Informare sulle misurazioni: pubblicazioni e conferenze del METAS

Le attività di ricerca e sviluppo si riflettono anche nelle pubblicazioni e nelle conferenze che i ricercatori del METAS hanno pubblicato o tenuto.

Anche nell'anno in rassegna i collaboratori del METAS hanno presentato i risultati del loro lavoro di ricerca e sviluppo in occasione di riunioni di specialisti, conferenze e pubblicazioni scientifiche. Essi sono stati attivi in organizzazioni specializzate e in gruppi di esperti a livello nazionale ed internazionale, apportandovi il loro know-how e la loro esperienza. Hanno fatto conoscere la metrologia ad un vasto pubblico al di fuori della ristretta cerchia specializzata e si sono impegnati a impartire lezioni agli studenti universitari. La maggior parte delle presentazioni, conferenze e riunioni quest'anno si è svolta online.

Una panoramica delle pubblicazioni dei collaboratori del METAS e delle conferenze da essi tenute è riportata alla fine di questo capitolo. Una serie di conferenze specialistiche si è tenuta inoltre nell'ambito di eventi, che si sono svolti nella sede stessa del METAS.

Onorificenze

La rivista scientifica "IEEE Transactions on Instrumentation and Measurement" ha colto l'occasione del suo 70° anniversario come un'opportunità per onorare autori degni di nota. Due scienziati del METAS che si occupano di metrologia nel settore dell'elettricità hanno ricevuto premi, uno come autore particolarmente meritevole da molti anni, l'altro come promettente giovane autore in questo campo.

Rivista specialistica "METinfo"

Nel 2020 sono stati pubblicati due numeri della rivista specialistica di metrologia "METinfo", edita dal METAS e i cui articoli vengono normalmente scritti da collaboratori del METAS. Parecchi articoli di "METinfo" sono stati ripresi da diverse riviste specializzate.

Diamo un'occhiata ai laboratori

A differenza degli anni precedenti, la prevista partecipazione del METAS al programma "Mädchen – Technik – Los!" (Ragazze – Tecnica – Via!) durante la giornata nazionale del futuro, che avrebbe dovuto aver luogo all'inizio di novembre 2020, non è stata possibile perché tale giornata ha dovuto essere annullata a causa della pandemia. Nell'ambito di questo programma, a un gruppo di ragazze viene offerta una panoramica dei compiti e delle attività di alcuni laboratori del METAS.

Nell'anno in rassegna è stato anche particolarmente difficile organizzare visite per gruppi. Le visite consentono ai visitatori di avvicinarsi ai compiti e alle attività del METAS e di comprenderli meglio. Non appena la situazione pandemica lo consentirà, presso il METAS si terranno nuovamente degli eventi.

Pubblicazioni e presentazioni

La seguente compilazione offre una panoramica degli articoli più importanti pubblicati e delle conferenze tenute dai collaboratori del METAS. Nell'indicazione degli autori i nomi dei collaboratori del METAS sono evidenziati in grassetto.

Pubblicazioni

Brown, R. J.C., **Andres, H.:** *How should metrology bodies treat method-defined measurands?* Accreditation and Quality Assurance 25 (2020), 161-166.

Sauvageat, E. (...) **Auderset, K.** (...), **Vasilatou, K.:** *Real-time pollen monitoring using digital holography.* Atmospheric Measurement Techniques 13 (2020), 1539-1550.

Ferrero, A., **Basic, N.** et al: *An insight into the present capabilities of national metrology institutes for measuring sparkle.* Metrologia 57 (2020), 065029 18pp.

Muzeta, V., **Bernasconi, J.** (...), **Blattner, P., Reber, J.** et al.: *Review of road surface photometry methods and devices – Proposal for new measurement geometries.* Lighting Research and Technology (2020), 0: 1-17.

Bircher, B., Meli, F., Küng, A., Thalmann, R.: *X-ray source tracking to compensate focal spot drifts for dimensional CT measurements.* Proceedings. 10th Conference on Industrial Computed Tomography (iCT 2020) Wels, Austria, 6pp.

Bissig, H., Tschannen, M., de Huu, M.: *Traceability of pulsed flow rates consisting of constant delivered volumes at given time interval.* Flow Measurement and Instrumentation 73 (2020), 101729.

Bissig, H., Tschannen, M., de Huu, M.: *Water collection techniques at very low flow rates including strong capillary effects.* Flow Measurement and Instrumentation 73 (2020), 101744.

Reyes, D. R. (...), **Bissig, H.,** Becker, H.: *Accelerating innovation and commercialization trough standardization of microfluidic-based medical devices.* Royal Society of Chemistry (2020), 13pp.

de Huu, M., Tschannen, M., Bissig, H. et al: *Design of gravimetric standards for field-testing of hydrogen refuelling stations.* Flow Measurement and Instrumentation 73 (2020), 101747.

