



JISDM 2019

4th Joint International Symposium on
Deformation Monitoring

15-17 May 2019
Eugenides Foundation
Athens, Greece

www.jisdm2019.survey.ntua.gr

SCIENTIFIC PROGRAM



JISDM 2019

**4th Joint International Symposium on
Deformation Monitoring**

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Eugenides Foundation
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Local Organiser



National Technical
University of Athens



School of Rural and
Surveying Engineering

Scientific & Professional Commissions



INTERNATIONAL FEDERATION
OF SURVEYORS



IUGG



International Association
of Geodesy



Information from Imagery

PROGRAM OVERVIEW

Wednesday, 15 May 2019

08:00 - 09:00 Registrations

AMPHITHEATER

09:00 - 10:00 **Opening ceremony**

10:00 - 12:00 **Keynote Speeches**

12:00 - 13:00 Lunch break

AMPHITHEATER

CONFERENCE HALL

13:00 - 14:30 Session 1.1 - QC/QA and optimization techniques in deformation analysis

Session 1.2 - New concepts for GNSS-based monitoring

14:30 - 15:00 Coffee break

15:00 - 16:30 Session 1.3 - Point cloud-based space-temporal deformations - I

Session 1.4 - Reference frames and geodynamics - I

16:30 - 17:00 Coffee break

17:00 - 18:30 Session 1.5 - Vibration monitoring and dynamics

Session 1.6 - Ground and spaceborne radar – I

11:30 - 18:30 Poster Session 1 (Hallway)

19:30

Welcome reception

Thursday, 16 May 2019

AMPHITHEATER

CONFERENCE HALL

09:00 - 10:30 Session 2.1 - Monitoring of cultural heritage

Session 2.2 - Deformation monitoring for construction engineering

10:30 - 11:00 Coffee break

11:00 - 12:30 Session 2.3 - Bridge monitoring - I

Session 2.4 - Reference frames and geodynamics - II

12:30 - 13:30 Lunch break

13:30 - 15:00 **SPONSORS PRESENTATIONS**

15:00 - 15:30 Coffee break

15:30 - 17:00 Session 2.5 - Multi-sensor systems and new concepts for deformation measurements - I

Session 2.6 - Dam monitoring

09:00 - 15:00 Poster Session 2 (Hallway)

19:30

Dinner

Friday, 17 May 2019

AMPHITHEATER

CONFERENCE HALL

09:00 - 10:30 Session 3.1 - UAV for change detection and deformation monitoring

Session 3.2 - Ground and spaceborne radar – II

10:30 - 11:00 Coffee break

11:00 - 12:30 Session 3.3 - Multi-sensor systems and new concepts for deformation measurements - II

Session 3.4 - Monitoring of geohazards

12:30 - 13:30 Lunch break

13:30 - 15:00 Session 3.5 - Point cloud-based space-temporal deformations - II

Session 3.6 - Bridge monitoring - II

09:00 - 15:00 Poster Session 3 (Hallway)

AMPHITHEATER

15:00 - 16:00 **Keynote Speech**

16:00

Closing of the Symposium - Awards - Closing Ceremony

Wednesday, 15 May 2019

08:00 - 09:00 **Registrations**

AMFITHEATER

09:00 - 10:00 **Opening ceremony**

Chairs: *Wolfgang Niemeier, Vassilis Gikas*

10:00 - 11:00 **Keynote Speech 1 - Inspections and structural condition assessment of bridges: The role of ambient vibration testing and continuous monitoring**

Carmelo Gentile, Professor of Structural Engineering DABC, Politecnico di Milano, Italy

11:00 - 12:00 **Keynote Speech 2 - Big satellite data for ground deformation assessment at global scale**

Charalampos (Haris) Kontoes, Research Director, National Observatory of Athens, Greece

12:00 - 13:00 **Lunch break**

AMFITHEATER

13:00 - 14:30 **Session 1.1 - QC/QA and optimization techniques in deformation analysis**

Chairs: *Wolfgang Niemeier, Günther Retscher*

Strategies and methods for multi-epoch deformation analysis with geodetic networks

