ELVIO BONISOLI
Curriculum Vitae

Politecnico di Torino
Department of Mechanical and Aerospace Engineering
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EDUCATION

- Ph.D. Applied Mechanics, Politecnico di Torino, Mar. 2004
- Engineering qualification, Politecnico di Torino, Dec. 2000 with 199/220
- M.Sc. Mechanical Engineering, Energy course, Politecnico di Torino, Dec. 1999 with 110 cum laude /110

ACADEMIC APPOINTMENTS

- Associate Prof. in Applied Mechanics
  Dept. of Mechanical and Aerospace Eng., Politecnico di Torino, Oct. 2016–present
- Confirmed Assistant Professor
  Dept. of Management and Production Eng., Politecnico di Torino, Mar. 2011–Sep. 2016
- Assistant Professor
  Dept. of Management and Production Eng., Politecnico di Torino, Mar. 2008–Feb. 2011
- Research Assistant
  Dept. of Mechanical Engineering, Politecnico di Torino, Jan. 2004-Feb. 2008

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 9 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.

SCIENTIFIC COMMITEE AND AWARDS

- Reviewer for 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 Systems, Man and Cybernetics Systems, IEEE – Transactions on Magnetics, International Journal on Interactive Design and Manufacturing, International Journal of Mechanics and Control, Society of Automotive Engineers (SAE) Congress;
- Member of the Editorial Board (21/12/2016-present) and Associate Editor (01/01/2017-present) of the International Journal of Mechanics and Control for recognized expertise in fields of interest on Energy Systems;
- Invited speaker to several seminars, public meetings and keynotes, awarded of two best papers in International Conferences;
- Industrial grants (overall about 2300 kEur in 15 years) and 3 grants for Proof of Concept (overall about 140 kEur).

TEACHING HISTORY

- PhD course, lectures of "Tools and technologies for product development";
- MSc courses, lectures and practices of "Mechanical System Dynamics", practices of "Motor Vehicle Mechanics", "Functional Modelling of Machines", "Vibration Mechanics";
- BSc courses, lectures and practices of "Machine Drawing", "Engineering Drawing", practices of "Applied Mechanics", "Rotordynamics", "Motor Vehicle Design";
- Supervisor of about 135 BSc students, 117 MSc students, 8 PhD students.

SELECTED PUBLICATIONS

B.A.D. Piombo, E. Bonisoli, M. Ruzzene, "A comparison between the theoretical model and experimental outcomes of oscillations of para- or dia-magnetic structures subject to passive magnetic elements", *SPIE's 9th Annual International Symposium on Smart Structures and Materials*, *Proceedings of SPIE*, Vol. 4697, [4697-50], 2002, San Diego, California, March 17-21, pp. 274-283.
L. Garibaldi, S. Marchesiello, E. Bonisoli, "Identification and up-dating over the Z24 benchmark", *Mechanical Systems and Signal Processing*, January 2003, **17**(1), DOI: 10.1006/mssp.2002.1553, pp. 153-161.
E. Bonisoli, J.E. Mottershead, "Complex-damped dynamic systems in the time and frequency domains", *Shock and Vibration*, 2004, **11**(3-4), Special issue dedicated to Professor Bruno Piombo, pp. 209-225.
M. Parrino, A. Mannoni, E. Bonisoli, M Sorli, "Block-oriented models for transient HVAC simulations", *SAE 2005 Transactions Journal of Passenger Cars: Mechanical Systems*, Section 6, Vol. 114, 2005, SAE Technical Paper 2005-01-2002, pp. 2483-2489.
E. Bonisoli, A. Vigliani, "Passive effects of rare-earth permanent magnets on flexible conductive structures", *Mechanics Research Communications*, May-June 2006, **33**(3), DOI: 10.1016/j.mechrescom.2005.08.011, pp. 302-319.
E. Bonisoli, A. Vigliani, "Identification techniques applied to a passive elasto-magnetic suspension", *Mechanical Systems and Signal Processing*, April 2007, **21**(3), DOI: 10.1016/j.ymssp.2006.05.009, pp. 1479-1488.
E. Bonisoli, A. Vigliani, "Passive elasto-magnetic suspensions", *Mechanics Research Communications*, June 2007, **34**(4), DOI: 10.1016/j.mechrescom.2007.02.005, pp. 385-394.
M. Velardocchia, E. Bonisoli, E. Galvagno, A. Vigliani, A. Sorniotti, "Efficiency of epicyclic gears in automated manual transmission systems", *SAE-ICE 2007 8th International Conference on Engines for Automobile*, 2007, Capri, Napoli, Italy, September 16-20, SAE Technical Paper 2007-24-0139, pp. 1-8.
M. Velardocchia, N. D'Alfio, E. Bonisoli, E. Galvagno, F. Amisano, A. Sorniotti, "Block-oriented models of Torque Gap Filler devices for AMT transmissions", *SAE book: Transmission and Driveline*, April 2008, SP-2147, SAE Technical Paper 2008-01-0631, pp. 1-10.

