18:00 Testing the Stability of GPS Oscillators Within Serbian Permanent GPS Stations Network (428)

Vukan Ogrizovic, Belgrade University, Faculty of Civil Engineering, Serbia
Violeta Vasilic, Belgrade University, Faculty of Civil Engineering, Serbia
Sinisa Delcev, Belgrade University, Faculty of Civil Engineering, Serbia
Jelena Gucevic, Belgrade University, Faculty of Civil Engineering, Serbia

TC4 – WAVEFORM ANALYSIS AND MEASUREMENT

Co-Chairs: *Milos Sedlacek, Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic*
Octavian Postolache, Instituto de Telecomunicações, Portugal

16:20 Design of DSP Windows Using Window Spectrum Zeros Placement (44)

Milos Sedlacek, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Zdenek Stoudek, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

16:40 On-Line Estimation of Parameters of a Time Series (152)

Andrzej Dobrogowski, Poznan University of Technology, Telecommunication Systems and Optoelectronics, Poland
Michal Kasznia, Poznan University of Technology, Telecommunication Systems and Optoelectronics, Poland

17:00 Significance of Correlation in the Uncertainty Evaluation of Sampling Oscilloscope Measurements (203)

Sascha Eichstädt, Physikalisch-Technische Bundesanstalt (PTB), Germany
Alfred Link, Physikalisch-Technische Bundesanstalt (PTB), Germany
Meinhard Spitzer, Physikalisch-Technische Bundesanstalt (PTB), Germany
Mark Bieler, Physikalisch-Technische Bundesanstalt (PTB), Germany
Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany

17:20 Performance Comparison of Three Algorithms for Two-Channel Sinewave Parameter Estimation: Seven Parameter Sine Fit, Ellipse Fit, Spectral Sinc Fit (266)

Pedro M. Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Fernando M. Janeiro, Instituto de Telecomunicações/Universidade de Évora, Portugal
Tomáš Radil, Instituto de Telecomunicações, Portugal

17:40 New Algorithms for the Optimal Selection of the Bandpass Sampling Rate in Measurement Instrumentation (571)

Giovanni Betta, DAEIMI - University of Cassino, Italy
Domenico Capriglione, DAEIMI - University of Cassino, Italy
Luigi Ferrigno, DAEIMI - University of Cassino, Italy
Gianfranco Miele, DAEIMI - University of Cassino, Italy

18:00 Digital Notch Filters Implementation with Fixed-Point Arithmetic (504)

Eduardo Pinheiro, Instituto de Telecomunicações, Portugal
Octavian Postolache, Instituto de Telecomunicações, Portugal
Pedro Silva Girão, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

TC10 – MEETING

Meeting of the Technical Committee

on

Technical Diagnostics

TC10

TC11 – METROLOGICAL INFRASTRUCTURE

Co-Chairs: *Mladen Boršić, Faculty of Electrical Engineering and Computing, Croatia*
Janko Drnovsek, University of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia

16:20 Uncertainty of Road Traffic Safety Measurements (3)

Edi Kulderknup, Estonian Accreditation Centre, Estonia
Jürgen Riim, Estonian Accreditation Centre, Estonia
Tuuli Levandi, Faculty of Science, Tallinn University of Technology, Estonia

16:40 The Role of Metrology Communities Under the WTO System: Measurement Science and Conformity Assessment Procedures (239)

Jookeun Park, KRISS, Korea
Gun Woong Bahng, NCSRD, KRISS, Korea

17:00 Implementation of a Measurement Uncertainty Guideline for ISO/IEC 17025 Laboratory Assessors (510)

Daniel Homrich da Jornada, Certificar / Rede Metrológica, RS, Porto Alegre, Brazil
Carla Schwengber ten Caten, PPGEP/UFRGS, Brazil

17:20 Smart Transducer Block Enables Plug & Play Transducers (511)

Vítor Viegas, LabIM/ESTSetúbal, Polytechnic Institute of Setúbal, Portugal
J. M. Dias Pereira, LabIM/ESTSetúbal, Polytechnic Institute of Setúbal/Instituto de Telecomunicações, Portugal
Pedro Silva Girão, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

17:40 Basic Characteristics of ZigBee and Simpliciti Modules to use in Measurement Systems (520)

L. Skrzypczak, Department of Electronics, Computer and System Sciences University of Calabria, Italy
Domenico Grimaldi, Department of Electronics, Computer and System Sciences University of Calabria, Italy
R. Rak, Inst. of the Theory of Elec. Eng., Inf. and Meas. Systems, Warsaw Univ. of Technology, Poland

18:00 Speed Measurement Uncertainty in Metrological Verifications at IPQ (640)

Olivier Pellegrino, Instituto Português da Qualidade, Portugal
Carlos Pires, Instituto Português da Qualidade, Portugal
António Cruz, Instituto Português da Qualidade, Portugal

TC17 – MEETING

Meeting of the Technical Committee

on

Measurement in Robotics

TC17

TC21 – UNCERTAINTY AND INFERENCE

Co-Chairs: *Alistair Forbes, National Physical Laboratory, United Kingdom*
Eduarda Filipe, Instituto Português da Qualidade, Portugal

16:20 Bayesian Analysis of a Calibration Model (53)

Ignacio Lira, Pontificia Universidad Católica de Chile, Chile
Dieter Grientschnig, Boehler Edelstahl, Austria

16:40 Determining the 95% Confidence Interval of Arbitrary Non-Gaussian Probability Distributions (81)

France Pavlovcic, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Janez Nastran, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
David Nedeljkovic, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

17:00 Comparison of Two Diferent Approaches in the Uncertainty Calculation of Gravimetric Volume Calibration (160)

Elsa Batista, Instituto Português da Qualidade, Portugal
Nelson Almeida, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal
João Alves e Sousa, Laboratório Regional de Engenharia Civil, Portugal

17:20 Measurement Uncertainty Evaluation Associated with Calibration Functions (467)

M. G. Cox, National Physical Laboratory, United Kingdom
Alistair B. Forbes, National Physical Laboratory, United Kingdom
P. M. Harris, National Physical Laboratory, United Kingdom
I. M. Smith, National Physical Laboratory, United Kingdom

17:40 Correlation in Uncertainty of Measurement - A Discussion of State of the Art Techniques (479)

Rüdiger Kessel, National Institute of Standards and Technology (NIST), United States of America
Raghu N. Kacker, National Institute of Standards and Technology (NIST), United States of America

18:00 Novel and Established Concepts for Considering Correlation in Uncertainty Evaluation (528)

Klaus-Dieter Sommer, Physikalisch-Technische Bundesanstalt (PTB), Germany
Bernd Siebert, Physikalisch-Technische Bundesanstalt (PTB), Germany
Anna-Lisa Hauswaldt, Physikalisch-Technische Bundesanstalt (PTB), Germany

TC2 – MEETING

Meeting of the Technical Committee

on

Photonics

TC2

TC3 – Force Standard Machines - Improvements and Investigations

Co-Chairs: *José Ángel Robles, Director de la División Científica y de RRII, Director of Scientific and IIRR Division, Centro Español de Metrología (CEM), Spain*
Zhimin Zhang, National Institute of Metrology, P. R. China

08:30 **Improvement of the Realization of Forces Between 2 MN and 5 MN at PTB - The New 5 MN Force Standard Machine (172)**

Falk Tegtmeier, Physikalisch-Technische Bundesanstalt (PTB), Germany
Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany
Mark Seidel, Physikalisch-Technische Bundesanstalt (PTB), Germany

08:50 **Improvement of Metrological Characteristics of INTI's 110 kN Force Standard Machine by Using the CENAM's Six-Component Dynamometer for Static and Dynamic Evaluation (205)**

Alejandro Savarin, Instituto Nacional de Tecnología Industrial (INTI), Argentina
Carlo Marinari, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Jorge C. Torres-Guzmán, CENAM, Queretaro, Mexico

09:10 **Influence of the Mutual Gravitational Attraction in a Set of Masses of Deadweight Machines (215)**

Giancarlo D'Agostino, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Alessandro Germak, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Fabrizio Mazzoleni, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Danilo Quagliotti, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Giulio Barbato, DISPEA, Politecnico di Torino, Italy

09:30 **Investigation of the Influence of Carrier Frequency or Direct Current Voltage in Force Calibrations (388)**

Daniel Schwind, Gassmann Testing and Metrology, Germany
Torsten Hahn, GTM Gassmann Testing and Metrology GmbH, Germany

TC4 – WORKSHOP ON ADC TESTING - SESSION 1

Co-Chairs: *Vladimir Haasz, Deputy Head of Dept. of Measurement, Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic*
Luca De Vito, Department of Engineering, University of Sannio, Italy

08:30 **Error in the IEEE 1057 Standard Random Noise Test of ADCs (474)**

F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

08:50 **Implementation of High Resolution DAC Test Station: A Contribution to Draft Standard IEEE P1658 (643)**

Aldo Baccigalupi, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II, Italy
Mauro D'Arco, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II, Italy
Annalisa Liccardo, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II, Italy
Michele Vadursi, Università degli Studi di Napoli "Parthenope", Italy

09:10 **A New Approach to the Design of Post-DAC Filters (372)**

Jacek Piskorowski, West Pomeranian University of Technology, Szczecin, Poland
Roman Kaszynski, West Pomeranian University of Technology, Szczecin, Poland
Miguel Angel Gutierrez de Anda, Instituto Nacional de Astrofisica, Optica y Electronica, Mexico
Arturo Sarmiento-Reyes, Instituto Nacional de Astrofísica, Optica y Electronica, Mexico

09:30 **Comparative Analysis of Different Acquisition Techniques Applied to Static and Dynamic Characterization of High Resolution DAC (599)**

Domenico Luca Carnì, University of Calabria, Italy
Domenico Grimaldi, Department of Electronics, Computer and System Sciences University of Calabria, Italy

TC7 – UNCERTAINTY

Co-Chairs: *Roman. Z. Morawski, Warsaw University of Technology, Faculty of Electronics and Information Technology, Institute of Radioelectronics, Poland*
Ivan Frollo, Institute of Measurement Science, Slovak Academy of Sciences, Slovakia

08:30 Modelling of Dynamic Measurements for Uncertainty Analysis by Means of Discretised State-Space Forms (580)

Klaus-Dieter Sommer, Physikalisch-Technische Bundesanstalt (PTB), Germany
Uwe Hanebeck, Universität Karlsruhe, Germany
Michael Krystek, Physikalisch-Technische Bundesanstalt (PTB), Germany
Anna-Lisa Hauswaldt, Physikalisch-Technische Bundesanstalt (PTB), Germany
Albert Weckenmann, Friedrich-Alexander-University Erlangen-Nuremberg, Germany

08:50 Elements of Statistical Decision Making (321)

Kimmo Konkarikoski, Tampere University of Technology / ASE, Finland
Risto Ritala, Tampere University of Technology, Finland

09:10 On-Line Determination of the Measurement Uncertainty of the Stochastic Measurement Method (278)

Ivan Župunski, Faculty of Technical Sciences, Novi Sad, Serbia
Vladimir Vujicic, Faculty of Technical Sciences, Novi Sad, Serbia
Zoran Mitrovic, Faculty of Technical Sciences, Novi Sad, Serbia
Slobodan Milovancev, Faculty of Technical Sciences, Novi Sad, Serbia
Mile Pesaljevic, Faculty of Organizational Sciences, Belgrade, Serbia

09:30 Improvement of Uncertainty by MCMC for Blood Chemical Analysis (41)

Yasuo Iwaki, Chaos Applied Research Office, Japan
Tadao Inmuta, Chaos Applied Research Office, Japan

TC11 – MEETING

Meeting of the Technical Committee

on

Metrological Infrastructures

TC11

TC15 – EXPERIMENTAL MECHANICS

Co-Chairs: *Peter Hessling, SP Technical Research Institute of Sweden, Measurement Technology, Sweden*

08:30 **Experimental Residual Stress Analysis of Welded Ball Valve (11)**

Pavel Macura, VŠB-TU Ostrava, Faculty of Mechanical Engineering, Czech Republic
František Fojtík, VŠB-TU Ostrava, Faculty of Mechanical Engineering, Czech Republic
Radomír Hrnčář, Faculty of Mechanical Engineering, VŠB – TU Ostrava, Czech Republic

08:50 **State-of-the-Art and New Developments of Multi-Degree-of-Freedom Piezoelectric Motors for Experimental Mechanics and Measuring Devices (143)**

Ramutis Bansevicius, Kaunas University of Technology, Lithuania

09:10 **Dynamic Calibration of a Bus (328)**

Pingyu Zhu, Hunan University of Science and Technology, China
Jan Peter Hessling, SP Technical Research Institute of Sweden, Measurement Technology, Sweden
Rongrong Wan, Hunan University of Science and Technology, China

09:30 **Sea Seismometer Coupling on the Sediment (447)**

Xavier Roset, Polytechnic University of Catalonia, SARTI, Spain
Montserrat Carbonell, Polytechnic University of Catalonia, Department of Fluids Mechanics, Spain
Antoni Mànuel, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Spartacus Gomáriz, Polytechnic University of Catalonia, SARTI, Spain

TC20 – Measurement in Civil Engineering

Co-Chairs: *Karim Hariri, TU Braunschweig, Germany*

08:30 Multi-Axes Force Transducer Using the System for Acting Pressure Image Visualisation (477)

J. Volf, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic
P. Novak, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
K. Vitek, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic
M. Novak, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic
J. Vlcek, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic
J. Stastny, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic
R. Neděla, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic

08:50 Surveillance of Steel Fibre Reinforced Concrete Slabs Measured with an Open-Ended Coaxial Probe (633)

Josep M. Torrents, Department of Electronic Engineering (Technical University of Catalonia), Spain
Pablo Juan-García, Department of Electronic Engineering (Technical University of Catalonia), Spain
Oriol Patau, Dept. of Electronic Engineering (Technical University of Catalonia), Spain
Antonio Aguado, Dept. of Construction Engineering (Technical University of Catalonia), Spain

09:10 Measurement of Moisture in Mortar Using a Coplanar Waveguide (525)

Pablo Juan-García, Department of Electronic Engineering (Technical University of Catalonia), Spain
Josep M. Torrents, Department of Electronic Engineering (Technical University of Catalonia), Spain

WORKSHOP ON THE VIM

Co-Chairs: *Luca Mari, Università Cattaneo - LIUC, Italy*
Paul Regtien, University of Twente, Fac. Electrical Engineering, Mathematics and Computer Science, The Netherlands
Franco Pavese, INRIM, Italy

11:00 **Standing on the Shoulders of VIM (207)**

Ludwik Finkelstein, Meaurement and Instrumentation Centre, City University London, United Kingdom

TC3 – DYNAMIC FORCE MEASUREMENT

Co-Chairs: *Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Philippe Averlant, LNE - Laboratoire National de Métrologie et d'Essais, France

11:00 **System Identification of Force Transducers for Dynamic Measurements (39)**

Alfred Link, Physikalisch-Technische Bundesanstalt (PTB), Germany
Bernd Glöckner, Physikalisch-Technische Bundesanstalt (PTB), Germany
Christian Schlegel, Physikalisch-Technische Bundesanstalt (PTB), Germany
Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany
Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany

11:20 **Dynamic Behaviors of Checkweigher with Electromagnetic Force Compensation (184)**

Yuji Yamakawa, Univ. of Tokyo, Japan
Takanori Yamazaki, Oyama National College of Technology, Japan
Junichi Tamura, Anritsu Industrial Solutions Co., Ltd., Japan
Osamu Tanaka, Anritsu Industrial Solutions Co., Ltd., Japan

11:40 **Static and Dynamic Measurement of Force Transducer's Deformation Under Load (317)**

Andre Buß, Physikalisch-Technische Bundesanstalt (PTB), Germany

12:00 **Development of Accurate Weighing System Used Under the Vibration-Like Moving Conditions, Verification of Weghing System with 3 Accelerometers (544)**

Yoshihiro Fujioka, Matsue College of Technology, Japan
Kouta Miyake, Matsue College of Technology, Japan
Jianxin Sun, National Institute of Advanced Industrial Science and Technology (AIST), Japan
Toshiro Ono, professor emeritus at Osaka Prefecture University, Japan

TC4 – WORKSHOP ON ADC TESTING - SESSION 2

Co-Chairs: *Francisco Alegria, Instituto de Telecomunicações, Instituto Superior Técnico, Portugal*
Dominique Dallet, University of Bordeaux - ENSEIRB, IMS Laboratory, France

11:00 **Using Sinusoidal Instead of Triangular Stimulus Signals in the IEEE1057 Standard Random Noise Test of ADCs (475)**

F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

11:20 **Sine Wave Signal Sources for Testing High-Speed High-Resolution A/D Converters (484)**

Vaclav Papez, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Jaroslav Roztocil, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Stanislav Dado, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

11:40 **A 3 Bits Discrete Pure Linear Analog Preprocessing Folding ADC Architecture Based on Cascade Controlled Channels (32)**

Fabio Leccese, "Roma Tre" University, Italy
Michael Magnone, "Roma Tre" University, Italy

12:00 **High-Quality Low-Cost Low-Frequency Filter for ADC Testing (139)**

Vladimir Haasz, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
David Slepicka, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

TC5 – Characterization of Hardness Indenters

Co-Chairs: *Edward Aslayan, Head of the Science Research Department Metrology in Mechanics, Thermodynamics and Construction, "VNIIFTRI", Russia*
Renato Machado, INMETRO/DIMCI/DIMEC, Chefe do Laboratório de Força - LAFOR, Brazil

11:00 Geometric Measurement Comparisons for Rockwell Diamond Indenters (29)

John Song, National Institute of Standards and Technology (NIST), United States of America
Samuel Low, National Institute of Standards and Technology (NIST), United States of America
Alan Zheng, National Institute of Standards and Technology (NIST), United States of America

11:20 Estimation of Uncertainty in Rockwell Hardness Diamond Cone Indenters (551)

Jorge Trota Filho, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Renato Reis Machado, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Sérgio Pinheiro de Oliveira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Cláudio Afonso Koch, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Islei Domingues da Silva, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

11:40 New Possibilities in the Geometrical Calibration of Diamond Indenters (625)

Alessandro Germak, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Claudio Origlia, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

12:00 Progress in the Characterization of the Geometry of Rockwell Diamond Indenters (155)

Gaoliang Dai, Physikalisch-Technische Bundesanstalt (PTB), Germany
Herrmann Konrad, Physikalisch-Technische Bundesanstalt (PTB), Germany
Febo Menelao, Physikalisch-Technische Bundesanstalt (PTB), Germany

TC13 – RESPIRATORY MEASUREMENTS

Co-Chairs: Ireneusz Jablonski, Wroclaw University of Technology, Poland

11:00 A Complex Mathematical Model of the Respiratory System as a Tool for the Metrological Analysis of the Interrupter Technique (501)

Ireneusz Jabłoński, Wrocław University of Technology, Poland
Adam G. Polak, Wrocław University of Technology, Poland
Janusz Mroczka, Wrocław University of Technology, Poland

11:20 Estimation Method for Consumption Energy for Humans in Daily Cycle (344)

Takao Sugimoto, College of Science and Technolog, NIhon University, Japan
Yohsuke Yoshida, Student of graduate school, Science and Technology, Nihon University, Japan
I. Yoshida, Student of graduate school, Science and Technology, Nihon University, Japan

11:40 Quantification of the Respiratory Time-Series Regularity and Complexity Using Approximate Entropy and Sample Entropy (506)

Ireneusz Jabłoński, Electronic and Photonic Metrology, Dep. of Electronics, Wroclaw Univ. of Technology, Poland
Andrzej Czajka, Electronic and Photonic Metrology, Dep. of Electronics, Wroclaw Univ. of Technology, Poland
Janusz Mroczka, Electronic and Photonic Metrology, Dep. of Electronics, Wroclaw Univ. of Technology, Poland

TC15 – MEETING

Meeting of the Technical Committee

on

Experimental Mechanics

TC15

TC20 – MEETING

Meeting of the Technical Committee

on

Measurement Techniques for the Construction Industry

TC20

ROUND TABLE ON THE VIM

Co-Chairs: *Paul Regtien, University of Twente, Fac. Electrical Engineering, Mathematics and Computer Science, The Netherlands*
Luca Mari, Università Cattaneo - LIUC, Italy
Franco Pavese, INRIM, Italy

13:40 **Measurement and Calibration: Considerations Based on the International Vocabulary of Metrology (VIM, 3rd Ed.) and Related Standards (385)**

Roberto Buccianti, CEI – Comitato Elettrotecnico Italiano, Italy
Marco Cibien, UNI – Italian Organization for Standardization, Italy
Luca Mari, Università Cattaneo - LIUC, Italy
Bruno Rebaglia, ITIA - CNR, Italy

14:00 **Accuracy, Trueness, and Precision: Considerations Based on the International Vocabulary of Metrology (VIM, 3rd Ed.) and Related Standards (417)**

Roberto Buccianti, CEI – Comitato Elettrotecnico Italiano, Italy
Marco Cibien, UNI – Italian Organization for Standardization, Italy
Luca Mari, Università Cattaneo - LIUC, Italy
Bruno Rebaglia, ITIA - CNR, Italy

TC3 – FORCE MEASUREMENT DEVICES

Co-Chairs: *Philippe Averlant, LNE - Laboratoire National de Métrologie et d'Essais, France*
Amritlal Sawla, Physikalisch-Technische Bundesanstalt (PTB), Germany

13:40 **Evaluation of Cutting Device with Stroke Enlargemnet Mechanism (108)**

Yoshitaka Morimoto, Kanazawa Institute of Technology, Japan

14:00 **Fibre Bragg Sensors Compared with Electrical Strain Gauges for Use in Force Measurement - Prospects and Potentials (144)**

Thomas Kleckers, Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany

14:20 **Novel High-Resolution Interferometric Materials Testing Device for the Determination of the Viscoelastic Behaviour of High-Tech Plastics (212)**

Michael Kühnel, Ilmenau University of Technology, Germany
Falko Hilbrunner, Ilmenau University of Technology, Germany
Gerd Jäger, Technical University Ilmenau, Germany

14:40 **The Influence of the Force Feed-in System on High-Accuracy Low Force Measurement (331)**

Roland Füßl, Technical University Ilmenau, Germany
Gerd Jäger, Technical University Ilmenau, Germany

15:00 **Material Charactarization for a Terneol-D Based Force Sensor (404)**

Klaus Oppermann, Johannes Kepler University, Institute for Measurement Technology, Austria
Bernhard Zagar, Johannes Kepler University, Institute for Measurement Technology, Austria

TC4 – Radio Frequency, Microwave and Milimiter Wave Measurements

Co-Chairs: *Leo Van Biesen, Vrije Universiteit Brussel, Department ELEC, Belgium*
Fernando Janeiro, Instituto de Telecomunicações, Universidade de Évora, Portugal