Wolfgang Niemeier, Hiddo Velsink

Evaluating the performance of a space- and time-continuous deformation models

Corinna Harmening, Hans Neuner

Single point adjustment within existing networks by means of the repro-BLE

Burkhard Schaffrin, Cuiping Guo

Impact of mathematical correlations on the statistic of the congruency test case study: B-splines surface approximation from bridge observations

Gael Kermarrec, Johannes Bureick, Hamza Alkhatib

Accuracy of Msplit estimates in the context of vertical displacement analysis

Patrycja Wyszowska, Robert Duchnowski

Towards a More Rigorous Error Propagation Within the Errors-In-Variables Model for Geodetic Applications

Burkhard Schaffrin, Kyle Snow

CONFERENCE HALL

13:00 - 14:30 **Session 1.2 - New concepts for GNSS-based monitoring**

Chairs: *Volker Schwieger, Michael Gianniou*

Reducing Multipath Effect of Low-Cost GNSS Receivers for Monitoring by Considering Temporal Correlations

Li Zhang, Volker Schwieger

Modelling antenna vibrations using the signal-to-noise ratio (snr) of GNSS signals

Ioulia Peppas, Panos Psimoulis, Xiaolin Meng

On the Improvement of Precise Point Positioning augmented with tropospheric ZWD using CORS networks applied to bridge monitoring

Xu Tang, Craig Matthew Hancock, Gethin Wyn Roberts, Shuanggen Jin, Huib de Ligt

Investigating the ability of high-rate GNSS-PPP for determining the vibration modes of engineering structures: small scale model experiment

Cemal Ozer Yigit, Ahmet Anil Dindar, Ahmed El-Mowafy, Mert Bezcioglu, Vassilis Gikas

Distance Limitations when using CORS Networks and GNSS Receivers for Deformation Monitoring

Nikolaos Kanellopoulos, Georgios Pantazis, Evangelia Lambrou

Predicting displacement deformation of bridge based on CEEMDAN-KELM model using GNSS monitoring data

Qian Fan, Xiaolin Meng, Dinh Tung Nguyen, Yilin Xie, Jiayong Yu

14:30 - 15:00 **Coffee break**

AMFITHEATER

15:00 - 16:30 **Session 1.3 - Point cloud-based space-temporal deformations - I**

Chairs: *Heiner Kuhlmann, Vassilios Pagounis*

Robust feature-based correspondence search for point-cloud-based deformation monitoring

Zan Gojcic, Caifa Zhou, Andreas Wieser

Analyzing shape deformation and rigid body movement of structures using commonly misaligned terrestrial laser scanners: the radio telescope case

Christoph Holst, Tomislav Medic, Axel Nothnagel, Heiner Kuhlmann

Terrestrial Laser Scanning time series for landslide advanced analysis

Julien Point, Jean-Philippe Malet, Mathilde Desrues, Ryan Kromer, Gilbert Ferhat

Deformation monitoring of noise barriers with profile laser scanning

Florian Schill, Andreas Eichhorn

Geodetic surface based methods for structural analysis during construction phase

Claudius Schmitt, Hans Neuner, Benjamin Kromoser

Influence of atmospheric refraction on terrestrial laser scanning at long range

Ephraim Friedli, Robert Presl, Andreas Wieser

CONFERENCE HALL

15:00 - 16:30 **Session 1.4 - Reference frames and geodynamics - I**

Chairs: *Dimitris Delikaraoglou, Vassilios Andritsanos*

Input for intra-frame velocity models for the U.S. N.S.R.S. in 2022

Daniel Roman

Deformation detection through the realization of reference frames

Nestoras Papadopoulos, Melissinos Paraskevas, Katsafados Ioannis, Nikolaidis Georgios, Anagnwstou Eyaggelos

Kobe earthquake monitoring – real time geodetic networking

Hiroyuki Hasegawa, Jan De Turck, Yoshihiro Ueda

Analysis of deformations after the Bodrum-Kos earthquake (July 20, 2017 Mw6.6) using Geosensors data

