

PERSONAL INFORMATION

Nicola Roveri

Sex Male | Date of birth | Nationality

WORK EXPERIENCE

June 2015 – Present

Contract Professor of Mechanical Vibrations, Master Degree in Mechanical Engineering (1044906) Ing-ind/13

Dept. of Mechanical and Aerospace Engineering, Sapienza, University of Rome.

Business or sector Academic

January 2015 – Present

Board member of the postgraduate master in Inventive Engineering Sapienza, University of Rome.

▪ Master representative professor.

Business or sector Innovation Engineering, Intellectual property

January 2009 – Present

Research assistant at the National Research Council (CNR) of Italy, formerly at the Department of Mechanics and Aeronautics, Sapienza

CNR-Insean and Sapienza, University of Rome.

- OPTYRE research project: development of a smart tire for the identification of the tire-road grip conditions based on a wireless optical system with embedded Fiber Bragg Grating strain sensors. The apparatus allows the real time observation of the circumferential tire strain when rolling in real conditions on the road: from this information and with the development of dedicated algorithms, it is possible to identify the instant area of the contact patch, the grip conditions as well the instant dissipation.
- Research assistant at CNR-Insean (2014/2016) in the research project "Ritmare", title: "Metodi e tecnologie di monitoraggio e diagnostica strutturale".
- Research assistant at the Department of Mechanics and Aeronautics, Sapienza, (2011/2014) for the research project "Sviluppo di un sistema integrato per l'identificazione early-stage del danneggiamento strutturale di armamenti ferroviari".
- Collaboration to joint research projects, with Octo Telematics on the on-board identification of car crash, with ANAS on the early stage damage identification on motorway bridges, and to the academic projects: "Innovative High Speed Marine Vehicle with Semiactive Suspension Skid System", "FBG Vehicle Sensing Technology", "Energy-autonomous vehicles for water health monitoring" sponsored by Sapienza.

Fields of interest:

- Smart tire, Tyre and Vehicle Dynamics.
- Self-diagnosis of smart structures, Fibre Bragg Grating optical fiber sensors.
- Driver classification and driving style recognition, adaptive vehicle control system, connected cars, autonomous driving.
- Signal analysis: pattern recognition, feature extraction, data compression with Neural Networks, Principal Component Analysis, nonlinear filters, such Empirical Modal Decomposition and Stochastic Resonance, Hilbert-Huang Transformation.
- Energy sharing process in complex resonators, linear and nonlinear energy pumping.

Business or sector Academic

November 2008 – October 2009

Engineer at Bridgestone Technical Centre Europe

Bridgestone TCE S.p.A., Castel Romano, RM, Italy.

- Design of the original equipment passenger tire for European carmakers, such as Audi, BMW, Mercedes, Ford, Opel, Volkswagen.

Business or sector Automotive, Chemical

October 2008 – October 2009

Consultant Engineer at the Italian Ship Model Basin

CNR-INSEAN, Via di Vallerano, Roma, Italy.

- Consultant of the international project: Hydro Testing Alliance. Application of nanotechnology and intelligent materials to nonintrusive measure instruments for hydrodynamical applications.

Business or sector Naval

EDUCATION AND TRAINING

July 2012

Postgraduate diploma in Control, Health Monitoring, and Wind Energy/Power Grid Energy

EQF 7

SYSWIND Summer School, University of Patras, Greece.

- Methods for the Control and Structural Health Monitoring of wind turbines.

July 2010

Postgraduate diploma in Variational Models and Methods in Solid and Fluid Mechanics

EQF 7

CISM, Udine, Italy.

- Investigation of the nature of real physical problems with the aim of finding the best variational formulation suitable to those problems. The direct application of variational analysis to solve real engineering problems. A Rayleigh-Hamilton principle is used to establish boundary conditions at discontinuity surfaces in porous media. New variational models of fracture mechanics are presented and solved. Continuous structures to which are attached special sets of resonators that generate amplitude decays in its impulse response are also treated.

November 2007 – June 2008

Researcher, Internship at Carnegie Mellon University

Carnegie Mellon University, 5000, Forbes Avenue, 15213, Pittsburgh, USA .

- Joint research activities between Carnegie Mellon University and Sapienza on the development of innovative engineering systems with high damping properties.

November 2005 – November 2008

PhD in Theoretical and Applied Mechanics

EQF 8

Sapienza, University of Rome, Italy.

- Energy sharing process in complex resonators, passive vibration control methods based on energy localization into a cluster of resonators. Linear and nonlinear energy pumping.

September 1997 – May 2005

Master's degree magna cum laude (110/110 with honour) in Mechanical Engineering

EQF 7

Sapienza, University of Rome, Italy.

- Mechanical Vibration, Structural mechanics, Fluid Dynamics, Turbomachinery, Energetics, Mechanical Technology, Economics.