13:40 Interference Sensitivity of an Automatic Modulation Classifier (691)

Luca De Vito, Department of Engineering, University of Sannio, Italy
Daniele Domenico Napolitano, TLC Testing Sannio Lab, Italy
Sergio Rapuano, Department of Engineering, University of Sannio, Italy
Maurizio Villanacci, Department of Engineering, University of Sannio, Italy

14:00 Automatic Signal Recognition for a Flexible Spectrum Management (690)

Niclas Björsell, ITB/Electronics, University of Gävle, Sweden
Pasquale Daponte, Dipartimento di Ingegneria - Università degli Studi del Sannio, Italy
Luca De Vito, Dipartimento di Ingegneria - Università degli Studi del Sannio, Italy
Sergio Rapuano, Dipartimento di Ingegneria - Università degli Studi del Sannio, Italy

14:20 Indoor Positioning by Ultra Wide Band Radio Aided Inertial Navigation (164)

Alessio De Angelis, DIEI, University of Perugia, Italy
John-Olof Nilsson, Signal Processing Lab, Royal Institute of Technology (KTH), Stockholm, Sweden
Isaac Skog, Signal Processing Lab, Royal Institute of Technology (KTH), Stockholm, Sweden
Peter Händel, Signal Processing Lab, ACCESS Linnaeus Center, Royal Institute of Technology, Sweden
Paolo Carbone, DIEI, University of Perugia, Italy

14:40 Available Measurements in Current WiMAX Networks and Positioning Opportunities (6)

Mussa Bshara, Vrije Universiteit Brussel, Belgium
Leo Van Biesen, Vrije Universiteit Brussel, Belgium

15:00 Measuring Demodulator Imbalance in Radio Frequency Receivers by Tone Test (14)

Peter Händel, Signal Processing Lab, ACCESS Linnaeus Center, Royal Institute of Technology, Sweden
Per Zetterberg, Signal Processing Lab, ACCESS Linnaeus Center, Royal Institute of Technology, Sweden

15:20 Period Estimation of the Modulated Signal (289)

Dusan Agrez, Faculty of Electrical Engineering, University of Ljubljana, Slovenia

TC4 – CALIBRATION, METROLOGY AND STANDARDS

Co-Chairs: *Umberto Pogliano, Istituto Nazionale di Ricerca Metrologica - INRIM, Italy*
Gelson Rocha, INMETRO, Brazil

13:40 Multi-Range Transformer Bridge for Calibration of Inductance Standards (683)

Andrzej Met, Silesian University of Technology, Poland
Krzysztof Musiol, Silesian University of Technology, Poland
Tadeusz Skubis, Silesian University of Technology, Poland

14:00 Prediction of the Output Voltage of DC Voltage Standards (670)

Damir Ilić, Faculty of Electrical Engineering and Computing (FER), Croatia
Alan Šala, Faculty of Electrical Engineering and Computing (FER), Croatia
Ivan Leniček, Faculty of Electrical Engineering and Computing (FER), Croatia

14:20 Calibration of Capacitance Standards with a Quadrature Bridge (424)

Luca Callegaro, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Vincenzo D'Elia, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Bruno Trinchera, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

14:40 Alternative Power Standard Realization at Radio Frequency (250)

Luciano Brunetti, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Luca Oberto, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Marco Sellone, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

15:00 Traceability Chain of the Capacitance Unit to Quantum Hall Effect at INMETRO - Four-Terminal Coaxial Bridge (97)

Renata Barros e Vasconcellos, Capacitance and Inductance Laboratory - INMETRO, Brazil
Luiz Macoto Ogino, Capacitance and Inductance Laboratory - INMETRO, Brazil

15:20 Calibration of High Accuracy Class Standard Current Transformers (318)

Dragana Naumovic-Vukovic, Electrical Engineering Institute "Nikola Tesla", Serbia
Slobodan Skundric, Electrical Engineering Institute "Nikola Tesla", Serbia
Dragan Kovacevic, Electrical Engineering Institute "Nikola Tesla", Serbia
Srdjan Milosavljevic, Electrical Engineering Institute "Nikola Tesla", Serbia

TC5 – HARDNESS MEASUREMENT, STANDARDS AND APPLICATION

Co-Chairs: *Gunwoong Bahng, Director of the National Center for Standard Reference Data, KRISS, Korea*
Febo Menelao, Physikalisch-Technische Bundesanstalt (PTB), Germany

13:40 **Study of the Best Measurement Capability in Rockwell Scale at the Brazilian NMI INMETRO's Primary Hardness Standard Machine (548)**

Jorge Trota Filho, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Sérgio Pinheiro de Oliveira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Islei Domingues da Silva, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Renato Reis Machado, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Cláudio Afonso Koch, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

14:00 **Establishment of Brinell and Vickers Hardness Scales at UME (607)**

Cihan Kuzu, TUBITAK UME (National Metrology Institute), Turkey

14:20 **Accuracy of Standard Blocks for Hardness and Uncertainty of Hardness (50)**

Takashi Yamamoto, Yamamoto Scientific Tool Laboratory, Japan
Masayuki Yamamoto, Yamamoto Scientific Tool Laboratory, Japan
Kensuke Miyahara, National Research Institute for Metals, Japan

14:40 **Vibration Effect on Rockwell Scale C Hardness Measurement (5)**

Tassanai Sanponpute, National Institute of Metrology, Thailand
Apichaya Meesaplak, National Institute of Metrology, Thailand

15:00 **A Contact Point Detection for Indentation Test of Low-k Film (420)**

Koichiro Hattori, National Metrology Institute of Japan, AIST, Japan
Yutaka Seino, National Metrology Institute of Japan, AIST, Japan
Takashi Usuda, AIST/NMIJ, Japan

15:20 **Influencing Parameters of Equivalent Indentation Test (51)**

Takashi Yamamoto, Yamamoto Scientific Tool Laboratory, Japan
Masayuki Yamamoto, Yamamoto Scientific Tool Laboratory, Japan
Kensuke Miyahara, National Research Institute for Metals, Japan
Tatsuya Ishibashi, Niigata University, Japan

TC10 – TECHNICAL DIAGNOSTICS 2

Co-Chairs: Marcantonio Catelani, University of Florence, Italy

13:40 Measurements of Acoustic Emission Induced by Partial Discharges in Foil-Based Capacitors for Their Quality Assessment (166)

Kazimierz Józwiak, ZPR Miflex S.A., Poland
Marek Olesz, Faculty of Electrical and Control Engineering, Gdańsk University of Technology, Poland
Janusz Smulko, Faculty of Electronics, Telecommunications and Informatics, Gdańsk Univ. of Technology, Poland

14:00 Single Event Upset (SEU): Diagnostic and Error Correction System for Avioncs Device (442)

Lorenzo Ciani, University of Florence, Department of Electronics and Telecommunications, Italy
Marcantonio Catelani, University of Florence, Department of Electronics and Telecommunications, Italy
Lorenzo Veltroni, Sirio Panel S.p.A, Italy

14:20 Comparison Between Thermal Performance of Silver Conductive Adhesive and Sn-Ag-Cu Solder Joints in a Medical Ultrasound Array Transducer (445)

Marcantonio Catelani, University of Florence, Department of Electronics and Telecommunications, Italy
Valeria L Scarano, University of Florence, Italy
Francesco Bertocci, University of Florence, Italy
Roberto Singuaroli, University of Florence, Italy

14:40 Primary Calibration of Acoustic Emission Sensors (512)

Jiri Keprt, Brno University of Technology, Czech Republic
Petr Beneš, Brno University of Technology, Czech Republic

15:00 Identification of Liquid Boiling by Acoustic Emission (536)

Petr Beneš, Brno University of Technology, Czech Republic
Miroslav Uher, Brno University of Technology, Czech Republic

TC19 – MEETING

Meeting of the Technical Committee

on

Environmental Measurements

TC19

TC2 – FIBER OPTICS

Co-Chairs: *Tilo Pfeifer, RWTH Aachen University, Germany*
Yasuhiro Takaya, Department of Mechanical Engineering, Graduate School of Engineering, Osaka University, Japan

16:20 Novel Fiber Optic Sensor Based on in-Line Core-Cladding Intermodal Interferometer and Photonic Crystal Fiber (453)

Wojtek Bock, University of Quebec en Outaouais, Canada
Tinko Eftimov, Plovdiv University "P. Hilendarski", Bulgaria
Predrag Mikulic, University of Quebec en Outaouais, Canada
Jiahua Chen, University of Quebec en Outaouais, Canada

16:40 Measurement of Roundness and Run-Out with Distributed Fiber-Optics Sensors (515)

Robert Schmitt, Fraunhofer Institute for Production Technology IPT, Germany
Niels König, Fraunhofer Institute for Production Technology IPT, Germany
Guilherme Francisco Mallmann, Fraunhofer Institute for Production Technology IPT, Germany
Frank Depiereux, fionec GmbH, Germany

17:00 Measurement of Radiation Effects on Active and Passive Optical Fiber Components (46)

Dan Sporea, National Institute for Laser, Plasma and Radiation Physics, Romania
Adelina Sporea, National Institute for Laser, Plasma and Radiation Physics, Romania
Constantin Oproiu, National Institute for Laser, Plasma and Radiation Physics, Romania
Rodica Georgescu, National Institute for Physics and Nuclear Engineering "Horia Hulubei", Romania
Ion Vata, National Institute for Physics and Nuclear Engineering "Horia Hulubei", Romania

17:20 Study of Time Fluctuation of Polarization of Polarization Preserving Fibers (70)

Filip Dvorak, Faculty of Military Technologies, University of Defence Brno, Czech Republic
Jan Maschke, Faculty of Military Technologies, University of Defence Brno, Czech Republic
Cestmir Vlcek, Faculty of Military Technologies, University of Defence Brno, Czech Republic

17:40 Dynamically Tunable Birefringence in Photonic Liquid Crystal Fibers (695)

Tomasz R. Woliński, Faculty of Physics, Warsaw University of Technology, Poland
Sławomir Ertman, Faculty of Physics, Warsaw University of Technology, Poland
Marzena Tefelska, Faculty of Physics, Warsaw University of Technology, Poland
Piotr Lesiak, Faculty of Physics, Warsaw University of Technology, Poland
Andrzej W. Domański, Faculty of Physics, Warsaw University of Technology, Poland
Roman Dąbrowski, Military University of Technology, Poland
Edward Nowinowski-Kruszelnicki, Military University of Technology, Poland

18:00 Optimization of the Fiber-Opitc Fabry-Perot Interferometer Construction (364)

M. Jedrzejewska-Szczerska, Dep. of Optoelectronics and Electronics Systems, Gdańsk Univ. of Technology, Poland
Ryszard Hypszer, Dep. of Optoelectronics and Electronics Systems, Gdańsk Univ. of Technology, Poland
Bogdan B. Kosmowski, Dep. of Optoelectronics and Electronics Systems, Gdańsk Univ. of Technology, Poland

TC4 – MEASUREMENT FOR SYSTEM IDENTIFICATION AND CONTROL

Co-Chairs: Pedro M. Ramos, Instituto de Telecomunicações, Instituto Superior Técnico, Portugal

16:20 Hybrid Neural Network System for Electric Load Forecasting of Telecomunication Station (56)

Maurizio Caciotta, Roma Tre University, Italy
Sabino Giarnetti, Roma Tre University, Italy
Fabio Leccese, Roma Tre University, Italy

16:40 Electrical Impedance Measurement Using Voltage/Current Pulse Excitation (277)

Abraham Mejía-Aguilar, Universitat Politècnica de Catalunya (UPC), Spain
Ramon Pallàs-Areny, Universitat Politècnica de Catalunya (UPC), Spain

17:00 High-Accuracy Electrical Measurements Using Fractional Delay and PCA (133)

Renata Barros e Vasconcellos, Capacitance and Inductance Laboratory - INMETRO, Brazil
Marcello Luiz Rodrigues de Campos, UFRJ, Brazil

17:20 Permittivity Measurement and Anisotropy Evaluation of Dielectric Materials at Millimeter-Waves (153)

Carlos A. Fernandes, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Jorge R. Costa, Instituto de Telecomunicações, ISCTE, Portugal

17:40 The New Configuration of Measure PCB Electric Permittivity Using the Ring Resonator (497)

Victor F. M. B. Melo, Federal University of Campina Grande, CEEI/LEMA, Brazil
Adaildo G D'Assunção Jr, Federal University of Campina Grande, CEEI/LEMA, Brazil
Alfredo Gomes Neto, CEFET-PB/GTMA, Brazil
Raimundo C. S. Freire, Universidade Federal de Campina Grande, Brazil
Glauco Fontgalland, Federal University of Campina Grande, CEEI/LEMA, Brazil

18:00 Characterizing Magnetic Materials Using Virtual Instrumentation (253)

Gopal Mahesh, SAMEER- Centre for Electromagnetics, India
Boby George, Graz University of Technology, Austria
V. Jayashankar, Dept. of Electrical Engineering, Indian Institute of Technology Madras, India
V. Jagadeesh Kumar, Dept. of Electrical Engineering, Indian Institute of Technology Madras, India

TC4 – SENSORS AND TRANSDUCERS

Co-Chairs: *Sergey Yurish, Universitat Oberta de Catalunya (UOC), Internet Interdisciplinary Institute (IN3), Spain*
Bernardo Tellini, University of Pisa, Department of Electrical Systems and Automation, Italy

16:20 Algorithms and Circuits for Low Power Secured Sensor Networks with Asymetric Computational Resources (665)

Tomasz Adamskl, Warsaw University of Technology, Institute of Electronic Systems, Poland
Wiesław Winiecki, Warsaw University of Technology, Institute of Radioelectronics, Poland
Jakub Olszyna, Warsaw University of Technology, Institute of Radioelectronics, Poland

16:40 Temperature and Frequency Dependence of Precision Current Transformer Based on Rogowski Coils (658)

Luka Ferković, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia
Damir Ilić, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia
Kristina Ferković, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

17:00 Electromagnetic Gauge of Tube Inner Radius Compensated for Material Properties and Coil Radial Offset (464)

Darko Vasić, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
Silvano Perković, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
Vedran Bilas, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia

17:20 Non-Contact, Short Distance Measuring System for Wide Applications (90)

Sergey Yurish, Technical University of Catalonia (UPC Barcelona), Spain

17:40 Virtual Capacitance Meter Based on Impedance Modulus Measurement (686)

Artur Skórkowski, Silesian Univ. of Technology, Institute of Measurement Science, Electronics and Control, Poland
Adam W. Cichy, Silesian Univ. of Technology, Institute of Measurement Science, Electronics and Control, Poland

18:00 Measurement of Eddy Current Transients in Fast-Cycled Linac Quadrupole Magnets at CERN (384)

Giancarlo Golluccio, CERN European Organization for Nuclear Research, Geneva, Switzerland
Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Marco Buzio, Dept. of Technology, Group of Magnets Superconductors Cryostats, CERN, Geneva, Switzerland

TC7 – FOUNDATIONS

Co-Chairs: *Eric Benoit, LISTIC - Universite de Savoie, France*
Giovanni Rossi, Università degli Studi di Genova - DIMEC, Italy

16:20 **Measurement Science - An Examination of Its Current State and Lines of Advance (26)**

Ludwik Finkelstein, Meaurement and Instrumentation Centre, City University London, United Kingdom

16:40 **Software as a Service in Measurement Science and Education (526)**

Dietrich Hofmann, Steinbeis Transferzentrum Qualitaetssicherung und Qualitaetsmesstechnik, Germany
Gerhard Linß, Ilmenau University of Technology, Germany
Olaf Kuehn, Landesamt fuer Mess- und Eichwesen Thueringen, Germany

17:00 **Problems of Terminology Improvement in Metrology (514)**

Roald Taymanov, D. I. Mendeleyev Institute for Metrology, Russia
Ksenia Sapozhnikova, D. I. Mendeleyev Institute for Metrology, Russia

17:20 **Measurement as Information Channel with an Application to Printability (180)**

Marja Mettänen, Tampere University of Technology, Finland
Risto Ritala, Tampere University of Technology, Finland

17:40 **The Portuguese marco of 1499 - the First Travelling Standard Around the World (610)**

António Cruz, Instituto Português da Qualidade, Portugal

18:00 **Joint Scopes Activity the IMEKO and International Organizations of Standardization Technical Committees in Field of Metrology (21)**

Tetyana Gordiyenko, State Enterprise "UkrSREC", Ukraine
Oleh Velychko, Ukrmetrteststandard, Ukraine

TC19 – WATER / ELECTROMAGNETIC

Co-Chairs: *Roland Collay, Club Mesure Rhone-Alpes, France*
Aimé Lay-Ekuakille, University of Salento, Italy

16:20 **STFT - Based Spectral Analysis of Urban Waterworks Leakage Detection (147)**

Aimé Lay-Ekuakille, University of Salento, Italy
Giuseppe Vendramin, University of Salento, Italy
Amerigo Trotta, University of Salento, Italy
Philippe Vanderbemden, University of Liege, Belgium

16:40 **An IEEE1451.X and RFID Compatibility Unit for Water Quality Monitoring (616)**

Octavian Postolache, Instituto de Telecomunicações, Portugal
Pedro Silva Girão, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
J. M. Dias Pereira, LabIM/ESTSetúbal, Polytechnic Institute of Setúbal/Instituto de Telecomunicações, Portugal

17:00 **Radiometric Measurement of Corn Canopy Water Content with a 916 MHz Wireless Sensor Network (646)**

João Carlos Giacomin, Federal University of Lavras, Brazil
Flávio Henrique Vasconcelos, Federal University of Minas Gerais, Brazil
Elson José da Silva, Federal University of Minas Gerais, Brazil

17:20 **Acquisition Signals from Electromagnetic Field-Meters Using Digital Multimeters with Event Logging Mode (370)**

Daniel Belega, Faculty of Electronics and Telecommunications, Politehnica University of Timisoara, Romania
Ciprian Dughir, Faculty of Electronics and Telecommunications, Politehnica University of Timisoara, Romania

17:40 **Analysis of Time-Varying Low-Frequency Magnetic-Field Emitted from the Ship's Inverter-Fed Induction Motor (529)**

Beata Pałczyńska, Department of Marine Telecommunications, Gdynia Maritime University, Poland
Jacek Wyszkowski, Gdynia Maritime University, Poland

TC16 – MEETING

Meeting of the Technical Committee

on

Pressure and Vacuum Measurement

TC16

TC21 – MEETING

Meeting of the Technical Committee

on

Mathematical Tools for Measurements

TC21

TC2 – SPECTROSCOPY

Co-Chairs: *Tilo Pfeifer, RWTH Aachen University, Germany*
Iakyra B. Couceiro, National Institute of Metrology, Standardization and Industrial Quality (INMETRO), Brazil

08:30 Proposal of Imaging-Type 2-Dimensinal Fourier Spectroscopy (64)

Ichirou Ishimaru, Kagawa University, Japan
Takashi Takuma, Kagawa University, Japan
Shinji Yabushita, Kagawa University, Japan
Takeshi Kawajiri, Kagawa University, Japan
Kana Yanogawa, Kagawa University, Japan
Takaki Harada, Kagawa University, Japan
Kazuya Yamamoto, Kagawa University, Japan

08:50 Raman Sensors: Interest and Applications (259)

Marc Fontana, LMOPS, UMR CNRS 7132, University of Metz and Supelec, France
Patrice Bourson, LMOPS, UMR CNRS 7132, University of Metz and Supelec, France
Ivana Durickovic, LMOPS, UMR CNRS 7132, University of Metz and Supelec, France
Julien Martin, LMOPS, UMR CNRS 7132, University of Metz and Supelec, France
Jean-Marie Chassot, LMOPS, UMR CNRS 7132, University of Metz and Supelec, France
Mario Marcherri, Laboratoire Régional des Ponts et Chaussées, France
Rémy Claverie, Laboratoire Régional des Ponts et Chaussées, France

09:10 Precise Measurement of Thickness Distribution of Non-Uniform Thin Films by Imaging Spectroscopic Reflectometry (378)

Miloslav Ohlidal, Institute of Physical Engineering, Brno University of Technology, Czech Republic
Ivan Ohlidal, Masaryk University Brno, Czech Republic
Petr Klapetek, Czech Metrology Institute, Czech Republic
D. Nečas, Department of Physical Electronics, Faculty of Science, Masaryk University, Czech Republic

09:30 Fundamental Verification for 2-Dimensional Super-Resolution Optical Inspection for Semiconductor Defects by Using Standing Wave Illumination Shift (354)

Ryota Kudo, The University of Tokyo, Japan
Shin Usuki, Shizuoka University, Japan
Satoru Takahashi, The University of Tokyo, Japan
Kiyoshi Takamasu, The University of Tokyo, Japan

TC3 – CALIBRATION AND COMPARISON FO FORCE AND TORQUE MACHINES

Co-Chairs: *Amritlal Sawla, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Andy Knott, National Physical Laboratory, United Kingdom

08:30 Calibration of Hydraulic Force Machines – Requirements, Concepts, Problems, Solutions (24)

Boris Katz, P. K. Calibration & Consulting Labs, Israel
Peter Kornhauser, P. K. Calibration & Consulting Labs, Israel
Shlomi Bitas, Beton Daruch, Israel

08:50 Application of a Loading Frame Structure to a Force Comparator Referring to the Tuning Fork Type Force Transducer (240)

Toshiyuki Hayashi, National Metrology Institute of Japan, AIST, Japan
Yoshihisa Katase, National Metrology Institute of Japan, AIST, Japan
Kazunaga Ueda, National Metrology Institute of Japan, AIST, Japan
Naoya Shinozaki, Shinko Denshi Co., Ltd., Japan
Hiroshi Suzawa, Shinko Denshi Co., Ltd., Japan

09:10 A Comparative Verification of Force Calibration Machines Used by an Accredited Laboratory (255)

Carlo Ferrero, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Adelina Leka, Servizio Italiano di Taratura, Italy

09:30 UK Torque Intercomparison - 2007 (52)

Andy Robinson, National Physical Laboratory, United Kingdom
Andy Knott, National Physical Laboratory, United Kingdom

TC4 – WORKSHOP ON ADC TESTING - SESSION 3

Co-Chairs: *Pasquale Daponte, Department of Engineering, University of Sannio, Italy*
Jan Saliga, Technical University of Kosice, Slovak Republic

08:30 Static Characterizations of Analog to Digital Converter (138)

Patrick Espel, LNE Laboratoire National de Métrologie et d'Essais, France
Andre Poletaeff, LNE Laboratoire National de Métrologie et d'Essais, France

08:50 Virtual Testing Method for Static ADC Non-Linearity – RSD Cyclic A/D Converter Case (174)

