16th Intl CONFERENCE on
VIBRATION MEASUREMENTS by LASER and NONCONTACT TECHNIQUES
ANCONA, ITALY, 24th-26th June 2025
AULA MAGNA - Faculty of Agricultural, Food and Environmental Sciences

FINAL PROGRAMME

TUESDAY, 24th June	
08.30	*REGISTRATION*
09.00	*WELCOME by Prof. Enrico Primo Tomasini, President of A.I.VE.LA., Italy*
09.20	**Session 1: NON-CONTACT MEASUREMENT TECHNIQUES for ADVANCED STRUCTURES CHARACTERIZATION and RELIABILITY ASSESSMENT 1** *developed by: Alessandro Annessi (1), Milena Martarelli (2), Paolo Chiariotti (3)* *(1) Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche, Italy, (2) Department of Industrial Engineering and Mathematical Sciences, Polytechnic University of Marche, Italy, (3) Department of Mechanical Engineering, Politecnico di Milano, Italy* *Chairman: Prof. Milena Martarelli, Polytechnic University of Marche, Italy*
	"On the separability of defective clusters in resonance testing datasets of additive manufactured components", *D. Candelaresi , G.Kosova, A. Annessi, E. Di Lorenzo, M. Martarelli, P. Castellini, Polytechnic University of Marche, Italy* "Artworks diagnostic by Shearography and 3D scanning", *C. Saltarelli, V. Pagliarulo, M. Paturzo , Institute of Applied Sciences and Intelligent Systems - CNR, Italy* "Investigation of Elastic-Strain-Dependent Damping Properties of Metallic Alloys Using Laser Vibrometer", *E. Alkountar , A. Lohrengel, TU Clausthal, Germany*
10.20	**INVITED LECTURE** **"Rethinking Material Testing: How Information-Rich Experiments and Inverse Computational Methods Are Driving a New Paradigm",** Prof. Marco Rossi, Polytechnic University of Marche, Italy
11.00	*COFFEE BREAK*
11.20	**Session 2: ACOUSTICS** *Chairman: Prof. Lorenzo Scalise, Polytechnic University of Marche, Italy*
	"Performance analysis over Conventional Frequency Domain Beamforming using asynchronous arrays', *A. Sabatini , G. Herold, G. Battista, M. Martarelli, P. Castellini, Polytechnic University of Marche, Italy* "User-centred sink vibro-acoustic optimization: SHAP-based methodology for sound quality metrics correlation with jury test ", *V. Pasquinelli, A. Scaburri, A. Annoscia, L. Boccardo, P. Castellini, M. Martarelli, Polytechnic University of Marche, Italy*

12.00	**TUTORIAL** **"High-Speed 3D Vibrometry for Modal Analysis using Q2 Laser Radar",** *Ommatidia LiDAR, Spain*
12.40	*LUNCH*
14.00	**Session 3: CONTACTLESS MEASUREMENTS and COMPUTER VISION for PRECISION AGRICULTURE** *developed by: Alessandro Annessi, Enrico Maria Lodolini, Veronica Giorgi, Department of Agricultural, Food and Environmental Sciences – Polytechnic University of Marche, Italy* *Chairman: Dr Alessandro Annessi, Polytechnic University of Marche, Italy*
	"From disruption to detection: Biotremology's tools for smart agriculture and ecological sensing", *V. Mazzoni, S. E. Moussaoui, S. Galvagni, L. Fellin, C. Peccerillo, G. Roselli, R. Nieri, Edmund Mach Foundation, Italy* "Smart Agriculture Insurance Based on Computer Vision Application", *M. Fiorentini , S. Zenobi, F. Mammarella, M. Francioni, C. Rivosecchi, R. Orsini, P. D'Ottavio, P. A. Deligiosa, L. Ledda, Polytechnic University of Marche, Italy*
14.40	**TUTORIAL and HANDS-ON DEMO** **"Optical measurement techniques for vibration measurements",** *Dr Amar Peshave , MatchID, Belgium*
16.10	*COFFEE BREAK*
16.30	**HANDS-ON DEMOs by POLYEC GmbH** - Vibroscan QTEC Xtra SLDV measuring ODS on a turbine blade excited by an automatic hammer - VibroFlex Range, the outdoor-proof long-range laser sensor head designed for remote analysis of vibrating structures, model validation and health monitoring on large and distant structures from more than 500 m - VibroGo, the truly portable, battery powered digital laser vibrometer for field studies and quick and easy condition monitoring of machines and facilities
17.30	**Session 4: OPTICAL SENSORS 1** *Chairman: Prof. Nicola Paone, Polytechnic University of Marche, Italy*
	"Design and development of an optical vibration sensor based on fiber Bragg grating (FBG) technology for aerospace applications", *M. Bertone, A. Aimasso, F. Amoretti, P. Maggiore, M. D. L. Dalla Vedova , Politecnico di Torino, Italy* "Power Flow Measurement through a New Rig based on a Sensitive Element and Irradiation", *A. Safaei , M. D.L. Dalla Vedova, F. Maggi, Politecnico di Torino, Italy* "Optical Signal Attenuation in an FBG Sensor Network for Aerospace Systems Monitoring", *M. Bertone, A. Aimasso, F. Amoretti, P. Maggiore, M. D. L. Dalla Vedova , Politecnico di Torino, Italy*
18.30	END of DAY 1
20.15	Aperitivo @ GALLOROSSO al GUASCO

