6th Joint International Symposium on Deformation Monitoring

07.– 09.04.2025, Karlsruhe, Germany

Programme

Contents

- when it has to be **right**

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Welcome

On behalf of the organising commissions of FIG, IAG and ISPRS as well as the local organising committee, it is my great pleasure to welcome you to the 6th Joint International Symposium on Deformation Monitoring (JISDM) in Karlsruhe, Germany.

JISDM brings together experts from the wide range of geodetic fields such as photogrammetry, remote sensing, engineering geodesy and higher geodesy as well as from neighbouring fields at the interface of deformation monitoring. Here, the topicality of deformation monitoring is greater than ever. The effects of climate change as well as ageing infrastructures are just two examples in which deformation monitoring plays an overriding role in order to guarantee safety and sustainability.

The three days of the symposium are filled with three keynotes, 62 oral presentations, and 15 poster presentations. The contributions cover the latest developments with regard to sensor and measurement technologies and present innovative analysis strategies. In addition, their applications to natural phenomena and artificial objects are discussed.

On top of the technical programme, social events provide the perfect opportunity for discussing the presented solutions and results, for networking or for just enjoying a nice evening.

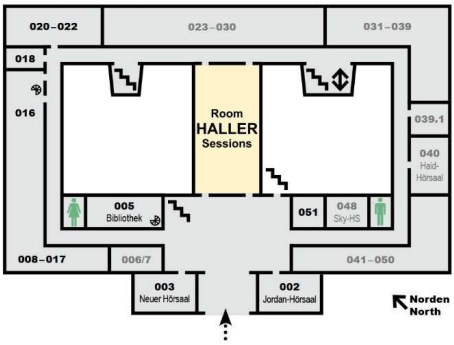
I wish us all a successful symposium, an exciting exchange and many fruitful discussions!

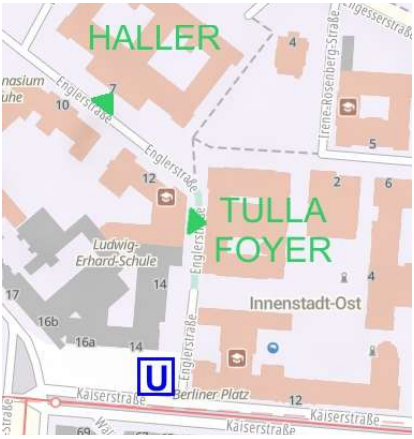
Corinna Harmening
Professor for Geodetic Sensor Systems
Karlsruhe Institute of Technology, Geodetic Institute

Welcome to the KIT-Campus

We will guide you!

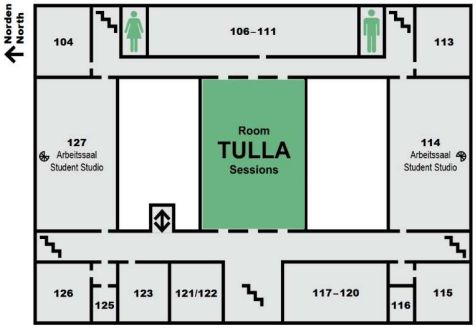
Building 20.40 Groundfloor





Building 11.40 Groundfloor

Building 11.40 First Floor



Technical programme

Overview

	Monday, 07.04.2025	
08:00 - 09:00	Registration	
09:00 - 10:00	Opening	
10:00 - 10:45	Keynote: "The role of stress for safe water reservoir operation"	
10:50 - 12:20	Current developments in deformation analysis	Enhanced deformation monitoring by means of data fusion I
12:20 - 13:15	Lunch break	
13:15 - 14:45	Research Unit "TLS-Defo": An holistic approach for TLS-based dam monitoring	Enhanced deformation monitoring by means of data fusion II
14:45 - 15:15	Coffee break	
15:15 - 17:15	TLS and MLS for deformation monitoring	Innovative approaches for deformation monitoring
20:00	Ice breaker party	

	Tuesday, 08.04.2025	
08:30 - 10:00	Geomonitoring with TLS	InSAR for deformation monitoring
10:05 - 10:35	Teaser presentations A (poster)	
10:35 - 11:15	Poster session (with coffee break)	
11:15 - 12:30	Sponsors' presentations	
12:30 - 13:30	Lunch break	
13:30 - 14:15	Keynote: "Why geodesy is needed for monitoring, or why not"	
14:20 - 15:50	Advanced point cloud analysis strategies for deformation analysis	Dynamic structural health monitoring
15:50 - 16:15	Coffee break	
16:15 - 17:30	Challenges in GNSS-based deformation monitoring	Terrestrial radar for deformation monitoring
19:30	Dinner	

