

LATAM-SHM

Technical Programme

Tuesday, 05/12/2023

Tue, 05/12/2023 08:30 - 09:00
OC - Opening Ceremony

Room A

Tue, 05/12/2023 09:00 - 09:30

Keynote - Real-time State and Health Awareness for Autonomous Electric Vehicles

Room A

Real-time State and Health Awareness for Autonomous Electric Vehicles
F. Chang*

Tue, 05/12/2023 09:30 - 10:00

Coffe Break

Tue, 05/12/2023 10:00 - 12:00

TUm - Wind Turbines 1

Chaired by: Prof. Wieslaw Ostachowicz (Polish Academy of Sciences, Institute of Fluid Flow Machinery), Prof. Christian Tutivén (Escuela Superior Politécnica del Litoral)

Room A

Wind Turbine Gearbox Condition Monitoring Using Vibration Data and Mel-Frequency Cepstral Coefficients
C. Velandia-Cardenas*, Y. Vidal, F. Pozo

Automated Modal Identification of Operational Wind Turbines Blades
F. Bravo*, R. Astroza, M. Orchard

Detecting Deviating Cells (DDC): An Outlier Filtering Approach for Unsupervised Damage Detection in Wind Turbines
H. Cevallos-Valdiviezo*, C. Tutivén, Y. Vidal, M. Benitez

Vibration Based Harvester for Wind Turbines
C. Castellano-Aldave, A. Plaza, **X. Iriarte***, A. Carlosena

Structural health monitoring in a jacket-type wind turbine foundation: a minimum distortion embedding approach
J. Leon-Medina*, N. Parés, F. Pozo

Real-Time Estimation of Damping in Wind Turbines
I. Vilella, M. Zivanovic, G. Gainza, A. Plaza, X. Iriarte, **A. Carlosena***

Tue, 05/12/2023 10:00 - 12:00

TUm - Damage detection by Vibration and modal analysis methods

Chaired by: Dr. Ziemowit Dworakowski (AGH University of Science and Technology)

Room B

Modal Filtration without calculation of the modal model
Z. Dworakowski*, K. Mendrok

Implementation of Bayesian Model Updating in Five-Story Building
O. Hurtado*, D. Gomez, P. Thomson, A. Ortiz

Lamb Wave Analysis and Damage Detection in a Skin-stringer Composite Joint
L. Šedková*, O. Vích, J. Šedek

Autonomous Monitoring of Breathing Debonds in Composite Structures Using Non-Linear Ultrasonic Signals
S. Sikdar, **W. Ostachowicz***

Experimental Analysis of the Reflection Behavior of Ultrasonic Waves at Material Boundaries
J. Liebeton*, D. Söffker

Experimental Study on the Efficacy of Fiducial Marker-Free Drone-Based Identification of Displacements due to Ambient Vibrations
F. Alarcón*

Tue, 05/12/2023 12:00 - 13:30

Lunch Break

Tue, 05/12/2023 13:30 - 14:50

Room A

TUa - Wind Turbines 2

Chaired by: Prof. Xavier Maldague (University Laval)

Condition Monitoring of a Wind Turbine with an IMU on the Main Shaft

I. Vilella*, G. Gainza, M. Zivanovic, X. Iriarte, A. Plaza, A. Carlosena

Pattern recognition and damage detection in the energetica 2030 wind turbine fiber glass tower through machine learning

S. Rodriguez*, C. Blandón Uribe, M. Paz Duque, J. Sierra Perez

Advancing Wind Turbine Safety: Vibration-Based Early Detection of Blade Ice Accumulation Using Extended Isolation Forest

A. Gómez, **C. Tutivén***, Y. Vidal

Advancing Wind Turbine Reliability: Machine Learning-Based Early Detection of Rotor Imbalance for Proactive Maintenance Strategies

I. Gonzalez*, C. Tutivén, Y. Vidal

Tue, 05/12/2023 13:30 - 14:50

Room B

Tua - Damage detection by Vibration and modal analysis methods 2

Chaired by: Prof. Eugene OBrien (University College Dublin)

Comparative assessment of data normalization methods for modal-based SHM

S. Gómez*, A. Occhiuzzi, C. Rainieri

Identification of Local Defect Resonances using global and local mode separation procedure

A. Klepka*, M. Krzemiński, L. Pieczonka

Time-Frequency Features of Smartphone Accelerometer Data Collected from Bridges via a Passing Vehicle

E. Ozer*, T. Tran

Detecting Ice in Plate-like Structures Via Flow-induced Random Guided Wave

Q. Qin*, X. Wang

Tue, 05/12/2023 14:50 - 15:10

Coffee Break

Tue, 05/12/2023 17:00 - 19:00

SP - Social Program

Wednesday, 06/12/2023

Wed, 06/12/2023 08:30 - 09:00

Room A

Keynote - Evolution of SHM over the last 30 years. Outstanding research issues

Evolution of SHM over the last 30 years. Outstanding research issues
C. R. Farrar*

