



12th Intl CONFERENCE on VIBRATION MEASUREMENTS by LASER and NONCONTACT TECHNIQUES

Muse Theatre, Ancona, 29th June - 1st July 2016

PRELIMINARY PROGRAMME

WEDNESDAY, 29th JUNE

08:30 **REGISTRATION**

09:00 **WELCOME** - SALA RIDOTTO

09:20 **KEYNOTE LECTURE** - SALA RIDOTTO

"Exciting Vibrations, Measuring Vibrations, Managing Vibrations", *Prof. David J. Ewins, Imperial College - London and Bristol University, UK*

10:20 **COFFEE BREAK**

10:50 **Session 1 - BLADE TIP TIMING** - SALA RIDOTTO

Co-Chairman: Dr P. Russhard, EMTD Ltd, UK

Co-Chairman: Prof. G.L. Rossi, University of Perugia, Italy

"Using Image Processing Techniques on Proximity Probe Signals in Rotordynamics", *D. H. Diamond, P. S. Heyns, A. J. Oberholster, University of Pretoria, South Africa*

"Sensors for Noncontact Vibration Diagnostics in Rotating Machinery", *P. Procházka, Academy of Sciences, the Czech Republic*

"Blade Tip Timing (BTT) Uncertainties", *P. Russhard, EMTD Ltd, uk*

"Noncontact Vibration Measurements Using Magnetoresistive Sensing Elements", *R. Tomassini, G. Rossi, University of Padua, Italy*

12:10 **Session 2 - FIELD APPLICATIONS of LDV** - SALA RIDOTTO

Chairman: Prof. G.L. Rossi, University of Perugia, Italy

"Mobile Seismic Exploration", *A. Dräbenstedt, X. Cao, U. Polom, F. Pätzold, T. Zeller, P. Hecker, V. Seyfried, C. Rembe, Polytec GmbH, Germany*

12:30 **LUNCH**

14:00 **Session 3 - FULL-FIELD, ESPI & HOLOGRAPHY 1** - SALA RIDOTTO

Chairman: Prof. P. Avitabile, University of Massachusetts at Lowell, USA

"Digital Stroboscopic Holographic Interferometry for Power Flow Measurements in Acoustically Driven Membranes", *W. Keustermans, F. Pires, D. De Greef, J. J. J. Dirckx, University of Antwerp, Belgium*

"Non-destructive Evaluation of Impact Damage on Carbon Fiber Laminates: Comparison between ESPI and Shearography", *V. Pagliarulo, V. Lopresto, A. Langella, V. Antonucci, M. R. Ricciardi, P. Ferraro, CNR, Italy*

"Eulerian Frequency Analysis of Structural Vibrations from High-Speed Video", *A. Venanzoni, L. De Ryck, J. Cuenca, Siemens PLM Software, Belgium*

"Dynamic Speckle Interferometry of High-Cycle Material Fatigue: Theory and Some Experiments", *A.P. Vladimirov, Ural Federal University, Russia*

15:20 **Session 4 - BIOMEDICAL APPLICATIONS 1 - SALA RIDOTTO**

developed in collaboration with Prof. J.J.J. Dirckx, University of Antwerp, Belgium

Chairman: Prof. J.J.J. Dirckx, University of Antwerp, Belgium

"LDV Measurement of Bird Ear Vibrations to Determine Inner Ear Impedance and Middle Ear Power Flow", *P.G.G. Muuyshondt, F. Pires, J. J. J. Dirckx, University of Antwerp, Belgium*

"Algorithm for Automatic Detection of the Cardiovascular Parameter PR-Interval from LDV-Velocity Signals", *L. Mignanelli, C. Rembe, Clausthal University of Technology, Germany*

"A Fast Autofocus Setup Using A Liquid Lens Objective For In-Focus Imaging In The Macro Range", *S. Pasinetti, I. Bordini, G. Sansoni, F. Docchio, M. Tinelli, M. Lancini, Brescia University, Italy*

"Application of a Four-Channel Vibrometer System for Detection of Arterial Stiffness", *A. Campo, A. Waz, G. Dudzik, J. Dirckx, K. Abramski, University of Antwerp, Belgium*

16:40 **COFFEE BREAK**

17:00 **Session 5 - NDT, QUALITY and PROCESS CONTROL 1 - SALA RIDOTTO**

Chairman: Prof. S. Rothberg, Loughborough University, UK

"Slip Measurement in a Frictional Connection by Torsional LDV", *G. Schäfer, A. Lohrengel, J.L. Hilgermann, Clausthal University of Technology, Germany*