	Wednesday, 09.04.2025	
09:00 - 10:30	Surface reconstruction as a basis for deformation analysis	About the importance of stochastic information in deformation analysis
10:35 - 11:05	GKGM-Award ceremony	
11:05 - 11:35	Teaser presentations B (poster)	
11:35 - 12:45	Poster session (with lunch break)	
12:45 - 14:15	Remote structural health monitoring	Advanced approaches for total station-based deformation monitoring
14:20 - 15:05	Keynote: "Combination for simulation models and deformation monitoring in structural dynamics"	
15:05 - 15:45	Closing	

Opening

Monday, 07.04.2025, 09:00 - 10:00, Room Tulla

Welcoming

Corinna Harmening Head of the local organizing committee
Oliver Kraft Vice President Research of KIT
Hansjörg Kutterer Dean of KIT-Department of Civil Engineering, Geo and Environmental Sciences
Werner Lienhart, *Corinna Harmening*, *Wolfgang Niemeier* FIG Commission 6, Engineering Surveys
Vassilis Gikas IAG Commission 4, Positioning and Applications
Martin Weinmann ISPRS Working Group II/9, Vision Metrology

Keynotes

Monday, 07.04.2025, 10:00 - 10:45, Room Tulla

Chair: Hansjörg Kutterer

"The role of stress for safe water reservoir operation"

Frank R. Schilling, Birgit I. R. Mueller

The Enguri high dam was chosen for the study of water level induced seismicity due to its height of 271 m and extraordinary water level variations. On site-research allows to quantify underlying processes and mechanisms of dam-environment interactions – to reduce risks for public and the environmental impact. The interdisciplinary collaborative effort www.DAMAST-caucasus.de initiated a transfer to enhance the lifetime of Enguri high dam supplying 40% of Georgian electricity demand.

THE CHALLENGE(S): Earthquakes are triggered by stress modifications in the underground. Hence the question arises, how is induced seismicity connected to water level changes? What are potential risks of water dams for environment and population? The answers require an improved understanding of processes in the underground. What is the share of sedimentation into a reservoir and pore-pressure stress coupling through water level variations on induced seismicity?

METHODOLOGIES: In the DAMAST projects research on methods for a comprehensive deformation monitoring system around, at and within the Enguri arch dam, has been ongoing since 2019. To study the seismicity a dedicated seismological network was established at the dam which is able to detect even micro-seismic events. Historical and operational data as well as the results of the new observations serve as basis for the analysis. This allows to identify correlations between different processes and mechanisms as well as to derive recommendations for a safer operation of the facility.

RESULTS: In addition to established methods, new concepts such as the successful testing of GB-SAR for dam deformation monitoring have been implemented and Artificial Intelligence (AI) methods were used. Numerous, up to 300 m deep drill holes had been drilled in the vicinity of the dam and have been monitored with modern borehole logging tools as well as with hydraulic fracturing to deduce the state of stress, which turned out to be mainly influenced by local topography. The influence of periodic water level fluctuations on the regional deformation as well as the structural deformation of the dam could be shown using PSInSAR, 3D terrain and dam models and GB-SAR measurements. Increasing water levels lead to subsidence and sideway displacement of the lake shores and deformation of the dam itself.
Large-scale numerical models provide information on the deformation behavior of the dam embankment and enable to calculate the distribution of shear and Coulomb Failure stresses based on the compiled stress data. Modelling results have been compared with the time series and location of the micro-seismicity. Model data, geometries and measurement data are then used to train a Convolutional Neural Network (CNN).

The projects focus on the SDGs of clean energy, environment and climate protection which are linked to SDGs of innovation and infrastructure, good jobs, economic growth and poverty reduction. Inherent are contributions to the quality of education. The trained young researchers have the potential to play a decisive role within future authorities, e.g. for project approval and control. This is extremely relevant to achieve the SDGs and for the direct users such as owners of hydropower and irrigation reservoirs.

Tuesday, 08.04.2025, 13:30 - 14:15, Room Tulla

Chair: Corinna Harmening

"Why geodesy is needed for monitoring, or why not"

Andreas Wieser

Deformation monitoring based on multi-epoch network measurements and statistically strict testing for differences of network geometry was an important contribution of (engineering) geodesy to many application fields. It still is. But for many applications, data acquisition with a variety of sensors has become easy and cost effective. Solutions range from embedded and in-situ sensing via classical geodetic methods to air- and spaceborne remote sensing with sometimes highly automated processing pipelines. Machine learning already supports the data analysis and may soon bridge the gap between data processing and interpretation. What does this mean for geodesists? Should they "go with the flow"? Are their key competences not unique enough anymore or even becoming obsolete? In this presentation, I will try a high-level look at the development of the fields of deformation monitoring, and the role of geodesy.

