INGEO2017

7th International Conference on Engineering Surveying

MONITORING
needs and solutions

Programme

Laboratório Nacional de Engenharia Civil
Portugal | Lisbon | October 18 - 20, 2017

LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

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Hour	Wednesday 18th October	Thursday 19th October	Friday 20th October
9:00		TS4	TS7
9:30	Opening session	TS4	TS7
10:00	PS1	TS4	TS7
10:30	PS1	Coffee break	Coffee break
11:00	Coffee break	PS3	PS5
11:30	TS1	PS3	PS5
12:00	TS1	TS5	TS8
12:30	TS1	TS5	TS8
13:00	Lunch	Lunch	Lunch
13:30	Lunch	Lunch	Lunch
14:00	PS2	PS4	PS6
14:30	PS2	PS4	PS6
15:00	TS2	TS6	TS9
15:30	TS2	TS6	TS9
16:00	TS2	TS6	TS9
16:30	Coffee break	Coffee break	Closing session
17:00	TS3	Visit to Lisbon	
17:30	TS3	Visit to Lisbon	
18:00	Poster	Visit to Lisbon	
18:30	Poster	Visit to Lisbon	
19:00	Conference Dinner		
19:30	Conference Dinner		
20:00	Conference Dinner		
20:30	Conference Dinner		
21:00	Conference Dinner		
21:30	Conference Dinner		

18th Oct., Wednesday

9h30   Opening Ceremony

10h00   PS1

Civil Engineering Structures / Terrestrial Laser Scanning

Chair: Wolfgang Niemeier

Do we need structural monitoring?
José Manuel Catarino

3D congruency – the point cloud problem
Thomas Wunderlich

Coffee Break

11h30   TS1

Monitoring of Civil Engineering Structures I

Chair: Rinaldo Paar
Co-chair: Teresa O. Santos

As-built documentation of anchor blocks of facade elements using TLS
Ján Erdélyi, Alojz Kopáčik and Peter Kyrinovič
This is a peer reviewed paper

Combined use of non-destructive methods for the survey of facades anomalies of heritage buildings with structural concrete elements
José Dias, Luís Matias, Maria João Henriques, Maria Ribeiro and Teresa Santos
This is a peer reviewed paper

Estimation of wooden coefficient of expansion due to temperature and moisture with geodetic sensors
Annette Schmitt and Volker Schwieger

Determining the non-verticality of tall chimneys using the laser scanning approach
Aleš Marjetič and Gašper Štebe
This is a peer reviewed paper

Measurements of geometry of internal flues in multi-flue chimneys
Edyta Puniach

Lunch

14h00 PS2

Historical Buildings / Potential of Classical Methods

Chair: Thomas Wunderlich

Monuments and historic buildings: Applications and challenges in structural engineering
Paulo B. Lourenço

The potential of classical surveying methods for health care monitoring of large structures
Alojz Kopáčik

15h00 TS2

Monitoring of Civil Engineering Structures II

Chair: Helena Cruz
Co-chair: Ján Erdélyi

Using IATS and digital levelling staffs for the determination of dynamic displacements and natural oscillation frequencies of civil engineering structures
Rinaldo Paar, Ante Marendic, Andreas Wagner, Wolfgang Wiedemann, Thomas Wunderlich, Miodrag Roic and Domagoj Damjanovic
This is a peer reviewed paper

Uncertainty evaluation of deflection measurements from FWD tests on road pavements
José Neves and Edgar Cardoso
This is a peer reviewed paper

Visual inspection automation with image processing
Ana Fonseca, Dora Roque, Maria João Henriques and José Muralha

Automated geodetic monitoring systems in new hydropower plants
Elisa Almeida, Daniel Pimentel, David Fernandes, Carlos Pestana and Ricardo Araújo

Assessment of cracks on concrete dams by image processing: the case-study of Itaipu dam, at the Brazil-Paraguay border
Jónatas Valença and Eduardo S. Júlio
This is a peer reviewed paper

