

PROGRAM

Wednesday 28th, November

8 h 30 Plenary Conference I (Regency I and II). Chair person: J Torres

Dr. Hector Nava Jaimes General Director, CENAM	Measurements in Mexico, from the Mayas to CENAM
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9 h 30 Coffee break

10 h 00 Key note speech sessions

Force	Regency I and II Chair: D I Kang	J H Choi	"Small force metrology down to pico-newton range (Characterization of quantum-weight generating cantilever device)"
Vacuum	Chichen Itza Chair: J Torres	Karl Jousten	Traceability to SI units for vacuum measurement in industrial applications
Vibrations	Uxmal Chair: Th Bruns	T Usuda	Development of charge amplifier calibration system employing substitution method

10 h 30 Parallel Sessions I

Force I	Regency I and II Chair persons: D I Kang J H Choi	D M Stefanescu A Stoian K H Haase S Mäuselein D M Stefanescu	Strain gauged elastic elements for force and related quantities measurement A new type of force sensor Strain sensor based on Bragg gratings Investigations of load cells made of single-crystalline silicon with sputtered-on strain gauges A new weigh-in-motion and traffic monitoring system
Vacuum I	Chichen Itza Chair persons: K Jousten J Torres	C Wüthrich N Medina I M Choi P Otal J C Torres-Guzman	The new static expansion system of METAS Developments in the pressure field at CEM A study of carbon nanotube-based ionization gauges Three technologies met in the absolute pressure range 0,5 Pa to 3 Pa SIM vacuum comparison from 133.3 Pa to 13.33 kPa
Vibrations I	Uxmal Chair persons: Th Bruns Chr. Hof	A Oota W Cheung G P Ripper H Nozato	Development of primary calibration system for high frequency range up to 10 kHz Progress in development of primary angular vibration calibration systems The development of a new primary calibration system for laser vibrometers at INMETRO Development of shock acceleration calibration machine in NMIJ

12 h 10 Lunch

13 h 20 Parallel Sessions II

Force II	Regency I and II Chair persons: C Ferrero T Bartel	C Marinari A Pusa O Mack T Hayashi A Knott	Static and dynamic evaluation of the CENAM (Mexico) 150 kN primary force standard machine by means of the INRiM (Italy) 100 kN six-component dynamometer The long-term behaviour of force transducers as criteria for the selection of new transfer standards Add-on of the 2 MN force standard machine for testing load cells Performance of force comparator with reference to tuning-fork type force transducer Continuous calibration of force transducers
Related Quantities	Chichen Itza Chair persons: P Olvera D Ramirez	S Y Woo C Ferrero P I Santamaría R Tejada	Measurement of gravitational acceleration values at the calibration laboratories in Korea The intercomparison of Charpy impact pendulum calibration Activities designed to establish relationships between concepts as a didactic strategy in the metrology teaching process Traceability concept teaching by means of experimental procedures for chemistry undergraduate students at UNAM
Vibrations II	Uxmal Chair persons: T Usuda W S Cheung	C S Veldman H Nicklich G P Ripper M I Schiefer Y J Huang P Rattanangkul	Traceable low frequency ac voltage measurements Latest design of sine and shock exciters for calibration purposes A bilateral acceleration comparison between CENAM and INMETRO New techniques in primary accelerometer calibration Dynamic structure evaluation of isolation seismic block for primary vibration calibration system The bilateral comparison for charge sensitivity of standard accelerometer between NIMT and NMIJ

15 h 00 Coffee break

15 h 30 Poster Session I. Izamal. Coordinator: P Olvera

Pressure & Vacuum	F J Cedillo M	Continuous improvement of a Mexican pressure calibration secondary laboratory
	Rantanen	High pressure comparison among seven European national laboratories
	Z Krajcek	Standardization of negative gauge pressures using piston balances
	A Navarro-Nateras	Development of measurement systems for the calibration of leaks and holes in dynamic pressure (micro flow) at CENAM Mexico
	J Setina	Validation of a variable bell jar pressure as a method for primary generation of absolute pressure in the range from 100 Pa to 5 kPa
Vibrations	T Licht	Primary vibration calibration by laser interferometry and mechanical shortcomings
	D Milcic	The effective vibration speed of web offset press
Related Quantities	C Marinari	Measuring the free-fall acceleration with the IMGC-02 absolute gravimeter
	Laguna-Aguilar	Metrology impact in Technological Universities, Mexico