Wednesday, 09.04.2025, 14:20 - 15:05, Room Tulla

Chair: Corinna Harmening

"Combination of simulation models and deformation monitoring in structural mechanics"

Steffen Freitag, Ba Trung Cao, Nicola Gottardi, Anastasiia Volovikova, Günther Meschke

The performance and the reliability of engineering structures, e.g. bridges, tunnels or buildings, have to be assessed by structural models, which are used to compute the structural response (e.g. displacements and stresses of the structural components) according to the expected loads and environmental conditions. This includes not only the final structural state but also the construction process. Additionally, the health state of the structure may change during its lifetime, which needs to be considered within the reliability and safety assessment. In general, the structural response can be represented as time-variant processes of structural quantities of interest, which are dependent on the time-variant loads and material parameters.

Deformation monitoring is an important approach to observe the structural state during construction and during the service life of the structure. Real-time applications enable to compare continuously monitored deformation data with a priori computed deformations and to check specific threshold values, e.g. within a structural warning system. In addition to structural inspections, deformation monitoring can help to assess the structural health state or to identify unknown load and boundary conditions of the structural models. This requires to combine deformation monitoring with structural simulation models, which is the focus of this presentation. To achieve real-time performance of computational expensive simulation models, surrogate modeling strategies based on artificial neural networks will be presented. Additionally, the consideration of uncertainties will be discussed.

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Technical sessions and poster presentations

Monday, 07.04.2025, 10:50 - 12:20, Room Tulla

Chairs: Cornelia Eschelbach, Daniel Czerwonka-Schröder

Current developments in deformation analysis

W. Niemeier
50 Years of Deformation Monitoring - What has been achieved?

H. Kutterer, M. Even, A. Seidel, J. Weisgerber
Bridging the scales - Earth observation infrastructure and geodetic deformation monitoring

J. Stähle, A. Volovikova, S. Freitag, A. Stark
Artificial Intelligence-Based Deformation Analysis for Damage Identification in Structural Health Monitoring

K. Karsznia, E. Świerczyńska, K. Książek, W. Odziemczyk
Development of an expert system for the deformation monitoring of historical sites using Artificial Intelligence (AI)

Monday, 07.04.2025, 10:50 - 12:20, Room Haller

Chairs: Marco Scaioni, Dimitrios Bolkas

Enhanced deformation monitoring by means of data fusion I

D. Bolkas, M. Olsen, E. Che, C. Simpson
First steps towards creating multi-sensor DEMs using optimal weighting for change estimation and monitoring applications

N. Dal Santo, A. Michelini
A data fusion approach for combined Terrestrial Radar Interferometry (TRI) and Robotic Total Station (RTS) monitoring

T. V. Pattela, L. Disperati, E. D'Addario, D. Rappuoli
Multi-Temporal GNSS, RTS, and InSAR for Very Slow-Moving Landslide Displacement Analysis

A. Seidel, M. Even, H. Kutterer, M. Westerhaus
Surface displacement monitoring and geophysical source modeling at the gas storage cavern field Epe

Monday, 07.04.2025, 13:15 - 14:45, Room Tulla

Chairs: Heiner Kuhlmann, Hans Neuner

Research Unit "TLS-Defo": An holistic approach for TLS-based dam monitoring

H. Kuhlmann (spokesperson of the research unit)
Research unit "TLS-Defo": Deformation analysis based on terrestrial laser scanner measurements

E. Koller, B. Jost, H. Kuhlmann
Towards the calibration of terrestrial laser scanners – A case study at a water dam

O. AbdelGafar, S. Palaz, Y. Yang, Ch. Holst
An efficient strategy for determining intensity-based range variances of terrestrial laser scanners for rigorous deformation analyses

E. Ötsch, C. Harmening, H. Neuner
Employing variance component estimation for point cloud based geometric surface representation by B-splines

S. Sadiq, C. Harmening
Investigating the potential of stochastic relationships to model deformations

Monday, 07.04.2025, 13:15 - 14:45, Room Haller

Chairs: Dimitrios Bolkas, Michele Crosetto

Enhanced deformation monitoring by means of data fusion II

M. Scaioni, S. Barindelli, E. Realini, D. Ravasi, A. Gatti, F. Sansò, R. Eskandari, L. Barazzetti, F. Roncoroni, M. Aghemio, L. Lucidera, S. Sciannamè
HeMOC: a Project for Monitoring of Cultural Heritage in the City of Como, Italy

N. Wielgocka, G. Jóźków, D. Teodorczyk
Classifying surface displacements in mining regions using differential terrain models and InSAR coherence