Ondřej Šubrt, ASICentrum/Faculty of Electrical Engineering CTU in Prague, Circuit Theory Dept., Czech Republic
Miloslav Kubař, ASICentrum/Faculty of Electrical Engineering CTU in Prague, Microelectronics Dept., Czech Republic
Pravoslav Martinek, CTU in Prague, Faculty of Electrical Engineering, Circuit Theory Dept., Czech Republic
Jiří Jakovenko, CTU in Prague, Faculty of Electrical Engineering, Microelectronics Dept., Czech Republic

09:10 Statistical Analysis of the Word Error Rate Measurement in Analog-to-Digital Converters (204)

Marcantonio Catelani, University of Florence, Department of Electronics and Telecommunications, Italy
Andrea Zanobini, University of Florence, Department of Electronics and Telecommunications, Italy
Lorenzo Ciani, University of Florence, Department of Electronics and Telecommunications, Italy

09:30 ADC Functional Testing Using Artificial Immune Systems (483)

Cleonilson Protásio de Souza, Federal Institute of Maranhão, Brazil
Cláudio Leão Torres, Federal Institute of Maranhão, Brazil
Raimundo C. S. Freire, Federal University of Campina Grande, Brazil
Francisco M. de Assis, Federal University of Campina Grande, Brazil

TC14 – Measurement of Form Deviation

Co-Chairs: Yasuhiro Takaya, Department of Mechanical Engineering, Graduate School of Engineering, Osaka University, Japan

08:30 Roundness Measurement Capability and Traceability at NIMT (36)

Samana Piengbangyang, National Institute of Metrology, Thailand
Thammarat Somthong, National Institute of Metrology, Thailand
Jariya Buajarern, National Institute of Metrology, Thailand
Anusorn Tonmueanwai, National Institute of Metrology, Thailand

08:50 The Bird-Cage Method Used for Measuring Cylindricity - A Problem of Optimal Profile Matching (150)

Dariusz Janecki, Kielce University of Technology, Poland
Jarosław Zwierzchowski, Kielce University of Technology, Poland

09:10 Laser Doppler Distance Sensor for Fast Shape Measurements at Rotating Objects (383)

Jürgen Czarske, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany
Thorsten Pfister, TU Dresden, Professur Mess- und Prüftechnik, Germany
Lars Büttner, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany

09:30 Minimization of the Uneven Sampling Effects on Evaluating Roundness with Coordinate Measuring Machines (639)

Francisco Augusto Arenhart, Universidade Federal de Santa Catarina, Brazil
Gustavo Daniel Donatelli, Fundação CERTI, Brazil
Mauricio de Campos Porath, Fundação CERTI, Brazil

TC18 – MEETING

Meeting of the Technical Committee

on

Measurement of Human Functions

TC18

TC22 – MEETING

Meeting of the Technical Committee

on

Vibration Measurement

TC22

TC1 – Organisational Aspects of Metrology Education

Co-Chairs: *Susanne Toepfer, Carl Zeiss AG, Germany*
Dietrich Hofmann, Technology- and Innovation Park Jena GmbH, Germany

11:00 **Doctoral Degree Study of Measurement and Instrumentation in the Czech Republic (140)**

Vladimir Haasz, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

11:20 **Development of User Group Specific Training Concepts for Metrology in Industrial Application (422)**

Albert Weckenmann, Friedrich-Alexander-University Erlangen-Nuremberg, Germany
Teresa Werner, Friedrich-Alexander-University Erlangen-Nuremberg, Germany

11:40 **Metrology Education in the Curriculum of the Accredited Bachelor in Engineering Programme of the "Vrije Universiteit Brussel" (564)**

Leo Van Biesen, Vrije Universiteit Brussel, Belgium

ROUND TABLE ON CONTINUOUS AND DYNAMIC CALIBRATION IN FORCE AND TORQUE

Co-Chairs: *Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Yon-Kyu Park, Force Measurement & Evaluation Lab., KRISS, Korea

TC4 – WORKSHOP ON ADC TESTING - SESSION 4

Co-Chairs: *Linus Michaeli, Technical University of Kosice, Slovak Republic*
Sergio Rapuano, Department of Engineering, University of Sannio, Italy

11:00 Economical Test of Internal ADC in Embedded Systems (15)

Josef Vedral, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Jakub Svatoš, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Pavel Fexa, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

11:20 Signature Testing of Analog-to-Digital Converters (552)

Vadim Geurkov, Ryerson University, Canada
Valeri Kirischian, Ryerson University, Canada
Lev Kirischian, Ryerson University, Canada

11:40 Bias in ADC Terminal Based Gain and Offset Estimation Using the Histogram Method (472)

F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

12:00 Advanced ADC Testing by Multiexponential Stimuli (191)

Linus Michaeli, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Jan Saliga, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Michal Sakmar, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Jan Busa, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia

TC7 – APPLICATIONS

Co-Chairs: *Gerhard Linß, TU Ilmenau, Germany*
Kimmo Konkarikoski, Tampere University of Technology / Automation Science and Engineering, Finland

11:00 A Least Squares Problem in Gamma Ray Transmission Tomography (654)

Carlos C. Dantas, Departamento de Energia Nuclear DEN - Universidade Federal de Pernambuco UFPE, Brazil
Bruna G. M. Araújo, Departamento de Energia Nuclear DEN - Universidade Federal de Pernambuco UFPE, Brazil
Valdemir A. dos Santos, Departamento de Química - Universidade Católica de Pernambuco, Brazil
Christine L. L. Finkler, Departamento de Química - Universidade Católica de Pernambuco, Brazil
Eric F. de Oliveira, Centro de Informática da Universidade Federal de Pernambuco CIN / UFPE, Brazil
Silvio B. Melo, Centro de Informática -Universidade Federal de Pernambuco, Brazil
M. Graça dos Santos, Instituto Superior Técnico, Portugal

11:20 Electromagnetic Phantom Design for Measurement and Imaging Quality Testing Using NMR Imaging Methods (260)

Ivan Frollo, Institute of Measurement Science, SAS, Bratislava, Slovakia
Peter Andris, Institute of Measurement Science, SAS, Bratislava, Slovakia
Jiri Přibil, Institute of Measurement Science, SAS, Bratislava, Slovakia
Lubomir Vojtisek, Institute of Measurement Science, SAS, Bratislava, Slovakia
Zuzana Holubekova, Institute of Measurement Science, SAS, Bratislava, Slovakia

11:40 Estimation of Basis Weight of Paper: Light Transmittance Measurements over Eight Orders of Magnitude of Spatial Scale (132)

Jukka-Pekka Raunio, Tampere University of Technology, Finland
Risto Ritala, Tampere University of Technology, Finland

12:00 Linear Fitting Procedures Applied to Refractometry of Aqueous Solutions (560)

Olivier Pellegrino, Instituto Português da Qualidade, Portugal
Andreia Furtado, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal

TC13 – MEETING

Meeting of the Technical Committee

on

Measurements in Biology and Medicine

TC13

TC18 – QUALITY MEASUREMENT AND EVALUATION

Co-Chairs: *Timo Salpavaara, Department of Automation Science and Engineering, Tampere University of Technology, Finland*
Boby George, Institute of Electrical Measurement and Measurement Signal Processing, Graz University of Technology, Austria.

11:00 A Method for Seat Occupancy Detection for Automobile Seats with Integrated Heating Elements (251)

Boby George, Graz University of Technology, Austria
Hubert Zangl, Graz University of Technology, Austria
Thomas Bretterklieber, Graz University of Technology, Austria
Georg Brasseur, Graz University of Technology, Austria

11:20 Wireless Insole Sensor System for Plantar Force Measurements During Sport Events (283)

Timo Salpavaara, Tampere University of Technology, Finland
Jarmo Verho, Tampere University of Technology, Finland
Jukka Lekkala, Tampere University of Technology, Finland
Jouko Halttunen, Tampere University of Technology, Finland

11:40 Model Developent to Predict Perceived Degree of Naturalness (395)

Agnieszka Bialek, National Physical Laboratory, United Kingdom
Alistair B. Forbes, National Physical Laboratory, United Kingdom
Teresa Goodman, National Physical Laboratory, United Kingdom
Ruth Montgomery, National Physical Laboratoty, United Kingdom
Martin Rides, National Physical Laboratory, United Kingdom
Gerie van der Heijden, Biometris, Wageningen University, The Netherlands
Hilko van der Heijden, Biometris, Wageningen University, The Netherlands
Gerrit Polder, Biometris, Wageningen University, The Netherlands
Krista Overvliet, Parc Científic de Barcelona, Universitat de Barcelona, Spain

12:00 Attempts to Diminish Uncertainty in Quality Evaluation of Compressed Video by Human Audience (659)

Anna Ostaszewska, Warsaw University of Technology, Poland
Sabina Żebrowska-Łucyk, Warsaw University of Technology, Poland

TC4 – POWER AND ENERGY MEASUREMENTS

Co-Chairs: Mario Savino, Dean of Engineering Faculty, Politecnico di Bari, Italy

13:40 On the Calibration of Reactive Energy Meters Under Non Sinusoidal Conditions (688)

Antonio Cataliotti, Dep. of Electrical, Electronic and Telecommunication Engineering, Univ. di Palermo, Italy
Valentina Cosentino, Dep. of Electrical, Electronic and Telecommunication Engineering, Univ. di Palermo, Italy
Alessandro Lipari, Dep. of Electrical, Electronic and Telecommunication Engineering, Univ. di Palermo, Italy
Salvatore Nuccio, Dep. of Electrical, Electronic and Telecommunication Engineering, Univ. di Palermo, Italy

14:00 Accurate Digital Three-Phase Electricity Meter and Generator (185)

Branislav Lojko, FEI, Slovak University of Technology, Bratislava, Slovakia
Jan Hribik, FEI, Slovak University of Technology, Bratislava, Slovakia
Peter Fuchs, FEI, Slovak University of Technology, Bratislava, Slovakia
Miloslav Hruskovic, FEI, Slovak University of Technology, Bratislava, Slovakia

14:20 Power Performance Evaluation of an Electric Home Fan with TRIAC-Based Automatic Speed Control System (664)

Inácio Bianchi, São Paulo State University, Department of Electrical Engineering, Brazil
Paulo Magalhães Filho, São Paulo State University, Department of Energy, Brazil
José Pinto Ferreira Sobrinho, São Paulo State University, Department of Energy, Brazil

14:40 A New Approach to Demand Measurement over the Electricity Distribution Network (672)

José Santo Guiscafré Panaro, UFF – Universidade Federal Fluminense, Brazil

15:00 The Dependence of the Inrush Current of a Transformer Upon Switching off/on Phases (380)

Andrzej Dobrogowski, Poznan University of Technology, Telecommunication Systems and Optoelectronics, Poland
Przemyslaw Lisowski, Poznan University of Technology, Telecommunication Systems and Optoelectronics, Poland

TC7 – METHODOLOGY

Co-Chairs: *Klaus-Dieter Sommer, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Dietrich Hofmann, Technology- and Innovation Park Jena GmbH, Germany

13:40 Reveal and Systematization of Quantities Transformation Methods (192)

Vladimir Kneller, Institute of Control Sciences of Russian Academy of Sciences, Russia

14:00 Properties of Fuzzy Nominal Scales (540)

Eric Benoit, LISTIC - Universite de Savoie, France

14:20 Measurement in a Point Versus Measurement over an Interval (480)

Vladimir Vujicic, Faculty of Technical Sciences, Novi Sad, Serbia
Ivan Župunski, Faculty of Technical Sciences, Novi Sad, Serbia
Zoran Mitrovic, Faculty of Technical Sciences, Novi Sad, Serbia
M. Sokola, School of Professional Higher Technical Education, Novi Sad, Serbia

14:40 Some Comments on Reference Data Set Generation in Passing (593)

Halina Nieciag, The Institute of Advanced Manufacturing Technology, Poland
Zbigniew Chuchro, The Institute of Advanced Manufacturing Technology, Poland

15:00 Closed-Form Equations to Design Single Sampling Plans for Isolated Lots (341)

Giuseppe Cavone, Polytechnic of Bari, Italy
Laura Fabbiano, Polytechnic of Bari, Italy
Nicola Giaquinto, Polytechnic of Bari, Italy

TC12 – MEETING

Meeting of the Technical Committee

on

Temperature and Thermal Measurements

TC12

TC16 – PRESSURE METROLOGY

Co-Chairs: *Tokihiko Kobata, National Metrology Institute of Japan, AIST, Japan*
Marcello Caravaggio, SCANDURA & FEM, Italy

13:40 The CEM Laser Interferometer Mercury Manobarometer (242)

Salustiano Ruiz, Centro Español de Metrología, Spain
Maria Nieves Medina, Centro Español de Metrología, Spain
Roberto Calvo, Fundación Tekniker, Spain

14:00 The Calibration of a Differential Pressure Transducer at the Operating Pressure with a Pressure Amplifier (494)

L. A. Di Salvio, Petrobras, UN-BC/ATP-C/ISUP, Brazil
A. F. Orlando, Orlando, A.F., DEM-PósMQI, Brazil

14:20 Enhancement of the Measurement Characteristics of Pressure Transducers Up to 15000 bar Through Monolithic Measuring Design and Foil Strain Gages (248)

Markus Haller, Hottinger Baldwin Messtechnik GmbH, Germany
Wolfgang Viel, Hottinger Baldwin Messtechnik GmbH, Germany
André Schäfer, Hottinger Baldwin Messtechnik GmbH, Germany

14:40 Development of Dynamic High Pressure Seal Up to 500 MPa (235)

In-Mook Choi, KRISS, Korea
Sam-Yong Woo, KRISS, Korea
Han-Wook Song, KRISS, Korea
Boo-Shik Kim, KRISS, Korea
Ho-Young Lee, KRISS, Korea

15:00 Development of Weight Handling Device for APMP Absolute Pressure Intercomparison, APMP.M.P-K9 (309)

Sam-Yong Woo, KRISS, Korea
In-Mook Choi, KRISS, Korea
Han-Wook Song, KRISS, Korea
Boo-Shik Kim, KRISS, Korea

15:20 Experimental Evaluation of the Clamping Pressure Distribution in a PEM Fuel Cell Using Matrix-Based Piezoresistive Thin-Film Sensors (219)

Roberto Montanini, University of Messina, Italy
Gaetano Squadrito, CNR Institute for Transformation and Storage of Energy, Italy
Giosue Giacoppo, CNR Institute for Transformation and Storage of Energy, Italy

TC18 – MEASUREMENT AND MODELLING OF HUMAN MOVEMENTS

Co-Chairs: *Yasuharu Koike, Precision & Intelligence Laboratory, Tokyo Institute of Technology, Japan*
Koji Ito, Department of Computational Intelligence and System Science, Tokyo Institute of Technology, Japan

13:40 The Dynamic Optimization of STS Movement (198)

Hiroshi Yamasaki, Tokyo Institute of Technology, Japan
Hiroyuki Kambara, Tokyo Institute of Technology, Japan
Yasuharu Koike, Tokyo Institute of Technology, Japan

14:00 Coordination of Focal Arm Movements and Postural Stabilization in Whole Body Reaching: A Computational Model (221)

Jacopo Zenzeri, Neurolab, DIST, via Opera Pia 13, University of Genova, Italy
Vishwanathan Mohan, Italian Institute of Technology, Italy
Pietro Morasso, University of Genova - DIST, Italy

14:20 Muscular Sensation Induce Event Related Desynchronization (ERD) on Foot Motor Area (308)

Mitsuru Takahashi, Dep. of Computational Intelligence and System Science, Tokyo Institute of Technology, Japan
Manabu Gouko, Dep. of Computational Intelligence and System Science, Tokyo Institute of Technology, Japan
Koji Ito, Dep. of Computational Intelligence and System Science, Tokyo Institute of Technology, Japan

14:40 Measurement Set Up for the Experimental Study of the Dynamics of Hopping (432)

Francesco Crenna, Università degli Studi di Genova - DIMEC, Italy
Giovanni Battista Rossi, Università degli Studi di Genova - DIMEC, Italy
Luca Bovio, Università degli Studi di Genova - DIMEC, Italy

15:00 Definition of a Protocol for Geometric and Kinematic Measurements to Assess Wheelchair Propulsion (568)

Angelo Basteris, Department of Informatics, Systems and Telematics (University of Genova), Italy
Gabriele Vigo, Physical Medicine and Rehabilitation Unit (Hospital 'S. Corona'), Pietra Ligure, Italy
Carmelo Lentino, Physical Medicine and Rehabilitation Unit (Hospital 'S. Corona'), Pietra Ligure, Italy
Vittorio Sanguineti, Department of Informatics, Systems and Telematics (University of Genova), Italy

15:20 Reaction Time Measurement Applied to Multimodal Human Control Modeling (675)

Edwardo Arata Y. Murakami, National Institute of Advanced Industrial Science and Technology (AIST), Japan

TC22 – TECHNOLOGY AND UNCERTAINTY

Co-Chairs: *Thomas Bruns, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Eyüp Bilgiç, Tübitak Ulusal Metroloji Enstitüsü (UME), Turkey

13:40 Estimation of Uncertainty Contribution of Transverse Sensitivity and Vibration Distribution on Primary Accelerometer Calibration (95)

Akihiro Oota, National Metrology Institute of Japan, AIST, Japan
Takashi Usuda, National Metrology Institute of Japan, AIST, Japan
Hideaki Nozato, National Metrology Institute of Japan, AIST, Japan
Tamio Ishigami, National Metrology Institute of Japan, AIST, Japan
Tsuneo Kikuchi, National Metrology Institute of Japan, AIST, Japan

14:00 ISO 16063-11: Uncertainties in Primary Vibration Calibration by Laser Interferometry. Reference Planes and Transverse Motion (295)

Torben Licht, Bruel & Kjear, Denmark
Sven Erik Salbøl, DPLA and Brüel & Kjaer S&V, Denmark

14:20 Two Shock Machine Simulations Prestudy for Primary Low Level Shock Calibration System (310)

Jiun-Kai Chen, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Chao-Jung Chen, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Yeu-Jong Huang, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Hsin-Chia Ho, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan

14:40 Real-Time Dynamic Error Compensation of Accelerometers by Digital Filtering (58)

Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany
Sascha Eichstädt, Physikalisch-Technische Bundesanstalt (PTB), Germany
Alfred Link, Physikalisch-Technische Bundesanstalt (PTB), Germany
Thomas Bruns, Physikalisch-Technische Bundesanstalt (PTB), Germany

15:00 Calibration of Accelerometers Using Parameter Identification – Targeting a Versatile New Standard (118)

Thomas Bruns, Physikalisch-Technische Bundesanstalt (PTB), Germany
Alfred Link, Physikalisch-Technische Bundesanstalt (PTB), Germany
Franko Schmähling, Physikalisch-Technische Bundesanstalt (PTB), Germany
Holger Nicklich, SPEKTRA Schwingungstechnik und Akustik GmbH Dresden, Germany
Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany

15:20 Analysis of Type A Uncertainties in Primary Accelerometer Calibrations Applying the Sine-Approximation Method (421)

Gustavo Ripper, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Ronaldo Dias, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

POSTER SESSION 1 (TC1, TC2, TC3, TC19)

Laboratory of Analog Signal Processing and Digitizing at FEE CTU in Prague (137)

Josef Vedral, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Jakub Svatoš, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Pavel Fexa, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

A Pioneer Metrology Technical Course in the Latin America (224)

Gelson M. Rocha, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
R. P. Landim, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

Internet-Based Remote Control of the Oscilloscope by a Thin Client (403)

Domen Hudoklin, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

A Remote Monitoring System to Improve Educational Activities of Visually Impaired Students (471)

Bruno Andò, DIEES- University of Catania, Italy
Salvatore Baglio, DIEES- University of Catania, Italy
S. La Malfa, Engineering Faculty, D.I.E.E.S. University of Catania, Italy
Nicola Pitrone, Engineering Faculty, D.I.E.E.S. University of Catania, Italy

The Measuring Instrument with Distributed Data Processing (663)

Jakub Bach, Gdynia Technical University, Poland
Romuald Masnicki, Gdynia Technical University, Poland
Janusz Mindykowski, Gdynia Maritime University, Poland

Quantum Well Width as an Uncertainty Source in Electronic Transitions: A Simulated Approach (136)

José Manzoli, IPEN-CNEN/SP, Brazil
Eduardo Moura, IPEN-CNEN/SP, Brazil

PMD Source: A Proposal for a Reference Standard Development (146)

Alexandre Bessa dos Santos, INMETRO – DIMCI/Telecommunication Division, Brazil
Giovanna Borghi, INMETRO – DIMCI/Optical Metrology Division, Brazil
Janaina Ferreira, INMETRO – DIMCI/Telecommunication Division, Brazil
Jean Pierre von der Weid, Center for Telecommunications Studies/PUC-Rio, Brazil

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Ewa Frączek, Electronic and Photonic Metrology, Wrocław University of Technology, Poland
Janusz Mroczka, Wrocław University of Technology, Poland

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Hideo Furuhashi, Aichi Institute of Technology, Japan
Javier Valle Mayorga, Aichi Institute of Technology, Japan
Yoshiyuki Uchida, Aichi Institute of Technology, Japan
Akihiro Kono, Nagoya University, Japan

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Yasuhiro Mizutani, The University of Tokushima, Japan
Yoshiyuki Uehane, Tokyo University of Agriculture and Technology, Japan
Tomohito Kuwagait, Tokyo University of Agriculture and Technology, Japan
Yukitoshi Otani, Tokyo University of Agriculture and Technology, Japan
Norihiro Umeda, Tokyo University of Agriculture and Technology, Japan

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Andrzej Odon, Poznan University of Technology, Poland

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Zaccaria Silvestri, Laboratoire Commun de Metrologie LNE-CNAM, France
Patrick Pinot, Laboratoire Commun de Metrologie LNE-CNAM, France

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Talari Rambabu, Electrical Engineering Department , Jadavpur University, India
Mita Dutta, Electrical Engineering Department, Jadavpur University, India

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Zoltán Zelenka, BEV- Bundesamt für Eich- und Vermessungswesen, Austria

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Adriana Valcu, National Institute of Metrology, Romania
Dumitru Dinu, Romanian Bureau of Legal Metrology, Romania

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Maria Nieves Medina, Centro Español de Metrología, Spain
José Ángel Robles Carbonell, Spanish Metrology Centre (CEM), Spain
Alfonso Lobo Robledo, Spanish Metrology Centre (CEM), Spain

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Luis Omar Becerra, Centro Nacional de Metrología, Mexico
Luis Manuel Peña, Centro Nacional de Metrología, Mexico

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Yon-Kyu Park, KRISS, Korea
Sam Yong Woo, KRISS, Korea

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Sara Lietz, Physikalisch-Technische Bundesanstalt (PTB), Germany
Falk Tegtmeier, Physikalisch-Technische Bundesanstalt (PTB), Germany
Dirk Röske, Physikalisch-Technische Bundesanstalt (PTB), Germany
Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany
Daniel Schwind, Gassmann Testing and Metrology, Germany