17 h 00 End of technical activities of the day

Thursday 29th, November

8 h 30 Plenary Conference II (Regency I and II). Chair person: D I Kang

Dr. Richard Davis BIPM	Recent advances on the redefinition of the kilogram
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9 h 30 Coffee break

10 h 00 Key note speech sessions

Mass	Regency I and II Chair: R Davis	Alain Picard	Progress on the BIPM Watt balance
Pressure	Chichen Itza Chair: S Y Woo	Anita Calcatelli	The development of vacuum measurements down to extremely high vacuum -XHV
Torque	Uxmal Chair: D Peschel	Dirk Röske	The new version of the German torque calibration standard DIN 51309:2005-12 – a comparative overview

10 h 30 Parallel Sessions III

<p>Mass I</p>	<p>Regency I and II</p> <p>Chair persons: R Davis A Picard</p>	<p>H Fang</p> <p>Z Jabbour</p> <p>S Davidson</p> <p>J A Sousa</p>	<p>Mass determination of 1 kg silicon spheres for Avogadro project</p> <p>Magnetic levitation system for the dissemination of a non-artifact based kilogram</p> <p>A comparison of primary platinum-iridium kilogram mass standards among eighteen European NMIs</p> <p>The relevance of using a Monte Carlo method to evaluate uncertainty in mass calibration</p>
<p>Pressure I</p>	<p>Chichen Itza</p> <p>Chair persons: S Y Woo A Calcatelli</p>	<p>W Sabuga</p> <p>G Buonanno</p> <p>H Kajikawa</p> <p>G Molinar</p> <p>M Bair</p>	<p>An approach to the evaluation of dimensional measurements on pressure-measuring piston-cylinder assemblies</p> <p>Characterisation of the IMGC-DH100L pressure balance using finite element analysis</p> <p>Precise determination of the jacket pressure coefficient of controlled-clearance pressure balances</p> <p>FEM analysis for an industrial pressure balance from 3 MPa to 120 MPa in liquid medium</p> <p>The design and implementation of a fully automated crossfloat system for the comparison of piston gauges in both gauge and absolute measurement modes</p>
<p>Torque I</p>	<p>Uxmal</p> <p>Chair persons: D Peschel D Röske</p>	<p>A Brüge</p> <p>S Kuhn</p> <p>P Averlant</p> <p>K Ohgushi</p> <p>D Ramirez-Ahedo</p>	<p>Mathematical representation of reference torque transducers in partial-range regimes</p> <p>Advantage of carrier frequency in contactless high precision torque measurement systems</p> <p>Development of the new LNE 50 Nm deadweight torque standard machine</p> <p>Expansion of the calibration range and improvement of the uncertainty in the 1 kN·m deadweight torque standard machine</p> <p>Hybrid torque standard machine for 1 kN·m developed in CENAM</p>

12 h10 Lunch

13 h 20 Parallel Sessions IV

Force III	Regency I and II Chair persons: A Knott C Marinari	J Illemann M Kobusch R Ciobanu S S K Titus	The achievable uncertainty for balance-based force standard machines in the range from micronewton to newton Comparison of shock and sine force calibration methods Amorphous wire based stress sensor working with low carrier frequency Realization of forces (2 N - 20 N) by primary method
Pressure II	Chichen Itza Chair persons: G Molinar W Sabuga	S Y Woo T Kobata T Kobata L G Bermanec M Kojima	New differential pressure standard at KRISS A fully automated calibration system for pressure balances Towards establishment of remote calibration for pressure standards Characterization of LPM diving-bell manometer Study on calibration procedure for differential pressure transducers
Mass II	Uxmal Chair persons: Z Jabbour S Davidson	T Fehling T Fröhlich C Buchner M Grum G Vindisar	Design and performance of the new Sartorius robot-system Mass dissemination using a fully automated mass comparator robot system Fully automatic mass laboratory from 1 mg up to 50 kg – robots perform high precision mass determination Analysis of change of mass difference between weight support plates during subdivision of 1 kg Evaluation of standard uncertainty of measured mass difference on 10 kg comparator balance