F. Grassi, P. Rossi, B. Brunelli, F. Mancini, C. Castagnetti, L. Vincenzi, E. Bassoli, A. Capra
Ensembling satellite monitoring and numerical cartography towards the safety assessment of infrastructures

D. Tondas
An open-source Python library developed for GNSS & InSAR integration

Monday, 07.04.2025, 15:15 - 17:15, Room Tulla

Chairs: Christoph Holst, Roderik Lindenbergh

TLS and MLS for deformation monitoring

Th. Pfaffinger, M. A. Ortiz Rincón, A. Nothnagel, Ph. Mey, J. Quick, R. Botha, P. Stronkhorst, M. Nickola, Ch. Holst
Quality-controlled deformation analysis of the 26 m HartRAO radio telescope's main reflector: First results

B. Riedel, O. Welke, M. Altmann, M. Gerke
A signalization-free coregistration approach of multiscale and multitemporal survey for structural monitoring

N. C. Meyer, T. Medic, E. Friedli, R. Senti, A. Wieser
Investigation of different registration methods for TLS-based deformation analysis of hydroelectric dams – A case study

F. Schill, M. Horn, Th. Moser, W. Lienhart
Investigating the precision of remote geodetic sensors for bridge monitoring: a large-scale field study

M. Wagner, B. Jost, L. Klingbeil, H. Kuhlmann
Efficient and precise? – Evaluation of a mobile mapping system in the context of road surface monitoring

Monday, 07.04.2025, 15:15 - 16:45, Room Haller

Chairs: Stella Pytharouli, Hansjörg Kutterer

Innovative approaches for deformation monitoring

C. Qiu, S. Pytharouli, J. Souter
The potential of tiltmeters as a low-cost technology in baseline ground movement monitoring

E. Barnefske, C. Semmelroth, A. Scheider, H. Sternberg
Determination of the coordinates of a circle using distributed fibre-optic length changes

F.-B. Cartiaux, J. Semiao, A. Mege-Ythier
Deformation monitoring and model updating: three case studies on the Paris Metro

P. Krnjak, A. Kosor, H. Tomić, A. Marendić, R. Paar
Comparative Analysis of Achieved Accuracy Using Low-Cost Mobile Phone LiDAR and Remote Sensing Techniques

Tuesday, 08.04.2025, 08:30 - 10:00, Room Tulla

Chairs: Bernhard Höfle, Christoph Holst

Geomonitoring with TLS

N. Shi, T. Medic, N. Meyer, A. Voordendag, A. Wieser
Quantifying and Reducing the Uncertainty of 3D Displacement Estimates from Terrestrial Laser Scanner Point Clouds – A Case Study in Alpine Geomonitoring

D. Czerwonka-Schröder, F. Schulte, W. Albert, K. Hosseini, R. Tabernig, Y. Yang, B. Höfle, Ch. Holst, K. Zimmermann
AImon5.0 - Real-time monitoring of gravitational mass movements for critical infrastructure risk management with AI-assisted 3D metrology

Y. Yang, D. Czerwonka-Schröder, Ph. Seufert, Ch. Holst
Using point cloud registration to mitigate systematic errors in permanent laser scanning-based landslide monitoring

K. Hosseini, J. Hummelsberger, S. Zubareva, Ch. Holst
Contour line extraction and feature tracking for real-time 4D landslide monitoring based on point clouds: Proof of concept with lab experiments

Tuesday, 08.04.2025, 08:30 - 10:00, Room Haller

Chairs: Michele Crosetto, Markus Even

InSAR for deformation monitoring

A. Piter, M. Haghshenas Haghighi, M. Motagh
Temporarily Coherent Scatterer Selection for Transport Infrastructure Monitoring with Sentinel-1 InSAR

K. Shahryarinia, M. Omidalizarandi, M. Heidarianbaei, M. A. Sharifi, I. Neumann
Detecting Change Points in Time Series of InSAR Persistent Scatterers Using Deep Learning Models

M. Crosetto, S. Shahbazi, A. Barra
Mapping building differential deformations over wide areas

R. Eskandari, M. Scaioni
Joint Use of EGMS and Cosmo-SkyMed InSAR for Assessment of Ground and Structural Deformations: The Case of Como, Northern Italy

Tuesday, 08.04.2025, 10:05 - 11:15, Room Tulla + Foyer

Chair: Hansjörg Kutterer

Poster session A

M. Ulm, M. Elias, A. Eltner, E. Lotsari, K. Anders
Automated change detection in photogrammetric 4D point clouds – Transferability and extension of 4D objects-by-change for monitoring riverbank dynamics using low-cost cameras