Coffee Break

17h00   TS3

Monitoring of Historical Buildings

Chair: Paulo B. Lourenço
Co-chair: Peter Kyrinovič

Monitoring the behaviour of MEO Arena roof
Maria João Henriques, Helena Cruz, Dora Roque and Ana Fonseca
This is a peer reviewed paper

Displacement and surface pathology monitoring of former Tejo Power Station building by combining terrestrial laser scanning, micro-geodesy, photogrammetry and GIS
Adriano Oliveira, João Boavida and Bruno Santos

Vertical displacements of engineering structures during reconstruction: Classification and prediction models
Roman Shults

17h45   Poster Session

Chair: Alojz Kopáčik

Trigonometric levelling at extremely short lines of sight
Zarko Nestorovic

Comparison of 3D laser scanning and classical survey data deformation analysis of industrial facilities in oil refinery
Almin Dapo, Luka Babic, Bosko Pribicevic and Antonio Antunovic

Point cloud classification and track centre determination in point cloud collected by MMS on rail
Elzbieta Pastucha

Three years of monitoring using leveling and hybrid gravimetry applied to the geothermal sites of Soultz-sous-Forêts and Rittershoffen, Rhine Graben, France
Gilbert Ferhat, Nolwenn Portier, Jacques Hinderer, Marta Calvo Garcia-Maroto, Yassine Abdelfettah and Umberto Riccardi

19h00   **Dinner**
(Travel by bus)

19th Oct., Thursday

9h00 TS4

Concepts, New Technology and Software Development I

Chair: Hans Neuner
Co-chair: Ante Marendic

Fusion of laser-scan and image data for deformation monitoring – Concept and perspective
Andreas Wagner, Wolfgang Wiedemann and Thomas Wunderlich
This is a peer reviewed paper

The influence of different LocataNet configurations on positioning accuracy
Igor Grgac, Rinaldo Paar, Ante Marendic and Ivan Jakopec
This is a peer reviewed paper

A new approach to long-distance EDM: using intermode beating of broadband ultrashort laser pulses
David Salido Monzú and Andreas Wieser
This is a peer reviewed paper

Synchronization routine for real-time synchronization of robotic total stations
Zan Gojcic, Slaven Kalenjuk and Werner Lienhart
This is a peer reviewed paper

Deformation monitoring in the Internet of Things. Implementation of a multi-platform software package for modern sensor networks in engineering geodesy
Philipp Engel
This is a peer reviewed paper

Coffee Break

11h00 PS3

Geotechnical Works / Ground Based Radar Interferometry

Chair: Ana Fonseca

The role of monitoring in geotechnical works
Ana Quintela

Potential of Space Based and Ground Based Radar Interferometry for Deformation Monitoring
Wolfgang Niemeier

12h00   TS5

Monitoring of Geological and Hydrological Hazards

> **Chair: Ana Quintela**
> **Co-chair: Stella Pytharouli**

Deformation monitoring of Kostanjek landslide in Croatia using multiple sensor networks and UAV
Ante Marendić, Rinaldo Paar, Hrvoje Tomić, Miodrag Roić and Martin Krkač
This is a peer reviewed paper

Geodetic monitoring of the Adroit landslide, Barcelonnette, French Southern Alps
Gilbert Ferhat, Jean-Philippe Malet, Anne Puissant, Delphine Caubet and Emilie Hubert
This is a peer reviewed paper

Multi-method monitoring of the large and rapidly developping Pas de l'Ours landslide - Queyras, France
Floriane Provost, Pierrick Bornemann, Elouan Faustin, Jean-Philippe Malet, Clément Hibert, Anne Puissant, Marc Fleck, Gilbert Ferhat, Pascal Diot and Vincent Ségel

Lunch

14h00   PS4

Maritime Structures / Augmented Reality

> **Chair: Ana Fonseca**

Application of stereo-photogrammetric methodologies to the design and monitoring of maritime structures
Conceição Juana Fortes

Virtual and Augmented Reality: from the Lab to the Wild
Alfredo Ferreira

15h00 TS6

Monitoring of Coastal Structures

Chair: Conceição Juana Fortes
Co-chair: José Nuno Lima

Towards a mobile monitoring tool for coastal structures inspection: The Ericeira rubble-mound breakwater test case
Rui Capitão, Alexandre Maia, Rute Lemos, Armanda Rodrigues and Conceição Juana Fortes
This is a peer reviewed paper

