



M4Dconf 2022

IMEKO TC 6 – First International Conference on
Metrology and Digital Transformation

19. – 21. September 2022



Berlin, Germany

SPECIAL SESSION

Sensor Network Metrology

Towards digital metrological services
for measuring sensor networks

Sensor networks are becoming a standard approach in many applications, ranging from regulated areas such as energy, water, gas and heat consumption (Legal Metrology) to low-cost Internet of Things (IoT) for Industry 4.0 (Industrial Metrology), even multi-sensor secondary realizations (fundamental metrology), and other areas such as healthcare, chemical and pharmaceutical industries.

The research work in this topic area focuses on linking the existing research from individual disciplines such as information theory, communication theory and data-science, in order to address metrological questions for such sensor networks.

The underlying methods for most metrological services must be fundamentally revised, in order to accommodate these new measuring sensor networks, allowing new features of anomaly detection, condition monitoring, state prediction, automatic determination the quality of measurement data, etc.

SESSION TOPICS

- Use of sensor networks in regulated areas, such as smart grids and water, gas and heat networks
- Use of low cost sensor networks for applications that require trustworthy and reliable measurements, such as air quality monitoring
- New/updated calibration procedures for multi-sensor measuring systems
- Digital representation of sensor networks as digital twin or for virtual measurements, such as ML/AI-based models for estimation of water/gas consumption
- Data quality and measurement uncertainty in sensor networks
- Wireless and dynamic sensor networks; and
- Semantics and ontologies for sensor network metrology

SESSION ORGANIZERS

- › Federico Grasso Toro, PhD
Federal Institute of Metrology (METAS)
- › Martin Koval, PhD
Czech metrology institute (CMI)
- › Sascha Eichstädt, PhD
Physikalisch-Technische Bundesanstalt,
Germany

IMPORTANT DATES

- › Extended Abstract Submission Deadline:
15 March 2022

WEBSITE & CONTACTS

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SESSION ORGANIZERS



Federico Grasso Toro, PhD

Federico Grasso Toro received the degree of Electronics Engineer oriented to automation and robotics from the Universidad Nacional de San Juan (UNSJ), Argentina, in 2010, and the Ph.D. degree in Mechanical Engineering oriented to AI for GNSS-based localization Systems from the Technische Universität Braunschweig, Germany, in 2014. Since 2019, he is Project Leader for Research and Development at the Swiss Federal Institute of Metrology in Bern, working on digitalization of metrological services.

Martin Koval, PhD

Martin Koval received a Ph.D. degree in Metrology from the Slovak University of Technology in Bratislava (STU) in 2015. He currently works last 7 years at Czech Metrology Institute (CMI) as an expert for software validation and digitalization. He is a member of working groups related to legal metrology (WELMEC WG7 Software, OIML - TC5/SC2 Software) and digital transformation (EURAMET TC-IM WG M4D).



Sascha Eichstädt, PhD

Sascha Eichstädt, PhD, is leading the department "Metrology for digital transformation" at the Physikalisch-Technische Bundesanstalt (PTB). He received his Diploma in Mathematics in 2008 at the HU Berlin, and his PhD in Theoretical Physics in 2012 at the TU Berlin. From 2008 to 2017 he joined the PTB working group "Mathematical modelling and data analysis" and from 2017-2021 he was leading the PTB working group "Coordination digitalization" in the Presidential Staff. His main research areas are signal processing and sensor networks.



SUBMISSION OF ABSTRACTS

- › Submission of abstracts for this Special Session are handled by the IMEKO Conference platform:
<https://conferences.imeko.org/event/2>
- › The deadline for submission of abstracts is 15th March 2022
- › Response to authors is scheduled for 31st May 2022