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Riadh Hannachi, Laboratoire Commun de Métrologie LNE-CNAM, France
Zaccaria Silvestri, Laboratoire Commun de Métrologie LNE-CNAM, France
Daniel du Colombier, Laboratoire Commun de Métrologie LNE-CNAM, France
Patrick Pinot, Laboratoire Commun de Métrologie LNE-CNAM, France

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Renato Reis Machado, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Cláudio Afonso Koch, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Rafael Soares de Oliveira, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Ana Rosa Martins, Technological Institute of the Catholic University of Rio de Janeiro, Brazil
Carlos Rodrigo Roesler, University Hospital of the Federal University of Santa Catarina, Brazil
Ieda Caminha, National Institute of Technology, Brazil

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Dan Mihai Ştefănescu, Romanian Measurement Society, Romania
Valentin Butoescu, National Institute for Aerospace Research "Elie Carafoli", Bucharest, Romania

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Wang Jian, Mechanics and Acoustics Division, National Institute of Metrology, China
Yao Hong, Mechanics and Acoustics Division, National Institute of Metrology, China
Zhang Yue, Mechanics and Acoustics Division, National Institute of Metrology, China
Cai Changqing, Mechanics and Acoustics Division, National Institute of Metrology, China
Ding Jingan, Mechanics and Acoustics Division, National Institute of Metrology, China

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S. S. K. Titus, Force and Hardness Standard, National Physical Laboratory, India
Kamlesh K. Jain, Force and Hardness Standard, National Physical Laboratory, India
S. K. Dhulkhed, Depart. of Mechanical Engineering, SDM College of Engineering & Technology, India
Poonam Yadav, Force and Hardness Standard, National Physical Laboratory, India

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Jin Wan Chung, KRISS, Korea
Sungjun Lee, KRISS, Korea
Kwang Pyo Kim, KRISS, Korea

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Salvatore Lorefice, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Maria do Céu Ferreira, Portuguese Institute for Quality, Central Laboratory of Metrology - IPQ, Portugal

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Sheroz Khan, Department of ECE (International Islamic University Malaysia), Malaysia
A. H. M. Zahirul Alam, Department of ECE (International Islamic University Malaysia), Malaysia
Zuraidah Zainudin, Department of ECE (International Islamic University Malaysia), Malaysia
Muzna S. Khan, Department of ECE (International Islamic University Malaysia), Malaysia
Shihab Abdel Hameed, Department of ECE (International Islamic University Malaysia), Malaysia
Aisha Hassan Abdalla, Department of ECE (International Islamic University Malaysia), Malaysia
Mohd. Rafiqul Islam, Department of ECE (International Islamic University Malaysia), Malaysia

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Vladimir Fetisov, Ufa State Aviation Technical University, Russia
Olga Melnichuk, Ufa State Aviation Technical University, Russia

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Grzegorz Śmigielski, Szkoła Wyzsza im. Pawła Włodkowica, Institute of Applied Informatics, Poland
Roman Dygdała, Szkoła Wyzsza im. Pawła Włodkowica/Uniw. Kazimierza Wielkiego, Inst. of Mathematics, Poland
Mieczysław Kunz, Uniwersytet Mikołaja Kopernika, Institute of Geography, Poland
Damian Lewandowski, Szkoła Wyzsza im. Pawła Włodkowica, Institute of Applied Informatics, Poland
Krzysztof Stefański, Uniwersytet Mikołaja Kopernika, Collegium Medicum, Poland

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Michal Návorka, Dep. of Tech. and Meas., Fac. of Electrical Engineering, Univ. of West Bohemia, Czech Republic
Olga Tůmová, Dep. of Tech. and Meas., Fac. of Electrical Engineering, Univ. of West Bohemia, Czech Republic

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Nuno Rodrigues, Sondar, Amostragens e Tecnologias do Ar, Lda., Portugal
Paulo Gomes, Sondarlab, Lda., Portugal
Eduardo Fernandes, Sondar, Amostragens e Tecnologias do Ar, Lda., Portugal
Carlos Pedro Ferreira, Sondar, Amostragens e Tecnologias do Ar, Lda., Portugal
João Sampaio, Sondar, Amostragens e Tecnologias do Ar, Lda., Portugal

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Elena Iliescu, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Romania
Sorin Bercea, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Romania
Aurelia Celarel, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Romania
Constantin Cenusa, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Romania

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Ales Hribernik, University of Maribor, Faculty of Mechanical Engineering, Slovenia
Maja Bauman, University of Maribor, Faculty of Mechanical Engineering, Slovenia
Aleksandra Lobnik, University of Maribor, Faculty of Mechanical Engineering, Slovenia

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Ranny Michalski, Acoustic Testing Laboratory - INMETRO / UFRJ, Brazil
Marco Nabuco, Acoustic Testing Laboratory - INMETRO / UFRJ, Brazil
Gustavo Ripper, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

Monitoring of the Soil Status Using Electrical Impedance Spectrometry Method Developed in Project E!3838 of the Europe International Program EUREKA (443)

Jana Parilkova, Faculty of Civil Engineering, Brno University of Technology, Czech Republic
Jaroslav Vesely, Faculty of Civil Engineering, Brno University of Technology, Czech Republic
Jiri Pavlik, GEOtest Brno, Inc., Czech Republic
Radek Stoklasek, Czech Republic

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Ana Madeira, Instituto Português da Qualidade, Portugal
Florbela A. Dias, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal

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Artur Dybko, Warsaw University of Technology, Poland

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Henryk Urzędniczok, Silesian Univ. of Technology, Institute of Measurement Science, Electronics and Control, Poland

Signal Validation in Measurements in Underwater Environment (614)

Wieslaw Kicinski, Nicolaus Copernicus University, Institute of Physics, Poland

Distiction of Landslide by Autonoumous Node in Wireless Sensing Network (648)

Shigeru Takayama, Ritsumeikan University BKC, Japan
Yasutaka Nakajima, Ritsumeikan University BKC, Japan
Riki Ohbayashi, Ritsumeikan University BKC, Japan
Komyo Kariya, Ritsumeikan University BKC, Japan

TC1 – TRAINING SYSTEMS FOR METROLOGY EDUCATION

Co-Chairs: *Paul Regtien, University of Twente, Fac. Electrical Engineering, Mathematics and Computer Science, The Netherlands*
Roman. Z. Morawski, Warsaw University of Technology, Faculty of Electronics and Information Technology, Institute of Radioelectronics, Poland

16:20 A Novel Approach for Teaching Digital Image Processing Based on a New Multi-Scalable Hardware Platform (115)

Maik Rosenberger, Ilmenau University of Technology, Germany
Mathias Schellhorn, Ilmenau University of Technology, Germany
Martin Correns, Ilmenau University of Technology, Germany
Maik Schumann, Ilmenau University of Technology, Germany
Michael Vogel, Ilmenau University of Technology, Germany
Gerhard Linß, Ilmenau University of Technology, Germany

16:40 Demonstrational System for Training in FlexRay Communication (271)

Jan Malinsky, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Petr Kocourek, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

17:00 Development of Remote Controlled Virtual Laboratory (326)

Angela Varadine Szarka, University of Miskolc, Hungary

17:20 Remote Laboratory for FPGA Based Reconfigurable Systems Testing (190)

Milos Drutarovsky, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Jan Saliga, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Linus Michaeli, Technical University of Košice, Faculty of Electrotechnic and Informatics, Slovakia
Ingrid Hroncová, Ixonos Slovakia s.r.o., Slovakia

17:40 A Comprehensive Simulation Software for Teaching Camera Calibration (459)

David Samper, University of Zaragoza, Spain
Jorge Santolaria, University of Zaragoza, Spain
Jorge Juan Pastor, University of Zaragoza, Spain
Juan José Aguilar, University of Zaragoza, Spain

TC2 – LIGHT SOURCES AND DETECTORS

Co-Chairs: *Tilo Pfeifer, RWTH Aachen University, Germany*
José Rebordão, National Institute of Engineering, Technology and Innovation (INETI), Aerospace Laboratory (LAER), Faculdade de Ciências da Universidade de Lisboa, Portugal

16:20 Measurement of Iodine Cell Purity and Absolute Frequency Shifts for Laser Stabilization (638)

Jan Hrabina, Institute of Scientific Instruments, Academy of Sciences of the Czech Republic, Czech Republic
Josef Lazar, Institute of Scientific Instruments, Academy of Sciences of the Czech Republic, Czech Republic
Petr Jedlička, Institute of Scientific Instruments, Academy of Sciences of the Czech Republic, Czech Republic
Ondřej Číp, Institute of Scientific Instruments, Academy of Sciences of the Czech Republic, Czech Republic

16:40 Ultra-Stable Visible Laser Source Based on Comb-Injection Locked DFB for Gauge Block Measurement (299)

Han Young Ryu, KRISS, Korea
Sung Hun Lee, KRISS, Korea
Tae Bong Eom, KRISS, Korea
H. Suh, KRISS, Korea

17:00 Ultra Stable Coherent Sources Based on Injection Locked DFB from a Femtosecond Fiber Laser Comb (300)

Sung Hun Lee, KRISS, Korea
Han Young Ryu, KRISS, Korea
Yong Pyong Kim, Kyung Hee University, Korea
H. Suh, KRISS, Korea

17:20 Towards the Implementation of a Single-Photon Detector Absolute Calibration System with Correlated Photon-Pairs (537)

T. Ferreira da Silva, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
I. B. Couceiro, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
H. P. H. Grieneisen, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Jean Pierre von der Weid, Center for Telecommunications Studies/PUC-Rio, Brazil

17:40 Passive Terahertz Microscopy with a Highly Sensitive Detector (98)

Yusuke Kajihara, The University of Tokyo, Japan
Takeji Ueda, The University of Tokyo, Japan
Patrick Nickels, The University of Tokyo, Japan
Susumu Komiyama, The University of Tokyo, Japan

18:00 Spatial Uniformity of the Silicon Photodiodes for Establishment of Spectral Responsivity Scale (103)

Luciana Alves, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Fabiana Reis, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Miguel Torres, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Giovanna Almeida, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Iakyra Couceiro, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil

TC4 – MEETING

Meeting of the Technical Committee

on

Measurement of Electrical Quantities

TC4

TC12 – PYROMETRY

Co-Chairs: *Francesco Righini, INRIM Istituto Nazionale Ricerca Metrologica, Italy*
Fumihiro Sakuma, Standard Radiation Thermometry Section, Temperature and Humidity Department, National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Industry, Japan

16:20 Temperature Coefficients of Topcon Radiation Thermometers (231)

Fumihiro Sakuma, National Institute of Advanced Industrial Science and Technology, Japan

16:40 Uncertainty Estimation of Size-of-Source Effect Measurement for 650 nm Radiation Thermometers (109)

Fumihiro Sakuma, National Institute of Advanced Industrial Science and Technology, Japan
Laina Ma, National Institute of Advanced Industrial Science and Technology, Japan

17:00 Uncertainty in the Temperature of Silicon Wafers Measured by Radiation Thermometry Based upon a Polarization Technique (304)

Tohru Iuchi, Toyo University, Japan
Atsushi Gogami, School of Engineering, Toyo University, Kawagoe, Japan

17:20 Size of Source Effect of a Transfer Reference Thermometer Suitable for International Comparisons Near to Room Temperature (233)

Yong Shim Yoo, KRISS, Korea
Bong-Hak Kim, KRISS, Korea
Chul-Woung Park, KRISS, Korea
Dong-Hoon Lee, KRISS, Korea
Seung-Nam Park, KRISS, Korea

17:40 Neural Network Based Correction of Infrared Thermal Imager for Short Distance Measurement (86)

Jian Sun, College of Mechatronics Engineering, China Jiliang University, China
Enhui Zheng, College of Mechatronics Engineering, China Jiliang University, China
Le Chen, College of Mechatronics Engineering, China Jiliang University, China
Yanyan Huang, College of Mechatronics Engineering, China Jiliang University, China
Yaqiong Fu, College of Mechatronics Engineering, China Jiliang University, China

TC21 – METROLOGY DATA ANALYSIS

Co-Chairs: *Robert Douglas, National Research Council of Canada - Institute for National Measurement Standards, Canada*
Klaus-Dieter Sommer, Physikalisch-Technische Bundesanstalt (PTB), Germany

16:20 Adjustment of a Network of Fundamental Constants (449)

Alistair B. Forbes, National Physical Laboratory, United Kingdom

16:40 Comparison of Statistical Consistency and Metrological Consistency (500)

Raghu N. Kacker, National Institute of Standards and Technology (NIST), United States of America
Rüdiger Kessel, National Institute of Standards and Technology (NIST), United States of America
Klaus-Dieter Sommer, Physikalisch-Technische Bundesanstalt (PTB), Germany
Xin Bian, National Institute of Metrology, China

17:00 Testing for Outliers Based on Bayes Rule (624)

Giampaolo E. D'Errico, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

17:20 Metrological Insights from International Comparison Data (631)

Alan G Steele, National Research Council of Canada - Institute for National Measurement Standards, Canada
A. Peruzzi, National Research Council of Canada - Institute for National Measurement Standards, Canada
J. E. Decker, National Research Council of Canada - Institute for National Measurement Standards, Canada
R. J. Douglas, National Research Council of Canada - Institute for National Measurement Standards, Canada

17:40 Data Reconciliation and the Singular Value Decomposition (649)

Christos L. Mitsas, Hellenic Institute of Metrology, Greece

TC22 – NEW SYSTEMS AND METHODS

Co-Chairs: *Ian Veldman, NMISA, Metrologist: Acoustics, Ultrasound and Vibration, South Africa*
Gustavo Ripper, INMETRO, Brazil

16:20 Progress in Development of Calibration Systems for Angular Vibration Pickups (200)

Wan-Sup Cheung, Fluid & Acoustics Centre / KRISS, Korea
Torben Licht, Bruel & Kjear, Denmark

16:40 A New System for Comparison Calibration of Vibration Transducers at Low Frequencies (294)

Gustavo Ripper, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Dimas Teixeira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Cauê Ferreira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Ronaldo Dias, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

17:00 Primary Accelerometer Calibration in UME by Sine Approximation Method (381)

Eyüp Bilgiç, TUBITAK UME (National Metrology Institute), Turkey
Enver Sadikeğlu, TUBITAK UME (National Metrology Institute), Turkey
Baki Karaböce, TUBITAK UME (National Metrology Institute), Turkey
Cafer Kirbaş, TUBITAK UME (National Metrology Institute), Turkey
A. Izzet Turan, TUBITAK UME (National Metrology Institute), Turkey

17:20 The Need for Controlled Shocks - A New Type of Shock Exciter Allows to Apply Well Defined Mechanical Shocks (396)

Holger Nicklich, SPEKTRA Schwingungstechnik und Akustik GmbH Dresden, Germany
Martin Brucke, SPEKTRA Schwingungstechnik und Akustik GmbH Dresden, Germany
Michael Mende, SPEKTRA Schwingungstechnik und Akustik GmbH Dresden, Germany

17:40 Laser Vibrometer Calibration at High Frequencies Using Conventional Calibration Equipment (495)

Thomas Bruns, Physikalisch-Technische Bundesanstalt (PTB), Germany
Frank Blume, Physikalisch-Technische Bundesanstalt (PTB), Germany
Angelika Täubner, Physikalisch-Technische Bundesanstalt (PTB), Germany

18:00 Improved Low Frequency Accelerometer Calibration (662)

Mark Schiefer, The Modal Shop, Inc, United States of America
Richard Bono, The Modal Shop, Inc, United States of America

POSTER SESSION 2 (TC7, TC8, TC9, TC11, TC13, TC14)

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Tetyana Gordiyenko, State Enterprise "UkrSREC", Ukraine
Oleh Velychko, Ukrmetrteststandard, Ukraine

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André Göpfert, Ilmenau University of Technology, Germany
Steffen Lerm, Ilmenau University of Technology, Germany
Maik Rosenberger, Ilmenau University of Technology, Germany
Matthias Rückwardt, Ilmenau University of Technology, Germany
Mathias Schellhorn, Ilmenau University of Technology, Germany

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Andraž Miklavec, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Valentin Batagelj, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Jovan Bojkovski, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Igor Pušnik, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Janko Drnovšek, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

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Marjanen Kalle, Tampere University of Technology, Department of Automation Science and Engineering, Finland
Ojala Petteri, Tampere University of Technology, Department of Automation Science and Engineering, Finland
Mäkinen Martti, University of Joensuu, Department of Physics and Mathematics, Finland

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Senzu Shen, Wuhan Digital Engineering Institute, China
Zhengle Shi, Wuhan Digital Engineering Institute, China
Wenjun Chang, Wuhan Digital Engineering Institute, China
Qian Liu, Wuhan Digital Engineering Institute, China
Minghu Zhang, Wuhan Digital Engineering Institute, China

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Carlo Ferrero, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Angelo Chiapuzzi, Atlas Copco BLM, Italy

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S. S. K. Titus, Force and Hardness standard, National Physical Laboratory, India
Anil Kumar, Force and Hardness standard, National Physical Laboratory, India
H. N. P. Poddar, Force and Hardness standard, National Physical Laboratory, India
S. K. Jain, Force and Hardness standard, National Physical Laboratory, India
Kamlesh K. Jain, Force and Hardness standard, National Physical Laboratory, India

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Alex Pablo Ferreira Barbosa, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
C. R. da Costa Rodrigues, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
D. M. do Espírito Santo Filho, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
José Renato Real Siqueira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Roberto Guimarães Pereira, PGMEC-UFF, Brazil
Luiz Henrique Paraguassú de Oliveira, Mechanical Metrology Divison, INMETRO, Brazil

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Domenico Luca Carnì, University of Calabria, Italy
Domenico Grimaldi, Department of Electronics, Computer and System Sciences University of Calabria, Italy
Francesco Lamonaca, Università della Calabria, Italy

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Jorge C. Torres-Guzmán, Centro Nacional de Metrología, Mexico
Miguel Viliesid-Alonso, Centro Nacional de Metrología, Mexico
Luis Omar Becerra-Santiago, Centro Nacional de Metrología, Mexico
Roberto Arias-Romero, Centro Nacional de Metrología, Mexico

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Andrzej Michalski, Electrical Fac., Warsaw Univ. of Technology/Electronics Fac., Military Univ. of Technology, Poland
Zbigniew Watral, Military University of Technology, Poland
Jan Sienkiewicz, Military University of Technology, Poland

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Jacek Jakubowski, Military University of Technology, Poland
Andrzej Michalski, Electrical Fac., Warsaw Univ. of Tech./Electronics Fac., Military Univ. of Technology, Poland

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Maurizio Leopardi, Faculty of Engineering - University of L'Aquila, Italy
Maria Teresa Todisco, Faculty of Engineering – L'Aquila, Italy

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Maria Teresa Todisco, Faculty of Engineering – L'Aquila, Italy

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Craig Coull, METCO Services Ltd, United Kingdom
Edmund Spearman, CNR International, United Kingdom
Jason Laidlaw, METCO Services Ltd, United Kingdom

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Tomáš Hajduk, Czech Metrology Institute, Czech Republic
František Staněk, Czech Metrology Institute, Czech Republic
Dominik Pražák, Czech Metrology Institute, Czech Republic
Jiří Tesař, Czech Metrology Institute, Czech Republic
Zdeněk Krajíček, Czech Metrology Institute, Czech Republic

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Vaclav Papez, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Stanislava Papezova, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic

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Andrzej Michalski, Electrical Fac., Warsaw Univ. of Technology/Electronics Fac., Military Univ. of Technology, Poland
Łukasz Makowski, Warsaw University of Technology, Poland

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Eri Matsuyama, Dep. of Radiological Technology, Graduate School of Health Sciences, Niigata Univ., Japan
Du-Yih Tsai, Dep. of Radiological Technology, Graduate School of Health Sciences, Niigata Univ., Japan
Yongbum Lee, Dep. of Radiological Technology, Graduate School of Health Sciences, Niigata Univ., Japan
Katsuyuki Kojima, Dep. of Information Networks, Fac. of Administration and Informatics, Univ. of Hamamatsu, Japan

A Low-Cost Autosampler for Surface Plasmon Resonance Biosensor Platforms (305)

Cleumar Moreira, Dep. of Elec. Engineering, Univ. Federal de Campina Grande/Dep. of Electronics – IF-AL, Brazil
Arlindo Barreto Neto, IF-PB and Universidade Federal de Campina Grande, Brazil
L. C. Oliveira, Mechanical Metrology Divison, INMETRO, Brazil
Antonio Marcus Lima, Federal University of Campina Grande, Brazil
F. C. C. Loureiro, Dep. of Electrical Engineering, Universidade Federal de Campina Grande, Brazil
Helmut Neff, Universidade Federal de Campina Grande and CETENE/LINCS, Brazil

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Kozarski Maciej, Institute of Biocybernetics and Biomedical Engineering PAN, Poland
Krzysztof Zielinski, Institute of Biocybernetics and Biomedical Engineering PAN, Poland
Krzysztof, Jakub Palko, Institute of Biocybernetics and Biomedical Engineering PAN, Poland
Dominik Bozewicz, Institute of Precision and Biomedical Engineering Warsaw University of Technology, Poland
Marek Darowski, Institute of Biocybernetics and Biomedical Engineering PAN, Poland

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Francesco Adamo, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Filippo Attivissimo, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Anna M. L. Lanzolla, Polytechnic of Bari, Italy
Maurizio Spadavecchia, Department of Electrics and Electronics - Polytechnic of Bari, Italy

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Vesna Geršak, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Gregor Geršak, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

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Zbigniew Moroń, Institute of Biomedical Engineering and Instrumentation, Wrocław Univ. of Technology, Poland
Tomasz Grysiński, Institute of Biomedical Engineering and Instrumentation, Wrocław Univ. of Technology, Poland

A New Tracking System to Study the Behaviour of Species (518)

David Sarriá, Centre Tecnològic, SARTI, Vilanova i la Geltrú, Spain
Joaquín del Río, Centre Tecnològic, SARTI, Vilanova i la Geltrú, Spain
Antoni Mànuel, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Xavier Roset, Centre Tecnològic, SARTI, Vilanova i la Geltrú, Spain
Jacopo Aguzzi, Institut de Ciències del Mar. CSIC, Spain
Francesc Sardà, Institut de Ciències del Mar. CSIC, Spain

Portable MP3 Player as Low-Cost Data Logger (532)

Samuel E. de Lucena, UNESP - São Paulo State University, Brazil

A Simple Bioelectrical Signal Simulator for Measurement Device Testing (634)

Antti Vehkaoja, Tampere University of Technology, Department of Automation Science and Engineering, Finland
Jukka Lekkala, Tampere University of Technology, Finland

The Analysis of the Geometry of Osseous Tissue of the Biological Bearings Interaction Zone in the Aspect of Accuracy of Shape Mapping (668)

Andrzej Ryniewicz, Cracow University of Technology, Production Engineering Institute, Poland