Maury, R. (...), **de Huu, M.** et al.: *Hydrogen refuelling station calibration with a traceable gravimetric standard.* Flow Measurement and Instrumentation 74 (2020), 101743.

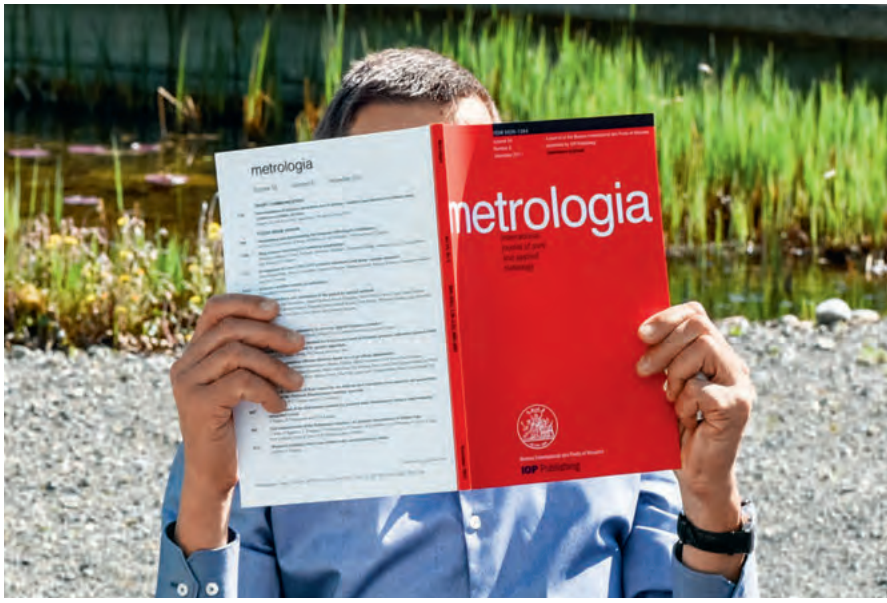
Büker, O. Stolt, K., **de Huu, M.** et al.: *Investigations on pressure dependence of Coriolis Mass Flow Meters used at Hydrogen Refueling Stations.* Flow Measurement and Instrumentation 76 (2020), 101815.

Kottler, Ch. et al.: *Comparisons of air kerma and absorbed dose to water standards in Co-60 radiation beams for radiotherapy.* Metrologia 57 (2020), 06013.

Küng, A., Bircher, B., Meli, F.: *Low-Cost 2D Index and Straightness Measurement System Based on a CMOS Image Sensor.* Sensors 19 (2020), 5461.

Lüthi, M., Bircher, B., Meli, F., Küng, A., Thalmann, R: *X-ray flat-panel detector geometry correction to improve dimensional computed tomography measurements.* Measurement Science and Technology 31 (2020), 8 pp.

Fernández-Martínez, M. (...), **Iturrate-Garcia, M.** et al.: *The role of climate, foliar stoichiometry and plant diversity on ecosystem carbon balance.* Global Change Biology 26 (2020), 7067-7078.



Marti, K., Wuethrich, Ch., Aeschbacher, M., Russi, S., Brand, U., Li, Z.: *Micro-Force Measurements: A New Instrument at METAS.* Measurement Science and Technology 31, No. 7 (April 2020), 075007.

Seferi, Y., Blair, S.M., **Mester, Ch.,** Stewart, B.G.: *Power Quality Measurement and Active Harmonic Power in 25 kV 50 Hz AC Railway Systems.* Energies 13 (2020), 5698.

Götz, M (...) **Mortara, A:** *Calibration of ultrastable low-noise current amplifiers without direct use of a cryogenic current comparator.* Metrologia 57 (2020), 055008 9pp.

Heinrich, M., **Overney, F.** et al.: *Application of electrochemical impedance spectroscopy to commercial Li-ion cells.* Journal of Power Sources 480 (2020), 228742.

Overney, F., (...) Jeanneret, B.: *Load compensation bridge for Josephson arbitrary waveform synthesizers.* Measurement Science and Technology 31 (2020), 055004.

Overney, F., Flowers-Jacobs, N.E., **Jeanneret, B.** et al.: *Dual Josephson impedance bridge: towards a universal bridge for impedance metrology.* Metrologia 57 (2020), 065014.

Satar, E., Nyfeler, P., **Pascale, C., Niederhauser, B.,** Leuenberger, M.: *Towards an understanding of surface effects: Testing of various materials in a small volume measurement chamber and its relevance for atmospheric trace gas analysis.* Atmospheric Measurement Techniques 13 (2020), 16 pp.