S. Łapiński, P. Mąkowski
Detection analysis of displaced connection points for a different type of engineering survey networks connections

P. Wyszkowska, R. Duchnowski
Sliding window algorithm applied to M_{split} estimation for seasonal change detection from LiDAR data

J. Steinbach, C. Harmening
Laser scanning based deformation analysis of a wooden dome under load

M. C. Ramlie, P. Olea-Encina, Ch. Magnard, T. Strozzi, O. Monserrat, M. Crosetto, Ch. McDermott
The Potential of Multi temporal SAR Time Series Analysis for the Monitoring of the Geobattery Project

P. Olea-Encina, M. Ramlie, M. Crosetto, O. Monserrat
Analyzing the Impact of Soil Moisture Dynamics on Ground Deformation in Salar de Atacama Using PSI and Sentinel Imagery

J. Paziewski, R. Sieradzki, J. Koscielski, H. Szczepanik, D. Tomaszewski, K. Stepniak
Validation of mass-market GNSS and IMU MEMS sensors for millimeter-level displacement retrieval under simulated vibrations

R. Naeimaei, S. Schön
Deterministic Uncertainty for Terrestrial Laser Scanning Observations Based on Intervals

Tuesday, 08.04.2025, 11:15 - 12:30, Room Tulla

Chair: Hansjörg Kutterer

Sponsors' presentations

M. Rutschmann (Senior Product Manager, Leica Geosystems AG) Autonomous and Automated Railway Deformation Monitoring
E. Burth (Managing Director RIEGL Germany) and K. Zimmermann (DMT Group) Efficient infrastructure and deformation monitoring using laser scanning
D. Blersch (Senior Application Engineer, Zoller + Fröhlich GmbH) Efficient data capturing for high demands

Tuesday, 08.04.2025, 14:20 - 15:50, Room Tulla

Chairs: Daniel Czerwonka-Schröder, Bernhard Höfle

Advanced point cloud analysis strategies for deformation analysis

O. Geißendörfer, Ch. Holst
Spatio-temporal mode description in LiDAR point clouds

R. Tabernig, W. Albert, H. Weiser, B. Höfle
A hierarchical approach for near real-time 3D surface change analysis of permanent laser scanning point clouds

A. Voordendag, D. Haener, A. Wieser
Plane-based deformation analysis of railway tracks using airborne laser scanning data

M. E. Kowalska, J. Zaczek-Peplinska
Exploring Planar Projection of Point Clouds: A Case Study with Cylindrical Objects

Tuesday, 08.04.2025, 14:20 - 15:50, Room Haller

Chairs: Gilbert Ferhat, Craig Hancock

Dynamic structural health monitoring

X. An, X. Meng, L. Hu, Y. Xie, F. Zhang
Integrated GNSS Positioning and Attitude Determination for Structural Health Monitoring of Large-span Bridges

C. Xue, G. Li, J. Geng, P. Psimoulis
Feasibility analysis of smartphone GNSS data for low-frequency cm-level motion monitoring

J. M. O. Jayamanne, P. Psimoulis, J. Owen, N. Penna, C. Xue
Incorporating Low-Cost GNSS Receivers for Deformation Monitoring in High-Rise Buildings

A. Algadhi, P. Psimoulis, A. Grizi, L. Neves
Impact of surface orientation of structures on their seasonal deformation: a case-study in the UK
Thematically allocated to "Remote structural health monitoring"

Tuesday, 08.04.2025, 16:15 - 17:30, Room Tulla

Chairs: Panos Psimoulis, Craig Hancock

Challenges in GNSS-based deformation monitoring

W. Dai, Y. Wen, W. Yu, Q. Wang The usability evaluation and data processing methods of GNSS deformation monitoring in challenging environment
G. Ferhat, X. Wanner, M. Vidal, J.-P. Malet Challenges and limitations in geodetic monitoring of landslides, case-study of Viella (Pyrenees mountains) and La Valette (Southern Alps), France
C. Hancock, Ch. Hill, P. Bhatia, J. Starkey, A. Athab, L. Yang, A. Arcia, A. Wong Low-Cost GNSS Ground Monitoring for Land Planning: AI-Integrated Geospatial Solutions

Tuesday, 08.04.2025, 16:15 - 17:30, Room Haller

Chairs: Wolfgang Niemeier, Andreas Schenk

Terrestrial radar for deformation monitoring

A. Michelini, N. Dal Santo, G. Alli, C. Testa Water multipath effect in Terrestrial Radar Interferometry (TRI) in open-pit mine monitoring
M. Talich, J. Havrlant, L. Soukup, T. Plachý, M. Polák, P. Ryjáček, V. Stančík Appropriate strategy for GB-RAR measurements - One radar is not sufficient
M. Rebmeister, A. Schenk, J. Weisgerber, M. Westerhaus, S. Hinz, F. Andrian, M. Vonié Ground-based InSAR and GNSS integration for enhanced dam monitoring

