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Alessandro Zanarini, PhD. MSc.

https://www.researchgate.net/profile/Alessandro_Zanarini

Research Experience

Jan 2013 – Jul 2015 **Experienced Researcher**
Vienna University of Technology, Institute of Mechanics and Mechatronics
Vienna, Austria

Marie Curie FP7-PEOPLE-IEF-2011 Project TEFMA
Towards Experimental Full Field Modal Analysis
(http://cordis.europa.eu/project/rcn/103580_it.html)

Jan 2009 – Feb 2010 **Visiting Professor**
Vienna University of Technology, Institute of Mechanics and Mechatronics
Vienna, Austria

Testing the full field technologies in the TU-Wien lab. 2 courses given to
Master and PhD students:

1) Complementary Approaches in Structural Dynamics and Experimental
Modelling

2) Advanced techniques in applied modal analysis and vibro-acoustic
modelling

Mar 2006 – present **Professor (Assistant)**
University of Bologna, Department of Industrial Engineering DIN, Italy
http://diem1.eng.unibo.it/personale/zanarini/Zanarini_ricerca_EN.htm

Aug 2005 – Feb 2006 **PostDoc Position**
University of Bologna, Department of Mechanical, Nuclear, Aviation, and
Metallurgical Engineering DIEM, Bologna, Italy
Grant on **active vibration control in industrial machinery**

Apr 2004 – Jul 2005 **PostDoc Position**
Dantec Dynamics A/S, Solid Mechanics, Ulm, Baden-Württemberg, Germany
Structural dynamics with optical full field measurements in the European
Commission - Marie Curie project "**Speckle Interferometry for industrial
needs**"

Jan 2003 – Mar 2004 **PostDoc Position**
University of Bologna, Department of Mechanical, Nuclear, Aviation, and
Metallurgical Engineering DIEM, Bologna, Italy

Grant on the **variability of dynamic properties in spatial mechanisms**

Jan 2002 – Jan 2003 **PhD Student**

University of Leuven, Department of Mechanical Engineering, Leuven, Belgium

1 year abroad in the framework of the European Commission - Marie Curie Actions **EDSVS - European Doctorate on Sound and Vibration Studies**.

Research project: **Hybrid modeling for road-noise prediction**, supervisor Prof. Paul Sas

Nov 2001 – May 2002 **PhD Student**

LMS International, Division of RTD Test, Leuven, Belgium

Hybrid coupling in automotive for model updating and road noise modeling

Jan 2000 – Dec 2002 **PhD Student**

University of Bologna, Department of Mechanical, Nuclear, Aviation, and Metallurgical Engineering DIEM, Bologna, Italy

Doctoral studies on *Development of numerical and experimental procedures for dynamic analysis of automotive vehicles*. 05/2003, Doctorate Dissertation in Mechanics of Machines (XV cycle), Bologna University, Italy, Supervisor: Prof. Giuseppe Catania, Prof. Alberto Maggiore, Prof. Umberto Meneghetti, DOI:10.13140/RG.2.1.1539.1602

Skills & Activities

Skills FE Analysis, Vibration Analysis, Structural Dynamics, Dynamics, Structural Analysis, Structural Vibration, Dynamic Analysis, Dynamic Simulation, Vibration Testing, Earthquake Engineering, Structural Stability, Computational Mechanics, Computational Structural Mechanics, Stress Analysis, Structural Health Monitoring, Solid Mechanics, Structural Optimization, Finite Element Modeling, Finite Element Analysis, Structural Reliability, Applied Mechanics, Rotor Dynamics, Multibody System Dynamics, NVH, Condition Monitoring, Nondestructive Testing, Computer-Aided Engineering, Vibration Engineering, Damage Detection, Experimental Modal Analysis, Mechanical Engineering, Diagnostics

Languages English, German, Italian

Interests **Nature and wildlife photography: <https://www.colorazeta.it>**

Book

Alessandro Zanarini: *Analisi cinetostatica grafica di meccanismi piani. Applicazioni per la Meccanica delle Macchine*. 1st 10/2012; Società Editrice Esculapio., ISBN: 978-88-7488-545-9, DOI:10.15651/978-88-748-8545-9