"High-speed Rangefinder for Industrial Application", *F. Cavedo, A. Pesatori, M. Norgia, Polytechnic University of Milan, Italy*

"Experimental Characterization of Cantilever-type Piezoelectric Generator Operating at Resonance for Vibration Energy Harvesting", *R. Montanini, A. Quattrocchi, University of Messina, Italy*

"Quantitative Speckle-analysis of Damage Accumulation in the Organic Glass under High-cycle Fatigue", *A.P. Vladimirov, I.S. Kamantsev, N.A. Drukarenko, V.N. Trishin, Ural Federal University, Russia*

18:20 **END of DAY 1**

19:30 **GALA DINNER**

THURSDAY, 30th JUNE

09:00 **REGISTRATION**

09:20 **KEYNOTE LECTURE - SALA RIDOTTO**

"Some experiences with noncontact measurements for modal analysis applications", *Prof. Peter Avitabile, University of Massachusetts at Lowell, USA*

10:20 **COFFEE BREAK**

10:50 **Session 6 - MODAL ANALYSIS, STRUCTURAL/ MATERIAL IDENTIFICATION 1 - SALA RIDOTTO**

Chairman: Prof. D. J. Ewins, Imperial College - London and Bristol University, UK

"Structural Vibration Field Test using Optical Flow Analysis of a Video Sequence", *D. H. Diamond, A. J. Oberholster, P. S. Heyns, University of Pretoria, South Africa*

"Improving the Correlation of Structural FEA Models by the Application of Automated High Density Robotized Laser Doppler Vibrometry", *M.*

Chowanietz, A. Bhangaonkar, M. Semken, M. Cockrill, University of Leicester, UK

"Non-contact Measurement of Civil and Engineering Structures", *P. Kohut, T. Uhl, AGH University of Science and Technology, Poland*

11:50 **Session 7 - NDT, QUALITY and PROCESS CONTROL 2 - SALA RIDOTTO**

Chairman: Dr B. Peeters, SIEMENS INDUSTRY SW, Belgium

"Energy-based Indexes for Analysis of Vibrations from Rotating Machinery based on the Hilbert-Huang Transform", *G. Dinardo, L. Fabbiano, G. Vacca, Polytechnic University of Bari, Italy*

"Monitoring Techniques for High Accuracy Interference Fit Assembly Processes", *A. Liuti, F. Rodriguez Verdugo, N. Paone, C. Ungaro, AEA Srl, Italy*

12:30 **LUNCH**

14:00 **Session 8 - MANUFACTURERS' PRESENTATIONS - SALA RIDOTTO**

Chairman: Prof. E.P. Tomasini, Polytechnic University of Marches, Italy

14:50 **Session 9 - CONTINUOUS SCANNING LDV - SALA RIDOTTO**

Co-Chairman: Prof. P. Castellini, Polytechnic University of Marches, Italy

Co-Chairman: Prof. M. Martarelli, e-Campus, Italy

"Full-Field Strain Measurements on Turbomachinery Components using 3D SLDV Technology", *M. Maguire, I. A. Sever, Rolls-Royce MTOC, Germany*

"Structure-structure Coupling by Liquids: Vibration Measurements on a Rotating Disk with Self-tracking LDV", *M. Weder, B. Horisberger, C. Monette, J. Dual, ETH Zurich, Switzerland*

"Continuous Scanning Laser Doppler Vibrometry and Wavelet Processing for Diagnostics: a Time Domain Approach", *P. Chiariotti, G. M. Revel, M. Martarelli, Polytechnic University of Marche, Italy*

15:50 **PARALLEL SESSIONS**

SALA RIDOTTO

Session 10 - METROLOGY & CALIBRATION

Chairman: Prof. C. Rembe, Clausthal University of Technology, Germany

"3D Camera Assisted Fully Automated Calibration of Scanning Laser Doppler Vibrometers", *S. Sels, B. Ribbens, L. Mertens, S. Vanlanduit, University of Antwerp, Belgium*

SALA CLIO

Session 11 - ADVANCES IN LASER INTERFEROMETRY

Chairman: Dr D. Di Maio, University of Bristol, UK

"Study on Avalanche Photodiode Influence on Heterodyne Laser Interferometer Linearity", *G. Budzyn, T. Podzorny, Wroclaw University of Technology, Poland*

"An Improved Method in the Measurement of the Moment of Inertia", J. Peng, L. Zhang, Beihang University, P.R. China