Duygu Akyürek, Serdar Erol, İrem Köz, Bihter Erol

Geohazard Detection Based on High-Precision Estimates of the Instantaneous Velocity of Autonomous GNSS Stations

Roland Hohensinn, Alain Geiger

16:30 - 17:00 **Coffee break**

AMFITHEATER

17:00 - 18:30 **Session 1.5 - Vibration monitoring and dynamics**

Chairs: *Xiaolin Meng, Panos Psimoulis*

RTS measurement of aeroelastic effects on a 30m-high historical industrial chimney

Stathis Stiros, Vasso Saltogianni, Dimitra Founda

Bootstrap tests for model selection in robust vibration analysis of oscillating structures

Boris Kargoll, Mohammad Omidalizarandi, Jens-André Paffenholz, Ingo Neumann, Gaël Kermarrec, Hamza Alkhatib

Detection of structural vibration with high-rate GNSS Precise Point Positioning – methodology and case study results

Jacek Paziewski, Pawel Wielgosz, Rafal Sieradzki, Radoslaw Baryla

Multi-GNSS implementation and assessment of the phase residual method for structures dynamic load and natural frequency estimation

Marco Mendonca, Emerson P. Cavalheri, Ana P. Laroocca, Marcelo C. Santos

Experimental validation of a prototype photonic Phase Optical Time Domain Reflectometer for SHM in large-scale infrastructures

Massimo Leonardo Filograno, George Piniotis, Vassilis Gikas, Vassilis Papavassiliou, Charis Gantes, Maria Kandyła, Christos Riziotis

Introduction to the New Monitoring System for Long-span Bridges - from GeoSHM to iSHM

Xiaolin Meng, Yilin Xie, Dinh Tung Nguyen, John S. Owen, Panos Psimoulis, George Ye, Laiyi Wu, Shuguo Pan, Jun Qian, Paul Bhatia, Yangjun Xu

CONFERENCE HALL

17:00 - 18:30 **Session - Ground and spaceborne radar – I**

Chairs: *Charles Toth, Georgios Pantazis*

Urban deformation monitoring using Sentinel-1 SAR data: a case study

Michele Crosetto, Oriol Monserrat, María Cuevas-González, Anna Barra, Vrinda Krishnakumar, Bruno Crippa

Fast-moving landslides mapping contribution using Sentinel-2 satellite images

Issaak Parcharidis, Constantinos Loupasakis, Ioannis Gougoustamos

Analysis of two decades of SAR data for measuring ground deformation in wider Athens, Greece

Ioannis Papoutsis, Charalampos Kontoes, Demitrios Paradissis

Multi-station Ground-based Real-aperture Radar for quasi-static Deformation Measurement

Marco Scaioni, Mattia Manieri, Eufemia Tarantino

Multi-temporal InSAR analysis for monitoring ground deformation in Amorgos island, Greece

Stavroula Alatza, Ioannis Papoutsis, Demitris Paradissis, Charalampos Kontoes

19:30 **Welcome Reception**

Thursday, 16 May 2019

AMFITHEATER

09:00 - 10:30 **Session - Monitoring of cultural heritage**

Chairs: *Konstantinos Tokmakidis, Dionysios Balodimos*

Multispectral monitoring of the successive phases of the Holy Aedicule rehabilitation

Invited Lecture

Antonia Moropoulou, Andreas Georgopoulos, Evangelia Lambrou, George Pantazis, Sofia Soile, Sevasti Tapeinaki, Elisavet Tsilimantou, Kyriakos Labropoulos

The significance of 3D network adjustment by using different least squares methods for the constructions' monitoring application on the monitoring network of the Holy Aedicule in Jerusalem

Dimitrios Zachos, George Pantazis, Evangelia Lambrou

100 Years of Geodetic Measurements in the Piazza del Duomo (Pisa, Italy): Reference Systems, Data Comparability and Geotechnical Monitoring

Gabriella Caroti, Andrea Piemonte, Nunziante Squeglia

Geodetic Monitoring and Structural Analysis on the Great Temple of Yeha, Ethiopia