Wednesday, 09.04.2025, 09:00 - 10:30, Room Tulla

Chairs: Hans Neuner, Janina Zaczek-Peplinska

Surface reconstruction as a basis for deformation analysis

L. M. Stausberg, N. Quadt, B. Jost, H. Kuhlmann Investigating the applicability of surface models for laser scanner-based deformation analysis
R. Lindenbergh, Th. Dewez, D. Hulskemper Assessing 3D morphological dune changes using medial axes
L. Winiwarter, F. Schulte, J. Wang, Q. Zhang, K. Anders, B. Jutzi Assessing the Potential of Neural Radiance Fields and Gaussian Splatting for Change Detection and Change Quantification
Ch. Michel, M. Ulrich Automatic Inspection of Punched Metal Plate Fasteners on Timber-to-Timber Joints with Image-Based 3D Reconstruction

Wednesday, 09.04.2025, 09:00 - 10:30, Room Haller

Chairs: Frank Neitzel, Gabriel Kerekes

About the importance of stochastic information in deformation analysis

G. Kerekes, V. Schwieger Correlations in TLS point clouds: Should we care about them?
M. Lösler, C. Eschelbach, R. Lehmann Impact of Mathematical Correlations
J. A. Butt Building and Solving Probabilistic Instrument Models with CaliPy
K. Snow, B. Schaffrin Total Least-Squares Collocation for Deformation Analysis

Wednesday, 09.04.2025, 10:35 - 11:05, Room Tulla

GKGM-Award ceremony

F. Pollinger (GKGM)
Laudatory speech for the awardee J. Guillory

J. Guillory
Field measurements over kilometres with sub-millimeter uncertainties using the Arpent two-wavelength EDM

GKGM/GKGM-award

The Society for the Calibration of Geodetic Devices, "GKGM", in German, engages in the advancement of research and science through fostering exchange and networking, initiating studies, disseminating information and contributing to the development of national and international standards. Its activities should benefit the geodetic community and society at large, but operators of geodetic calibration labs and users of geodetic devices in particular.

The Society established the GKGM-award in 2012 as a recognition of scientists who have contributed in an outstanding way to this field. There have been nine recipients, so far. At this year's JISDM conference, Dr. Joffray Guillory will be distinguished for his substantial contributions to the development of multi-wavelength EDM for traceability of distance measurements. His extensive track record includes the development of an instrument which automatically mitigates the dominant atmospheric effects, successful practical demonstration under field conditions at various sites, and a thorough uncertainty quantification.

Abstract of the celebratory speech

Arpent is an EDM that simultaneously measures two optical path lengths at two different wavelengths. As a result, this prototype instrument is able to measure distances without the necessity for the user to correct for the effects of air temperature or pressure. Indeed, the measured distances do not depend on the group refractive index of the air, but only on the dispersion. In addition, Arpent measures distances traceable to the SI definition of the metre, with an instrumental uncertainty of less than 1 mm at $k = 1$ and a range of 8 km. In practice, this instrument has demonstrated that it can compensate for variations in the air refractive index when measuring a fixed distance. For example, it showed a

standard deviation of 0.3 mm over several days at 2.6 km and 5.4 km. Moreover, when distance measurements of up to 6.5 km were compared with those of a GNSS-based distance metre, the discrepancies between the two systems had a standard deviation of only 1.8 mm.

Wednesday, 09.04.2025, 11:05 - 12:45, Room Tulla + Foyer

Chair: Corinna Harmening

Poster session B

C. Ito, S. Nishiyama
UAV Measurement Methods for Monitoring of Volume Reduction at Dredged Sediment Disposal Sites

R. Palamà, A. Barra, M. Cuevas-González, K. Pawłuszek-Filipiak, J. A. Navarro, O. Monserrat, M. Crosetto
Wide-Area Supervised Classification of Ground Deformation Phenomena from European Ground Motion Service Products

G. Ferhat, I. Musq, P. Ulrich
Evaluation of several GNSS receivers: from low-cost to high-end geodetic receivers

A. M. Ruiz-Armenteros, M. Marchamalo-Sacristán, F. Lamas-Fernández, Á. Hernández-Cabezudo, A. Fernández-Landa, J. M. Delgado-Blasco, M. Bakon, M. Lazecky, D. Perissin, J. Papco, G. Corral, J. L. García-Balboa, J. L. Mesa-Mingorance, A. Da Penha Pacheco, J. M. Jurado-Rodríguez, J. J. Sousa
Integrated Monitoring of Dams and Large Ponds: The Role of Satellite Radar Interferometry and the European Ground Motion Service