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

UNDERSTANDING	SPEAKING	WRITING

	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	B2	C1	C1
Spanish	B1	B1	A1	A1	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
 Common European Framework of Reference for Languages

Communication skills Hosts of scientific television shows as Leonardo and Geo Scienza, on air on RAI 3.

Organisational / managerial skills Leadership, currently responsible for a team of 15 graduate-undergraduate people working in the university laboratory in Cisterna di Latina, Italy.

Computer skills Excellent command of Matlab and Comsol numerical computing environments and programming languages. Excellent command of AutoCAD software application for 2D and 3D computer-aided design and drafting. Excellent command of Microsoft Office, Acrobat professional, good command of Photoshop.

Driving licence Category: B

ADDITIONAL INFORMATION

Publications
Conferences
Memberships
References

List of publication and patents:

- 1) N. Roveri, S. Milana, A. Culla, A. Carcaterra, Structural health monitoring under random flow loading, Acoustics 17 Boston, 173rd Meeting Of The Acoustical Society Of America And 8th Forum Acusticum.
- 2) D. Antonelli, N. Roveri, G. Pepe, A. Carcaterra, "Semi-active suspension's control by artificial Neural Network and Variational feedback control features", ASME IDETC2017, 2017.
- 3) F. Coppo, G. Pepe, N. Roveri, A. Carcaterra, "A Multisensing setup for the intelligent tire monitoring", Sensors, 2017.
- 4) A. Carcaterra, G. Pepe and N. Roveri, " Energy Exchange between Nonlinear Oscillators: An Entropy Foundation", ISMA2016, Leuven, Belgium, 2016
- 5) N. Roveri, G. Pepe, A. Carcaterra, On line estimation of rolling resistance for intelligent tires, Proceedings of ISMA2016-USD2016, Leuven, Belgium 19-21 September 2016.
- 6) A. Carcaterra, G. Pepe, N. Roveri, Energy exchange between nonlinear oscillators, Proceedings of ISMA2016-USD2016, Leuven, Belgium 19-21 September 2016.
- 7) G. Pepe, N. Roveri, A. Carcaterra, Prototyping a new car semi-active suspension by variational feedback controller, Proceedings of ISMA2016-USD2016, Leuven, Belgium 19-21 September 2016.
- 8) University Patent Pending, appointed inventors A. Carcaterra, N. Roveri, M. Platini, Dispositivo e metodo per la misurazione ottica dell'aderenza di uno pneumatico e pneumatico idoneo per detta misurazione, property University of Rome "La Sapienza", first deposit number RM2011A000401, date 27/07/2011.
- 9) N. Roveri, G. Pepe, A. Carcaterra, OPTYRE – A new technology for tire monitoring: Evidence of contact patch phenomena, Mechanical Systems and Signal Processing, doi:10.1016/j.ymssp.2015.06.019.
- 10) N. Roveri, A. Carcaterra, A. Akay, Frequency intermittency and energy pumping by linear attachments, Journal of Sound and Vibration, Available online 14 May 2014, <http://dx.doi.org/10.1016/j.jsv.2014.04.003>.
- 11) A. Carcaterra, N. Roveri, and G. Pepe, Fractional dissipation generated by hidden wave-fields, Mathematics and Mechanics of Solids 1081286513518941, first published on January 13, 2014 as doi:10.1177/1081286513518941
- 12) N. Roveri, A. Carcaterra, A. Sestieri, Real-time Monitoring of Railway Infrastructures Using Fiber Bragg Grating Sensors, Mechanical Systems and Signal Processing, 60–61, 2015, 14–28.
- 13) N. Roveri, A. Carcaterra, Unsupervised identification of damage and load characteristics in time-varying systems, Continuum Mechanics and Thermodynamics, 2013, DOI 10.1007/s00161-013-0328-3.
- 14) N. Roveri, A. Carcaterra, Damage detection in structures under travelling loads by Hilbert–Huang transform, Mechanical Systems and Signal Processing, 2012, 28, 128-144.
- 15) A. Carcaterra, N. Roveri, Energy Distribution In Impulsively Excited Structures, Shock and Vibration, 2012, 19, 5, 1143-1163.