Klaus Mechelke, Simeon Burkhardt, Gerhard Eisele, Marcus Illguth, Mike Schnelle, Harald Sternberg

CONFERENCE HALL

09:00 - 10:30 **Session 2.2 - Deformation monitoring for construction engineering**

Chairs: *Alessandro Capra, Andrea Masiero*

Static and Dynamic Interaction of Soil and Structures during the Design, Construction and Operation of various Engineering Projects **Invited Lecture**

Prodromos Psarropoulos

A methodology for correcting refraction in vertical angles for precise monitoring in tunnels

Konstantinos Nikolitsas, Evangelia Lambrou

Development and research of the methods for analysis of geodetic monitoring results for the subway tunnels

Roman Shults

Geodetic monitoring of displacements and deformations for assessment of effect from suspend of exploitation of Pernik mines

Ivan Kaltchev, Maria Kaltcheva

Re-discovering "big data" and "data science" in geodesy and geomatics

Ioannis D. Doukas

10:30 - 11:00 **Coffee break**

AMFITHEATER

11:00 - 12:30 **Session 2.3 - Bridge monitoring - I**

Chairs: *Gethin Wyn Roberts, Prodromos Psarropoulos*

Bridge Monitoring & Assessment via OSMOS Optical Strands

François-Baptiste Cartiaux, Sofia Koutsonika, Georgios Andrikopoulos, Patrice Marc Pelletier

Long-term Monitoring of a Multi-span Beam Bridge Using a Network of Digital Inclinometers: First Results and Perspectives

Vassilis Gikas, Athanasios Mpimis, George Piniotis, Harris Perakis, Fanis Papadimitriou, Kostas Drimeris, Panos Sotiriou

Application of a Bayesian-based Neural Network on SHM of long-span bridges

Dinh Tung Nguyen, Xiaolin Meng, John Owen, Yilin Xie, Panagiotis Psimoulis, George Ye

Assessment of bridges on the "Demir Kapija-Smokvica" motorway section on Pan-European Corridor X using loading test

Toni Arangjelovski, Darko Nakov, Simona Bogojevka, Marija Docevska, Tilemachos Tsiknias, Goran Markovski

Performance analysis of bridge monitoring with the integrated GPS, BDS and GLONASS

Ruijie Xi, Xiaolin Meng, Weiping Jiang, Qiyi He, Xiangdong An

CONFERENCE HALL

11:00 - 12:30 **Session 2.4 - Reference frames and geodynamics - II**

Chairs: *Daniel Roman, Christos Pikridas*

The ups and downs of coast regions: The implications of vertical land motion on coastal hazards

Paul H. Denys, Rob G. Bell, John Hannah, Chris F. Pearson

On the role of the length of GPS time-series in the accuracy of tectonic velocities' estimation: Examples from the HEPOS network

Michail Gianniou, Eleni Mitropoulou, Dimitrios Mastoris

Recent Surface Deformation along the Carmel-Gilboa Fault System, Israel

Gilad Even-Tzur, Jörg Reinking

Calculating a geoid model for Greece using gravity and GPS observations

Nestoras Papadopoulos, Melissinos Paraskevas, Ioannis Katsafados, Georgios Nikolaidis

A model of vertical land movements along the German coast based on a combined solution of GNSS and InSAR data

Dieter Tengen, Anika Riedel, Björn Riedel, Wolfgang Niemeier, Markus Gerke

12:30 - 13:30 **Lunch break**

AMFITHEATER

13:30 - 15:00 **SPONSORS PRESENTATIONS**

Chairs: *Andreas Georgopoulos, Gilbert Ferhat*

Non-intrusive technologies and solutions for Monitoring and Digital Reality models

Marco Di Mauro, Monitoring and Control Segment Manager, Leica Geosystems Ltd

Interoperability tools for deformation monitoring from UAS to road network change detection

Dimitris Stefanakis, CEO & Co-founder, UcanDrone PC, Greece

Infrastructure Assessment, Monitoring and Management under the heavy maintenance of Olympia Odos Concession Project

