PROGRAMME OF THE FIFTH INTERNATIONAL CONFERENCE ON
EXPERIMENTAL VIBRATION ANALYSIS
FOR CIVIL ENGINEERING STRUCTURES
28-30 OCTOBER 2013, OURO PRETO, BRAZIL

EVACES'13

EXPERIMENTAL VIBRATION ANALYSIS FOR CIVIL ENGINEERING STRUCTURES

Edited by

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Preface

Vibration-based assessment, monitoring and control of Civil Engineering structures is a field of increasing importance for researchers, designers and construction companies. In recent years, a significant technological improvement of measurement equipment and theoretical formulations has been experienced. Moreover, society is showing more interest to structural safety, serviceability conditions and durability of structures, from construction to rehabilitation.

In this context, the aim of this fifth edition of EVACES is to provide and strengthen a forum for practitioners and researchers from all around the world. The event creates an environment for exchange of experiences and views related to measurement, data processing and use of experimental vibration analysis for civil engineering structures.

EVACES was first held in the city of Bordeaux, France, in 2005. In 2007, the city of Porto, in Portugal, hosted the event followed by Wroclaw, Poland, in 2009. In 2011, the event took place in the town of Varenna, Italy. Now, for the first time outside Europe, EVACES is being held in Ouro Preto, Brazil.

Ouro Preto is a catching and friendly city, once the heart of the gold exploitation in the country. Due to the dark iron oxide that covers the minerals of the region, the city received the name of Ouro (Gold) Preto (Black). The first Brazilian city listed as UNESCO World Heritage, it has high historic and social value, museums, natural parks and exuberant architecture.

Dynamic testing of historical constructions is one of the topics addressed by the present event, along with: concepts in vibration data analysis; vibration measurements, including large structures; vibration isolation and mitigation; system identification and model updating; structural monitoring and integrity assessment; in-situ and laboratory experiments, benchmarks; footbridges; earthquake engineering tests; and effects of shock and vibration on humans and facilities.

EVACES'13 encompasses 5 keynote lectures and over 60 contributions, from 18 countries. This 3-day event seeks to provide experience and knowledge sharing, besides new collaborations and insights into various subjects. The outcomes of the conference are likely to improve the understanding on the field of experimental vibration analysis, for both academy and industry.

This Programme contains the timetable for all activities taking place in the following days. The first pages present important information regarding the conference and must be carefully read. Presentations and keynotes are listed by title; authors are grouped by affiliation in the full programme. Maps of the conference site indicate where each activity will take place. Moreover, a map of Ouro Preto can be found on the last page, offering some guidance on the surroundings of the event.

To conclude, the Organizing Committee would like to express their most sincere gratitude to the authors and participants for their priceless contribution; to the Scientific Committee, for their assistance in enhancing the quality of this event; and to the Secretariat, whose efforts led to this day. Finally, acknowledgments to the institutions that, with financial aid and support, made this conference possible: UFJF, UFOP, FAPEMIG, CAPES, IEME Brasil and GROM.

EVACES'13 Organizing Committee

Ouro Preto, October 2013.

General Information

Venue

The conference will take place in Parque Metalúrgico – Convention and Performing Arts Center of the Federal University of Ouro Preto. Address: Rua Diogo de Vasconcelos 328, Pilar, Ouro Preto.

Dates

This event will be held between October 28th and 30th, 2013, from Monday to Wednesday.

Information and Registration Office

The registration and information desk will be open in the following periods:

Monday, 28th – from 8:00 to 19:00;

Tuesday, 29th – from 8:00 to 19:00;

Wednesday, 30th – from 8:00 to 13:00.

Identification

The conference tag is provided at the registration desk. In case of loss, please report to the information desk.

Internet

Wireless internet is available to all attendees. The password can be obtained at the information desk.

Coffee-Breaks

Coffee-breaks will be served at the Room Tiradentes, assigned on the map in the next page.

Lunch and the city

This event does not offer lunch. Staff at the information desk will be happy to provide you with directions to restaurants nearby.