WEDNESDAY, 25th June	
08.30	*REGISTRATION*
09.00	**Session 5: THE POWER of SEEING MOTION: INNOVATIONS in OPTICAL TECHNIQUES for VIBRATION and DYNAMIC TESTING** *developed by: Emilio Di Lorenzo (1), Davide Mastrodicasa (2)* *(1) Siemens Digital Industries Software, Simulation and Testing Solutions, Genoa, Italy, (2) Siemens Digital Industries Software, Simulation and Testing Solutions, Leuven, Belgium* *Chairman: Dr Emilio Di Lorenzo, Siemens Digital Industries Software, Simulation and Testing Solutions, Genoa, Italy,*
	"Vision-based multi-scale motion tracking of mechanisms: a weaving-loom case study", *T. Willems, W. Trekels, V. Smeets, S. Vanpaemel, F. Naets, KU Leuven, Belgium* "Global DIC algorithm for vibrating and rotating object tracking", *P. Neri, A. Paoli, S. Occhipinti, A. Cesaretti, D. Botto, C. M. Firrone, University of Pisa, Italy* "Learning-Based Operational Deflection Shapes Video Magnification in Structural Dynamics", *M. Visconte, F. Cosco, D. Mastrodicasa, E. Di Lorenzo, D. Mundo, Università della Calabria, Italy* "Heuristic Fiber Bragg Grating sensor placement algorithm for strain response reconstruction", *N. Jensen, F. Naets, KU Leuven, Belgium* "High-Speed 3D Vibrometry for Industrial Modal Analysis", *J. L. Rubio, E. Margallo, G. Pandraud , D. Mastrodicasa, E. Di Lorenzo, Ommatidia LiDAR, Spain* "3D-based Video Motion Magnification and Estimation for Vibration Analysis", *L. Chittano, D. Mastrodicasa, S. Occhipinti, E. Di Lorenzo, D. Botto, Siemens Industry Software NV, Belgium*
11.00	*COFFEE BREAK*
11.20	**INVITED LECTURE** **"Mobilizing Laser Doppler Vibrometer for Railway Track Monitoring: From Concept to Field",** *Dr. Yuanchen Zeng, Delft University of Technology, The Netherlands*
12.00	**Session 6: MANUFACTURERS' PRESENTATIONS** *Chairman: Prof. Enrico Primo Tomasini, President of A.I.VE.LA., Italy*
12.40	**Session 7: BLADE TIP TIMING** *Chairman: Prof. Matteo Davide Lorenzo Dalla Vedova, Politecnico di Torino, Italy*
	"Insight on Experimental Evaluation of AMR Sensors for Blade Tip Timing", *M.L. Mekhalfia, P. Procházka, R. Smid, E. Voronova, R. Hodbod', D. Maturkanic, P. Bonello, P. Russhard, E.B. Tchawou Tchuisseu, Institute of Thermomechanics of the Czech Academy of Science, Czech Republic* "Development of calibration procedures of Tip-Timing systems for non-contact turbine blade vibration measurements", *G. Rossi, L. Capponi, G. Tribbiani, V. Medici, P. Castellini, M. Martarelli, N. Paone, G. Zito, A. Morvayov´a, A. Gaspari, L. Fabbiano, A. Venuto, F. Freni, R. Montanini, A. Prato, A. Schiavi, University of Perugia, Italy*
13.20	*LUNCH*