Michalis Bartzis, Alexandra Mavroiedi, Engineering Geologist, Olympia Odos, Greece

OSMOS Integrated Monitoring Solutions

Arnaud Surpas, OSMOS Hellas SA, Greece

Structural health monitoring-an essential tool in the maintenance strategy of the Rion-Antirion Bridge

Akis Panagis, GEFYRA S.A., Greece

Rheticus®: Monitoring from space geological transformations of earth surface for detecting instabilities of critical infrastructure

Yiota Spastru, Planetek Hellas E.P.E., Greece

Deformation monitoring using Laser Scanners. OPSIS, a unique solution for leaving no spot unattended

George Papastamos, Moniterra Ltd, Engineering Instrumentation & Monitoring, Cyprus

15:00 - 15:30 **Coffee break**

AMFITHEATER

15:30 - 17:00 **Session 2.5 - Multi-sensor systems and new concepts for deformation measurements - I**

Chairs: *Werner Lienhart, Evangelia Lambrou*

Benefits of strain and temperature monitoring of conventional tunnel cross sections using distributed fibre optic sensors

Fabian Buchmayer, Christoph Martin Monsberger, Werner Lienhart

Sensor noise characteristics and error propagation: An educational approach based on collocated MEMS accelerometers

Stathis Stiros, Georgia Fotopoulou, Christodoulos Glaros

A methodology for WSN deployment in 2D large-scale constraining environments, using computational geometry algorithms

Athanasios Iliodromitis, Georgios Pantazis, Vassilios Vescoukis, Evangelia Lambrou

Fast track seismic assessment protocol based on a low cost structural health monitoring system

Spyros Damikoukas, Stavros Chatzieleftheriou, Nikos D. Lagaros

Temporal and Spatial Analysis of GNSS network data for detection of anomalies

Mohammed Habboub, Panos Psimoulis, Richard Bingley

CONFERENCE HALL

15:30 - 17:00 **Session 2.6 - Dam monitoring**

Chairs: *Maria João Henriques, Jens-André Paffenholz*

Automatic follow-up of the tri-directional displacements of the Sainte-Croix arch dam (Verdon - France) by motorized total station

Rémy Boudon, Simon Blin, Emilie Pons, Aurélie Ajzenberg

Investigation of the relationship between rainfall and long-term settlements of earthfill dams based on geodetic measurements: the case of Pournari I dam (Greece)

Niloufar Zanganehazadabadi, Stella Pytharouli, Panagiotis Michalis

Polyphyton Dam: Monitoring of the Right Abutment Slide

Spyridon Raftopoulos

Adaptive parametric identification in dam monitoring by Kalman filtering

Sonja Gamse, Wan-Huan Zhou

19:30 **Dinner**

Friday, 17 May 2019

AMFITHEATER

09:00 - 10:30 **Session 3.1 - UAV for change detection and deformation monitoring**

Chairs: *Charalabos Ioannidis, Stella Pytharouli*

Small and low-cost navigation system for UAV-based emergency disaster response applications

Yang Gao, Zhitao Lyu, Hamid Assilzadeh, Yang Jiang

Low cost UAV and image classification for monitoring the deterioration on building façades

Andrea Masiero, Francesca Fissore, Antonio Vettore

Multitemporal Surface Deformation Analysis of Amyntaio Slide (Greece) using Remotely Piloted Airborne System and Structure-from-Motion photogrammetry

Emmanuel Vassilakis, Michael Foumelis, Athanasia Erkeki, Evelina Kotsi, Issaak Parcharidis, Efthymios Lekkas

On the UAV based Analysis of Slow Geomorphological Processes: A Case Study at a Solifluction Lobe in the Turtmann Valley

Lasse Klingbeil, Erik Heinz, Markus Wieland, Jana Eichel, Thomas Läbe, Heiner Kuhlmann

Estimating Climate Change-based Soil Loss Using Erosion Models and UAV Imagery in the Metsovo Mountain Region