The Geometry Estimation of the Articulation Cartilage Shape and Defect Diagnosis Using Magnetic Resonance Imaging (669)

Anna M. Ryniewicz, Univ. of Mining and Metallurgy/Jagiellonian Univ., Dental Institute, Poland
Andrzej Ryniewicz, Cracow University of Technology, Production Engineering Institute, Poland

Analysis of Measurement Uncertainty in the Procedure of Groove Depth Measurement (111)

Gorana Baršić, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Biserka Runje, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Sanjin Mahović, Faculty of Mechanical Engineering and Naval Architecture, Croatia

Holographic Prism – The New Plane Angle Measure on Base of Hologram Array in Crystalline Photochromic Nano-Material (128)

Valery A. Granovsky, Central Scientific Research Institute "Elektropribor", Russia
Mikhail D. Kudryavtsev, Central Scientific Research Institute "Elektropribor", Russia
Alexandr I. Ryskin, St. Petersburg State University on Information Technology, Mechanics and Optics, Russia
Alexandr S. Shcheulin, St. Petersburg State University on Information Technology, Mechanics and Optics, Russia

Research on Accurate in Situ Measurements of Cylindricity (163)

Krzysztof Stepien, Kielce University of Technology, Poland
Stanislaw Adamczak, Kielce University of Technology, Poland

Coordinate Measurements of Complex-Shape Surfaces (168)

Andrzej Werner, Bialystok Technical University, Poland
Malgorzata Poniatowska, Bialystok Technical University, Poland

Probe Radius Compensation and Fitting Errors in CAD-Based Measurements of Free-Form Surface: A Case Study (169)

Malgorzata Poniatowska, Bialystok Technical University, Poland
Andrzej Werner, Bialystok Technical University, Poland

Possibilities of Improving of Positional Precision of Machine Tools with Linear Axes (210)

Tomas Loebl, Slovak Univ. of Technology, Institute of automation measurement and Applied Informatics, Slovakia
Eva Kureková, Slovak University of Technology in Bratislava, Faculty of Mechanical Engineering, Slovakia
Rudolf Palenčár, Slovak Univ. of Technology, Institute of automation measurement and Applied Informatics, Slovakia

The Construction and Accuracy Analysis of the Multireference Equipment for Calibration of Angle Measuring Instruments (243)

Domantas Brucas, Vilnius Gediminas Technical University, Lithuania
Vytautas Giniotis, Vilnius Gediminas Technical University, Lithuania

Experimental Check of the Simulated Cylinder's Geometrical Characteristics Obtained from the Expert Program (312)

Michal Pawlowski, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Bartosz Gapinski, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Miroslaw Rucki, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland

Advanced Calibration Method for Pitch Artifact (314)

Yohan Kondo, Department of Mechanical and Environmental Informatics, Tokyo Institute of Technology, Japan
Kazuyuki Sasajima, Tokyo Institute of Technology, Japan
Sonko Osawa, Dimensional Standards Section, National Metrology Institute of Japan, AIST, Japan
Osamu Sato, Dimensional Standards Section, National Metrology Institute of Japan, AIST, Japan
Tsukasa Watanabe, Dimensional Standards Section, National Metrology Institute of Japan, AIST, Japan

Performance Evaluation of Probing Systems in Data Capture for Kinematic Parameter Identification and Verification of Articulated Arm Coordinate Measuring Machines (451)

Jorge Santolaria, University of Zaragoza, Spain
Juan José Aguilar, University of Zaragoza, Spain
Agustín Brau, University of Zaragoza, Spain
Francisco Javier Brosed, University of Zaragoza, Spain

Coordinate Measuring Machine Application for Machine Tool Correction (499)

Jan Chajda, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Bartosz Gapinski, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Krzysztof Matlinski, FOS POLMO Lodz S.A., Poland
Roman Staniek, Poznan University of Technology, Institute of Mechanical Technology, Poland
Michal Wieczorowski, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland

Dynamic Deviation Error in Single Flank Gear Testing (509)

Jan Chajda, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Miroslaw Grzelka, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland
Łukasz Mądry, Poznan University of Technology, Division of Metrology and Measuring Systems, Poland

Surface Quality of the EDM Processed Materials (587)

Marcel Sabin Popa, Technical University of Cluj Napoca, Romania
Gald Contiu, Technical University of Cluj Napoca, Romania
Grigore Pop, Technical University of Cluj Napoca, Romania

TC3 – TORQUE STANDARD MACHINES - NEW IDEAS AND DEVELOPMENTS

Co-Chairs: *Diedert Peschel, Head of DKD lab DKD-K-47801 (torque), Head of DKD's TC Torque, Germany*
Dirk Röske, Physikalisch-Technische Bundesanstalt (PTB), Germany

08:30 Sensitivity Evaluation of the Fulcrum in the 10 N•m Dead Weight Torque Standard Machine and Performance Examination of a 1 N•m Torque Measuring Device (92)

Atsuhiro Nishino, National Metrology Institute of Japan, AIST, Japan
Koji Ogushi, National Metrology Institute of Japan, AIST, Japan
Kazunaga Ueda, National Metrology Institute of Japan, AIST, Japan

08:50 The Development of 100 Nm Torque Standard Machine at NIM (265)

Zhang Zhimin, National Institute of Metrology, China
Zhang Yue, National Institute of Metrology, China
Guo Bin, National Institute of Metrology, China
Meng Feng, National Institute of Metrology, China
Li Tao, ShangHai Marine Equipment Research Institute, China
Ji Honglei, ShangHai Marine Equipment Research Institute, China
Dai Ming, ShangHai Marine Equipment Research Institute, China

09:10 Suspended-Fulcrum Torque Standard Machine (373)

Tassanai Sanponpute, Torque Laboratory, Dep. of Mechanical Metrology, National Institute of Metrology, Thailand
Pramann Chantaraksa, Torque Laboratory, Dep. of Mechanical Metrology, National Institute of Metrology, Thailand
Nattapon Saenkhum, Torque Laboratory, Dep. of Mechanical Metrology, National Institute of Metrology, Thailand
Nittaya Arksonnarong, Torque Laboratory, Dep. of Mechanical Metrology, National Institute of Metrology, Thailand

09:30 The Torque Standard Machines in China (414)

Li Tao, Shanghai Marine Equipment Research Institute (SMERI), China
Dai Ming, Shanghai Marine Equipment Research Institute (SMERI), China
Lin Jing, Shanghai Marine Equipment Research Institute (SMERI), China
Zhang Yue, National Institute of Metrology, China
Zhang Zhimin, National Institute of Metrology, China

TC4 – POWER QUALITY ASSESSMENT

Co-Chairs: *Peter Händel, Signal Processing Lab, Royal Institute of Technology, Stockholm, Sweden*
Sergio Rapuano, Department of Engineering, University of Sannio, Italy

08:30 Accuracy Analysis of Voltage Dip Measurement (603)

Daniele Gallo, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy
Carmine Landi, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy
Mario Luiso, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy

08:50 Electrical Power Quality and Efficiency Diagnostic System (335)

Richárd Bátorfi, Univesity of Miskolc, Department of Electrical and Electronic Engineering, Hungary

09:10 Development of Digital Flicker Meter and Specification of Disturbance Propagation Direction (336)

Unhauzer Attila, Department of Electrical and Electronic Engineering, University of Miskolc, Hungary

09:30 Event-Based Distributed Measurement System for PQ Monitoring Applications (386)

Fabrizio Ciancetta, Dipartimento di Ingegneria Elettrica e dell'Informazione, University of L'Aquila, Italy
Edoardo Fiorucci, Dipartimento di Ingegneria Elettrica e dell'Informazione, University of L'Aquila, Italy
Giovanni Bucci, Dipartimento di Ingegneria Elettrica e dell'Informazione, University of L'Aquila, Italy
Carmine Landi, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy

TC9 – MEETING

Meeting of the Technical Committee

on

Flow Measurement

TC9

TC12 – FIXED POINTS

Co-Chairs: *Davor Zvizdic, FSB-Faculty of Mechanical Engineering and Naval Architecture, LPM-Laboratory for Process Measurements, Croatia*
Renato Teixeira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Diretoria de Metrologia Científica e Industrial, Divisão de Metrologia Térmica, Brazil

08:30 Performance Evaluation of an Open Zinc Cell Constructed at INMETRO (456)

Renato Teixeira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Hamilton Vieira, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Rodrigo Silva, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

08:50 Realization of New Mercury Triple Point Cells at TUBITAK-UME (609)

Murat Kalemci, TUBITAK UME (National Metrology Institute), Turkey
Ahmet T. Ince, Yeditepe University, Turkey
Georges Bonnier, TUBITAK UME, France

09:10 Comparison of Different Methods of Fixed-Point Temperature Evaluation (586)

Gunter Krapf, Ilmenau University of Technology, Germany
Marc Schalles, Ilmenau University of Technology, Germany

09:30 Validation of Numerical Simulation of Freezing Point of Zinc (127)

Denise das Mercês Camarano, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil
Roberto Márcio de Andrade, Federal University of Minas Gerais, Brazil

TC14 – Optical Metrology in Manufacturing and Gear Measurements

Co-Chairs: *Albert Weckenmann, Chair Quality Management and Manufacturing Metrology, University Erlangen-Nuremberg, Germany*
Gerd Jäger, Ilmenau University of Technology, Germany

08:30 Workflow Based Process Modeling for Optical Coordinate Measurement (125)

Jörg Bargenda, Ilmenau University of Technology, Germany
Maik Schumann, Ilmenau University of Technology, Germany
Martin Correns, Ilmenau University of Technology, Germany
Mathias Schellhorn, Ilmenau University of Technology, Germany
Holger Weißensee, Ilmenau University of Technology, Germany
Maik Rosenberger, Ilmenau University of Technology, Germany
Gerhard Linß, Ilmenau University of Technology, Germany

08:50 User Interface for Optical Multi-Sensorial Measurements at Extruded Profiles (129)

Albert Weckenmann, Friedrich-Alexander-University Erlangen-Nuremberg, Germany
Johannes Bernstein, Quality Management and Manufacturing Metrology, University Erlangen-Nuremberg, Germany

09:10 A Novel Artifact for Evaluating Accuracies of Gear Profile and Pitch Measurements of Gear Measuring Instruments (306)

Sonko Osawa, National Metrology Institute of Japan, AIST, Japan
Osamu Sato, National Metrology Institute of Japan, AIST, Japan
Yohan Kondo, National Metrology Institute of Japan, AIST, Japan
Masaharu Komori, Department of Mechanical Engineering and Science, Kyoto University, Japan
Toshiyuki Takatsuji, National Metrology Institute of Japan, AIST, Japan

TC16 – PRESSURE BALANCES

Co-Chairs: *Jay Hendricks, NIST Pressure and Vacuum Group, USA*
Maria Nieves Medina, Head of Mass Division, Spanish Metrology Centre (CEM), Spain

08:30 Characteristics of Controlled-Clearance Piston-Cylinders for Pressure Ranges Up to 1 GPa (135)

Hiroaki Kajikawa, National Metrology Institute of Japan, AIST, Japan
Kazunori Ide, National Metrology Institute of Japan, AIST, Japan
Tokihiko Kobata, National Metrology Institute of Japan, AIST, Japan

08:50 Comparative Analysis of the Measurement Uncertainty of the Deformation Coefficient of a Pressure Balance Using the GUM Approach and Monte Carlo Simulation Methods (539)

Paulo R G Couto, Mechanical Metrology Divison, INMETRO, Brazil
Jailton C Damasceno, Materials Metrology Divison, INMETRO, Brazil
Luiz Henrique Paraguassú de Oliveira, Mechanical Metrology Divison, INMETRO, Brazil
Jackson S. Oliveira, Mechanical Metrology Divison, INMETRO, Brazil

09:10 Comparison Between Gas and Hydraulic Pressure Balances Using a Liquid-Lubricated Pressure Balance (589)

Tokihiko Kobata, National Metrology Institute of Japan, AIST, Japan

09:30 Design of a New Series of Pressure Balance in Liquid Medium (213)

Marcello Caravaggio, SCANDURA & FEM, Italy
Gianfranco Molinar Min Beciet, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Paolo De Maria, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

TC19 – AIR/SOIL

Co-Chairs: *Sunao Yamashita, DKK-TOA corporation, Japan*
Theodore Laopoulos, Physics Dept. - Electronics Lab, Aristotle University of Thessaloniki, Greece

08:30 An Automated System for Measurement of Shear Waves Velocity in Soil (334)

Argiris Theopoulos, Aristotle University of Thessaloniki, Department of Physics, Electronics Lab, Greece
Anthi Papadopoulou, Aristotle University of Thessaloniki Department of Civil Engineering, Greece
Theodora Tika, Aristotle University of Thessaloniki Department of Civil Engineering, Greece
Theodoros Laopoulos, Aristotle University of Thessaloniki, Department of Physics, Electronics Lab, Greece

08:50 Legal Metrology and the Automotive Air Pollution Control in Brazil (546)

Augusto P. Cunha, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Ronaldo N. Azeredo, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil

09:10 Cloud Base Height Estimation Using a Low-Cost Digital Camera (596)

Fernando M. Janeiro, Instituto de Telecomunicações/Universidade de Évora, Portugal
Frank Wagner, Centro de Geofísica de Évora, Universidade de Évora, Portugal
Pedro M. Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
A. M. Silva, Centro de Geofísica de Évora, Universidade de Évora, Portugal

09:30 Solar Powering of a Mobile Telemetry Station for Air Quality Monitoring (653)

Vasco Carvalho, Instituto Superior Técnico, Portugal
F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

ROUND TABLE ON TRACEABILITY IN CHEMISTRY, HEALTH, FOOD AND NUTRITION

Co-Chairs: *Carlo Ferrero, INRIM, Italy*
Isabel Castanheira, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal
Philippe Charlet, Laboratoire National de Metrologie et D'Essais (LNE), France

TC3 – Torque and Multi-Component Measurements

Co-Chairs: *Dirk Röske, Physikalisch-Technische Bundesanstalt (PTB), Germany*
Andy Knott, National Physical Laboratory, United Kingdom

11:00 **High Precision Torque Measurement Systems in Dynamic and Static Applications (120)**

Sven Kuhn, Hottinger Baldwin Messtechnik GmbH, Germany

11:20 **Influence of Cross Forces and Bending Moments on Reference Torque Sensors for Torque Wrench Calibration (330)**

Brüge Andreas, Physikalisch-Technische Bundesanstalt (PTB), Germany
Röske Dirk, Physikalisch-Technische Bundesanstalt (PTB), Germany
Mauersberger Dietmar, Physikalisch-Technische Bundesanstalt (PTB), Germany
Adolf Klaus, Physikalisch-Technische Bundesanstalt (PTB), Germany

11:40 **Evaluation of Static and Dynamic Parassitic Components on the INRIM 1 MN Primary Force Standard Machine by Means the 500 kN Six-Component Dynamometer (134)**

Carlo Marinari, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

12:00 **Evaluation of Multi-Component Force Transducers Having Column Type Sensing Element (157)**

Yon-Kyu Park, KRISS, Korea
Rolf Kumme, Physikalisch-Technische Bundesanstalt (PTB), Germany
Dirk Roeske, Physikalisch-Technische Bundesanstalt (PTB), Germany
Dae-Im Kang, KRISS, Korea

TC12 – APPLICATIONS

Co-Chairs: *Janko Drnovsek, University of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia*
Tohru Iuchi, Toyo University, Dept. of Mechanical Engineering, Japan

11:00 A Novel Ultrasonic Thermometry for Monitoring Temperature Profiles in Materials (627)

Ikuo Ihara, Nagaoka University of Technology, Japan
Manabu Takahashi, Nagaoka University of Technology, Japan

11:20 Nondestructive Evaluation of Plexiglas Materials Using Lock-in and Pulse Phase Infrared Thermography (220)

Roberto Montanini, University of Messina, Italy
Salvina Aliquò, University of Messina, Italy

11:40 Flat Surface Temperature Probe Influence on Temperature Measurement (406)

Gaber Beges, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia
Janko Drnovšek, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia

12:00 Sensors Characterization and Control of Measurement Systems Based on Thermoresistive Sensors Kept at Constant Temperature (498)

M. A. Moreira, Federal University of Bahia, Brazil
Amauri Oliveira, Federal University of Bahia, Brazil
C. R. T. Dórea, Federal University of Bahia, Brazil
P. R. Barros, Universidade Federal de Campina Grande, Brazil
José Sérgio da Rocha Neto, Federal University of Campina Grande, Brazil

TC13 – Radiation Measurements

Co-Chairs: *Vesna Sapsic Jokic, Faculty of Technical Sciences, Chair for instrumentation and Electrical Measurements, University of Novi Sad, Serbia*

11:00 **Radiation Isodose Surface Distortion as a Source of Dose or Exposure Rate Measurement Uncertainty: Example in Brachytherapy Seeds (69)**

José Manzoli, IPEN-CNEN/SP, Brazil
Jorge Pirolla, Universidade São Judas Tadeu, Brazil
Eduardo Moura, IPEN-CNEN/SP, Brazil
Carlos Zeituni, Nuclear and Energetic Research Institute and Universidade Presbiteriana Mackenzie, Brazil
João Moura, Nuclear and Energetic Research Institute, IPEN, Brazil
Maria Elisa Chuery Martins Rostelatto, Nuclear and Energetic Research Institute, IPEN, São Paulo, Brazil

11:20 **Estimation of Patient Effective Dose from 131i Using Monte Carlo Calculation (410)**

Vesna Spasic Jokic, Faculty of Technical Sciences, Serbia
Milan Orlic, VINCA Institute og nuclear Sciences, Serbia

11:40 **Traceability to Absorbed-Dose-to-Water Primary Standards in Dosimetry of Brachytherapy Sources Used for Radiotherapic (553)**

Maurizio Bovi, Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti (ENEA-INMRI), Italy
Maria Pia Toni, Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti (ENEA-INMRI), Italy
Isabelle Aubineau-Laniècе, CEA, LIST, LNE-LNHB, France
Jean-Marc Bordy, CEA, LIST, LNE-LNHB, France
João Cardoso, Instituto Tecnológico e Nuclear (ITN), Portugal
Bruno Chauvenet, CEA, LIST, LNE-LNHB, France
Frantisek Gabris, BEV- Bundesamt für Eich- und Vermessungswesen, Austria
Jan-Erik Grindborg, Swedish Radiation Safety Authority (SSM), Sweden
Antonio Stefano Guerra, Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti (ENEA-INMRI), Italy
Antti Kosunen, Radiation and Nuclear Safety Authority (STUK), Finland
Carlos Oliveira, Instituto Tecnológico e Nuclear (ITN), Portugal
Maria Pimpinella, Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti (ENEA-INMRI), Italy
Thorsten Sander, National Physical Laboratory, United Kingdom
Hans-Joachim Selbach, Physikalisch-Technische Bundesanstalt (PTB), Germany
Vladimír Sochor, Czech Metrology Institute, Czech Republic
Jaroslav Šolc, Czech Metrology Institute, Czech Republic
Jacco de Pooter, Van Swinden Laboratorium B. V. (VSL), The Netherlands
Eduard van Dijk, Van Swinden Laboratorium B. V. (VSL), The Netherlands

12:00 **Portable X–Ray CT Mini System Based on Monolithitic Semi-Insulating GaAs Detectors Using Perspective Imaging Reconstruction Techniques (67)**

Jiri Přibil, Institute of Measurement Science, SAS, Bratislava, Slovakia
B. Zaťko, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia
Ivan Frollo, Institute of Measurement Science, SAS, Bratislava, Slovakia
F. Dubecký, Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia
Pawel Gryboś, Department of Measurement and Science, AGH University of Science and Technology, Poland

TC14 – MEETING

Meeting of the Technical Committee

on

Measurement of Geometrical Quantities

TC14

TC16 – VACUUM AND LOW PRESSURE

Co-Chairs: *Jorge C. Torres-Guzmán, Centro Nacional de Metrología (CENAM), Mexico*
Sam-Yong Woo, Division of Physical Metrology, Korea Research Institute of Standards and Science, Korea

11:00 **Effects of Baffle Size on Pressure Distribution in Vacuum Chamber During Continuous Gas Flow (232)**

Wakil Khan, Vacuum Technology Centre, KRISS/University of Science and Technology (UST), Korea
Y. H. Shin, Vacuum Technology Centre, KRISS, Korea
Seung Soo Hong, Vacuum Technology Centre, KRISS, Korea

11:20 **Volume Ratio Determination in Static Expansion Systems by Means of Two Pressure Balances (280)**

David Herranz, Spanish Metrology Centre (CEM), Spain
Salustiano Ruiz, Centro Español de Metrología, Spain
Maria Nieves Medina, Centro Español de Metrología, Spain

11:40 **A Method of Traceability for a FPG8601 Force Balanced Piston Gauge to Define Pressures in the Range from 1 Pa to 15 kPa in Gauge and Absolute Measurement Modes (298)**

Rob Haines, DH Instruments, A Fluke Company, United States of America
Michael Bair, DH Instruments, A Fluke Company, United States of America

12:00 **NIST Experience with Non-Rotating Force-Balanced Piston Guages for Low Pressure Metrology (549)**

Jay H. Hendricks, National Institute of Standards and Technology (NIST), United States of America
Douglas A. Olson, National Institute of Standards and Technology (NIST), United States of America

TC1 – MEETING

Meeting of the Technical Committee

on

Education and Training in Measurement and Instrumentation

TC1

TC3 – MASS II

Co-Chairs: *José Ángel Robles, Director de la División Científica y de RRII, Director of Scientific and IIRR Division, Centro Español de Metrología (CEM), Spain*
Richard Davis, Head, Mass Section, Bureau International des Poids et Mesures, Sèvres, France

13:40 A New Weighing Method for Checkweighers by Using Signal Processing (246)

Kengo Fukuda, Oyo Measurement Co., Ltd., Japan
Koji Yoshida, Okayama University of Science, Japan
Tetsuya Kinugasa, Okayama University of Science, Japan
Shinsaku Fujimoto, Okayama University of Science, Japan
Morihito Kamon, Department of Automatic Machinery R&D, Yamato Scale Co., Ltd., Japan
Yoichiro Kagawa, Department of Automatic Machinery R&D, Yamato Scale Co., Ltd., Japan
Toshiro Ono, professor emeritus at Osaka Prefecture University, Japan

14:00 Investigations of New Silicon Load Cells with Thin-Film Strain Gauges (374)

Sascha Mäuselein, Physikalisch-Technische Bundesanstalt (PTB), Germany
Oliver Mack, Physikalisch-Technische Bundesanstalt (PTB), Germany
Roman Schwartz, Physikalisch-Technische Bundesanstalt (PTB), Germany
Gerd Jäger, Technical University Ilmenau, Germany

14:20 Recommended for the Revision of Test Procedures for Load Cells in Legal Metrology (427)

Oliver Mack, Physikalisch-Technische Bundesanstalt (PTB), Germany
Sascha Mäuselein, Physikalisch-Technische Bundesanstalt (PTB), Germany

14:40 Mass and Density Determination of OIML E1 Weight Set in Czech Metrology Institute (508)

Jaroslav Zůda, Czech Metrology Institute, Czech Republic

15:00 Sub-Milligram Weight Subdivision and Application in Force Calibration of Nanoindenter (93)

Chin-Fen Tuan, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Fu-Lung Pan, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Yi-Ching Lin, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Sheau-shi Pan, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan
Chung-Lin Wu, Center for Measurement Standards/Industrial Technology Research Institute, Taiwan

TC9 – FLOW MEASUREMENT - LIQUIDS ETC.