Wed, 06/12/2023 09:00 - 09:30

Room A

Keynote - Synthetic Aperture Radar Interferometry for structural health monitoring of bridges: potentialities and open research questions

Synthetic Aperture Radar Interferometry For Structural Health Monitoring Of Bridges: Potentialities And Open Research Questions
M. Limongelli*, P. Giordano

Wed, 06/12/2023 09:30 - 10:00

Coffee Break

Wed, 06/12/2023 10:00 - 12:00

Room A

WDM - SHM for Civil Structures 1

Chaired by: Dr. Pier Francesco Giordano (Politecnico di Milano), Dr. Shota Urushadze (Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences)

Case studies of SHM projects design and implementation: added values for owners and engineers
A. Paciacconi, F. Pellegrini*

Bridge damage detection by variational mode decomposition and PCA of traffic-induced vibrations under environmental variability
R. Delgadillo Ayala*, F. Tenelema Muñoz, J. Casas Rius

A Monte Carlo Sampling Strategy for the Automated Operational Modal Analysis of Road Bridges
M. Civera*, B. Chiaia

A data-driven feature selection-based procedure for automatic bridge damage localization
V. Alves, F. Barbosa, A. Cury*

Design and study of an instrumentation and software for permanent monitoring of a cable-stayed bridge
T. Toullier*, A. Bouché, J. Dumoulin

Fatigue Damage Prognosis of Marine Cracked Structures Using SHM, Sea Wave Forecast and Numerical Models
J. Useche*

Wed, 06/12/2023 10:00 - 12:00

Room B

WDM - Machine learning, Neural networks and other AI algorithms

Chaired by: Prof. Viviana Meruane (Universidad de Chile)

Fault detection in industrial pumps based on recurrent autoencoder neural networks
V. Meruane*, T. Hansen, I. Huerta, E. Roa, L. Quinteros, J. Marin

Damage identification of RC beams using Feed-Forward Back Propagation Neural Network Approach (FFBPN)
K. Oroz Farfan*, V. Ramos Cari, J. Casas Rius, R. Delgadillo Ayala

Damage Classification Utilizing Autoencoders and Convolutional Neural Networks
F. Barbosa*, L. Resende, R. Finotti, A. Cury, H. Garrido, M. Domizio, O. Curadelli

Spatio-temporal damage identification through Bayesian calibration of time-varying finite element models
G. Parra*, R. Astroza, M. Birrel, F. Mizón

A data driven frequency-domain virtual sensing method based on cross-spectral density matrices
M. Nuñez Cuji*, R. Prieto-Galarza, C. Tutivén Gálvez, L. Avendaño Valencia

Structural Damage Identification based on the Curvature Matrix of the Accelerance
J. Herrera*

Wed, 06/12/2023 12:00 - 13:30

Lunch Break

Wed, 06/12/2023 13:30 - 14:30

Room A

WDa - SHM for Civil Structures 2

Chaired by: Prof. Wael Zatar (Marshall University), Prof. Andrzej Klepka (AGH University of Krakow)

Bridge monitoring using InSAR data

P. Giordano*, M. Limongelli

Value of Information Analysis Accounting for Sensor Data Quality: focus on drift

P. Giordano*, M. Limongelli

Experimental investigation of a moving vehicle for identification bridge dynamic parameters

S. Urushadze*, J. Yau

Wed, 06/12/2023 13:30 - 14:30

Room B

WDa - Damage detection by guided waves 1 (with on-line presentations)

Chaired by: Mr. Shenfang Yuan (Nanjing University)

A variable-size iFEM for real time shape sensing of a large honeycomb antenna panel – LATAM-SHM 2023

T. Dong*, S. Yuan, T. Huang

Guided wave-based damage imaging of quartz ceramic thermal protection structures ablation

H. zheng*, F. shao, Q. Shan, L. Qiu, S. Yuan

Estimation of dynamic interstory drifts using smart wireless accelerometers

F. Gomez*, Y. Fu

Wed, 06/12/2023 14:30 - 15:00

Coffee Break

Wed, 06/12/2023 15:10 - 16:30

Room A

Keynote - Opportunities and Challenges in Public Infrastructure Monitoring: A Perspective from Oversight and Fiscal Control

Opportunities and Challenges in Public Infrastructure Monitoring: A Perspective from Oversight and Fiscal Control

R. & Gonzalez*, I. Dario Gómez Lee

Wed, 06/12/2023 18:00 - 21:00

GD - Gala dinner & Awards ceremony

Thursday, 07/12/2023

Thu, 07/12/2023 08:30 - 09:00

Room A

Keynote - SHM of Highway Bridges: The Mexican Experience

SHM of Highway Bridges: The Mexican Experience
F. Carrion*

Thu, 07/12/2023 09:00 - 09:30

Room A

Keynote - Real-Life Examples of Fiber Optic Sensing SHM Applications in Latin America