Z. Muszynski, M. Wyjadlowski, P. Kujawa, K. Gorska
Application of Terrestrial Laser Scanning and Inclinometer for Comprehensive Monitoring of Deep Excavation

J. E. Blanco, M. C. de Lacy, M. A. Gomez-Villegas
Bayesian and frequentist significance of vertical displacements from high-precision geodetic observations: case study in an earth fill dam placed in southern Spain

G. Ferhat, M. Meroni, M. Ajrouche, C. Fontaine, L. Krangnes
Some examples of landslide monitoring using Trimble equipement in Europe

Wednesday, 09.04.2025, 12:45 - 14:15, Room Tulla

Chairs: Roderik Lindenbergh, Marco Scaioni

Remote structural health monitoring

V. Belloni, N. E. Deresse, A. Nascetti, E. Verstrynge
Crack monitoring of masonry walls with standard and enhanced Digital Image Correlation methods

A. Boney, S. Nishiyama, O. Murakami, S. Akita
A Feasibility Study to Monitor Crack Width Displacement using Images Taken with Pan-Tilt-Zoom Cameras

Ch. Gaus, B. Jost, T. Piert, Ch. Hesse, K. Holste, H. Kuhlmann
Analysis and optimization of the reliable hole detection in sheet pile walls

A. Algadhi, P. Psimoulis, A. Grizi, L. Neves
Impact of surface orientation of structures on their seasonal deformation: a case-study in the UK
Moved to session "Dynamic structural health monitoring"

Wednesday, 09.04.2025, 12:45 - 14:15, Room Haller

Chairs: Luis Garcia-Asenjo, Cornelia Eschelbach

Advanced approaches for total station-based deformation monitoring

L. García-Asenjo, R. Luján, S. Baselga
Mitigation of the refraction error in surveying techniques by using a network of meteorological sensors and a 3D refractivity model

A. Knöpfler
Deformation measurements on emergency sites

F. Schulte, L. Schneider, M. Lösler, S. Printz, D. Czerwonka-Schröder
Automatic geodetic monitoring with total stations based on open source software library JAG3D – Case study of a rockfall in Trier/Germany

J. Zaczek-Peplinska, M. E. Kowalska
Principles and Case Study of IMSGeo: Automatic Displacement Monitoring System for Construction Sites

Closing

Wednesday, 09.04.2025, 15:05 - 15:45, Room Tulla

Closing & Awarding of "JISDM Best Young Author Contribution"

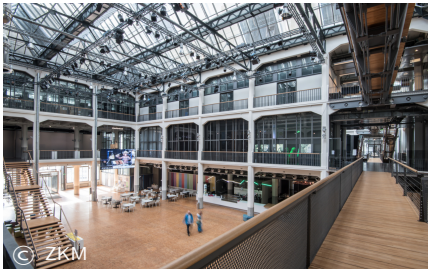
Corinna Harmening
Head of local organizing committee

Social events

Ice breaker party
supported by

Monday, 07.04.2025, 20:00 (arrival: starting 19:00), ZKM

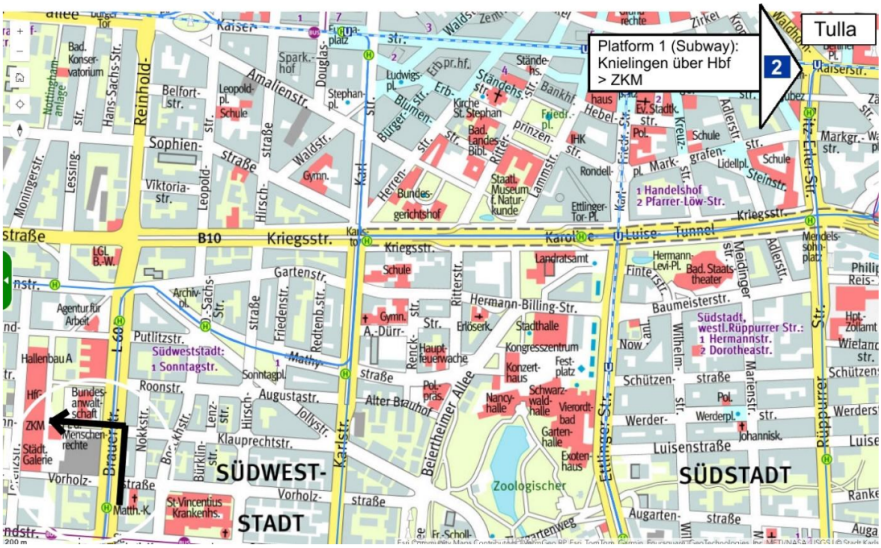
The ice breaker party takes place in the foyer of the Center for Art and Media Karlsruhe (ZKM). ZKM was founded in 1989 with the mission of continuing the classical arts into the digital age. With this objective, ZKM unites exhibition spaces, research platforms, media centre and library under one roof, thus combining research and production, exhibitions and events, archive and collection. This combination makes ZKM a unique cultural institution worldwide. Since 1997, ZKM has been located in a listed industrial building of a former munitions factory.