15 h 00 Coffee break

15 h 30 Poster Session II. Izamal. Coordinator: D Ramirez

Force	S Lietz	A new six-component force vector sensor – first investigations
	J A Robles Carbonell	Enlargement of the force capability at CEM: development of a 10 MN hydraulic force standard machine
	M Franz	Implementation of the reference force standard in the Croatian metrology and interlaboratory comparison
	C Morales-Aguillon	Instrumentation improvements in the MMS-150 kN force standard machine, CENAM Mexico
	D Kimetto	The use of strain gauges in the Kenyan industry for measurement
	D González Espinosa	Load cells temperature effect in force applications for automotive industry requirements
Torque	Y K Park	Establishment of torque standards in KRISS of Korea
	G Wegener	Suggestions on how to include the effect of reproducibility in the evaluation of simplified calibration procedures
	R Soares de O Ramirez-Ahedo	Torque metrology development in Brazil Torque proficiency test among accredited laboratories in Mexico
Mass	S Lee	The repeatability optimization of an automated weighing comparator
	M Ueki	Automated volume measurement for weights using acoustic volumeter
	R Tykva	Determination of mass differences in the range of units of μg by radioactivity measurement
	T Yamazaki	Development of mass and length measurement system on conveyor belt (2nd report)
	L O Becerra	Linking SIM mass comparisons to the KCRV on 1 kg
	M Sanz	Metrology in developing economies – Jamaican experience in publishing mass CMCs in Appendix C of MRA of CIPM
Density	Sari Semenoja	Determination of air density with buoyancy artifacts

17 h 00 End of technical activities of the day

Friday 30th, November

8 h 30 Plenary Conference III (Regency I and II). Chair person: Th Bruns

Prof. Antonio Cruz Serra President, IMEKO	Aims, objectives structure and activity of IMEKO - the instrumentation and measurement confederation
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9 h 30 Coffee break

10 h 30 Parallel Sessions V

Force IV	Regency I and II Chair persons: A Pusa J Torres	T Bartel	Statistical analysis of 2 MN and 4 MN force range key comparisons
		C Villarroel-Poblete	Force standards comparison at 1 kN and 50 kN among national laboratories from EUROMET and SIM
		J Torres-Guzman	Comparison between the CENAM (Mexico) 150 kN and the INRiM (Italy) 1 MN force standard machine
		C Ferrero	Dissemination of the force unit in Italy: intercomparison results up to 20 kN
		C Ferrero	The SIT activity to disseminate physical quantities in Italy: calibration of material testing machine intercomparisons
		J M Saffar	Qualification of force standard machines
Pressure III	Chichen Itza Chair persons: T Kobata G Buonanno	P Olvera-Arana	Hydraulic gauge pressure proficiency test in the range from 7 MPa to 70 MPa for Mexican accredited laboratories
		S Zuñiga-Gonzalez	Pneumatic gauge pressure proficiency test in the range from -70 kPa to 0 kPa for Mexican accredited laboratories
		J B Soriano	Considerations in mass calibration of pressure balance weights
		S Semenoja A Nunes	A calibration system for PTU devices Cost effective immersive room with pressure sensing floor
		P Silva Girão	Tactile sensors and their use in industrial, robotic and medical applications

12 h10 Lunch

13 h 20 Parallel Sessions VI

Vibrations III	Chichen Itza Chair persons: C S Veldman G P Ripper	C Hof Th Bruns P Košťal Rusnáková	Comparison of the calibration of a heavy multi-component vibration transducer on different exciter systems A web-based data generator for software-validation and algorithm comparison in primary accelerometer calibration Experimental modal analysis of tyres by ESPI Experimental study of plates by ESPI
Density I	Uxmal Chair persons: K Fujii H Fang	H Bettin C Buchner S Lorefice L O Becerra L M Peña	Temperature control in the μ K range for density measurements Automatic testing facility for determining liquids and solids density; and determining the volume of E1 weights Design of an automatic apparatus for the calibration of on-line densimeters Solids volume by hydrostatic weighing comparison between CENAM-Mexico and INMETRO-Brazil. SIM.7.34-B A new image processing system for hydrometer calibration developed at CENAM

15 h 00 Coffee break

15 h 30 Closing Ceremony

17 h 00 Conference technical activities end.