







PERSONAL INFORMATION



Elvio Bonisoli

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-  Skype: elvio.bonisoli

Sex Male | Date of birth 16/05/1974 | Nationality Italian

WORK EXPERIENCE

-
- from 24/10/2016 **Associate Professor (L.240)**
Politecnico di Torino, Department of Mechanical and Aerospace Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it
Business or sector SSD ING-IND/13 Applied mechanics (D.M. 4.10.2000)
 - from 1/3/2012 to 23/10/2016 **Confirmed Assistant Professor**
Politecnico di Torino, Department of Mechanical and Aerospace Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it
Business or sector SSD ING-IND/15 Design methods for industrial engineering (D.M. 4.10.2000)
 - from 1/3/2008 to 28/2/2011 **Assistant Professor**
Politecnico di Torino, Department of Mechanical and Aerospace Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it
Business or sector SSD ING-IND/15 Design methods for industrial engineering (D.M. 4.10.2000)
 - from 1/1/2004 to 29/02/2008 **Post Doc Research Fellow**
Politecnico di Torino, Department of Mechanical Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it
Business or sector SSD ING-IND/13 Applied mechanics (D.M. 4.10.2000)
 - from 1/1/2001 to 31/12/2003 **Ph.D. Student in Applied Mechanics**
Politecnico di Torino, Department of Mechanical Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it
Business or sector SSD ING-IND/13 Applied mechanics (D.M. 4.10.2000)
 - from 1/9/2000 to 31/12/2003 **Mechanical Engineer employee**
Centro Ricerche Fiat, S.C.p.A., Strada Torino, 50 – 10043 Orbassano (TO), Italy, www.crf.it
Business or sector Employee in vehicle sector – NVH

EDUCATION AND TRAINING

 6/11/2018 **Qualification to Full Professor (abilitazione a Prima Fascia)**

Politecnico di Torino, Department of Mechanical and Aerospace Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it

- SSD ING-IND/13 Applied mechanics (D.M. 4.10.2000)

 from 1/1/2001 to 31/12/2003 **Ph.D. in Applied Mechanics**

Politecnico di Torino, Department of Mechanical Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it

- XVI° Course, 2001-2003, defence on 18/3/2004 with the dissertation “Analysis of magneto-elastic dynamic systems”

 2nd session of 2000 **Qualification to the Profession of Engineer**

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Politecnico di Torino, Department of Mechanical Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it

- SSD ING-IND/13 Applied mechanics (D.M. 4.10.2000)

 from 10/1993 to 12/1999 **Master Degree in Mechanical Engineering, Energy course**

110 cum laude / 110

Politecnico di Torino, Mechanical Engineering,
Corso Duca degli Abruzzi, 24 – 10129 Torino, Italy, www.polito.it

- Defence on 16/12/1999 with the dissertation “Study of the structural damping induced through passive magnetic elements: applications on automotive structures”, developed in collaboration with Centro Ricerche Fiat of Orbassano (TO) and awarded with ATA grant (Associazione Tecnica dell'Automobile)

 PERSONAL SKILLS

Organisational / managerial skills

- Member of the Ph.D. School in Mechanical Engineering of the Department of Mechanical and Aerospace Engineering from 01/11/2019.
- Member of Collegio di Ingegneria Meccanica, Aerospaziale, dell'Autoveicolo e della Produzione from 1/10/2012.
- Member of GMA (Gruppo Italiano di Meccanica Applicata).
- Member of SEM (Society for Experimental Mechanics) from 02/11/2011.
- Member of SAE International (Society of Automotive Engineers) dal 03/04/2006.
- General secretariat of ADM (Associazione Nazionale Disegno di Macchine, President Prof. Stefano Tornincasa) from 16/06/2011 to 2014.
- General secretariat (01/01/2005-31/08/2016) of the International Journal of Mechanics and Control.
- Member of the Editorial Board (21/12/2016-present) of the International Journal of Mechanics and Control for recognized expertise in fields of interest on Energy Systems.
- Associate Editor (01/01/2017-present) of the International Journal of Mechanics and Control for recognized expertise in fields of interest on Energy Systems.

ADDITIONAL INFORMATION

Didactic activities

- from A.Y. 2019-2020 chair of Mechanical system dynamics (in English), Mechanical Engineering, 4th year, 1 semester.
- from A.Y. 2017-2018 to A.Y. 2018-2019 collaborator of Mechanical system dynamics (in English), Mechanical Engineering, 4th year, 1 semester.
- from A.Y. 2018-2019 to A.Y. 2021-2022 collaborator of Motor vehicle mechanics (in English), Automotive Engineering, 5th year, 1 semester.
- from A.Y. 2016-2017 collaborator of Meccanica applicata alle macchine (in Italian), Mechanical Engineering, 2nd year, 2 semester.
- from A.Y. 2011-2012 to A.Y. 2018-2019 chair of Engineering drawing (in English), Mechanical Engineering, 2nd year, 1 semester.
- from A.Y. 2012-2013 to A.Y. 2015-2016 collaborator of Elementi di costruzione e disegno di macchine (in Italian), Mechanical Engineering, 3rd year, 1 semester.
- from A.Y. 2007-2008 to A.Y. 2009-2010 collaborator of Disegno tecnico industriale (in Italian), Mechanical Engineering, 2nd year, 1 semester.