Cocktail

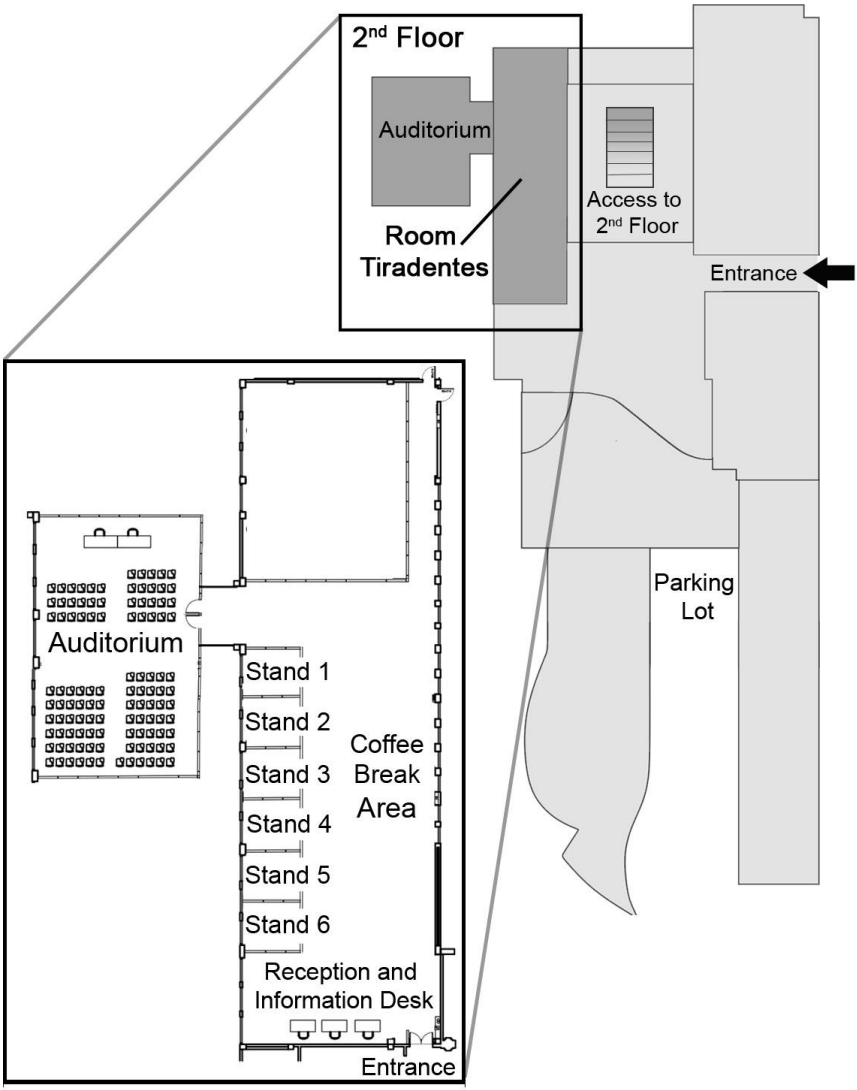
The opening cocktail will take place on Monday 28th, at the coffee break area (Room Tiradentes), at 19:00h.