Satar, E. (...), **Pascale, C., Niederhauser, B.,** Leuenberger, M.: *Investigation of adsorption and desorption behavior of small-volume cylinders and its relevance for atmospheric trace gas analysis.* Atmospheric Measurement Techniques 13 (2020), 101-117.

Högström, R. (...), **Niederhauser, B.** et. al: *Comparison for gas flow range 5 ml/min to 30 l/min.* Metrologia 57 (2020), 07029.

Peier, P., Trachsel, M., Kottler, Ch. et al.: *The European Joint Research Project UHDpulse -Metrology for advanced radiotherapy using particle beams with ultra-high pulse dose rates.* Physica Medica 80, (2020), 134-150.

Loch, C. (...), **Peier, P.** et al.: *Characterization of a Low-cost Plastic Fiber Array Detector for Proton Beam Dosimetry.* Sensors 20, (2020), 5727 13pp.

Pythoud, F.: *Technical Report: Measurement Method for 5G NR Base Stations up to 6 GHz.* METAS-report 154.1-2020-5218-1016 (2020), 25pp.

Dedyulin, S. (...), **Senn, R.,** de Groot, M.: *On the long-term stability of the triple-point-of-water cells.* Metrologia 57 (2020), 065032 11pp.

Stölting, K., Stettler, K.: *Die Naturwissenschaften machen es vor – Rückführbar messen – auch in der Medizin.* Chemieextra (2020), 11: 14-16.

Tancev, G., Pascale, C.: *The Relocation Problem of Field Calibrated Low-Cost Sensor Systems in Air Quality Monitoring: A Sampling Bias.* Sensors 20 (2020), 6198.

Tas, E., Pythoud, F.: *Design, Implementation, and Evaluation of Proficiency Testing in EMC Surge Immunity.* IEEE Transactions on Electromagnetic Compatibility 62, (2020), 2368-2375.

Trachsel, M., Kottler, Ch. et al.: *Chemical radiation dosimetry in magnetic fields: Characterization of a Fricke-type chemical detector in 6 MV photon beams and magnetic fields up to 1.42 T.* Physics in Medicine and Biology 65 (2020), 10pp.

Vasilatou, K. , (...), **Horender, S., Auderset, K.:** *Calibration of optical particle counters: first comprehensive inter-comparison for particle sizes up to 5 µm and number concentrations up to 2cm^{-3},* Metrologia 57 (2020), 2, 025005.

Wuethrich, Ch., Marti, K.: *Simultaneous Determination of Mass and Volume of a Set of Weights in Group Weighing.* ACTA IMEKO 9, No. 5 (2020), 17–22.

Contributi a convegni e conferenze

Agustoni, M.: *Impedance Metrology: Bridging the LF-RF Gap.* CPEM 2020 (online), 24.8.2020.

Andres, H.: *Metrology for Atmospheric Observations from in situ and on site sensors and networks (non-satellite).* Stakeholder webinar for EMN ClimOcNet, 12.2.2020.

Basic, N.: *Brief Description of the Physics of Graininess Sparkle and Graininess.* CIE Tutorial: Measurements of sparkle and graininess, 29.7.2020.

Bernasconi, J.: *Overview on quantities, geometries, instruments and measurement methods.* SURFACE stakeholder webinar, 19.6.2020.

Bircher, B.: *X-ray source tracking to compensate focal spot drifts for dimensional CT measurements.* 10th Conference on Industrial Computed Tomography 2020, Wels, 5.2.2020.

Bircher, B.: *METAS-CT: Metrological X-ray computed tomography at sub-micrometre precision.* euspen's international conference 2020 (online), 10.6.2020.

Bircher, B.: *Dimensional X-ray computed tomography at METAS.* Seminar Series in XCT, University Manchester, (online), 21.7.2020.

Bircher, B.: *State-of-the-art X-ray computed tomography for dimensional metrology.* NPL DXCT Workshop: Advanced X-ray computed tomography for dimensional metrology, (online), 2.12.2020.