BSc, MSc, PhD supervisor

Supervisor or co-supervisor of 131 Bachelor theses and 107 Master Degree theses.
Supervisor or co-supervisor of 8 PhD students.

Leader of the research activity

- STMicroelectronics, Comaredo (MI), Italy, titled "Design and prototyping of Energy Harvesters for shoes applications", 02/07/2012 - 01/10/2012.
- Cinetic Giustina, San Mauro Torinese (TO), Italy, entitled "Experimental modal analysis of grinding machines in traditional material or polymeric concrete", 14/11/2012 - 20/12/2012.
- Ergotech, Settimo Vittone (TO), Italy, entitled "Applied mechanics and simulation tools for the product development", 07/05/2013 - 25/01/2014.
- STMicroelectronics, Comaredo (MI), Italy, entitled "Industrialisation of sensor node for shoes applications", 26/09/2013 - 26/02/2014.
- Magnetto Wheels Italia S.r.l., Rivoli (TO), Italy, entitled "Meta-modelling and reduction of tolerances GD&T in production process of steel wheels", 26/06/2014 - 25/06/2016.
- Rotork Fluid Systems, Lucca, Italy, entitled "Low temperature simulation and characterization of metals for valves components", 21/07/2014 - 20/07/2015.
- Pirelli Tyre, Milano, Italy, entitled "Modelling and simulation of sensor nodes", 01/09/2014-25/09/2015
- General Motors Powertrain Europe, Torino, Italy, entitled "Functional modelling from model to simulation and experimental validation CCDPF Heat Shield", 01/09/2014 - 31/12/2014.
- Fives Giustina, San Mauro Torinese (TO), Italy, entitled "Structural vibrational measures on grinding machine in steady-state operative conditions", 24/10/2014 - 31/12/2014.
- Fiat Chrysler Automobiles Group, Torino, Italy, entitled "Didactic activity on AC3P - Fundamentals and debugging", 12/05/2015 - 31/01/2016.
- Fiat Chrysler Automobiles Group, Torino, Italy, entitled "Functional design and simulations of interactions of GD&T on engine compression ratio", 08/06/2015 - 07/06/2016.
- Fives Giustina, San Mauro Torinese (TO), Italy, entitled "Structural vibrational measures on grinding machine in steady-state operative conditions", 22/10/2015 - 09/11/2015.
- Magnetto Wheels Italia S.r.l., Rivoli (TO), Italy, entitled "Fatigue evaluation and meta-modelisation for wheel life assessment", 13/11/2017 - 12/11/2020.
- Valeo S.r.l., Santena (TO), Italy, entitled "Technical evaluation through numerical time and/or modal approaches on LEVIT devices", 01/12/2019 - 29/05/2020.
- Consulting for DEKRA Italia S.r.l., Cinisello Balsamo, Milano, Italy, (for DENSO Thermal Systems S.p.A., Poirino, Torino and Centro Sperimentale Balocco, Vercelli, Italia), entitled "Misure vibrazionali su veicolo in condizioni operative", 08/05/2019 - 07/06/2019.
- Prometeon Tyre Group S.r.l., Milano, Italy, entitled "Modellistica e simulazione FEM di componenti sensoristici", 05/03/2020 - 16/03/2021.
- Trama S.r.l., Alba (CN), Italy, entitled "Progettazione enclosure meccanica del dispositivo ADINA con HMI touch/aptica basata su tecnologia Niceclick", 01/09/2020 – to be completed,
- Arol S.p.A., Canelli (AT), Italy, entitled "Caratterizzazione sperimentale sorgenti vibrazionali e sviluppo remote auto-powered sensors", 05/10/2020 – to be completed.
- BSim S.r.l., Torino, Italy, entitled "Analisi numeric-sperimentale in ambito NVH di component e sottosistemi", 15/01/2021 – to be completed.
- Prometeon Tyre Group S.r.l., Milano, Italy, entitled "Modellistica avanzata e simulazioni FEM di nodi sensoristici per applicazioni automotive", 08/04/2021 – to be completed.