The monitoring of rubble mound breakwaters. An assessment of UAV technology
Maria João Henriques, Rute Lemos, Rui Capitão and Conceição Juana Fortes
This is a peer reviewed paper

The use of UAVs in engineering geological surveys: mapping along Scotland's south-west coast
Olympia Tziavou, Stella Pytharouli and Jock Souter

Survey of a two-dimensional scale model of a rubble-mound breakwater using different stereo-photogrammetric techniques
Rute Lemos, Maria João Henriques, António Muralha, Ricardo Jónatas, Conceição Juana Fortes and Rui Capitão
This is a peer reviewed paper

Coffee Break

16h30 Visit to downtown Lisbon
(Travel to the meeting point with the guides by subway)

20th Oct., Friday

9h00 TS7

Terrestrial Laser Scanning

Chair: Volker Schwieger
Co-chair: David Salido Monzú

Evaluating the freeform modelling of point clouds by means of a test specimen
Corinna Harmening, Gilles Teodori and Hans Neuner
This is a peer reviewed paper

Using point cloud comparisons for revealing deformations of natural and artificial objects
Christoph Holst, Lasse Klingbeil, Felix Esser and Heiner Kuhlmann
This is a peer reviewed paper

Geodetic surface based methods for applications in civil engineering
Claudius Schmitt, Benjamin Kromoser, Corinna Harmening, Johannes Falkner, Hans Neuner and Johann Kollegger
This is a peer reviewed paper

Simplicity is the New Black: The BLK360 Story
Vanda Kadlečíková

TLS Data Georeferencing - Error Sources and Effects
Jelena Pandžić, Marko Pejić, Branko Božić and Verica Erić
This is a peer reviewed paper

Coffee Break

11h00 PS5

Bridge Monitoring / GNSS Applications

Chair: Alojz Kopáčik

Dynamic Response of Bridges and its Monitoring Needs
Milan Sokol

GNSS: tools to monitor a dynamic Earth
Virgilio Mendes

12h00   TS8

Radar Interferometry Applications

> **Chair: Heiner Kuhlmann**
> **Co-chair: Dora Roque**

The use of InSAR technology to monitor ground and structural displacements
Josep Raventos, Carles Couso and Javier Garcia
This is a peer reviewed paper

Merging GBSAR and topographic surveys to measure pier deformations
Giovanni Nico, Andrea Di Pasquale, Gianluca Miccoli and Filippo Maria Soccodato

Ground based Synthetic Aperture Radar (GBSAR) interferometry: which advantages for the monitoring of concrete and earth-filled dams?
Giovanni Nico, Marco Corsetti, Alfredo Pitullo and Andrea Di Pasquale

Lunch

14h00   PS6

Concrete Dams / UAV Applications

> **Chair: António Batista**

The role of survey methods in the monitoring of concrete dams
Domingos Silva Matos

Assessing exposure of infrastructure to natural hazards using unmanned aerial systems: case studies from the Andes, Portugal, Antarctica and Cape Verde
Gonçalo Vieira

15h00   TS9

Concepts, New Technology and Software Development II

> **Chair: Gonçalo Vieira**
> **Co-chair: Ján Erdélyi**

Monitoring system using low cost GNSS sensors: first experiments and performance evaluation
Stefano Gandolfi, Luca Poluzzi and Luca Tavascih

A Bayesian procedure for analysis of short permanent GNSS baselines
José Nuno Lima and João Casaca

Systematic error elimination of inertial sensors using rotating platforms
Ľubica Erdélyiová, Pavol Kajánek and Alojz Kopáčik

Multi-sensor based augmented virtuality immersive technologies for large scale metrology applications
Theodoros Xenakis, Vassilis Gikas and George Kaisarlis

Assessment of accuracy of basic manoeuvres performed by an unmanned aerial vehicle during autonomous flights
Pawel Cwiakala

16h30   Closing Ceremony

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