Publications
Conferences
Memberships
References

List of publication and patents:

- 16) N. Roveri, A. Carcaterra, A. Akay, Vibration absorption using non-dissipative complex attachments with impacts and parametric stiffness, *The Journal of the Acoustical Society of America*, 2009, 126, 5, 2306-2314.
- 17) N. Roveri, A. Carcaterra, A. Akay, Energy equipartition and frequency distribution in complex attachments, *The Journal of the Acoustical Society of America*, 2009, 126, 1, 122-128.
- 18) Sestieri, A. Carcaterra, N. Roveri, New Monitoring Technologies in Mechanical Systems, 7th International Conference on Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques (Surveillance 7), 29-30 October 2013, Chartres, France.
- 19) N. Roveri, A. Carcaterra, A. Sestieri, Integrated system for SHM and wear estimation of railway infrastructures, 7th International Conference on Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques (Surveillance 7), 29-30 October 2013, Chartres, France.
- 20) Carcaterra, N. Roveri, Tire grip identification based on strain information: Theory and simulations. *Mechanical Systems and Signal Processing*, 2013, 41, 1-2, 564-580.
- 21) N. Roveri, A. Carcaterra, M. Platini, Phase-based FBG detectors for structural damage identification, in XX Convegno AIMETA, Bologna: Publi&Stampa Edizioni, 2011. - ISBN: 9788890634017. Proceedings of: AIMETA 2011: XX convegno nazionale AIMETA, Bologna, 12-15 Settembre 2011.
- 22) N. Roveri, A. Carcaterra, Structural health monitoring of time-varying systems by output-only identification, proceedings of ISMA 2012, International Conference on Noise and Vibration Engineering, KU Leuven (Belgium), 17 - 19 September 2012. ISBN 9789073802896.
- 23) N. Roveri, A. Carcaterra, Targeted energy pumping using a linear complex attachment, proceedings of ISMA 2012, International Conference on Noise and Vibration Engineering, KU Leuven (Belgium), 17 - 19 September 2012. ISBN 9789073802896.
- 24) N. Roveri, A. Carcaterra, Damage detection in structures under travelling loads by Hilbert–Huang transform, ICEDyn 2011- International Conference on structural Engineering Dynamics. Tavira. ISBN 978-989-96276-0-4.
- 25) A. Carcaterra, N. Roveri, A new theory of shock response in structural dynamics, ICEDyn 2011- International Conference on structural Engineering Dynamics. Tavira. ISBN 978-989-96276-0-4.
- 26) N. Roveri, A. Carcaterra, Structural health monitoring using empirical mode decomposition and AM/FM demodulation, the International Conference Surveillance 6, October 25-26, 2011, Compiègne, France.
- 27) A. Carcaterra, N. Roveri, Energy Distribution In Impulsively Excited Structures, proceedings of NOVEM 2012, Noise And Vibration: Emerging Methods, (2012), Sorrento, 1-4, April, 2012, Italy. ISBN 9788890648403.
- 28) N. Roveri, A. Carcaterra, A. Akay, Nonlinear Dynamics Of Complex Attachments NOVEM 2009, proceedings of NOVEM 2009, noise and vibration, emerging methods, (2009), Oxford, 05-08, April, 2009, UK. ISBN 978-0-85432-900-7.
- 29) N. Roveri; T.Bazzi; L.Benedetti, G. Colicchio, Survey On Nanotechnologies And Intelligent Materials For The Measure Of Hydrodynamic Quantities, INSEAN, Rapporto tecnico, Hydro Testing Alliance, Deliverable DJ7.4, 2010, <http://www.cnr.it/istituti/ProdottoDellaRicerca.html?cds=118&id=246342>.
- 30) A. Carcaterra, N. Roveri, A. Culla, L. Sabia, Sistema di monitoraggio e diagnostica strutturale di ponti, Progetto SENSIROAD, in collaboration with ANAS, 2011. www.stradeanas.it/index.php?file/download/10937
- 31) N. Roveri, A. Carcaterra, M. Platini, Phase-based FBG detectors for self-diagnosis of marine vehicles structures, in 9th Symposium on High Speed Marine Vehicles, Naples, may 2011, Claudio Pensa, Pasquale Cioffi. ISBN 978-88-906112-0-9.
- 32) N. Roveri, A. Carcaterra, A. Akay, Vibration absorption using non-dissipative complex attachments with impacts and parametric stiffness, Proceedings of the 8th International Conference on Structural Dynamics, EURO DYN 2011, Leuven, Belgium, 4-6 July 2011, G. De Roeck, G. Degrande, G. Lombaert, G. Müller (eds.), ISBN 978-90-760-1931-4.

▪ **Registered at the National Engineer's Register (Albo degli Ingegneri) of Viterbo.**

- Fellow of ADSIR, Advanced International School for Interdisciplinary Research (SISRI, Scuola Internazionale Superiore per la Ricerca Interdisciplinare), Director Rev. Prof. Giuseppe Tanzella-Nitti, full Professor of Fundamental Theology at the School of Theology, Pontifical University of the Holy Cross, Rome.
- References available upon request from Antonio Carcaterra, Professor of Mechanical Engineering, Sapienza, University of Rome, Italy, Adnan Akay Lord Professor of Mechanical Engineering at Carnegie Mellon University, Pittsburgh, USA.

Rome 04/07/2017

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