Co-Chairs: *Ernst von Lavante, University of Duisburg-Essen, Germany*
Craig Coull, METCO Services Ltd, Aberdeen, Scotland, United Kingdom

13:40 **Uncertainty Evaluation of Multi-Sensor Flow Measurement in a Sewer System Using Monte Carlo Method (75)**

Álvaro Silva Ribeiro, Laboratório Nacional de Engenharia Civil, Portugal
Maria do Céu Almeida, Laboratório Nacional de Engenharia Civil, Portugal
João Palma, Laboratório Nacional de Engenharia Civil, Portugal

14:00 **Determination of Vortex Convection Velocity with Application of Flow Visualization and Image Processing (4)**

Grzegorz L. Pankanin, Institute of Electronic Systems, Warsaw University of Technology, Poland
Artur Kulinczak, Institute of Electronic Systems, Warsaw University of Technology, Poland

14:20 **Radiofrequency Technological Measurements Under Pipeline Transportation of Liquefied Petrolem Gas (42)**

Alexander Sovlukov, Institute of Control Sciences, Russia
Victor Tereshin, Technosensor Co., Russia

14:40 **EURAMET Regional Key Comparison - Volume Comparison at 20 l (415)**

Elsa Batista, Instituto Português da Qualidade, Portugal
Nelson Almeida, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal
Peter Lau, Technical Research Institute of Sweden, Sweden

15:00 **Applying Digital Control of the Discharge in Hydraulic Models (608)**

Roman Klasinc, Graz Univ. of Technology, Institute of Hydraulic Eng. and Water Resources Management, Austria
Andrej Predin, Faculty of Mechanical Engineering, University of Maribor, Slovenia
Mitja Kastrevc, Faculty of Mechanical Engineering, University of Maribor, Slovenia

15:20 **Assessment of the Applicability of the Weight Vector Theory for Coriolis Flowmeters (48)**

Stephanie Enz, Technical University of Denmark, Denmark

TC13 – BIOMEDICAL MEASUREMENTS

Co-Chairs: *Gregor Geršak, University of Ljubljana, Faculty of Electrical Engineering, Slovenia*
Pablo Luna-Lozano, Castelldefels School of Technology (EPSC), Technical University of Catalonia (UPC), Spain

13:40 Concept of Personalised Biomedical Instrumentation; Case Study - Blood Pressure (439)

Gregor Geršak, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Irena Nančovska Šerbec, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Valentin Batagelj, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Janko Drnovšek, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

14:00 ProCardio 8 – the 8th Generation of the High Resolution ECG Mapping System (574)

J. Muzik, CTU in Prague, Faculty of Biomedical Engineering, Czech Republic
M. Tysler, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia
P. Kneppo, CTU in Prague, Faculty of Biomedical Engineering, Czech Republic
V. Rosik, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia
S. Karas, Institute of Measurement Science, Slovak Academy of Sciences, Bratislava, Slovakia
E. Heblakova, Institute of Measurement Science, Slovak Academy of Sciences, Slovakia

14:20 Interference Reduction in ECG Recordings by Using a Dual Ground Electrode (214)

Delia Díaz, Departament d'Enginyeria Electrònica,Universitat Politècnica de Catalunya (UPC), Spain
Óscar Casas, Departament d'Enginyeria Electrònica,Universitat Politècnica de Catalunya (UPC), Spain
Ramon Pallàs-Areny, Departament d'Enginyeria Electrònica,Universitat Politècnica de Catalunya (UPC), Spain

14:40 Heart Rate Detection from Impedance Plethysmography Based on Concealed Capacitive Electrodes (270)

Pablo Luna-Lozano, Technical University of Catalonia, Spain
Ramon Pallàs-Areny, Universitat Politècnica de Catalunya (UPC), Spain

15:00 Electrocardiogram by Mobile Phone: A Compression Method for SMS (543)

Cleonilson Protásio de Souza, CEFET-MA, Brazil
Tiago Pontes Pereira, CEFET-MA, Brazil
Raimundo C. S. Freire, Universidade Federal de Campina Grande, Brazil

15:20 A Multichannel Wireless EMG Measurement System Based on Intrabody Communication (446)

Zeljka Lucev, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
Igor Krois, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
Mario Cifrek, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia

TC14 – CALIBRATION, TRACEABILITY AND MEASUREMENTS UNCERTAINTY

Co-Chairs: *Jörg Seewig, Lehrstuhl für Messtechnik & Sensorik, Technische Universität Kaiserslautern, Germany*
Stanislaw Adamczak, Kielce University of Technology, Poland

13:40 On Traceability of Long Distances (100)

Jorma Jokela, Finnish Geodetic Institute, Finland
Pasi Häkli, Finnish Geodetic Institute, Finland
Joel Ahola, Finnish Geodetic Institute, Finland
Arunas Buga, Vilnius Gediminas Technical University, Institute of Geodesy, Lithuania
Raimundas Putrimas, Vilnius Gediminas Technical University, Institute of Geodesy, Lithuania

14:00 Assesment of Measurement Uncertainty Caused in the Preparation of Measurements using Computed Tomography (145)

Albert Weckenmann, Friedrich-Alexander-University Erlangen-Nuremberg, Germany
Philipp Krämer, Quality Management and Manufacturing Metrology, University Erlangen-Nuremberg, Germany

14:20 Angle Calibration of Robotic Total Stations and Laser Trackers (156)

David Martin, European Synchrotron Radiation Facility, France
Derek G. Chetwynd, School of Engineering, University of Warwick, United Kingdom

14:40 3D Measurement of Inner Shape of a Cavitiy (322)

Kazuhiro Enami, High Energy Accelerator Research Organization, Japan
Tatuya Kume, High Energy Accelerator Research Organization, Japan
Yasuo Higashi, High Energy Accelerator Research Organization, Japan
Kenji Ueno, High Energy Accelerator Research Organization, Japan

15:00 Extrinsic Parameters Calibration of a Structured Light System Via Planar Homography Based on a Reference Solid (430)

Enrico Marcuzzi, Cisas "G. Colombo", Center of Studies and Activities for Space, University of Padova, Italy
Giorgio Parzianello, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy
Massimiliano Tordi, Space Light SRL, Rovigo, Italy
Massimo Bartolozzi, Space Light SRL, Rovigo, Italy
Massimo Lunardelli, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy
Antonio Selmo, Dep of Information Engineering, Un. of Padova, Italy
Luca Baglivo, Cisas "G. Colombo", Center of Studies and Activities for Space, University of Padova, Italy
Stefano Debei, Cisas "G. Colombo", Center of Studies and Activities for Space, University of Padova, Italy
Mariolino De Cecco, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy

15:20 Multi-Stereo Compatibility Analysis for 3D Shape Estimation (460)

Mariolino De Cecco, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy
Marco Pertile, Dept of Mechanical Engineering, University of Padova, Italy
Luca Baglivo, Dept of Mechanical Engineering, University of Padova, Italy
Giorgio Parzianello, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy
Massimo Lunardelli, Dep. Of Mechanical and Structural Engineering, Un. of Trento, Italy
Francesco Setti, Department of Mechanical and Structural Engineering, University of Trento, Italy
Antonio Selmo, Dept of Information Engineering, University of Padova, Italy

TC24 – TRACEABLE CHEMICAL MEASUREMENTS

Co-Chairs: *Philippe Charlet, Laboratoire National de Metrologie et D'Essais (LNE), France*
Paola Fisicaro, Biomedical and Inorganic Chemistry Department, LNE, France

13:40 Integrate Approach to the Calibration of Nitrogen Oxides Analysers and to the Evaluation of their Measurement Uncertainty (161)

Elena Amico di Meane, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Davide Baroncini, Bi-Lab S.r.l., Italy
Stefano Crispu, Bi-Lab S.r.l., Italy
Gian Carlo Piras, Bi-Lab S.r.l., Italy
Michela Sega, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

14:00 A Dynamic Trace VOC Generator Useful for Global Climate Change Study (262)

Guido Sassi, Istituto Nazionale di Ricerca Metrologica (INRIM) / Politecnico di Torino, Italy
Alessia Demichelis, Istituto Nazionale di Ricerca Metrologica (INRIM) / Politecnico di Torino, Italy
MariaPaola Sassi, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

14:20 Portuguese pH Interlaboratory Comparison (429)

M. João Nunes, Instituto Português da Qualidade, Portugal
M.J. Guiomar Lito, Faculdade de Farmácia da Universidade de Lisboa, Portugal
M. Filomena Camões, Faculdade de Ciências da Universidade de Lisboa, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal

14:40 Ethanol Primary Gas Standards Preparation (435)

Gonçalo Baptista, Instituto Português da Qualidade, Portugal
Florbela A. Dias, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal

15:00 Implementation, Validation and Application of a Method of Evaluation of Urinary 1-Hydroxypyrene as a Indicator of Human Exposure to Polycyclic Aromatic Hydrocarbons in Rio De Janeiro State, Brazil (448)

Eliane Cristina Pires do Rego, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Annibal Duarte Pereira Netto, Dep. of Analytical Chemistry, Institute of Chemistry, Federal Fluminense Univ., Brazil

15:20 Development of a Flow-Through Cell for Accurate Measurements of Low Electrolytic Conductivity (450)

Chiara Boveri, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Francesca Durbiano, Istituto Nazionale di Ricerca Metrologica, Italy
Danilo Serazio, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

POSTER SESSION 3 (TC4, TC12, TC15)

A Simple Fault Diagnosis Method for Analog Parts of Electronic Embedded Systems (19)

Zbigniew Czaja, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland

Why Reactive Compensators Do Not Improve the Efficiency Correctly in Unbalanced Circuits (121)

Vicente León-Martínez, Universidad Politécnica de Valencia, Spain
Joaquím Montañana-Romeu, Universidad Politécnica de Valencia, Spain
José Roger-Folch, Universidad Politécnica de Valencia, Spain
Antonio Cazarola-Navarro, Universidad Politécnica de Valencia, Spain

Evaluation of the Long Term Stability of Inductors Using Standard Error of Estimate (141)

Gelson M. Rocha, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Luiz Macoto Ogino, Capacitance and Inductance Laboratory - INMETRO, Brazil

A Precision Calibration Set-Up for AC Magnetic Flux Density Measurement in the Range of 1 Hz to 20 kHz (197)

Po Gyu Park, KRISS, Korea
Young Gyun Kim, KRISS, Korea
Wan-Seop Kim, KRISS, Korea
V. N. Kalabin, D. I. Mendeleyev Institute for Metrology, Russia
Vladlen Ya. Shifirn, D. I. Mendeleyev Institute for Metrology, Russia

DSP Based Power Analyzing System for Onsite Measurements (237)

W. M. S. Wijesinghe, KRISS, Korea
Young Tae Park, KRISS, Korea

On the Design of Low-Power Signal Conditioners for Resistive Sensors (268)

Ramon Casanella, Universitat Politecnica de Catalunya, Spain
Ramon Pallàs-Areny, Universitat Politècnica de Catalunya (UPC), Spain

Fast and Accurate Measurement of the RMS Value of a Noncoherent Sampled Sine Wave (284)

Daniel Belega, Faculty of Electronics and Telecommunications, Politehnica University of Timisoara, Romania
Dominique Dallet, University of Bordeaux - ENSEIRB, IMS Laboratory, France

Increase of Strain Gage Output Voltage Signals Accuracy Using Virtual Instrument with Harmonic Excitation (290)

Dalibor Kuhinek, University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Croatia
Igor Zoric, University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Croatia
Josip Butorac, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia

A Simple, Virtual Phase Shift Meter (327)

Adam W. Cichy, Silesian Univ. of Technology, Institute of Measurement Science, Electronics and Control, Poland

Four Terminal-Pair Coaxial Standards of Capacitance (377)

Jaroslav Bohacek, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Radek Sedlacek, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Jan Kucera, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

Low Noise DC Power Supplies (379)

Vaclav Papez, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Stanislava Papezova, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic

Nonlinearity Testing of Equipment Used in Temperature Measurements (399)

Tadej Podgornik, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Valentin Batagelj, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Jovan Bojkovski, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Janko Drnovšek, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia

Error Modeling of Static Energy Meters (405)

Carlo Carobbi, Dep. of Electronics and Telecommunications, Università di Firenze, Italy
Guido Pellicci, Firenze Tecnologia, Italy
Simone Vieri, Dep. of Electronics and Telecommunications, Università di Firenze, Italy

Comparison of the Precision of Gain and Offset Estimations Obtained with the Histogram Test of ADCs (473)

F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

Preliminary Evaluation of Quantum Hall Effect Devices by Photoreflectance Spectroscopy (482)

L. Zamora-Peredo, Universidad Politécnica de San Luis Potosí, Mexico
M. Hernández-Sustaita, Universidad Politécnica de San Luis Potosí, Mexico
Ivan C. Hernández, Lasertel Inc., United States of America
V. H. Méndez-García, Instituto de Investigación en Comunicación Óptica, UASLP, Mexico
M. López-López, Departmento de Física, Centro de Investigaciones y de Estudios Avanzados - IPN, Mexico

The Use of Traditional Spectrum Analyzers to Measure the Electromagnetic Pollution Generated by WiMAX Devices (502)

Giovanni Betta, DAEIMI - University of Cassino, Italy
Domenico Capriglione, DAEIMI - University of Cassino, Italy
Gianfranco Miele, DAEIMI - University of Cassino, Italy
Luca Rossi, DAEIMI - University of Cassino, Italy

Inductive Current Sensor Based on Nanocrystalline Alloys (503)

Euler C. T. Macedo, Centro de Engenharia Elétrica e Informática, Universidade Federal de Campina Grande, Brazil
José G. A. Lira, Centro de Engenharia Elétrica e Informática, Universidade Federal de Campina Grande, Brazil
Edson G. Costa, Centro de Engenharia Elétrica e Informática, Universidade Federal de Campina Grande, Brazil
Raimundo C. S. Freire, Centro de Engenharia Elétrica e Informática, Universidade Federal de Campina Grande, Brazil
Benedito A. Luciano, Centro de Engenharia Elétrica e Informática, Universidade Federal de Campina Grande, Brazil
Marcelo J. A. Maia, Companhia Hidroeletrica do São Francisco (CHESF), Brazil

Microsystems for Electrical AC Voltage Metrology (531)

A. Bounouh, LNE Laboratoire National de Métrologie et d'Essais, France
F. Blard, LNE Laboratoire National de Métrologie et d'Essais, France
H. Camon, LAAS/CNRS - Université de Toulouse, France
D. Bélières, LNE Laboratoire National de Métrologie et d'Essais, France
F. Ziadé, LNE Laboratoire National de Métrologie et d'Essais, France

Real Time Distribution Using Radio Time Tones of Commercial Broadcasting System (555)

Youngbeom Kim, KRISS, Korea
Youngkyu Lee, KRISS, Korea
H. Suh, KRISS, Korea

Ant-Based Search Strategy for Industrial Multiple-Fault Diagnostics (558)

Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Carlo Manna, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II, Italy
Giuseppe Montenero, CERN European Organization for Nuclear Research, Geneva, Switzerland

Automatic Calibration System for Digital Instruments Without Built-In Communication Interface (559)

G. Andria, Polytechnic of Bari, Italy
Giuseppe Cavone, Polytechnic of Bari, Italy
L. Fabbiano, Polytechnic of Bari, Italy
Nicola Giaquinto, Polytechnic of Bari, Italy
M. Savino, Polytechnic of Bari, Italy

A Minimally-Invasive System for Free-Living Activity Monitoring in Home Care (584)

Fabrizio Clemente, Istituto di Ingegneria Biomedica - CNR, Italy
Carlo Manna, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II, Italy

Thermoelastic Signal Processing Using an FFT Lock-In Based Algorithm on Extended Sampled Data (588)

L. D'Acquisto, Dipartimento di Meccanica, Università degli Studi di Palermo, Italy
A. Normanno, Dipartimento di Meccanica, Università degli Studi di Palermo, Italy
G. Pitarresi, Dipartimento di Meccanica - Università di Palermo, Italy
A. M. Siddiolo, Sintesi SCpA, Italy

Flexibility Experimental Test of the Software Framework for Magnetic Measurements at CERN (612)

Pasquale Arpaia, Dipartimento di Ingegneria - Università degli Studi del Sannio/CERN, Italy
Marco Buzio, Dept. of Technology, Group of Magnets Superconductors Cryostats, CERN, Switzerland
Vitaliano Inglese, Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli Federico II/CERN, Switzerland

Analysis of Rogowski Coil Behavior Under Non Ideal Measurement Conditions (650)

G. Crotti, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
D. Giordano, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
A. Morando, Dipartimento di Ingegneria Elettrica Politecnico di Torino, Italy

DWT Analysis of Selected Transient and Notching Disturbances (660)

Mariusz Szweda, Gdynia Maritime University, Department of Ship Electrical Power, Poland

FEM Analysis of Rogowski Coils Coupled with Bar Conductors (676)

Mirko Marracci, University of Pisa, Italy
Bernardo Tellini, University of Pisa, Italy
Carmine Zappacosta, University of Pisa, Italy

On the Model of MV Power Line Communication System in the Case of Line to Line Transmission (687)

Antonio Cataliotti, Dep. of Electrical, Electronic and Telecommunication Engineering, Univ. di Palermo, Italy
G. Tinè, Institute on Intelligent Systems for the Automation/Research National Council, Italy

Calibrator of Alternative Voltage Based on the Method of Reproduction of Value of Direct Voltage (689)

Sergiej Taranow, The Institute of Electrodynamics of The National Ukrainian Academy of Science, Ukraine
Yurij Tesyk, The Institute of Electrodynamics of The National Ukrainian Academy of Science, Ukraine
Oleh Karasinskij, The Institute of Electrodynamics of The National Ukrainian Academy of Science, Ukraine
Stanislava Pronselev, The Institute of Electrodynamics of The National Ukrainian Academy of Science, Ukraine

DSL Interoperability Testing Laboratory (692)

Doris Bao, Department of Engineering, University of Sannio, Italy
Luca De Vito, Department of Engineering, University of Sannio, Italy
Daniele Domenico Napolitano, TLC Testing Sannio Lab, Italy

An Inherently Linear Transducer Using Thermal Sigma-Delta Modulator (2)

Valter C. Rosa, Federal University of Bahia, Brazil
Amauri Oliveira, Federal University of Bahia, Brazil
Ligia S. Palma, Federal University of Bahia, Brazil
Luiz Fernando G. T. Amaral, Federal University of Bahia, Brazil

Measurement of the Size of Source for Pyrometers Directly Indicating in Temperature (40)

Maria Jose Martin, Centro Español de Metrología, Spain
Manuel Zarco, Centro Español de Metrología, Spain
Dolores del Campo, Centro Español de Metrología, Spain

Study of the Influence of Convective Effects in Incident Radiative Heat Flux Density Measurement Uncertainty (101)

Luís Lages Martins, Laboratório Nacional de Engenharia Civil, Portugal
Álvaro Silva Ribeiro, Laboratório Nacional de Engenharia Civil, Portugal
Carlos Pina dos Santos, Laboratório Nacional de Engenharia Civil, Portugal

Calculated Uncertainty of the Thermal Diffusivity Measurement Based on Flash Laser Method (126)

Fabrício Lima Migliorini, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil
Egonn Hendrico Carvalho Silva, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil
Pablo Andrade Grossi, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil
Ricardo Alberto Neto Ferreira, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil
Denise das Mercês Camarano, National Commission of Nuclear Energy/Nuclear Tech. Development Center, Brazil

Influence of Radiation Diffraction Upon Metrological Parameters of the IR Line Scanner (393)

Leszek Rozanski, Poznan University of Technology, Poland
Stanislaw Poloszyk, Poznan University of Technology, Poland

Low Temperature Calibration Facilities at KRISS (547)

Inseok Yang, KRISS, Korea
Yong-Gyoo Kim, KRISS, Korea
Chang Ho Song, KRISS, Korea
Kee Hoon Kang, KRISS, Korea
Kee Sool Gam, KRISS, Korea

New Primary Low-Range Dew-Point Generator at LPM (554)

Davor Zvizdic, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Martti Heinonen, Centre for Metrology and Accreditation (MIKES), Finland
Tomislav Veliki, Laboratory for Process Measurement (LPM), Croatia
Daniel Sestan, Laboratory for Process Measurement (LPM), Croatia

Advanced Thermal Measurements of Modern Manufacturing Systems (579)

Marcel Sabin Popa, Technical University of Cluj Napoca, Romania

An Evaluation of a Simple Dynamical Model for Impacts Between Rigid Objects (490)

Erik Molino Minero Re, Polytechnic University of Catalonia (SARTI), Vilanova i la Geltrú, Spain
Mariano López, Polytechnic University of Catalonia (SARTI), Vilanova i la Geltrú, Spain
Antoni Mànuel, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Alfonso Carlosena, Universidad Pública de Navarra, Spain
Xavier Roset, Polytechnic University of Catalonia (SARTI), Vilanova i la Geltrú, Spain

TC4 – POWER QUALITY ASSESSMENT

Co-Chairs: *Janusz Mindykowski, Gdynia Maritime University, Poland*
Tomáš Radil, Instituto de Telecomunicações, Portugal

16:20 Evaluation of an Asynchronous Sampling Correction Technique Suitable for Power Quality Measurements (73)

Paul Clarkson, National Physical Laboratory, United Kingdom
Paul Wright, National Physical Laboratory, United Kingdom

16:40 Detection of Short Transients and Interruptions Using the Hilbert Transform (274)

Maurizio Caciotta, Roma Tre University, Italy
Sabino Giarnetti, Roma Tre University, Italy
Fabio Leccese, "Roma Tre" University, Italy
Zbigniew Leonowicz, Wrocław University of Technology, Poland

17:00 Single-Phase Power Quality Analyzer Based on a New Detection and Classification Algorithm (426)

Tomáš Radil, Instituto de Telecomunicações, Portugal
Pedro M. Ramos, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
A. Cruz Serra, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal

17:20 DSP-Based Instrument for Power Quality Monitoring on Ships (592)

Janusz Mindykowski, Gdynia Maritime University, Poland
Tomasz Tarasiuk, Gdynia Maritime University, Poland

17:40 Characterization Issue of Power Quality Instruments (604)

Daniele Gallo, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy
Carmine Landi, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy
Mario Luiso, Dipartimento di Ingegneria dell'Informazione, Seconda Università di Napoli, Italy

18:00 Current Harmonics Generated by Lamps: A Comparison in Different Conditions of Supply Voltage (601)

Claudio Cicala, Department of Electrical Engineering - "Sapienza" Università di Roma, Italy
Luca Podestà, Department of Electrical Engineering - "Sapienza" Università di Roma, Italy

TC7 – MEETING

Meeting of the Technical Committee

on

Measurement Science

TC7

TC9 – FLOW MEASUREMENT - GASES ETC.