Loukas-Moysis Misthos, Lefkothea Papada, George Panagiotopoulos, Nikos Gakis, Dimitris Kaliampakos

Photo surveys with drones. The improvement of OSOM+, the systematic monitoring of maritime works programme

Maria Henriques, Rui Capitão, Conceição Fortes, Rute Lemos, Teresa Reis, Hugo Silva

CONFERENCE HALL

09:00 - 10:30 **Session 3.2 - Ground and spaceborne radar – II**

Chairs: *Michele Crosetto, Chris Danezis*

ECOQUA Modeling and Monitoring of an Exploited Aquifer System in Northern Baja California, Mexico

Christine Schottmüller, Anika Riedel, Björn Riedel, Markus Gerke, Wolfgang Niemeier

Multi-track N-SBAS Sentinel-1 Interferometry focused on opencast mine monitoring: The case study of the Ptolemaida-Florina coal mine in Greece

Kleanthis Karamvasis, Vassilia Karathanassi

Monitoring ground deformation using Sentinel-1 PSInSAR and RTS measurements in the context of the Grand Paris Express project

Abdeljalil Nahli, Elisabeth Simonetto, Maxime Tatin, Stéphane Durand, Laurent Morel, Vincent Lamour

Introduction to IBIS-ArcSAR: a circular scanning GB-SAR system for deformation monitoring

Alberto Michelini, Federico Viviani, Lorenzo Mayer

The contribution of Sentinel-1 DInSAR to the determination of vertical deformation and height system monitoring

Natasa Triantafyllou, Georgios Vergos, Ilias Tziavos

10:30 - 11:00 **Coffee break**

AMFITHEATER

11:00 - 12:30 **Session 3.3 - Multi-sensor systems and new concepts for deformation measurements - II**

Chairs: *Hans Neuner, Maria Tsakiri*

The 4th industrial revolution, how Monitoring and Risk Management in constructions is changing in the digital era

Marco Di Mauro

A quick tool for the prediction of tunnel crown displacement using neural networks

Spyros Nsubuga, Maria Tsakiri, Vasiliki Georgiannou

Deflection Monitoring and frequency response of a Ship using GPS and Fibre Optic based sensors

Gethin Wyn Roberts, Craig Matthew Hancock, Ferdinand Klug, Werner Lienhart, Niko Zuzek, Huib de ligt

Machine learning meets deformation monitoring

Tomasz Owerko, Szymon Walasik, Wojciech Karas

The use of geodetic techniques in stability monitoring of floating structures

Vangelis Zacharis, Sotiria Dimitrellou, Konstantinos Politis, George Livanos, Vassilios Pagounis, Orthodoxia Arabatzi, Maria Tsakiri

Evaluation of the application of radar and geodetic measurements in the monitoring of earth-filled structures

Przemyslaw Kuras, Lukasz Ortyl, Tomasz Owerko, Aleksandra Borecka

CONFERENCE HALL

11:00 - 12:30 **Session 3.4 - Monitoring of geohazards**

Chairs: *Marco Scaioni, Ioannis Doukas*

CyCLOPS: A Novel Strategic Research Infrastructure Unit for Continuous Integrated Spaced-based Monitoring of Geohazards

Chris Danezis, Diofantos Hadjimitsis, Michael Eineder, Ramon Brcic, Athos Agapiou, Kyriacos Themistocleous, Evangelos Mendonidis, Marios Tzouvaras, Kleopas Hadjicharalambous, Sylvana Pilidou, Georgia Papathoma, Nana Mythilou, George Constantinou, Christiana Papoutsas, Marios Nikolaidis, Andreas Christofe

Establishment of a multi-purpose 3D geodetic reference frame for deformation monitoring in Cortes de Pallas (Spain)

Luis García-Asenjo, Laura Martínez, Sergio Baselga, Pascual Garrigues

Ground Deformation Monitoring Techniques at Continuous Surface Lignite Mines

Anthony Prokos, Christos Roumpos

Monitoring of Tempi Valley Critical Rock Masses: Establishment of Special Monitoring Network and Procedures in Aegean Motorway S.A. Concession Project