Blattner, P.: *Blaulichtgefährdung – Positionspapier der CIE.* SLG Vorabendseminar, Murten, 21.1.2020.
Blattner, P.: METROLOGY - Fundamentals of measurement, terms, units and traceability. CIE/ICNIRP Tutorial on the Measurement of Optical Radiation and its Effects on Photobiological Systems (Online), 14.8.2020.
Blattner, P.: *Physique des rayonnements UV et leurs effets biologiques.* Tagung ARRAD, rayonnement non ionisant, 27.11.2020.
Blattner, P./Stuker, F.: *sensLAB – Bewegungs- und Präsenzsensoren auf dem Prüfstand.* SLG Vorabendseminar, Olten, 24.11.2020.
de Huu, M.: *New measurement capabilities of the METAS piston provers.* Euramet TC Flow, Teams meeting, 4.11.2020
Hof, C.: *Reziprozitätsmethode.* Kalibrier-Seminar SPEKTRA, Dresden, 29.9.2020.
Hof, C.: *Metrologie im Bereich der Vibration am METAS.* Kalibrier-Seminar SPEKTRA, Dresden, 30.9.2020.
Hoffmann, J.: *Calculable RF Standard for Frequencies Between 5 Hz and Several GHz.* CPEM 2020 (online), 30.8.2020.
Esche, M., **Grasso Toro, F.:** *Developing Defense Strategies from Attack Probability Trees in Software Risk Assessment.* FedCSIS (2020), 527.
Iturrate-Garcia, M.: *Metrology for climate relevant volatile organic compounds – MetClimVOC.* 18th Swiss Geoscience Meeting (online), 7.11.2020.
Jeanneret, B.: *The Load Compensation Bridge: Preliminary Results.* CPEM 2020 (online), 24.8.2020.
Kazemipour, A.: *Material Measurements and Parameter Extraction, Error Analysis and Uncertainties.* UMEMA 2020, Workshop on Uncertainty Modelling for Electromagnetic Applications, Paris, 30.1.2020.
Kazemipour, A.: *Material Measurements and THz Metrology.* Seminar Universität Bern, 13.3.2020.
Kazemipour, A.: *THz Corrugated Horn Antennas as TEM Mede-Converter for Power Measurements and Material Characterization in Free-Space.* AES 2020, International Conference on Antennas and Electromagnetic Systems, Marrakesch, 1.6.2020.
Kazemipour, A.: *VNA-Based Material Characterization in THz Domain without Classic Calibration and Time-Gating.* CPEM 2020 (online), 30.8.2020.
Lüthi, M.: *Current Status.* PHOR Physics Meeting (online), 31.3.2020.
Lüthi, M.: *Cross-Section Measurements & Beamline Upgrade.* PHOR Physics Meeting (online), 6.11.2020.
Mallia, S.: *Präsentationen über «Metas-Aktivitäten» und über das «Lebensmittelsicherheitsprojekt».* PTB, Braunschweig, 1.10.2020.
Mallia, S.: *Metas: PAHs CRM Project.* Workshop "NRL-PAK", BVL, Berlin (online), 14.12.2020.
Meli, F.: *Towards primary dimensional X-ray computed tomography.* euspen's international conference 2020 (online), 8.6.2020.
Mester, Ch.: *Sampling primary power standard from DC up to 9 kHz using COTS components.* 3rd International Colloquium on Intelligent Grid Metrology (online). 20.10.2020.
Morel, J.: *Precise time and frequency transfer using the SWITCH network.* ICT-Focus Meeting 2020 (online), 10.11.2020
Niederhauser, B.: *Calibration services for ozone standards and instruments in Switzerland.* Ozone Workshop, 6.10.2020.
Niederhauser, B.: *Metrologie, METAS, Terminologie, Messunsicherheit, Konformität und Atemalkoholmessung.* ZHAW Kurs, 7.12.2020.
Overney, F.: *Characterization of a Dual Josephson Impedance Bridge.* CPEM 2020 (online), 24.8.2020.
Pascale, C.: *EMN for climate and ocean Observation: Atmospheric Section.* TC-MC Workshop PRT Brainstorming, 9.12.2020.
Peier, P.: *Radonmessplatz am METAS.* Mai-Sitzung der Subkommission für Umweltüberwachung der KSR (online), 7.5.2020.
Peier, P.: *Radonvergleichsmessung 2020 und Revision der Strahlenmessmittelverordnung.* Radoninformationstag, BAG (online), 13.10.2020.
Stölting, K.: *Scientific study of measurements, SI units, and the tasks of a National Metrology Institute.* Topical Day – Measurement Uncertainty. EMPA, St. Gallen, 18.8.2020.
Stuker, F.: *Messen und Beurteilen der Blaulichtgefährdung.* SLG Vorabendseminar, Murten, 21.1.2020.
Tas, E.: *An Improved Reference Device for Radiated Immunity Interlaboratory Comparison.* EMC Europe 2020, Rom (online), 24.9.2020.
Vasilatou, K.: *Generation and physicochemical characterisation of ambient-like model aerosols in the laboratory: application in the intercomparison of automated PM monitors with the reference gravimetric method.* SCS Fall meeting (online), 28.8.2020.
Vasilatou, K.: *Calibration of optical and aerodynamic particle size spectrometers.* European Aerosol Conference 2020 (online), 3.9.2020.
Vasilatou, K.: *New calibration procedures for bioaerosol monitors.* AutoPollen meeting (online), 3.9.2020.