*Co-Chairs:Jian Wu, National Metrology Centre of Agency for Science, Technology and Research (A*STAR), Singapore*

16:20 Laser Doppler Velocity Profile Sensor: Technical Advances for the Optical Flow Rate Measurement of Natural Gas (186)

Andreas Voigt, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany
Lars Büttner, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany
Jürgen Czarske, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany
Harald Müller, Physikalisch-Technische Bundesanstalt (PTB), Germany

16:40 Numerical and Experimental Study of Effects of Upstream Disturbances on Accuracy of Vortex-Shedding Flow Meter (194)

Pierre Cambier, ICAM Ecole d'ingenieurs, France
S. Vandermarlière, ICAM Ecole d'ingenieurs, France
Ernst von Lavante, University Duisburg-Essen, Germany
U. Banaszak, University Duisburg-Essen, Germany
H. Krisch, Krohne Messtechnik GmbH, Germany
Sylvain Tournillon, Krohne Messtechnik GmbH, Germany

17:00 Realisation of a Primary Air Velocity Standrad Using Laser Doppler Anemometer and Precision Wind Tunnel (413)

*Jian Wu, National Metrology Centre of Agency for Science, Technology and Research (A*STAR), Singapore*

17:20 Aerodynamic Loads Measurement of a Sounding Rocket Vehicle Tested in Wind Tunnel (478)

Maria Luísa Reis, Institute of Aeronautics and Space, Brazil
João Batista Falcão, Institute of Aeronautics and Space, Brazil
Giuliano Paulino, São Paulo State University, Brazil
Cláudio Truyts, Institute of Aeronautics and Space, Brazil

17:40 Numerical Test Rig for Turbine Gas Meter (234)

Toralf Hoch, RMG Messtechnik GmbH, Germany
Ernst von Lavante, University Duisburg-Essen, Germany

18:00 Advanced Phasor Control for a Coriolis Mass Flow Meter (CMFM) (402)

H. Röck, Christian-Albrechts-University of Kiel, Germany
Felix Koschmieder, Christian-Albrechts-University of Kiel, Germany

TC12 – CALIBRATIONS AND INTERCOMPARISONS

Co-Chairs: *Eduarda Filipe, Instituto Português da Qualidade, Portugal*
Jovan Bojkowski, University of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia

16:20 Noise and Interference in Thermometry Resistance Bridges (368)

Valentin Batagelj, University of Ljubljana, Faculty of Electrical Engineering, Slovenia
Jovan Bojkovski, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

16:40 Practical Limits of Measurement Uncertainties in Calibration of Standard Platinum Resistance Thermometers by Comparison (367)

Jovan Bojkovski, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia
Valentin Batagelj, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia
Janko Drnovšek, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia
Vincencij Žužek, Univ. of Ljubljana, Faculty of Electrical Engineering, Laboratory of Metrology and Quality, Slovenia

17:00 Interlaboratory Comparison of Digital Thermometer Between the Temperature Range from -40 °C to 420 °C (567)

Aliye Kartal Dogan, TUBITAK UME (National Metrology Institute), Turkey
Ali Uytun, TUBITAK UME (National Metrology Institute), Turkey
Murat Kalemci, TUBITAK UME (National Metrology Institute), Turkey
Kursat Ozdemir, TURKAK (Turkish Accreditation Agency), Turkey

17:20 Development of an Automatic Calibration System for Clinical Electrical Thermometers (87)

Le Chen, College of Mechatronics Engineering, China Jiliang University, China
Jian Sun, College of Mechatronics Engineering, China Jiliang University, China
Yaqiong Fu, College of Mechatronics Engineering, China Jiliang University, China
Hongwei Xu, College of Mechatronics Engineering, China Jiliang University, China

17:40 Comparison of Thermocouple Temperature Scales Realized by Fixed-Point and Radiation Methods (181)

Yong-Gyoo Kim, KRISS, Korea
Inseok Yang, KRISS, Korea
Yong Shim Yoo, KRISS, Korea

18:00 Uncertainties in the Whole Range of the Calibration of a Thermocouple (666)

Peter Benkó, STU Faculty of Mechanical Engineering, Slovakia
Rudolf Palenčár, STU Faculty of Mechanical Engineering, Slovakia

TC13 – BIOMEASUREMENTS

Co-Chairs: Nikolaus Bezruczko, Measurement and Evaluation Consulting, Chicago, United States of America

16:20 Fundamental Measurement for Functional Caregiving in Rehabilitation Medicine (91)

Nikolaus Bezruczko, Measurement and Evaluation Consulting, Chicago, United States of America
Shu-Pi Chen, Saint Xavier University, United States of America
Constance Hill, Children's Memorial Hospital, United States of America
Joyce Chesniak, Children's Memorial Hospital, United States of America

16:40 New Method for Locomotor Activity Measures in Instrumented Animals with Implant Based on Inductive Coupling (296)

Marcus Tadeu Pinheiro Silva, Federal Center for Technological Education - MG, Brazil
Flávio Henrique Vasconcelos, Federal University of Minas Gerais, Brazil
Guilherme Augusto Silva Pereira, Federal University of Minas Gerais, Brazil

17:00 Analysis and Design of Inductive Biosensors for Magnetic Immuno Assay (481)

Bruno Andò, DIEES- University of Catania, Italy
Salvatore Baglio, DIEES- University of Catania, Italy
Angela Beninato, DIEES- University of Catania, Italy
Giorgio Fallica, STMicroelectronics, Italy
Vincenzo Marletta, DIEES- University of Catania, Italy
Nicola Pitrone, DIEES- University of Catania, Italy

17:20 Correlation of Near and Far Infrared Vein Recognition for Unified Processing and Simulation (437)

Septimiu Crisan, Dep. of Electrical Measurement, Fac. of Electrical Engineering, Tech. Univ. of Cluj-Napoca, Romania
Ioan Gavril Tarnovan, Technical University of Cluj-Napoca, Romania
Bogdan Tebrean, Technical University of Cluj-Napoca, Romania
Titus Eduard Crisan, Technical University of Cluj-Napoca, Romania

17:40 Electrochemical Immunoassay for Cardiac Markers with Magnetic Particles as a Solid Phase and Silver Nanoparticles as an Electroactive Bio-Label (492)

Mateusz Szymanski, Cranfield University / National Physical Laboratory, United Kingdom
Robert Porter, National Physical Laboratory, United Kingdom

18:00 3-Dimensional Spectroscopic-Tomography of Biological Membrane by the Imaging-Type 2-D Fourier Spectroscopy (72)

Takashi Takuma, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Shinji Yabushita, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Takeshi Kawajiri, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Kana Yanogawa, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Takaki Harada, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Kazuya Yamamoto, Faculty of Engineering, Kagawa University, Takamatsu, Japan
Ichirou Ishimaru, Faculty of Engineering, Kagawa University, Takamatsu, Japan

TC14 – Optical Metrology in High-Precision Measurements

Co-Chairs: *Ryoshu Furutani, Department of Precision Engineering, Faculty of Engineering, Tokyo Denki University, Japan*
Jerzy Sladek, Laboratory of Coordinate Metrology, Mechanical Department, Cracow University of Technology, Poland

16:20 Limitations of Precision Length Measurements Based on Interferometers (37)

Gerd Jäger, Ilmenau University of Technology, Germany

16:40 Three Dimensional Profile Measurement of Four-Step Reference Specimens Using the Fringe Scanning Fourier Transform Method (102)

Chu-Shik Kang, KRISS, Korea
Jae Wan Kim, KRISS, Korea
Jong-Ahn Kim, KRISS, Korea
Tae Bong Eom, KRISS, Korea

17:00 New Demosaicing Algorithm Especially for Measurement of Geometries by Image Processing (113)

Martin Correns, Ilmenau University of Technology, Germany
Maik Schumann, Ilmenau University of Technology, Germany
Holger Weißensee, Ilmenau University of Technology, Germany
Maik Rosenberger, Ilmenau University of Technology, Germany
Mathias Schellhorn, Ilmenau University of Technology, Germany
Gerhard Linß, Ilmenau University of Technology, Germany

17:20 Nano-Dimensional Measurement Using Optically Trapped Probe Enhanced by Interferometric Scale (199)

Masaki Michihata, Osaka University, Japan
Daisuke Nakai, Osaka University, Japan
Terutake Hayashi, Osaka University, Japan
Yasuhiro Takaya, Osaka University, Japan

17:40 Mechatronic Approach in Precision Measurements (352)

Vytautas Giniotis, Vilnius Gediminas Technical University, Lithuania
Ramutis Bansevicius, Kaunas University of Technology, Lithuania
Mindaugas Rybokas, Vilnius Gediminas Technical University, Lithuania

18:00 Absolute Distance Metrology for Long Distances with Dual Frequency Sweeping Interferometry (647)

Alexandre Cabral, Faculty of Science of the University of Lisbon, Portugal
Manuel Abreu, Faculty of Science of the University of Lisbon, Portugal
José M. Rebordão, Faculty of Science of the University of Lisbon, Portugal

POSTER SESSION 4 (TC5, TC10, TC16, TC20, TC21, TC22, TC23, TC24)

Application of PSI/SCM Microscope for Nanoindentation Tester (329)

Masayuki Fujitsuka, Japan Society for the Promotion of Machine Industry, Japan
Makoto Yamaguchi, Japan Society for the Promotion of Machine Industry, Japan
Shigeru Ueno, Japan Society for the Promotion of Machine Industry, Japan
Genichiro Kamiyama, Lasertec Corporation, Japan
Shigeo Katayama, Fischer Instruments K.K., Japan

Installation and Uncertainty Evaluation of Reference Hardness Standard of Croatia (382)

Željko Alar, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Mladen Franz, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Tamara Aleksandrov, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Sanja Šolić, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia

A Simple Mathematical Method Used to Describe the Indenter Tip Area Function (606)

Pedro Bastos Costa, National Institute of Metrology, Standardization and Industrial Quality - INMETRO, Brazil
Renato Reis Machado, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil

Application of the Scanning Electron Microscope for the Analysis of the Reference Hardness Block Surface Quality (644)

Suzana Jakovljević, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Sanja Šolić, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Tamara Aleksandrov, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia
Željko Alar, University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia

Influence of Reliability on the Tradtional Control Charts: A Reliable Shewhart Control Chart (34)

Stefano De Falco, Research and Technology Transfer Office, School of Science and Tech., Univ. of Naples, Italy
Nello Polese, Dept. of Electrical Engineering, University of Naples Federico II, Italy

Traceability of Refrigerant Leak Tightness (43)

Isabelle Morgado, Laboratoire National de Métrologie et d'Essais, France
Pierre Otal, Laboratoire National de Métrologie et d'Essais, France
Jean-Claude Legras, Laboratoire National de Métrologie et d'Essais, France
Denis Clodic, Centre d'Energétique et des Procédés, Ecole des Mines de Paris, France

Car's Ignition System Diagnostics Using Continuous Wavelet Transform (54)

Petr Ježdík, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Jirí Novák, CTU in Prague, Faculty of Electrical Engineering, Czech Republic

Fault Diagnosis of Fully Differential Circuits in Electronic Embedded Systems (313)

Zbigniew Czaja, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland
Wojciech Toczek, Gdańsk University of Technology, Poland

Quality Assessment of Metal Oxide Varistors by Noise Spectroscopy (351)

Lech Hasse, Gdańsk University of Technology, Poland
Janusz Smulko, Faculty of Electronics, Telecommunications and Informatics, Gdańsk Univ. of Technology, Poland

Contactless Diagnostics of Thin Film Layers (371)

Vaclav Papez, CTU in Prague, Faculty of Electrical Engineering, Czech Republic
Stanislava Papezova, CTU in Prague, Faculty of Mechanical Engineering, Czech Republic

Measurement of Surface Displacement Excited by EMAT Transducer (411)

Petr Fidler, Brno University of Technology, Faculty of Electrical Engineering and Communication, Czech Republic
Petr Beneš, Brno University of Technology, Faculty of Electrical Engineering and Communication, Czech Republic

Novel and Low-Cost Temperature Compensation Technique for Piezoresistive Pressure Sensors (74)

Ferran Reverter, Universitat Politècnica de Catalunya, Spain
Goran Horak, University of Zagreb, Croatia
Vedran Bilas, University of Zagreb, Croatia
Manel Gasulla, Universitat Politècnica de Catalunya, Spain

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Zhijie Zhang, North University of China, China
Wei Wang, North University of China, China
Wenlian Wang, North University of China, China
Daihua Wang, North University of China, China

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Jorge C. Torres-Guzmán, Centro Nacional de Metrología, Mexico
Salustiano Ruiz, Centro Español de Metrología, Spain
Pablo Olvera, Centro Nacional de Metrología, Mexico
Maria Nieves Medina, Centro Español de Metrología, Spain

Volume Determination of a Vacuum Vessel by Pressure Rise Method (632)

Janez Setina, Institute of Metals and Technology, Slovenia
Bojan Erjavec, Institute of Metals and Technology, Slovenia

Remote Control of Electrical Appliances Via Power Line 230 V (83)

Milan Adamek, Faculty of Applied Informatics, Tomas Bata Univerzity in Zlin, Czech Republic
Pavel Martinec, Faculty of Applied Informatics, Tomas Bata Univerzity in Zlin, Czech Republic
Michaela Barinova, Faculty of Applied Informatics, Tomas Bata University in Zlin, Czech Republic

Calibration of Detection System of Crack in Concrete Structure by Using Image Processing Technology (332)

Man-Yong Choi, ESM Center, KRISS, Korea
Su-Un Kim, Department of Architecture Engineering, Hanyang University, Korea
Jeong-Hak Park, ESM Center, KRISS, Korea
Kee-Hwan Jee, Department of Civil Engineering, Chungnam National University, Korea
Sung-Woo Shin, Department of Architecture Engineering, Hanyang University, Korea

Experimental Research of an Inductive Dynamic Drive for Different Coil Power Supply Systems (594)

Piotr Jankowski, Gdynia Maritime University, Poland
Boleslaw Dudojć, Gdynia Maritime University, Poland
Janusz Mindykowski, Gdynia Maritime University, Poland
Andrzej Piłat, Gdynia Maritime University, Poland

A Novel Sensor for Monitoring Settlement (677)

Pingyu Zhu, Hunan University of Science and Technology, China
Hongyang Zeng, Hunan University of Science and Technology, China
Guilin Jiang, Hunan University of Science and Technology, China
Yang Zhou, Research Centre on Levee Safety & Disaster Prevention Ministry of Water Resources, China

PC Tool for Data Analysis in Calibration of Special Weights (18)

Adriana Valcu, National Institute of Metrology, Romania
Sterica Baicu, National Institute of Metrology, Romania

Research and Measurements of Velocity Field During Extrusion Process (33)

Leo Gusel, University of Maribor, Faculty of Mechanical Engineering, Slovenia
Rebeka Rudolf, University of Maribor, Faculty of Mechanical Engineering, Slovenia

The Choice of Method to the Evaluation of Measurement Uncertainty in Metrology (65)

João Alves e Sousa, Laboratório Regional de Engenharia Civil, Portugal
Álvaro Silva Ribeiro, Federal Fluminense University, Dep. of Analytical Chemistry, Institute of Chemistry, Brazil

Evaluating Uncertainties of Laserscanner Measurements by Using a Joint Monte Carlo and Fuzzy Approach (389)

Hamza Alkhatib, Geodetic Institute, Leibniz University of Hannover, Germany
Ingo Neumann, Geodetic Institute, Leibniz University of Hannover, Germany
Hansjürg Kutterer, Geodetic Institute, Leibniz University of Hannover, Germany

Identification of Measurement Data Processing Algorithm Coefficients Presented on Selected Form of FFT Algorithm (496)

Krzysztof Konopka, Inst. of Measurement Science, Electronics and Control, Silesian Univ. of Technology, Poland
Tadeusz Topór-Kamiński, Inst. of Measurement Science, Electronics and Control, Silesian Univ. of Technology, Poland

The Best Measurand Estimators of Trapezoidal PDF (513)

Warsza Zygmunt Lech, Polish Society of Metrology, Poland
Galovska Maryna, National Technical University of Ukraine, Ukraine

Importance of Scaling in Unsupervised Distance-Based Anomaly Detection (517)

Pekka Kumpulainen, Tampere University of Technology, Finland
Mikko Kylväjä, Aditro, Finland
Kimmo Hätönen, Nokia Siemens Networks, Finland

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Zygmunt Lech Warsza, Polish Metrological Society, Poland
Marian Jerzy Korczynski, Technical University of Lodz, Poland
Maryna Galovska, National Technical University of Ukraine "Kyiv Polytechnic Institute", Ukraine

Estimation of Positive Parameters in Form and Roughness Assessment (556)

Alistair B. Forbes, National Physical Laboratory, United Kingdom
João Alves e Sousa, Laboratório Regional de Engenharia Civil, Portugal

Improved Vehicle Parameter Estimation Using Sensor Fusion by Kalman Filtering (641)

Erik Steinmetz, SP Technical Research Institute of Sweden, Sweden
Ragne Emardson, SP Technical Research Institute of Sweden, Sweden
Per Jarlemark, SP Technical Research Institute of Sweden, Sweden

Upgrade of the Medium and High Frequency Vibration Calibration Reference Equipment and Extension to Low Frequencies (165)

Philippe Averlant, LNE Laboratoire National de Métrologie et d'Essais, France
Claire Bartoli, LNE Laboratoire National de Métrologie et d'Essais, France

STASI (Seismic Accelerometers Calibration System) (244)

Aldo Terrusi, ENEA C. R., Italy
Renzo Romagnoli, ENEA C. R., Italy
Roberto Silvestro, ENEA C. R., Italy
Domenico Ianniello, ENEA C. R., Italy

Measurements for the Evaluation of Vibration Exposure of Operators in a Ship Container Terminal (431)

Francesco Crenna, Università degli Studi di Genova - DIMEC, Italy
Giovanni Battista Rossi, Università degli Studi di Genova - DIMEC, Italy

Vibration Analysis Based on Hammer Impact Test for Multi-layer Fouling Detection (457)

Jaidilson Silva, Federal University of Campina Grande, Brazil
Antonio Marcus Lima, Federal University of Campina Grande, Brazil
Franz Neff, Federal University of Campina Grande, Brazil
José Sérgio da Rocha Neto, Federal University of Campina Grande, Brazil

Time Drift of Ocean Bottom Seismometers (OBS) (463)

S. Shariat-Panahi, Sarti Research Group. Technical University of Catalonia in Vilanova i la Geltru, Spain
F. Corrêa Alegria, Instituto de Telecomunicações/Instituto Superior Técnico, Portugal
Antoni Mànuel, Technical University of Catalonia (UPC), Vilanova i la Geltru, Spain
Joaquín del Río, Technical University of Catalonia (UPC), Vilanova i la Geltru, Spain

A New, Low-Cost, on-Line RGB Colorimeter for Wine Industry Based on Optical Fibers (225)

Cristina de la Torre, University of Oviedo, Spain
Rocío Muñiz, University of Oviedo, Spain
Miguel Angel Pérez, University of Oviedo, Spain

A Calibration Method, Based on Ridge LS Estimator Designed for Determination of Olive Oil Mixtures on the Basis of NIR Spectral Data (263)

Andrzej Miękina, Warsaw University of Technology, Poland
Roman Z. Morawski, Warsaw University of Technology, Poland

Traceability Statement for the Determination of Total Chromium Mass Fraction in Serpentine Soils by Atomic Absorption Spectrometry (407)

Maria Ascensão Trancoso, Instituto Nacional de Engenharia, Tecnologia e Inovação, Portugal
Sheila Alves, Instituto Superior Técnico, Portugal
Margarida Correia dos Santos, Instituto Superior Técnico, Portugal

Calibration and Verification of Breath Alcohol Detectors in Portugal (476)

Florbela A. Dias, Instituto Português da Qualidade, Portugal
Tânia Farinha, Instituto Português da Qualidade, Portugal
Fátima Dias, Instituto Português da Qualidade, Portugal
Eduarda Filipe, Instituto Português da Qualidade, Portugal

Evaluation of Measurement Uncertainty for the Moisture and Dry Matter Mass Fractions in Industrial Residues and Sludges (533)

Filomena C. Mouro, LNEG – Laboratório Nacional de Energia e Geologia, IP., Portugal
Sandra C. Calisto, LNEG – Laboratório Nacional de Energia e Geologia, IP., Portugal
Maria Ascensão Trancoso, LNEG – Laboratório Nacional de Energia e Geologia, IP., Portugal

Study, Development, and Implementation of Analysis Technique of Biphasic Attenuation Systems Using Ultrasound (545)

Monique K. K. Figueiredo, Laboratory of Ultrasond, Diavi/DIMCI/INMETRO, Brazil
Rodrigo P. B. Costa-Felix, Laboratory of Ultrasond, Diavi/DIMCI/INMETRO, Brazil
André V. Alvarenga, Laboratory of Ultrasond, Diavi/DIMCI/INMETRO, Brazil
Luiz E. Maggi, Laboratory of Ultrasond, Diavi/DIMCI/INMETRO, Brazil
Marcio F. Portilho, CENPES/Petrobras, Brazil
Marcio N. Souza, Institute of Chemistry, UFRJ, Brazil
Gilberto A. Romeiro, Institute of Chemistry, UFF, Campus of Valonguinho, Brazil

Homogeneity Study for Certification of a Candidate Reference Material for Polycyclic Aromatic Hydrocarbons (570)

Evelyn de F. Guimarães, Organic Analysis Laboratory – INMETRO/Chemical Department, Military Institute of Eng., Brazil
Eliane Cristina Pires do Rego, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Helen Cristine Moreira Cunha, INMETRO - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial, Brazil
Janaína M. Rodrigues, Organic Analysis Laboratory – INMETRO, Brazil
José Daniel Figueroa Villar, IME - Military Institute of Engineering, Chemical Department, Brazil
Valnei Smarçaro da Cunha, Organic Analysis Laboratory – INMETRO/Chemical Dep., Military Institute of Eng., Brazil

TC3 – FORCE MEASUREMENT FROM MICRO- TO PICO-NEWTON

Co-Chairs: *Yon-Kyu Park, Force Measurement & Evaluation Lab., KRISS, Korea*
Zhimin Zhang, National Institute of Metrology, P. R. China