14.40	**TUTORIAL and HANDS-ON DEMO** **"Seeing Motion: The Power of Video Motion Magnification and Estimation",** *Dr Emilio Di Lorenzo (1), Dr Davide Mastrodicasa (1), Dr Francesco Cosco (2) - (1) Siemens Digital Industries Software, (2) University of Calabria*
15.40	**Session 8: OPTICAL SENSORS 2** *Chairman: Prof. Chriatian Rembe, TU Clausthal, Germany*
	"Performance Evaluation of a Low-Cost Micro-Interferometer for Remote Vibration Sensing", *P. Esmaili, F. Cavedo, A.Pesatori , M. Norgia, L. Cristaldi, Politecnico di Milano, Italy* "Research on High-Frequency Angular Vibration Calibration using Heterodyne Laser Interferometer", *D. Zhang, Q. Lyu, X. Li, L. Zhang, J. Xue, Z. Liang, L. Chen, Changcheng Institute of Metrology & Measurement, P.R. China* "Squeezed-light-enhanced laser Doppler vibrometer for the acquisition of broad-band sound signals", *M. Yu , P. Gewecke, R. Schnabel, C. Rembe, TU Clausthal, Germany* "FM Self-mixing Interferometer Measurement Performance", *P. Esmaili, A. Pesatori, M. Norgia, Politecnico di Milano, Italy* "On the modeling and simulation of a MEMS micro-Resonator for mass detection applications", *S. Azizi, H. Madinei, H. Haddad Khodaparast, G. Rezazadeh, Swansea University, UK*
17.20	*END of DAY 2*
20.00	*Gala Dinner @ Ristorante l'Ascensore*

THURSDAY 26th June	
08.45	*REGISTRATION*
09.00	**Session 9: NON-CONTACT MEASUREMENT TECHNIQUES for ADVANCED STRUCTURES CHARACTERIZATION and RELIABILITY ASSESSMENT 2** *developed by: Alessandro Annessi (1), Milena Martarelli (2), Paolo Chiariotti (3)* *(1) Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche, Italy, (2) Department of Industrial Engineering and* *Chairman: Dr Alessandro Annessi, Polytechnic University of Marche, Italy*
	"Uncertainty Quantification of Thickness Estimation via Full-Field Ultrasonic Inspection", *N. Shah, E.M. Jacobson, E.B. Flynn, A.J. Wachtor, Los Alamos National Labs, the USA* "Numerical modelling and experimental validation of emergent subharmonic attenuation zones in nonlinear locally resonant metamaterials", *V. Zega, P. B. Silva, M. G. D. Geers, V. G. Kouznetsova, Politecnico di Milano, Italy* "Investigating the Deformation Behaviour of Metamaterials Under Compressive Load using RAFT Optical Flow and Micro-CT", *A. Caputo, A. Annessi, M. Martarelli, P. Castellini, Polytechnic University of Marche, Italy*
10.00	**INVITED LECTURE** **"Non-contact measurement technologies are key to the development of Energy equipment: current needs and trends",** *Dr Lorenzo Lorenzi, Baker Hughes*

10.40	**Session 10: NON-INVASIVE TECHNIQUES FOR BIOMEDICAL APPLICATIONS** *Chairman: Prof. Joris Dirckx, University of Antwerp, Belgium*
	"Uncertainty Analysis of Human Static Pose Assessment Using MediaPipe", *L. Panni, G. Cosoli, M. Arnesano, L. Scalise, Polytechnic University of Marche, Italy* "Fatigue Estimation of human Hand Arm in Working Condition by Data-Driven Approach Based on Wearable Sensors", *M. Cavacece, University of Cassino and Southern Latium, Italy*
11.20	*COFFEE BREAK*
11.40	**Session 11: VISION SYSTEMS and IMAGING TECHNIQUES in the CONSTRUCTION INDUSTRY: MEASUREMENT STRATEGIES to SUPPORT SUSTAINABILITY and CIRCULARITY** *developed by: Gloria Cosoli (1), Giovanni Salerno (2), Maria Teresa Calcagni (2), Gian Marco Revel (2)* *(1) eCampus University, (2) Department of Industrial Engineering and Mathematical Sciences – Polytechnic University of Marche* *Chairman: Prof. Gian Marco Revel, Polytechnic University of Marche, Italy*
	"Smart waste monitoring: an approach based on vision systems and AI for CDW management", *G. Salerno, M.T. Calcagni, G. Cosoli, L. Violini, G.M. Revel, Polytechnic University of Marche, Italy* "Validation of AI Tools for Construction and Demolition Waste Monitoring", *H. de Melo Ribeiro, M.A.A. Abbas, A. Ayodeji, E. El Masri, G. Cosoli, G. Salerno, M. T. Calcagni, G.M. Revel, Brunel University London, UK* "Classification of Hyperspectral Data from Construction and Demolition Waste (CDW) Using Spectral Angle Mapper (SAM) algorithm", *M.T. Calcagni, G. Salerno, G. Cosoli, G.M. Revel, Polytechnic University of Marche, Italy* "Estimation of Tire Parameters by a Sensor-Fusion Approach", *M. Cavacece, University of Cassino and Southern Latium, Italy*
13.00	*LUNCH*
13.45	*END of CONFERENCE*

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