International collaborations

- Collaboration with Prof. John E. Mottershead, Alexander Elder Professor of Applied Mechanics, University of Liverpool, UK, with several MSc and PhD students involved in structural dynamics, model updating, damping identification, active control (PhD students: Marco Prandina, Gabriele Marcuccio, Domenico Lisitano with Prof. J.E. Mottershead as supervisor) (from 2005).
- Collaboration with Prof. Stephen Elliott and Prof. Maryam Ghandchi-Tehrani of the Institute of Sound and Vibration Research (ISVR), University of Southampton, UK, with several MSc and PhD students involved in Energy Harvester design projects and identification (PhD students: Francesco Di Monaco, Luca Dimauro) (2011-2020).
- Collaboration with the Institute of Mechanics and Advanced Material, headed by Prof. Stéphane Pierre Alain Bordas, University of Cardiff, UK, regarding Isogeometric methodologies for linear static or modal analyses (PhD student: Marco Brino) (2013).
- Collaboration with Prof. Lauric Garbuio of the Laboratoire de Génie Electrique de Grenoble (G2Elab), Grenoble, France, regarding Energy Harvester design (PhD student: Nicolò Manca) (Nov. 2015-Jun. 2017).
- Collaboration with Prof. Marco Amabili, Canada Research Chair (Tier 1) in Mechanical Engineering at McGill University, Montreal, Québec, Canada, regarding nonlinear dynamics and model reduction techniques (PhD student: Matteo Scapolan, MSc student: Maria Schiavone) (from Nov. 2016).
- Collaboration with Prof. Maryam Ghandchi-Tehrani, University of Groningen, Netherlands, with several MSc and PhD students involved in Energy Harvester design projects (from 2021).
- Collaboration with Prof. Janko Slavič and Prof. Miha Boltežar, Faculty of Mechanical Engineering, University of Ljubljana, Slovenia, with several MSc and PhD students involved in Energy Harvester design projects (Post-PhD student: Domenico Lisitano) (from 2019).
- Collaboration with Prof. Paulo S. Varoto, Departamento de Engenharia Mecânica, Universidade de São Paulo, Brazil, with several MSc and PhD students involved in Energy Harvester design projects (PhD students: Nicolò Manca, Domenico Lisitano) (from 2019).

National collaborations

- Collaboration with Prof. Matteo Massaro, Università degli Studi di Padova, Italy, with several MSc and PhD students involved in structural dynamics, model updating, damping identification, active control (PhD students: Marco Prandina, Gabriele Marcuccio, Domenico Lisitano with Prof. J.E. Mottershead as supervisor) "Sustainable vehicles for the mobility in smart cities" POR-FSE 2014-2020 Regione del Veneto (from 2020).
- Collaboration with Prof. Edoardo Sabbioni, Politecnico di Milano, Italy, with several MSc and PhD students involved in structural dynamics, model updating, damping identification, active control (PhD students: Marco Prandina, Gabriele Marcuccio, Domenico Lisitano with Prof. J.E. Mottershead as supervisor) (from 2021).

Honours and awards

- award as co-author of the best paper: S. Tornincasa, E. Bonisoli, M. Brino, "NURBS patch coupling with Nitsche's method for isogeometric analysis", Proceedings of Joint Conference on Mechanical, Design Engineering & Advanced Manufacturing, 2014, Toulouse, France, June 18-20, Paper 77, pp. 1-6.
- invited speaker for the keynote of the paper: E. Bonisoli, C. Delprete, "Levitron: an exotic toy of nonlinear and linearised dynamics", Proceedings of the 5th International Conference on Computational Methods (ICCM2014), 2014, Cambridge, UK, July 28-30, pp. 1-13.
- workshop entitled "Maximum power transfer in nonlinear Energy Harvester for shoes" (Elvio Bonisoli was the only researcher from Italian Universities among eight invited speakers, others are from United Kingdom) at Engineering Nonlinearity Power Harvesting Workshop, Institute of Sound and Vibration Research (ISVR), University of Southampton, United Kingdom, September 2, 2015.
- invited speaker to SuperStudio Più, Milano, Italy, during Milan Design Week 2019, seminar entitled "Energy harvesting for autonomous sensors" during "Dassault Systemes, Design in the Age of Experience" April 13, 2019.
- award to Politecnico di Torino - PoC "Proof of Concept" on "Carrozzina con elemento flessibile di tensione come elemento di azionamento per la trazione e relativo metodo di retrofit" (6 months from 2/2019), scientific coordinator Prof. Giuseppe Quaglia.
- award to Politecnico di Torino - PoC "Proof of Concept" on "Cambio magnetico senza contatto tra i componenti o elementi di frizione" (6 months from 7/2020), scientific coordinator Prof. Elvio Bonisoli.
- award to Politecnico di Torino - PoC "Proof of Concept" on "Smorzatore dinamico parametrico con funzionalità di sensore autoalimentato" (6 months from 12/2021), scientific coordinator Prof. Elvio Bonisoli.
- invited as finalist (selection of best 35 on more than 1500 Italian patents) to the IPA2021 - Intellectual Property Award to Expo Dubai 2020 in the field Future Mobility for the patent and PoC "Cambio magnetico senza contatto tra i componenti o elementi di frizione".