08:30 **Determination of Micro-Forces from 1 µN up to 10 N Realized with a Full Automatically Dead Load Machine Developed by the BEV (264)**

Christian Buchner, BEV- Bundesamt für Eich- und Vermessungswesen, Austria

08:50 **Accurate Picoscale Forces for Insitu Calibration of AFM (285)**

Koo-Hyun Chung, National Institute of Standards and Technology (NIST), United States of America
Gordon Shaw, National Institute of Standards and Technology (NIST), United States of America
Jon R. Pratt, National Institute of Standards and Technology (NIST), United States of America

09:10 **KRISS Approach to Pico-Newton Standard Force Realization (458)**

Jae-Hyuk Choi, KRISS, Korea
Min-Seok Kim, KRISS, Korea
Yon-Kyu Park, KRISS, Korea
Yun Won Kim, KRISS, Korea
Dae-Im Kang, KRISS, Korea

TC4 – DIGITAL AND MIXED SIGNAL PROCESSING

Co-Chairs: *Artur Lopes Ribeiro, Instituto de Telecomunicações, Instituto Superior Técnico, Portugal*
Domenico Grimaldi, University of Calabria, Italy

08:30 Estimation and Prediction of the Clock Phase Fluctuations and Time-Interval Error (71)

Marek Zielinski, Nicolaus Copernicus University, Institute of Physics, Poland
Marcin Kowalski, Nicolaus Copernicus University, Institute of Physics, Poland
Dariusz Chaberski, Nicolaus Copernicus University, Institute of Physics, Poland
Slawomir Grzelak, Nicolaus Copernicus University, Institute of Physics, Poland

08:50 Implementation of Accelerated Impedance Spectrum Measurement Method (600)

Marek Niedostatkiewicz, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland
Romuald Zielonko, Gdańsk University of Technology, Dept. of Optoelectronics and Electronic Systems, Poland

09:10 Estimation of Residual Error Parameters for Vector Network Analyzers (62)

Gerd Wübbeler, Physikalisch-Technische Bundesanstalt (PTB), Germany
Rolf Judaschke, Physikalisch-Technische Bundesanstalt (PTB), Germany
Clemens Elster, Physikalisch-Technische Bundesanstalt (PTB), Germany

09:30 Precise Phase-Sensitive Detector with Switched Two-Terminal RC Network (188)

Andrzej Met, Silesian University of Technology, Poland
Krzysztof Musiol, Silesian University of Technology, Poland
Tadeusz Skubis, Silesian University of Technology, Poland

TC8 – MEETING

Meeting of the Technical Committee

on

Traceability in Metrology

TC8

TC14 – MEASUREMENT OF SURFACE CHARACTERISTICS

Co-Chairs: *Gerhard Linß, TU Ilmenau, Germany*
Robert Schmitt, Fraunhofer Institute for Production Technology IPT, Germany

08:30 Development of Refractory Thickness Meter for Torpedo Ladle Car (60)

Yoshito Isei, Sumitomo Metal Industries, Ltd, Japan
Tatsuro Honda, Sumitomo Metal Industries, Ltd, Japan
Kenichi Akahane, Sumitomo Metal Industries, Ltd, Japan
Hideyuki Takahashi, Sumitomo Metal Industries, Ltd, Japan

08:50 Calculation of Reference Surface Parameters for Elements Whose Generatrix is a Fragment of a Circle (162)

Dariusz Janecki, Kielce University of Technology, Poland
Krzysztof Stepien, Kielce University of Technology, Poland
Stanislaw Adamczak, Kielce University of Technology, Poland

09:10 2nd Generation Lead Measurement (573)

Jörg Seewig, University of Kaiserslautern, Germany
Tobias Hercke, Daimler AG, Stuttgart, Germany

09:30 Contact and Contactless Investigations of Manufactured High-Precise Surface Structures (680)

M. N. Durakbasa, Vienna University of Technology, Austria
P. H. Osanna, Vienna University of Technology, Austria
M. E. Yurci, Yildiz Technical University, Material Science and Manufacturing Technology, Turkey
P. Aksoy, Vienna University of Technology, Austria

TC21 – MEASUREMENT SOFTWARE, VALIDATION

Co-Chairs: *Franco Pavese, INRIM, Italy*
Alistair Forbes, National Physical Laboratory, United Kingdom

08:30 **Design and Evaluation of Experiments with SAS (247)**

Adriana Hornikova, University of Economics in Bratislava, Slovakia

08:50 **An Internationally Harmonised Measurement Software Guide: The Need and the Concept (419)**

Norbert Greif, Physikalisch-Technische Bundesanstalt (PTB), Germany
Graeme Parkin, National Physical Laboratory, United Kingdom

09:10 **Laboratories Best Measurement Capability Validation (598)**

Eduarda Filipe, Instituto Português da Qualidade, Portugal

TC23 – MEETING

Meeting of the Technical Committee

on

Metrology in Food and Nutrition

TC23

ROUND TABLE ON HIGHER EDUCATION IN 21ST CENTURY

Co-Chairs: *Paul Regtien, University of Twente, Fac. Electrical Engineering, Mathematics and Computer Science, The Netherlands*
Luca Mari, Università Cattaneo - LIUC, Italy

TC4 – DIRECT CURRENT AND LOW FREQUENCY MEASUREMENTS

Co-Chairs: *Ramon Pallàs-Areny, Universitat Politecnica de Catalunya, Spain*
Janusz Smulko, Gdańsk University of Technology, Poland

11:00 **A New Method for Insulation Resistance Measurement at Low Voltage Level Using Change of Effective Resistance (47)**

Kyu-Tae Kim, KRISS, Korea
Kwang-Min Yu, KRISS, Korea

11:20 **Assessment of Synchronic Detection at Low Frequencies Through DSP-Based Board and PC Sound Card (291)**

Mateusz Kotarski, Gdańsk University of Technology, Poland
Janusz Smulko, Faculty of Electronics, Telecommunications and Informatics, Gdańsk Univ. of Technology, Poland

11:40 **Parameters Estimation for a Model of Photovoltaic Panels (622)**

Francesco Adamo, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Filippo Attivissimo, Department of Electrics and Electronics - Polytechnic of Bari, Italy
A. Di Nisio, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Anna M. L. Lanzolla, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Maurizio Spadavecchia, Department of Electrics and Electronics - Polytechnic of Bari, Italy

12:00 **A Link Between Traditional and Modern Techniques in the Measurement of AC Voltage (142)**

Umberto Pogliano, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Bruno Trinchera, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Gian Carlo Bosco, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Marco Lanzillotti, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

TC8 – UNCERTAINTY AND STATISTICAL ANALYSIS

Co-Chairs: *Carlo Ferrero, INRIM, Italy*
Maria Nieves Medina, Head of Mass Division, Spanish Metrology Centre (CEM), Spain

11:00 Validity of Polynomials as Results for Comparisons (281)

Maria Nieves Medina, Centro Español de Metrología, Spain
José Ángel Robles, Spanish Metrology Centre (CEM), Spain
Javier Castro, Universidad Complutense, Spain

11:20 Choice of the Meaurement Points for a Calibration in a Range (349)

Umberto Pogliano, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

11:40 Type A Evaluation of Uncertainty Due to Systematic Effects in Digital Oscilloscopes (343)

Filippo Attivissimo, Department of Electrics and Electronics - Polytechnic of Bari, Italy
Andrea Cataldo, Department of Engineering for Innovation, University of Salento, Italy
Laura Fabbiano, Polytechnic of Bari, Italy
Nicola Giaquinto, Polytechnic of Bari, Italy

12:00 Methodology to Evaluate Calibrations: A Study Case Study on the Interlaboratorial Comparison Program (217)

Joel de Jesus Lima Sousa, Companhia Hidroeletrica do São Francisco (CHESF), Brazil
Luiz Torres Sá Leitão, Companhia Hidroeletrica do São Francisco (CHESF), Brazil

TC21 – MEASUREMENT APPLICATIONS

Co-Chairs: *Jean-Marc Linares, Aix-Marseille University, France*
Raghu Kacker, NIST/ITL/MCSD, United States of America

11:00 **Uncertainty of Reference Frames Applied to Computer Aided Orthopedic Surgery (94)**

Jean-Marc Linares, ISM/GIBO/EA(MS), UMR6233, Aix Marseille University, France
Jean-Michel Sprauel, ISM/GIBO/EA(MS), UMR6233, Aix Marseille University, France
Bernard Schlatterer, Institut des Sports de Monaco, Monaco

11:20 **Impact of Model Uncertainties to the Reconstruction of Surface Profiles in Scatterometry (171)**

Hermann Gross, Physikalisch-Technische Bundesanstalt (PTB), Germany
Andreas Rathsfeld, Weierstrass Institute for Applied Analysis and Stochasitcs, Berlin, Germany
Frank Scholze, Physikalisch-Technische Bundesanstalt (PTB), Germany
Markus Bär, Physikalisch-Technische Bundesanstalt (PTB), Germany

11:40 **Comparison of Error Mapping Techniques for Coordinate Measuring Machines Using the Plate Method and Laser Tracer Technique (565)**

S. Moustafa, National Institute for Standards, Egypt
N. Gerwien, Physikalisch-Technische Bundesanstalt (PTB), Germany
F. Haertig, Physikalisch-Technische Bundesanstalt (PTB), Germany
K. Wendt, Physikalisch-Technische Bundesanstalt (PTB), Germany

12:00 **Approximate GCD of Inexact Univariate Polynomials (279)**

Pablo Lecumberri, Universidad Pública de Navarra, Spain
Marisol Gómez, Universidad Pública de Navarra, Spain
Alfonso Carlosena, Universidad Pública de Navarra, Spain

TC23 – FOOD AND NUTRITIONAL METROLOGY - 1

Co-Chairs: *Roman. Z. Morawski, Warsaw University of Technology, Faculty of Electronics and Information Technology, Institute of Radioelectronics, Poland*

11:00 **Comparison of Principal Component Regression (PCR) and Partial Least Square (PLS) Methods in Prediction of Raw Milk Composition by VIS-NIR Spectrometry. Application to Development of on-Line Sensors for Fat, Protein and Lactose Contents (229)**

Rocío Muñiz, University of Oviedo, Spain
Miguel Angel Pérez, University of Oviedo, Spain
Cristina de la Torre, University of Oviedo, Spain
Carlos Enrique Carleos, University of Oviedo, Spain
Norberto Corral, University of Oviedo, Spain
Jesús Angel Baro, University of Valladolid, Spain

11:20 **A Flexible Experimental Set-Up for Development of Spectrophotometric Analysers of Food (59)**

Andrzej Miękina, Warsaw University of Technology, Poland
Roman Z. Morawski, Warsaw University of Technology, Poland

11:40 **Impedance Spectrometry for Monitoring Alcoholic Fermentation Kinetics Under Wine-Making Industrial Conditions (228)**

Miguel Angel Pérez, University of Oviedo, Spain
Rocío Muñiz, University of Oviedo, Spain
Cristina de la Torre, University of Oviedo, Spain
Beatriz Garcia, University of Oviedo, Spain
Carlos Enrique Carleos, University of Oviedo, Spain
Raúl Crespo, Dept. de Ingeniería Agroforestal (University of Valladolid), Spain
Luis M. Cárcel, Dept. de Ingeniería Agroforestal (University of Valladolid), Spain

12:00 **Experiences in Measuring Density by Fiber Optic Sensors in the Grape Juice Fermentation Process (578)**

Camilo Quintáns Graña, Vigo University, Electronic Technology Department, Spain
Jorge Marcos Acevedo, Vigo University, Electronic Technology Department, Spain
Ana Maria Cao y Paz, Vigo University, Electronic Technology Department, Spain
María José Graña Caneiro, Xunta de Galicia, Estación de Viticultura y Enología de Ribadumia, Spain

TC24 – MEETING

Meeting of the Technical Committee

on

Chemical Measurements

TC24

WORKSHOP ON MEASURING THE IMPOSSIBLE: MEASUREMENT OF CHARACTERISTICS RELATED TO HUMAN PERCEPTION AND INTERPRETATION

Co-Chairs: *Giovanni Rossi, Università degli Studi di Genova - DIMEC, Italy*
Luca Mari, Università Cattaneo - LIUC, Italy
Koji Ito, Department of Computational Intelligence and System Science, Tokyo Institute of Technology, Japan
Franco Pavese, INRIM, Italy

13:40 Measurement Related to Human Perception and Interpretation – State of the Art and Challenges (486)

Giovanni Battista Rossi, Università degli Studi di Genova - DIMEC, Italy
Birgitta Berglund, Dep. of Psychology, Univ. of Stockholm/Inst. of Environmental Medicine, Karolinska Inst., Sweden

14:00 Measurement of Parameters to Value Human Life Extension (178)

Philip Thomas, City University, United Kingdom
Roger Jones, City University, United Kingdom
James Kearns, City University, United Kingdom

14:20 Estimation of Relatively Commanded Force from EMG and Its Appication to Human-Machine Interfaces (106)

Masato Watanabe, Tokyo Institute of Technology, Japan
Yasuhiro Yamamoto, University of Tokyo, Japan
Kumiyo Nakakoji, University of Tokyo, Japan
Hiroyuki Kambara, Tokyo Institute of Technology, Japan
Yasuharu Koike, Tokyo Institute of Technology, Japan

14:40 Customer Satisfaction Surveys: A Simplified Method to Create a Leverage Index using Qualitative Data (316)

Jean-Claude Krynicki, Agilent Technologies, Palaiseau, France

15:00 Multiparametric Measurements of Emotions (667)

Ksenia Sapozhnikova, D. I. Mendeleyev Institute for Metrology, Russia
Roald Taymanov, D. I. Mendeleyev Institute for Metrology, Russia

TC3 – MEETING

Meeting of the Technical Committee

on

Measurement of Force, Mass and Torque

TC3

TC8 – CALIBRATION AND METROLOGICAL CHARACTERIZATION

Co-Chairs: *Umberto Pogliano, Istituto Nazionale di Ricerca Metrologica - INRIM, Italy*
Michela Sega, Istituto Nazionale di Ricerca Metrologica - INRIM, Italy

13:40 The Use of GC-MS to Support Stability Assessment of Density Reference Liquids (629)

Salvatore Lorefice, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Elena Amico di Meane, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Michela Sega, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

14:00 A New Procedure for Detecting Deviations Behind an Undercut by Using Optical Coordinate Measuring Machines (119)

Matthias Rückwardt, Ilmenau University of Technology, Germany
André Göpfert, Ilmenau University of Technology, Germany
Steffen Lerm, Ilmenau University of Technology, Germany
Maik Rosenberger, Ilmenau University of Technology, Germany
Mathias Schellhorn, Ilmenau University of Technology, Germany
Gerhard Linß, Ilmenau University of Technology, Germany

14:20 Traceability of 633 nm Laser Calibration at NIMT (158)

Monludee Ranusawud, National Institute of Metrology, Thailand
Ketsaya Vacharanukul, National Institute of Metrology, Thailand
Anusorn Tonmueanwai, National Institute of Metrology, Thailand

14:40 Study of Certified Reference Material Preparation Technique for Microelectronic Digital Circuits (88)

Senzu Shen, Wuhan Digital Engineering Institute, China
Wenjun Chang, Wuhan Digital Engineering Institute, China
Hua Li, Wuhan Digital Engineering Institute, China
Qian Liu, Wuhan Digital Engineering Institute, China
Minghu Zhang, Wuhan Digital Engineering Institute, China

15:00 A Semi-Automation Procedure for Dial Comparators Calibration (466)

Albert Garcia Benadí, Metrology and Calibration Lab., Tech. Center in Vilanova i la Geltru, Univ of Catalonia, Spain
S. Shariat-Panahi, Sarti Research Group. Technical University of Catalonia in Vilanova i la Geltru, Spain
Joaquín del Río, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain
Antoni Mànuel, Sarti Research Group, Technical University of Catalonia in Vilanova i la Geltru, Spain

15:20 Absolute Calibration of Optical Flats Throgout the Self Comparison and Image Processing (30)

Jose Sánchez, Precision Engineering Laboratory, CCADET, Universidad Nacional Autónoma de México, Mexico
Ruiz Gerardo, Instrumentation & Measurement Department, CCADET, Univ. Nacional Autónoma de México, Mexico
Sergio Padilla, Precision Engineering Laboratory, CCADET, Universidad Nacional Autónoma de México, Mexico
Benjamin Valera, Precision Engineering Laboratory, CCADET, Universidad Nacional Autónoma de México, Mexico

TC13 – BIOMEDICAL SENSORS

Co-Chairs: *Miguel Angel Perez, University of Oviedo, Spain*
Satu Kärki, Department of Automation Science and Engineering, Tampere University of Technology, Finland

13:40 Wireless Flex Sensor Belt Networks for Foetal Movement Monitoring in Low Risk Pregnancies (107)

Luís Borges, University of Beira Interior, Instituto de Telecomunicações-DEM, Portugal
Norberto Barroca, Univ. da Beira Interior, Inst. de Telecomunicações, Dep. de Engenharia Electromecânica, Portugal
Fernando Velez, Univ. da Beira Interior, Inst. de Telecomunicações, Dep. de Engenharia Electromecânica, Portugal
António Lebres, Universidade da Beira Interior, Departamento de Física, Portugal

14:00 High Sensitivity Triaxial Magnetic Field Transducer, Based on the Phase Characteristics of the GMI Effect (223)

Eduardo Costa Silva, Post Graduation Program in Metrology / PUC-Rio, Brazil
Luiz Gusmão, Electrical Engineering Department / PUC-Rio, Brazil
Carlos Hall Barbosa, Post Graduate Program in Metrology / PUC-Rio, Brazil
Elisabeth Costa Monteiro, Post Graduate Program in Metrology / PUC-Rio, Brazil

14:20 Humidity Control System in Newborn Incubator (292)

Enilson José Costa, Federal Center of Tecnological Education of Pernambuco, Recife – PE, Brazil
Raimundo C. S. Freire, Universidade Federal de Campina Grande, Brazil
João Bosco Silva, Universidade Federal da Paraíba - UFPB, Brazil
Carlos Magno Cursino, Univ. de Pernambuco e Centro Federal de Educação Tecnológica de Pernambuco, Brazil
Cláudio Oliveira, Universidade Federal da Paraíba - UFPB, Brazil
Bruno A. M. Pereira, Federal University of Pernambuco, Brazil
Roniere F. L. Silva, Federal University of Campina Grande, Brazil

14:40 A PVDF Sensor with Printed Electrodes for Normal and Shear Stress Measurements on Sole (346)

Satu Kärki, Tampere University of Technology, Finland
Miika Kiiski, Tampere University of Technology, Finland
Matti Mäntysalo, Tampere University of Technology, Finland
Jukka Lekkala, Tampere University of Technology, Finland

15:00 Plantar Pressure Distribution Measurements: An Approach to Different Methods to Compute a Pressure Map (130)

Satu Kärki, Department of Automation Science and Engineering, Tampere University of Technology, Finland
Jukka Lekkala, Department of Automation Science and Engineering, Tampere University of Technology, Finland
Tiina Kaistila, Physical and Rehabilitation Medicine Unit, Tampere University Hospital, Finland
Heikki-Jussi Laine, Department of Orthopaedics and Traumatology, Tampere University Hospital, Finland
Heikki Mäenpää, Department of Orthopaedics and Traumatology, Tampere University Hospital, Finland
Hannu Kuokkanen, Department of Plastic Surgery, Tampere University Hospital, Finland

15:20 A New Low-Cost and Portable Elisa Reader by Using a Photodiode Matrix and Electroluminiscent (EL) Lamps (227)

Beatriz Garcia, University of Oviedo, Spain
Jesús Angel Baro, University of Valladolid, Spain
Cristina de la Torre, University of Oviedo, Spain
Rocío Muñiz, University of Oviedo, Spain
Miguel Angel Pérez, University of Oviedo, Spain

TC14 – TACTILE COORDINATE METROLOGY

Co-Chairs: *Gustavo Donatelli, Fundação CERTI, Brazil*
Vytautas Giniotis, Inst. of Geodesy, Vilnius Gediminas Technical U-ty, Lithuania

13:40 **Self-Calibration of 2D Planar Coordinate Measuring Machine (38)**

Ryoshu Furutani, Tokyo Denki University, Japan

14:00 **Reducing Dynamically-Induced Deviations for Line Scale Calibration in Non-Ideal Measurement Situation (272)**

Saulius Kausinis, Kaunas University of Technology, Lithuania
Algimantas Barakauskas Barakauskas, Precizika-Metrology, Lithuania
Rimantas Barauskas, Kaunas University of Technology, Lithuania
Aurimas Jakstas, Kaunas University of Technology, Lithuania
Albinas Kasparaitis, Vilnius Gediminas Technical University, Lithuania

14:20 **Matrix Method for LCMM — Connection Between Subspaces of Reference Points (433)**

Jerzy Sładek, Cracow University of Technology, Poland
Marcin Krawczyk, Cracow University of Technology, Poland

14:40 **Knowledge-Based Optimisation of the Tactile Scanning Process on CMM (468)**

Robert Schmitt, Fraunhofer Institute for Production Technology IPT, Germany
Susanne Nisch, Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen Univ., Germany

15:00 **Kinematic Metrological Model of the Coordinate Measuring Arm (MCMA) (585)**

Jerzy Sładek, Cracow University of Technology, Poland
Ksenia Ostrowska, Cracow University of Technology, Poland
Kamila Gacek, Cracow University of Technology, Poland

15:20 **Testing of the Repeatability of Stylus Change of Modular Probes Used in Coordinate Measuring Machines (656)**

Adam Wozniak, Warsaw University of Technology, Institute of Metrology and Biomedical Engineering, Poland

TC23 – FOOD AND NUTRITIONAL METROLOGY - 2

Co-Chairs: Isabel Castanheira, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal

13:40 NIM's Role in Developing National System of Metrology in Chemistry for Food Analysis (230)

Jun Wang, National Institute of Metrology, China
Hongmei LI, National Institute of Metrology, China
Liandi Ma, National Institute of Metrology, China

14:00 Development of a Certified Reference Material for Nicotinamide in Infant Formula (159)

Jun Liu, National Institute of Metrology, China
Ting Huang, National Institute of Metrology, China
Wei Zhang, National Institute of Metrology, China
Yang Liu, National Institute of Metrology, China

14:20 Quality Control Materials for Analysis of Vitamins in Food (441)

Isabel Castanheira, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal
Elsa Vasco, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal
Cristina Flores, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal
Inês Coelho, Instituto Nacional de Saude Dr. Ricardo Jorge, Portugal

14:40 Determination of Organochlorine Pesticides in Tomato and Evaluation of Proficiency Testing Results (369)

Burcu Binici Gökçen, TUBITAK UME (National Metrology Institute), Turkey
Fatma Akçadağ, TUBITAK UME (National Metrology Institute), Turkey