The ice breaker party will be hosted in the foyer of ZKM, inviting to a creative exchange in an extraordinary atmosphere.

How to get to ZKM (from the conference venue)

- Address: Lorenzstraße 19, 76135 Karlsruhe.
- Take tram 2 (direction "Knielingen Nord über Hbf.") on platform 1 at subway station "Kronenplatz" at *.00, *.10, *.20,... .
- Exit at station "ZKM" (approximately 15 minutes driving distance).
- From here, ZKM is in 6 minutes walking distance.
- Look out for our guides.



Conference dinner

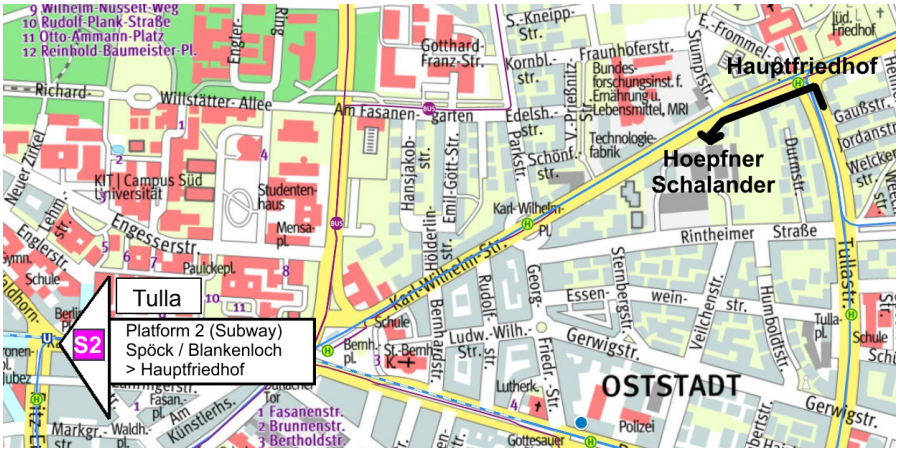
Tuesday, 08.04.2025, 19:30, Schalander at Höpfner castle

The conference dinner will take place in the traditional Höpfner castle in Karlsruhe's Oststadt district. Founded in 1798 by Karl Friedrich Gottlieb Höpfner, the Höpfner Brewery is one of the largest and oldest breweries in Karlsruhe. After the original site became too small, Höpfner castle was built from 1896-1899, where beer has been brewed and bottled since the castle's completion. Due to its stylistic design, which combines forms of medieval castle architecture with Renaissance and Art Nouveau elements, the castle has become a landmark of Karlsruhe.

The dinner will take place in the castle's "Schalander" which in its original function was available to the brewery's workers for changing clothes and taking a break. In its current function, it invites to a memorable dinner with traditional dishes and drinks.

How to get to Schalander at Höpfner (from the conference venue)

- Address: Haid-und-Neu-Straße 18, 76131 Karlsruhe.
- Take tram S2 (direction "Spöck" or "Reitschulschlag") on platform 2 at subway station "Kronenplatz (U)".
- Exit at station "Hauptfriedhof".
- From here, Schalander at Höpfner is in 6 minutes walking distance.
- Look out for our guides.
- Alternatively, walking is possible; Schalander is in 20 minutes walking distance from the conference venue.



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Abstract booklet:

Abstracts per session (click on the session name):

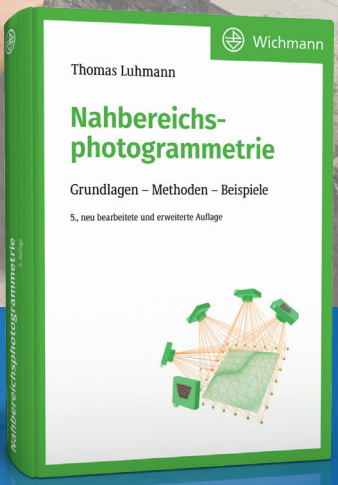
Online version of this programme

The online version of this programme can be accessed by means of the following QR code:

Proceedings

The proceedings can be accessed by means of the following QR code:

Wichmann



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