

1st International Workshop on Metrology for Virtual Measuring Instruments and Digital Twins



HELMHOLTZ
FONDS e.V.

Date

21. – 22. September 2021

Venue

Virtually via video conferencing (details will follow soon)

Day 1

12:30 CEST	Registration and on-boarding online
13:00 CEST	Welcome and introduction
13:15 CEST	Keynote "VirtMet – applications and overview" (Frank Härtig, VP PTB)
14:00 CEST	Keynote "Digital twins in medicine" (Olaf Dössel, KIT Institute for Biomedical Technologies)
14:45 CEST	Break with online virtual coffee
	Session "Medical applications"
15:00 – 15:20	Jessica Talbott "Simulation Methods in Diffusion Magnetic Resonance Imaging for a Spherical Domain"
15:20 – 15:40	Claudia Nagel "Assessing fidelity of simulated 12-lead ECGs in reduced clinical ECG eigenspaces"
15:40 – 16:00	Alessandra Manzin "Supporting magnetic hyperthermia pre-clinical tests with in-silico experiments"
16:00 – 16:20	Benjamin Winkler "Uncertainty Quantification and Sensitivity Analysis via Polynomial Chaos Expansion for Synthetic Electrocardiogram Data"
16:20 CEST	Break with online virtual coffee
	Session "Material properties and more"
16:40 – 17:00	Markus Schilling "Towards digitalization of materials in PMD & Mat-o-Lab: A standard-compliant application ontology of the tensile test"
17:00 – 17:20	Jörg Unger "A digital twin for monitoring the structural performance"
17:20 – 17:40	Adam Gaska "Measurement simulations in the shop floor conditions"
17:40 – 18:00	Hugo Gasca Aragon "The Digital Twin Manager at CENAM"
19 – 21 CEST	Online socialising event

Day 2

09:00 CEST	Keynote "Interface standards for manufacturing metrology in digital production – overview and outlook" (Dietrich Imkamp, Head of Bridge Systems at ZEISS)
	Session "Coordinate measuring systems"
09:45 – 10:05	Florian Wohlgemuth "CTSimU – Standardisation for X-Ray Computed Tomography Simulation Software"
10:05 – 10:25	Ivan Poroskun "Systematic creation of Metrological Digital Twins as software for uncertainty estimation"
10:25 – 10:45	Gertjan Kok "Noise and Form Deviations in Virtual Instruments; Some Virtual Instruments at VSL"
10:45 CEST	Break with online virtual coffee
	Session "Flow and nanometrology"
11:00 – 11:20	Andreas Weißenbrunner "Prediction of Flow Profiles behind 90° Elbows for the Evaluation of Virtual Flow Meters"
11:20 – 11:40	Martin Straka "Validation of a virtual ultrasonic clamp-on flow meter"
11:40 – 12:00	Søren Alkærsig Jensen "High-speed, optical in-line characterization of nanostructured foils produced by roll-to-roll nanoimprinting"
12:00 – 12:20	Maren Casfor Zapata "Towards virtual experiments in scatterometry: Model Uncertainties"
12:20 CEST	Break with online virtual coffee
	Session "Optics"
13:05 – 13:25	David Hilbig "Gradient-based freeform surface reconstruction from simulation and experiment in one multi-language software solution"
13:25 – 13:45	Lara Hoffmann "Uncertainty Quantification in Deep Learning for Computational Optical Form Measurement"
13:45 – 14:05	Helia Hooshmand "Comparison of virtual optical instrument and metrological characteristics for uncertainty evaluation in surface topography measurement"
14:05 – 14:25	Gregor Scholz "Virtual Experiments in Tilted-Wave Interferometry for measurement quality evaluation"
14:25 – 14:45	Goran Baer "Software for the simulation of form measuring interferometers and other optical metrological instruments"
14:45 CEST	Break with online virtual coffee
	Session "Simulation and measurement uncertainty"
15:00 – 15:20	Ellie Molloy "Using Simulations to Assess Comparison Analysis Methods"
15:20 – 15:40	Zygmunt Warsza "Estimation of uncertainties of all multivariable indirect measurement systems"
15:40 – 16:00	Gerd Wübbeler "GUM-compliant evaluation of uncertainty using virtual experiments"
16:00 – 16:20	Louise Wright "Confidence and comparability for virtual measurements"
16:20 -16:30 CEST	Closing remarks