Conference Banquet

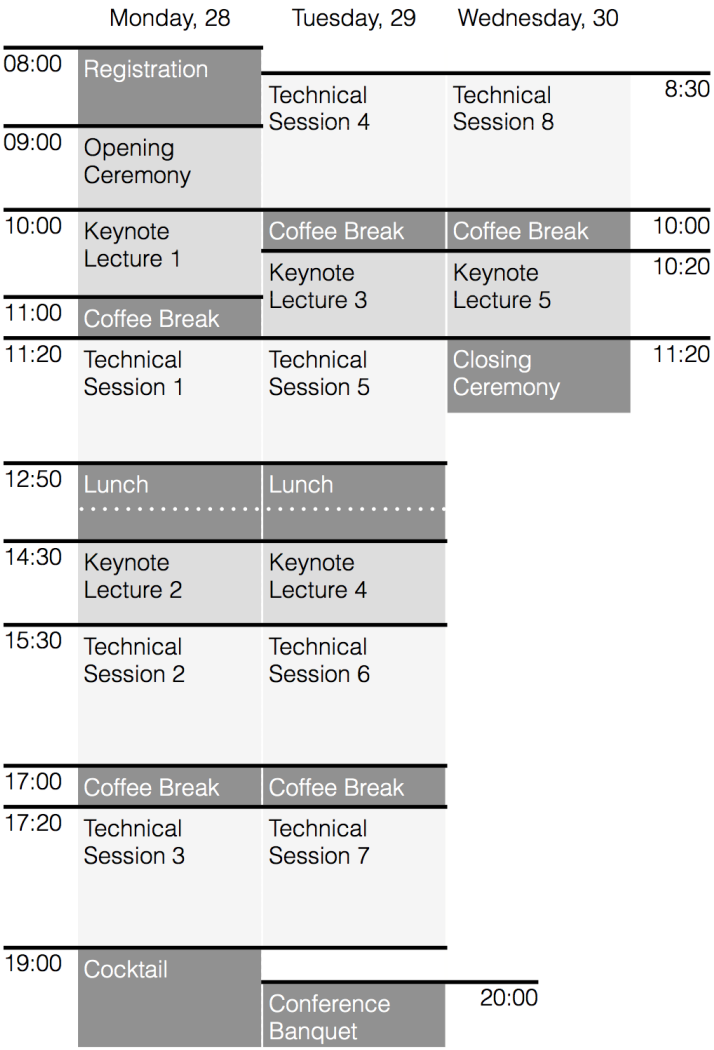
The official dinner will be held at the Bené da Flauta Restaurant on Tuesday 29th, at 20:00h. Address: Rua São Francisco de Assis, 32, Center. The dress code is business casual.

Map

Parque Metalúrgico - Convention and Performing Arts Center



Short Programme



Full Programme

Monday, October 28th

8:00 – 9:00 Registration

At the Reception and Information Desk

9:00 – 10:00 Opening Ceremony

10:00 – 11:00 Keynote Lecture 1

Dynamics & Aeroelasticity of Cable Stayed Bridges: Structural Behavior, Design and Monitoring

R. Battista

Chair: F. Barbosa

11:00 – 11:20 Coffee Break

11:20 – 12:50 Technical Session 1

Chair: J. Rodrigues

Vibration Measurement in Large Structures

Dynamic testing for structural assessment of existing bridges: two case studies

R. Alaggio, F. Benedettini, M. Dilena & A. Morassi

Experimental vibration analysis of concrete box bridge girders

J. Zwolski, J. Bień, T. Kamiński, M. Kużawa & P. Rawa

Experimental validation of a train-structure interaction model on a bowstring arch bridge

D. Ribeiro, R. Calçada & R. Delgado

System identification of a 5-story RC building during construction

R. Astroza, J. Conte, H. Ebrahimian, J. Restrepo & T. Hutchinson

Characterization of jacket-type offshore structure by operational modal analysis

C. Martins & J. Ortigão

Vibration measurement to identify force in tensioned cables

P. Almeida, J. Rodrigues & N. Vieira

Towards unified sizing-shape optimal design of cable-stayed stiffened box-type steel bridges - a comparative design experimentation with strength and stiffness constraints
S. Alghamdi, M. Al-Tholaia & J. Leiva

Static and dynamic tests of Cuyutlan Viaduct
J. Romo, J. Gonzalez, M. Ruiz-Sandoval, A. Patrón, E. Reyes & V. Robles

12:50 – 14:30 Lunch

14:30 – 15:30 Keynote Lecture 2

Objectives and challenges of structural health monitoring: scope and extend.
C. Cremona

Chair: A. Cury

15:30 – 17:00 Technical Session 2

Chair: C. Gentile

System Identification and Model Updating

Finite element model updating of a temporary grandstand
A. Peña, J. Brito, R. Pimentel & V. Brito

System identification and model updating of a retrofitted reinforced concrete frame
F. Calderón, G. Palazzo & A. Deraemaeker

An experimental/numerical study of the structural behaviour of a FCC unit
R. Battista & W. Varela

Retro-analysis of an urban bridge through theoretical-numerical-experimental technique
C. Santos, M. Pfeil & R. Battista

Dynamic Testing of Historical Constructions

Dynamic identification and non-destructive characterization of a Greek heritage building
D. Foti, M. Diaferio, N. Giannoccaro, R. Nobile & M. Sabbà

Structural retrofit of XVI century "Villa da Porto" in NE Italy
P. Franchetti & M. Frizzarin

Dynamic monitoring and seismic assessment of a historic masonry tower
C. Gentile, A. Saisi & M. Xu