Real-Life Examples of Fiber Optic Sensing SHM Applications in Latin America
A. Mendez*

Thu, 07/12/2023 09:30 - 10:00

CB - Coffee Break

Thu, 07/12/2023 10:00 - 12:00

Room A

THUm - Regional experiences on SHM

Chaired by: Prof. Rodrigo Astroza (Universidad de los Andes, Chile)

Implementation of methodological and normative bases based on artificial intelligence (AI) for bridge health monitoring in Peru.
K. Huamancusi*, R. Delgadillo

First experiences of civil structural health monitoring in Uruguay
A. Spalvier, F. Nicuesa, A. Vidal*, S. Garcia, M. Reina, S. Ihlenfeld, J. González de la Barrera

Probability of Detection: A Reliability Assessment Approach for Structural Health Monitoring Systems in Civil Engineering
D. Kanzler*, V. Rentala, Y. Jaelani, S. Keßler

Experimental Investigation of Post-Tensioned Anchored Trunnion Rods of Navigation Structures
W. Zatar*, H. Nghiem

Nonlinear tracking of Dynamic Properties in a Structure from Service condition to Collapse
F. Consuegra*, C. Marulanda

A new Methodology for Preventive Maintenance
A. Guida, F. Fatiguso*, G. Bernardo, G. Andrisani, V. Porcari

Thu, 07/12/2023 10:00 - 12:00

Room B

THUm - New sensors and sensing systems

Chaired by: Dr. Nicko Kassotakis (University of Exeter, UK), Dr. Jean Dumoulin (University Gustave Eiffel)

The Comparison of Piezoelectric and MEM Sensors Intended for Vibration Condition Machinery Monitoring
G. Zusman*

Employing vision-based sensing for long-term structural monitoring: Exploring the effects of stability on the robustness of DIC measurements
N. Kassotakis*, N. Burn, L. Fenney, A. Pillai, L. Johanning

New generation of generic synchronized wireless sensors for shm
A. Bouché*, V. Le Cam, L. Lemarchand

Metamaterial-aided correlation-based signal processing for damage localisation
W. Ostachowicz*, M. Miniaci, M. Radzienski, P. Kudela

FBG Based Strain Monitoring System to Assess Load Distribution and Differential Settlements in a 33-story Building: The Constructive Life Cycle Behavior
E. Paniagua*, J. Penagos, C. Blandón, C. Riveros, J. Aristizabal, J. Sierra

Development Of A Graphene Nanocomposite-Based Sensor For Structural Health Monitoring (SHM)
J. USECHE V.*, M. Pagnola, I. Piñeres, H. De Ávila, M. Molina, J. Peña-Consuegra

Thu, 07/12/2023 12:00 - 13:30

Lunch Break

Thu, 07/12/2023 13:30 - 14:30

Room A

THUa - Industrial applications 1

Chaired by: Prof. Alfonso Carlosena (Universidad Pública de Navarra)

Forecasting of refractory wall thickness in an electric arc furnace used in ferro-nickel production

R. Gomez*, B. Rueda, J. Romero, C. Pedraza, J. Sofrony, J. Mantilla, D. Tibaduiza

A Structured Light System for Monitoring Metallic Powder Bed Additive Manufacturing

M. Todd*, N. O'Dowd, A. Wachtor

Temperature forecasting against sensors failures in an electric arc furnace

D. Godoy*, B. Rueda, J. Romero, J. Leon, D. Tibaduiza

Thu, 07/12/2023 14:30 - 15:00

CB - Coffee Break

Thu, 07/12/2023 15:00 - 16:20

Room A

THUa - Industrial applications 2

Chaired by: Prof. Michael Todd (University of California San Diego)

Asset Predictive Maintenance in Hydroelectric Power Station based on Convolutional Autoencoder and Novelty Detection Techniques

A. Ruales Torres*, B. Mancipe Barrero, M. Jaramillo Romero, Ó. Cardona Morales

Implementation of Seismic Eco-Isolators in a vehicular bridge

J. Martínez*, A. Álvarez G., F. Guerrero M., A. Ortiz, P. R., J. Marulanda C.

Detection of Lossy Bolts in a Jacket-Type Wind Turbine Support Using a Vibration-Only Response Mechanism Based on Accelerometer Data

R. Prieto-Galarza*, C. Tutivén, Y. Vidal

Ultrasound for assessing the state of health of cylindrical lithium-ion batteries: applied to pristine, accelerated degraded and second-life batteries

S. Montoya-Bedoya*, E. Garcia-Tamayo, J. Gaviria-Cardona, D. Rohrbach, H. Martinez-Tejada, D. Howey, M. Bernal

Drive-by Fleet Monitoring Using Apparent Profiles

E. O'Brien*, S. Wang, D. McCrum

In-Situ Strain Measurement of Concrete Micro-Piles under Loading using Distributed Fiber Optic Sensing Systems

A. Méndez*, M. Terceros, W. Paniagua, F. Carrion