Journal Publications

- Alessandro Zanarini: *Competing optical instruments on the estimation of Full Field FRFs*. Under review for publishing in Measurement MEAS-D-17-01716
- Alessandro Zanarini: *Dynamic surface rotation and strain high resolution FRF mapping as derivative quantities from matching different full field optical measuring technologies*. Under review for publishing in Measurement Science and Technology MST-107359
- Alessandro Zanarini: *Full field optical measurements in experimental modal analysis and model updating*. Under revision for publishing in Journal of Sound and Vibration JSV-D-17-02193
- Giuseppe Catania, Alessandro Zanarini: *Flexible multibody system dynamics by means of a spectral based meshless approach*. Under revision for publishing in Advances in Applied Mathematics and Mechanics AAMM-OA-2018-0053
- Alessandro Zanarini: *Broad frequency band full field measurements for advanced applications: Point-wise comparisons between optical technologies*. Mechanical Systems and Signal Processing, online 05/2017; volume 98, year 2018, DOI:10.1016/j.ymsp.2017.05.035

Conference Proceedings

- Giuseppe Catania, Alessandro Zanarini: *ON THE EFFECTS OF FLEXIBILITY IN A QUICK RETURN PLANAR MECHANISM*. Undicesima giornata di studio Ettore Funaioli, Alma Mater Studiorum, Università degli Studi di Bologna; 07/2017, in press.
- Alessandro Zanarini: *ABOUT THE MODELLING OF TEETH MESH FLEXIBILITY IN PLANETARY GEARS*. Undicesima giornata di studio Ettore Funaioli, Alma Mater Studiorum, Università degli Studi di Bologna; 07/2017, in press.
- Alessandro Zanarini: *Abstract of the presentation "Towards Experimental Full Field Modal Analysis, Risultati del progetto europeo FP7 TEFFMA @ TU-WIEN, Austria"*. Incontro del GMA - Gruppo Italiano di Meccanica Applicata, Università degli Studi di Napoli Federico II; 07/2016
- Giuseppe Catania, Alessandro Zanarini: *A MESHLESS APPROACH IN FLEXIBLE MULTIBODY SYSTEM MODELLING*. Decima giornata di studio Ettore Funaioli, Alma Mater Studiorum, Università degli Studi di Bologna; 07/2016, DOI:10.6092/unibo/amsacta/5600#185
- Alessandro Zanarini: *RESULTS OF THE TEFFMA EUROPEAN FP7 PROJECT: TOWARDS EXPERIMENTAL FULL FIELD MODAL ANALYSIS*. Decima giornata di studio Ettore Funaioli, Alma Mater Studiorum, Università degli Studi di Bologna; 07/2016, DOI:10.6092/unibo/amsacta/5600#231
- Alessandro Zanarini: *Model updating from full field optical experimental datasets*. IFToMM - ICoEV2015 International Conference on Engineering Vibration, Ljubljana (Slovenia); 09/2015
- Alessandro Zanarini: *Full field experimental modelling in spectral approaches to fatigue predictions*. IFToMM - ICoEV2015 International Conference on Engineering Vibration, Ljubljana (Slovenia); 09/2015

Alessandro Zanarini: *Accurate FRF estimation of derivative quantities from different full field measuring technologies*. IFToMM - ICoEV2015 International Conference on Engineering Vibration, Ljubljana (Slovenia); 09/2015

Alessandro Zanarini: *Comparative studies on Full Field FRFs estimation from competing optical instruments*. IFToMM - ICoEV2015 International Conference on Engineering Vibration, Ljubljana (Slovenia); 09/2015

Alessandro Zanarini: *On the estimation of frequency response functions, dynamic rotational degrees of freedom and strain maps from different full field optical techniques*. ISMA2014-USD2014 Conferences, Leuven, Belgium; 09/2014

Alessandro Zanarini: *On the role of spatial resolution in advanced vibration measurements for operational modal analysis and model updating*. ISMA2014-USD2014 Conferences, Leuven, Belgium; 09/2014

Alessandro Zanarini: *Dynamic strain & stresses for enhanced reliability: from full field optical measurements to simulations*. ICAIM 2014 - International Conference on Applications for Image based Measurements, Leipzig, Germany; 06/2014, DOI:10.13140/RG.2.1.4724.1045

Alessandro Zanarini: *Full field optical measurements for Operational Modal Analysis and Model Updating*. Settima giornata di studio Ettore Funaioli, Bologna, Italy; 07/2013, DOI:10.6092/unibo/amsacta/4064

Alessandro Zanarini, Enrico Brugnoli: *A time-varying dynamic problem for the frequency analysis of an off-road motorcycle*. Sesta giornata di studio Ettore Funaioli, Bologna, Italy; 07/2013, DOI:10.6092/unibo/amsacta/3715

Alessandro Zanarini, Enrico Brugnoli: *Frequency analysis of a motorbike under motion conditions*. ISMA2012-USD2012 Conferences, Leuven, Belgium; 09/2012, DOI:10.13140/RG.2.1.2404.3608

Alessandro Zanarini, Andrea Cavallini: *Experiencing rotor and fluid film bearing dynamics*. Quinta giornata di studio Ettore Funaioli, Bologna, Italy; 07/2011, DOI:10.6092/unibo/amsacta/3310