Kostas Kalogirou, Efstratios Iliaskos

Sentinel -1 for geohazards monitoring

Anna Barra, Oriol Monserrat, Lorenzo Solari, Marta Bejar-Pizarro, Michele Crosetto, Gerardo Herrera, Elena Gonzales-Alonzo, Roberto Sarro, Silvia Bianchini

12:30 - 13:30 **Lunch break**

AMFITHEATER

13:30 - 15:00 **Session 3.5 - Point cloud-based space-temporal deformations - II**

Chairs: *Andreas Wieser, Antonio Vettore*

Non-signalized Structural Monitoring using Scanning Total Stations

Lukas Raffl, Wolfgang Wiedemann, Thomas Wunderlich

Numerical structural identification using 3D laser scanning – a simulation-based case study

Eugenio Serantoni, Andreas Wieser

Random Sample Consensus vs Neural Network Analysis (RANSAC vs NNA) – a comparative evaluation on TLS point clouds

Konstantinos Lakakis, Konstantinos Tokmakidis, Alexandros Naskos

Axial tomography as a tool for the estimation of constructions' deformations

George Georgopoulos, Elisavet Telioni, George Antoniou, Efstathia Diakoumi

Large-volume photogrammetric deformation monitoring of the Bremen Cog

Heidi Hastedt, Thomas Luhmann, Amandine Colson

Monitoring the planarity and subsidence of a motorway using kinematic laser scanning

Erik Heinz, Christian Eling, Lasse Klingbeil, Heiner Kuhlmann

CONFERENCE HALL

13:30 - 15:00 **Session 3.6 - Bridge monitoring - II**

Chairs: *Stathis Stiros, Rémy Boudon*

Identifying bridge deformation using laser scanning data

Linh Truong-Hong, Roderik Lindenbergh

Spatio-temporal monitoring of a bridge based on 3D point clouds - A comparison among several deformation measurement approaches

Jens-André Paffenholz, Daniel Wujanz

Diagnostic surveys of displacements of a rotating pedestrian bridge during its movement

Ireneusz Wyczałek, Michał Wyczałek, Elżbieta Wyczałek

Monitoring of the static and dynamic displacements of railway bridges with the use of the total station and set of the electronic inclinometers

Ireneusz Wyczałek, Piotr Olaszek, Damian Sala, Marek Kokot

15:00 - 16:00

Keynote Speech 3 - How research and technology convergence is shifting the deformation monitoring paradigm

Chairs: *Andreas Wieser, Vassilis Gikas*

Dorota Grejner-Brzezinska, Lowber B. Strange Endowed Chair, Professor, Associate Dean for Research, The Ohio State University, Columbus, United States

16:00

Closing of the Symposium - Awards - Closing Ceremony

11:30 - 18:30

Wednesday, 15 May 2019

Empirical influence functions of different robust estimation methods applied in displacement analysis

Robert Duchnowski, Patrycja Wyszowska

The method of detecting outliers, jumps and breaks in measurement data from a structural monitoring system

Wojciech Sowa, Bernard Kontny

Processing strategy of Continuous GPS (cGPS) observations for the French Landslide Observatory OMIV

Gilbert Ferhat, Mohammed Benbachir, Jean-Philippe Malet, Pierre Boetzlé, Paul Maise, Maurin Vidal, Benjamin Vial, Patrice Ulrich

Specific procedures for monitoring geotectonic recent movements in the Košice Basin, Slovakia

Vladimír Sedlák

Linear and Non-Linear Deformation Effects in the Permanent GNSS Network of Cyprus

Chris Danezis, Miltiadis Chatzinikos, Christopher Kotsakis

A strategy for the monitoring of tall structures in urban area using GNSS technology

Luca Tavasci, Luca Poluzzi, Stefano Gandolfi

Undisputable, Objective and Reliable Geodetic Dam Monitoring with FRM Standardization