"Accuracy Improvement in a Calibration Test Bench for Accelerometers by a Vision System", G. D'Emilia, D. Di Gasbarro, A. Gaspari, E. Natale, University of L'Aquila, Italy

"Research on New Dynamic Torque Calibration System", L. Zhang, Z. Y. Wang, X. Yin, Beihang University, P.R. China

"Key Technologies and Applications of Laser Cooling and Trapping ⁸⁷Rb Atomic System", N. Ru, L. Zhang, Y. Wang, S. Fan, Changeng Institute of Metrology and Measurement, P.R. China

"Self-Mixing Laser Sensor for Short-Distances Measurement", M. Norgia, L. Kun, A. Palludo, F. Cavedo, A. Pesatori, Polytechnic University of Milan, Italy

"Optimization of Quadrature Signal Processing for Laser Interferometers for Demanding Applications", T. Podzorny, G. Budzyn, J. Tkaczyk, Wroclaw University of Technology, Poland

"Characterisation of a Cryostat using Simultaneous, Single-beam Multiple-surface Laser Vibrometry", T. Kissinger, T.O. H. Charrett, S. W. James, A. Adams, A. Twin, R. P. Tatam, Cranfield University, UK

" Impact of LF and HF Noises of HeNe Lasers on the Operation of Precise Interferometers", G. Budzyn, T. Podzorny, J. Rzepka, Wroclaw University of Technology, Poland

17:30 END of DAY 2

17:45 GUIDED TOUR of ANCONA HARBOUR

FRIDAY, 1st JULY

09:00 **Session 12 - MODAL ANALYSIS, STRUCTURAL/ MATERIAL IDENTIFICATION 2** - SALA RIDOTTO

Chairman: Dr K. Bendel, Robert BOSCH GmbH, Germany

"Response Phase Mapping of Nonlinear Joint Dynamics using Continuous Scanning LDV Measurement Method", D. Di Maio, A. Bozzo, N. Peyret, Bristol University, UK

"Numerical and Experimental Analysis of structure-borne Sound Transmission in Coupled Systems", X. Cao, S.G. Backhaus, R. Scheidl, C. Rembe, Clausthal University of Technology, Germany

"Identification of Pavement Material Properties Using a Scanning Laser Doppler Vibrometer", N. Hasheminejad, C. Vuysse, W. Van den bergh, J. Dirckx, J. Leysen, S. Sels, S. Vanlanduit, University of Antwerp, Belgium

10:00 COFFEE BREAK

10:20 **Session 13 - BIOMEDICAL APPLICATIONS 2** - SALA RIDOTTO

Chairman: Prof. J. Rohrbaugh, Washington University in Saint Louis, USA

"LDV Measurement of Small Nonlinearities in Flat and Curved Membranes. A Model for Eardrum Nonlinear Acoustic Behaviour", K. Gladiné, P. Muysshondt, J. J. J. Dirckx, University of Antwerp, Belgium

"LDV Arterial Pulse Signal: Evidence for Local Generation in the Carotid", J. W. Rohrbaugh, E. J. Sirevaag, E. J. Richter, S. Casaccia, L. Casacanditella, L. Scalise, Washington University in Saint Louis, USA

"INTER-EYE: Interactive Error Compensation for Eye-Tracking Devices", M. De Cecco, M. Zanetti, A. Fornaser, M. Leuci, Nicola Conci, University of Trento, Italy

"Characterization and Calibration of the Central Arterial Pressure Waveform obtained from Vibrocardiographic Signal", L. Casacanditella, G. Cosoli, S. Casaccia, J.W. Rohrbaugh, L. Scalise, E.P. Tomasini, Polytechnic University of Marche, Italy

11:40 **Session 14 -FULL-FIELD, ESPI & HOLOGRAPHY 2 - SALA RIDOTTO**

Chairman: Prof. E.P. Tomasini, Polytechnic University of Marche, Italy

"Selected Strategies of Bessel Fringes Processing", A. Styk, Warsaw University of Technology, Poland

"Simultaneous Digital Speckle Pattern Interferometry and Thermographic Analysis for Cultural Heritage diagnostics", G. Arena, M. Rippa, P. Mormile, M. Grilli, M. Paturzo, G. Fatigati, P. Ferraro, CNR, Italy

"Full-field Vibration Measurements of the Violin using Digital Stroboscopic Holographic Interferometry and Electromagnetic Stimulation of the Strings", L. Keersmaekers, W. Keustermans, D. De Greef, S. J. A. Vanlanduit, J.J.J. Dirckx, University of Antwerp, Belgium

12:40 **LUNCH**

14:30 **END of CONFERENCE**



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