Alessandro Zanarini, Manfred Nuemann, Johann Wassermann: *Full Field Frequency Response Functions: A Bridge Towards NVH Applications*. ICAIM 2011 - International Conference on Applications for Image based Measurements, Ulm, Germany; 03/2011, DOI:10.13140/RG.2.1.1316.2329

Alessandro Zanarini, Manfred Neumann, Johann Wassermann: *Full field optical measurements for advanced structural dynamics: first outcomes*. Quarta giornata di studio Ettore Funaioli, Bologna, Italy; 07/2010, DOI:10.6092/unibo/amsacta/3043

Alessandro Zanarini: *Full Field ESPI Vibration Measurements to Predict Fatigue Behavior*. ASME 2008 International Mechanical Engineering Congress and Exposition; 10/2008, DOI:10.1115/IMECE2008-68727

Alessandro Zanarini: *Fatigue life assessment by means of full Field ESPI vibration measurements*. ISMA2008 Conference, Leuven, Belgium; 09/2008, DOI:10.13140/RG.2.1.3452.9365

Alessandro Zanarini: *ESPI measurements in structural dynamics: fatigue life assessment*. Dantec Dynamics International Conference and User Meeting, Ulm, Germany; 08/2008, DOI:10.13140/RG.2.1.3076.8724

- Alessandro Zanmarini:*Kinematics-based variability of the dynamic behaviour in spatial mechanisms*. ISMA2008 Conference, Leuven, Belgium; 08/2008, DOI:10.13140/RG.2.1.2666.5048
- Alessandro Zanmarini:*Full-field ESPI techniques in structural dynamics*. Seconda giornata di studio Ettore Funaioli, Bologna, Italy; 07/2008, DOI:10.6092/unibo/amsacta/2552
- Giuseppe Catania, Alessandro Zanmarini:*Experimental Measurement of NC Machine Tool Milling Cutting Forces*. IMAC-XXV, Orlando, Florida, USA; 02/2007
- Alessandro Zanmarini:*Full field ESPI measurements on a plate: Challenging Experimental Modal Analysis*. IMAC-XXV, Orlando, Florida, USA; 02/2007
- Alessandro Zanmarini:*Dynamic Behaviour Characterization of a Brake Disc by Means of Electronic Speckle Pattern Interferometry Measurements*. ASME 2005 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Long Beach, California, USA; 09/2005, DOI:10.1115/DETC2005-84630
- Alessandro Zanmarini, Filip De Coninck, Krzysztof Mendrok, Paul Sas:*Direct and Indirect Vibro-Acoustic Measurements for Road Noise NVH Predictions*. ASME 2005 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Long Beach, California, USA; 09/2005, DOI:10.1115/DETC2005-85633
- Alessandro Zanmarini:*Damage Location Assessment in a Composite Panel by Means of Electronic Speckle Pattern Interferometry Measurements*. ASME 2005 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Long Beach, California, USA; 09/2005, DOI:10.1115/DETC2005-84631
- Alessandro Zanmarini, Giuseppe Catania:*Evaluation of spatial mechanism eigenproperties with respect to kinematical configuration*. 5ème Conférence Internationale .Méthodes de Surveillance et Techniques de Diagnostic Acoustiques et Vibratoires, Senlis, France; 10/2004
- Giuseppe Catania, Alessandro Zanmarini:*Dynamic Contribution of Tires in Vehicle Suspension Modeling: An Experimental Approach*. ASME 2003 International Mechanical Engineering Congress and Exposition; 11/2003, DOI:10.1115/IMECE2003-41255
- Alessandro Zanmarini, Peter Mas, Koen Cuppens, Filip De Coninck, Paul Sas:*Using FBS for road noise NVH predictions: First outlines*. Euronoise2003 3rd European Conference on Noise Control, Napoli, Italy; 05/2003
- Alessandro Zanmarini, Filip De Coninck, Paul Sas, "A connecting stiffness optimization procedure to update finite element models of assembled structures", paper XV05 in P. Sas, B. van Hal (eds.), *Model Updating and Correlation, Proceedings of ISMA2002, International Conference on Noise and Vibration Engineering*, Leuven, 2002 (Belgium)
- Alessandro Zanmarini, Giuseppe Catania, Alberto Maggiore, Umberto Meneghetti, "Dynamic behaviour analysis and optimization of a rotary table transfer machine", paper XXIII05 in P. Sas, B. van Hal (eds.), *Dynamic Behaviour Analysis, Proceedings of ISMA2002, International Conference on Noise and Vibration Engineering*, Leuven, 2002 (Belgium)