Stelios P. Mertikas, Xenofon Frantzis, Achilles Tripolitsiotis

Investigation of the Optimum Minimum Input data for the Forecasting of 3D Point Position Changing, Using Non-Linear Autoregressive Neural Networks

Eleni-Georgia Alevizakou, Evangelia Lambrou

Monitoring applications by using the Remote Survey Method

Charalampos Molyvas, Evangelia Lambrou

Investigation of the dependence between digital height readings and the meteorological parameters by using a stand-alone set up and repeatable short-term measurements

Anastasios-Grammatas Kampouris, Evangelia Lambrou, George Pantazis

Long-term geodetic monitoring of seasonal deformations of earth dams and relevant finite element verification

George Pantazis, Dimitrios Skarlatos, Loizos Pelecanos

Geodetic and geophysical approach of the gravitational field in santorini volcanic group

Melissinos Paraskevas, Dimitrios Paradissis, Konstantinos Raptakis, Paraskevi Nomikou, Emilie Hooft, Dimitrios Papanikolaou

09:00 - 15:00

Thursday, 16 May 2019

Efficacy of Msplit estimation in displacement analysis

Zbigniew Wiśniewski, Andrzej Dumalski, Robert Duchnowski

Method for confirming Monitoring System Accuracy

Marthinus Briers, Yuriy Stopkhay

Noise analysis of BDS coordinate time series based on dynamic positioning

Jun Ma, Chengdu Cao, Yang Min, Lv Zhou

Accuracy assessment of multi-GNSS Precise Point Positioning

Duygu Akyürek, Serdar Erol, Asude Meryem Karaç, Bihter Erol

2014 Mw 6.5 Gökçeada earthquake deformation analysis with geodetic and geophysical methods

Duygu Akyürek, Serdar Erol, Murat Merdivan, Bihter Erol

Determination of the tectonic plate motion parameters for the Eurasian plate based on the VLBI station positions

Miłoslawa Rutkowska, Marcin Jagoda, Czesław Suchocki

The Aitolio-Akarnania (Western Greece) GNSS network PPGNet – first results

Epameinondas Lyros, Jakub Kostecky, Vladimir Plicka, Filler Vratislav, Efthimios Sokos, Konstantinos Nikolakopoulos

High rate GPS and seismological data to monitor coseismic deformation of the Peninsula of Baja California, Mexico

Carlos Moraila, Gilbert Ferhat, Clara de Lacy

Deformation Monitoring and Analysis of Super High-rise Building Based on GB-RAR

Lv Zhou, Xuelin Wen, Fei Yang, Jun Ma, Xianjian Lu

Study the Deformation of Elevated Water Storage Tank

Sara Sameh, Zaki Zeidan, Ashraf Beshr

Preliminary results on potential deformations occurring on slopes of major Highways by analyzing Sentinel 1 images

Elissavet Chatzicharalampous, Constantinos Loupasakis, Issaak Parcharidis, Manolis Charalampakis, Michaela-Maria Karathanou-Nicholaidi

Monitoring ground deformation of cultural heritage sites using SAR and geodetic techniques: The case study of Choirokoitia, Cyprus

Kyriacos Themistocleous, Chris Danezis, Evangelos Mendonidis, Vassilis Gikas

Seismic Instrumentation and Monitoring systems in large Hydroelectric Infrastructure in Greece

Christos Roilos, Spyridon Raftopoulos

09:00 - 15:00

Friday, 17 May 2019

A new GPS-derived database for co-seismic displacements in the Aegean area and its geodynamic significance

Nikoletta Andritsou, Athanassios Ganas, Chrysanthi Kosma, Panagiotis Argyrakis, Varvara Tsironi, George Drakatos, Efthymios Lekkas

Determination of local active tectonics regime in central and northern Greece, using primary geodetic data

Christos Pikridas, Ilias Lazos, Alexandros Chatzipetros, Spyros Pavlides

Investigation for mining-induced deformation in Upper Silesia Coal Basin with multi-GNSS in Near Real-Time

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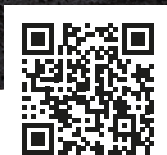
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