OMA tests and FEM updating in Peruvian archaeological heritage: Chokepukio
R. Aguilar, C. Martel & K. Sovero

17:00 – 17:20 Coffee Break

17:20 – 18:50 Technical Session 3

Chair: A. Patrón

Effects of Shock and Vibration on Humans and Facilities

Effect of whole body vibration (WBV) on tasks: the use of SMS on mobile phones
M. Duarte, L. de Melo, L. Duarte & A. Petrini

Whole-body vibration (WBV) influence on writing: subjective evaluation
M. Duarte, L. Duarte, L. Donadon, L. Gomides & R. de Oliveira

Transmissibility study of the vibration of the human head in the vertical direction
C. Bolina, S. Avila & G. Doz

Development of response prediction method for high frequency floors subject to walking
D. Liu, B. Davis & T. Murray

Vibration testing and evaluation of criteria for specialized facilities from phosphate mines to vivariums: a series of key case studies
M. Pavelchak & D. Choudhuri

Dynamic response of a building induced by a dance class
M. Juliani, L. Becocci, D. David & L. Juliani

Earthquake Engineering Tests

Drift issues of tall buildings during the March 11, 2011 M9.0 Tohoku earthquake, Japan - implications
M. Çelebi & I. Okawa

19:00 Welcome Cocktail

At Coffee Break Area

Tuesday, October 29th

8:30 – 10:00 Technical Session 4

Chair: R. Pimentel

In-situ and Laboratory Experiments, Benchmarks

Modal identification of a full-scale 5-story reinforced concrete building tested on the NEES-UCSD shake table
R. Astroza, J. Conte, H. Ebrahimian, J. Restrepo & T. Hutchinson

Identification of the fundamental period of shear-wall buildings in Cali, Colombia
S. Castellanos, J. Marulanda, A. Cruz & P. Thomson

Approval testings of railway track systems
M. Juliani, D. David, A.Sudano & T. Juliani

Footbridges

Experimental dynamic analysis of composite steel-concrete footbridges submitted to people walking
J. Zúñiga, J. Santos da Silva & W. Varela

Density effects in amplifying pedestrian lateral excitation of footbridges
R. Pimentel, M. Araújo Jr & J. Brito

Analysis of the dynamic behavior of a footbridge subjected to human loads
P. Viero, N. Roitman, C. Magluta, F. Barbosa, F. Nogueira, R. Pimentel, A. Brasiliano, J. Brito & G. Doz

Wireless vibration monitoring of a footbridge
G. Feltrin, K. Flouri, K. Jalsan, R. Bischoff & J. Meyer

Experimental vibration analysis of footbridges
P. Hawryszków

10:00 – 10:20 Coffee Break

10:20 – 11:20 Keynote Lecture 3

Motions and vibrations monitoring of marine risers
R. Machado

Chair: R. Battista

11:20 – 12:50 Technical Session 5

Chair: A. Morassi

Structural Monitoring and Integrity Assessment

Vibration based methods for damage localization in bridges
M. Dilena, A. Morassi & M. Limongelli

SHM and system ID. outcomes from six bridge typologies through different modal techniques and by three kinds of measurements
K. Islami & C. Modena

Output-only modal characterization for a damaged concrete bridge
M. Tavares, C. Martins & T. Soares

Possibility to detect damage in an old steel bridge
F. Calderón, M. Calvo & G. Palazzo

Using high frequency FRFs to identify structural damage in a laminate structure
H. Duarte, R. Ribeiro & L. Donadon

Baseline-free real-time novelty detection using vibration-based symbolic features
J. Santos, P. Silveira, C. Crémona & A. Orcesi

Soft-clustering techniques applied to structural damage assessment
V. Alves, A. Cury & C. Cremona

Structural damage detection via unsupervised classification techniques using raw data
V. Alves, A. Cury, N. Roitman & C. Magluta

12:50 – 14:30 Lunch

14:30 – 15:30 Keynote Lecture 4

Tagus River suspension bridge dynamic testing and monitoring
J. Rodrigues

Chair: M. Pfeil

15:30 – 17:00 Technical Session 6

Chair: C. Cremona

Structural Monitoring and Integrity Assessment

Structural health monitoring from limited vibration measurement adopting statistical system identification technique
D. Bandyopadhyay & S. Bhattacharyya