Main research interests Main research interests are focused on mechanical dynamics, modelling, design and experimental validation through CAD/CAE engineering tools.
The engineering interest for designing and developing of methodologies and tools is mainly devoted to dynamic and vibrational systems, automotive component design, nonlinear dynamic applications, such as energy harvesting devices, and identification techniques.
Author / co-author of more than 150 research articles in scientific journals and at international conferences; author / co-author of 11 patents involving mechanical and mechanical-magnetic devices.
He is leader of numerous contracts and advisories with industrial companies including Fiat Chrysler Automobiles, General Motors, Magnetto Wheels, Pirelli Tyres, Valeo, STMicroelectronics, Lavazza, Fives Giustina, Dekra, Rotork Fluid Systems.

Publications and patents From Google Scholar: 1033 citations, h-index 16, i-10 index 25
From Scopus: 725 citations, h-index 13

Top 10 selected papers:

- Bonisoli E., Brino M., Delprete C., “Numerical-experimental comparison of a parametric test-rig for crossing and veering phenomena”, *Mechanical Systems and Signal Processing*, 128, 2019, DOI: 10.1016/j.ymssp.2019.03.039, pp. 369-388.
- Bonisoli E., Lisitano D., Vigliani A., “Damping identification and localisation via Layer Method: experimental application to a vehicle chassis focused on shock absorbers effects”, *Mechanical Systems and Signal Processing*, 116, 2019, DOI: 10.1016/j.ymssp.2018.06.013, pp. 194-216.
- Scapolan M., Ghandchi Tehrani M., Bonisoli E., “Energy harvesting using parametric resonant system due to time-varying damping”, *Mechanical Systems and Signal Processing*, 79, 2016, DOI: 10.1016/j.ymssp.2016.02.037, pp. 149-165.
- Bonisoli E., Repetto M., Manca N., Gasparini A., “Electromechanical and electronic integrated harvester for shoes application”, *IEEE/ASME - Transactions on Mechatronics*, 22(5), 2017, DOI: 10.1109/TMECH.2017.2667401, pp. 1921-1932.
- Phu Nguyen V., Kerfriden P., Brino M., Bordas S.P.A., Bonisoli E., “A Nitsche's method for two and three dimensional NURBS patch coupling”, *Computational Mechanics*, 53(6), 2014, Springer-Verlag, DOI: 10.1007/s00466-013-0955-3, pp. 1163-1182.
- Tomincasa S., Repetto M., Bonisoli E., Di Monaco F., “Energy harvester for vehicle tires: nonlinear dynamics and experimental outcomes”, *Journal of Intelligent Material Systems and Structures*, 23(1), 2012, DOI: 10.1177/1045389X11430739, pp. 3-13.
- Prandina M., Mottershead J.E., Bonisoli E., “An assessment of damping identification methods”, *Journal of Sound and Vibration*, 323(3-5), 2009, DOI: 10.1016/j.jsv.2009.01.022, pp. 662-676.
- Bonisoli E., Delprete C., Rosso C., “Proposal of a modal-geometrical-based master nodes selection criterion in modal analysis”, *Mechanical Systems and Signal Processing*, 23(3), 2009, DOI: 10.1016/j.ymssp.2008.05.012, pp. 606-620.
- Bonisoli E., Vigliani A., “Identification techniques applied to a passive elasto-magnetic suspension”, *Mechanical Systems and Signal Processing*, 21(3), 2007, DOI: 10.1016/j.ymssp.2006.05.009, pp. 1479-1488.
- Garibaldi L., Marchesiello S., Bonisoli E., “Identification and up-dating over the Z24 benchmark”, *Mechanical Systems and Signal Processing*, 17, 2003, DOI:10.1006/mssp.2002.1553, pp. 153-161.

11 patents

Reviewer for International Journals:

- Journal of Sound and Vibration,
- Mechanical Systems and Signal Processing,
- International Journal of Non-Linear Mechanics,
- International Journal of Mechanical Sciences,
- Journal of Intelligent Material Systems & Structures,
- Journal of Vibration and Control,
- Hindawi Shock and Vibration,
- Journal of Structural Engineering,
- Journal of Computers and Structures,
- IEEE – Transactions on Magnetics,
- International Journal on Interactive Design and Manufacturing,
- International Journal of Mechanics and Control,
- Society of Automotive Engineers (SAE) Congress.

Torino, 21st April 2022


(Elvio Bonisoli)

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016,
I hereby express my consent to process and use my data provided in this CV.