Analyzing the reliability of two structural damage detection methods based on modal data
A. *Bonifacio, F. Barbosa & A. Cury*

Vibration Isolation and Mitigation

The use of pendulums in oscillations control of "rocking-block" type buildings
R. Garziera & L. Collini

Damping identification of a steel frame
P. Novak, D. Setti, R. Trentin & R. Sanches

Vibration damping via twin rotor damper
R. Bäumer, U. Starossek & S. Wollnack

Experimental and numerical evaluation of sandwich viscoelastic beams
W. Felippe Filho, F. Barbosa, N. Roitman, C. Magluta & F. Borges

Vibration mitigation in pipe system of hydraulic drive
G. Makaryants, A. Prokofiev, M. Makaryants, E. Shakhmatov & S. Gafurov

Prototype testing of subway noise and vibration atenuation systems
M. Juliani, L. Becocci, A.Sudano & L. Juliani

17:00 – 17:20 Coffee Break

17:20 – 18:50 Technical Session 7

Chair: N. Roitman

Concepts in Vibration Data Analysis

Experimental modal identification of a South African concrete arch dam
P. Bukenya, P. Moyo & C. Oosthuizen

A method for the correlation of data in modal testing of buildings
R. Garziera & L. Collini

Development of operational model based on vibration levels applied to optimal operation of hydropower turbines under different load condition
P. Sobrinho & M. Mathias

Non-linear dynamic analysis of RC slender structures subjected to wind loading based on experimental data
M. Silva & R. Brasil

Machine foundation monitoring
A. Zhivaev & G. Boldyrev

Modal identification from ambient vibration responses using the time-frequency domain decomposition method
T. Le & P. Paultre

Experimental study on dynamic properties of Bamboo species of Dendrocalamus Giganteus and Phyllostachys Pubescens
K. Ghavami & M. Armandei

20:00 Conference Dinner

At Bené da Flauta Restaurant

Wednesday, October 30th

8:30 – 10:00 Technical Session 8

Chair: G. Feltrin

Vibration Measurement

Forced vibration test of structures by means of bi-axial vibrodyne
L. Collini & R. Garziera

A vibration-based method for the evaluation of axial load in tie-rods: two main case studies
L. Collini & R. Garziera

Mounting low cost accelerometers: measuring acceleration on a concrete slab
C. Bolina, S. Avila & G. Doz.

Enhanced laser Doppler vibrometer technology enables non-contact vibration measurements on large distances
V. Pakrashi & G. Wirth

A low cost MEMS-based accelerograph
V. Papanikolaou & C. Karakostas

Output-only modal analysis using digital camera images
D. Sabino, J. Pereira & G. Abreu

A non-contact structural monitoring system based on image processing
R. Cardoso, F. Barbosa & F. Nogueira

10:00 – 10:20 Coffee Break

10:20 – 11:20 Keynote Lecture 5

One-year dynamic monitoring of a centenary iron arch bridge
C. Gentile

Chair: J. Bien

11:20 – 12:00 Closing Ceremony

Convention Center
Benê da Flauta Restaurant
SERVIÇOS
SERVICES
01. Bus Station
02. Post Office
03. Banks
04. Tourism Office
05. Movie Room
IGREJAS E MUSEUS
CHURCHES AND MUSEUMS
06. N. S. do Pilar Church
07. Currency Museum
08. Minig Museum
09. São Francisco de Assis Church
10. Inconfidência Museum
11. Aleijadinho Museum
12. N. Sra. do Rosário Church
13. Municipal Theatre
14. N. S. do Carmo Church
HOTÉIS
HOTELS/INN
15. Grande Hotel
16. Luxor Ouro Preto
17. Arcanjo
18. Pousada do Mondego
19. Solar da Ópera
20. Pousada Clássica
21. Pousada Minas Gerais
22. Casa Grande
23. Mirante
24. Recanto Minas Gerais
25. Colonial
26. Toledo
27. Boroni
28. Solar N. Sra. das Mercês
29. Priskar
30. Hospedaria Antiga
31. Nello Nuno
OURO PRETO
MARIANA
LAGES
CENTER
PILAR
BARRA
UFOP
BELO HORIZONTE
CONFINS AIRPORT
BR 040
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