E. Bonisoli, C. Delprete, C. Rosso, "Proposal of a modal-geometrical-based master nodes selection criterion in modal analysis", *Mechanical Systems and Signal Processing*, April 2009, **23**(3), DOI: 10.1016/j.ymssp.2008.05.012, pp. 606-620.
M. Prandina, J.E. Mottershead, E. Bonisoli, "An assessment of damping identification methods", *Journal of Sound and Vibration*, June 2009, **323**(3-5), DOI: 10.1016/j.jsv.2009.01.022, pp. 662-676.
E. Bonisoli, A. Canova, F. Freschi, S. Moos, M. Repetto, S. Tornincasa, "Dynamic simulation of an electromechanical energy scavenging device", *IEEE Transaction on Magnetics*, 2010, August 2010, **46**(8), DOI: 10.1109/TMAG.2010.2044156, pp. 2856-2859.
S. Tornincasa, M. Repetto, E. Bonisoli, F. Di Monaco, "Energy harvester for vehicle tires: nonlinear dynamics and experimental outcomes", *Journal of Intelligent Material Systems and Structures*, January 2012, **23**(1), DOI: 10.1177/1045389X11430739, pp. 3-13.
S. Tornincasa, M. Repetto, E. Bonisoli, F. Di Monaco, "Optimization of magneto-mechanical Energy Scavenger for automotive tyre", *Journal of Intelligent Material Systems and Structures*, December 2012, **23**(18), DOI: 10.1177/1045389X11430741, pp. 2055-2064.
E. Bonisoli, C. Rosso, C. Delprete, F. Stratta, "Inverse eigensensitivity approach in model updating of avionic components", *Topics in Model Validation and Uncertainty Quantification*, Vol.4, *Conference Proceedings of the Society for Experimental Mechanics Series*, 2012, Vol.29, Springer, DOI: 10.1007/978-1-4614-2431-4_16, pp. 149-165.
F. Di Monaco, M. Ghandchi Tehrani, S.J. Elliott, E. Bonisoli, S. Tornincasa, "Energy harvesting using semi-active control", *Journal of Sound and Vibration*, November 2013, **332**(23), DOI: 10.1016/j.jsv.2013.06.005, pp. 6033-6043.
E. Bonisoli, N. Manca, "Magneto-inductive energy harvesting: application to a computer mouse", *International Journal of Mechanics and Control*, 2013, **14**(2), pp. 21-28.
G. Marcuccio, E. Bonisoli, S. Tornincasa, J.E. Mottershead, E. Patelli, W. Wang, "Image decomposition and uncertainty quantification for the assessment of manufacturing tolerances in stress analysis", Journal of Strain Analysis for Engineering Design, 2014, **49**(8), DOI: 10.1177/0309324714533694, pp. 618-631.
Tornincasa S., Bonisoli E., Di Monaco F., "Virtual prototyping through multi-software integration for energy harvester design", *Journal of Intelligent Material Systems and Structures*, **25**(14), September 2014, DOI: 10.1177/1045389X13512190, pp. 1705-1714.
Bonisoli E., Delprete C., "Nonlinear and linearised behaviour of the Levitron®", *Meccanica*, **51**(4), April 2016, DOI: 10.1007/s11012-015-0238-5, pp. 763-784.
Scapolan M., Ghandchi Tehrani M., Bonisoli E., "Energy harvesting using parametric resonant system due to time-varying damping", *Mechanical Systems and Signal Processing*, **79**, October 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), October 2017, DOI: 10.1109/TMECH.2017.2667401, pp. 1921-1932.
Lisitano D., Jiffri S., Bonisoli E., Mottershead J.E., "Experimental feedback linearisation of a vibrating system with non-smooth nonlinearity", *Journal of Sound and Vibration*, **416**, March 2018, DOI: 10.1016/j.jsv.2017.11.047, pp. 192-212.
Lisitano D., Bonisoli E., Mottershead J.E., "Experimental direct spatial damping identification by the Stabilised Layers Method", *Journal of Sound and Vibration*, **437**, December 2018, DOI: 10.1016/j.jsv.2018.08.055, pp. 325-339.
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**, February 2019, DOI: 10.1016/j.ymssp.2018.06.013, pp. 194-216.
Filippini M., Alotto P., Cirimele V., Repetto M., Ragusa C., Dimauro L., Bonisoli E., "Magnetic loss analysis in coaxial magnetic gears", *Electronics*, **8**(11), 2019, paper 1320, pp. 1-15.
Cirimele V., Dimauro L., Repetto M., Bonisoli E., "Multi-objective optimization of a magnetic gear for powertrain applications", *International Journal of Applied Electromagnetics and Mechanics*, **60**(S1), 2019, pp. S25-S34.
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**, August 2019, ISSN: 0888-3270, DOI: 10.1016/j.ymssp.2019.03.039, pp. 369-388.
Bonisoli E., Repetto M., "Energy harvesting from slow rotational motion", *8th International Conference on Computational Methods for Coupled Problems in Science and Engineering*, *Coupled Problems 2019*, June 3-5, 2019, Sitges, Barcelona, Spain, pp. 91-99.
Lisitano D., Jiffri S., Bonisoli E., Mottershead J.E., "Experimental partial feedback linearisation: comparison between two active control strategies on a non-smooth nonlinear system", *Proceedings of the International Conference on Structural Engineering Dynamics ICEDyn2019*, July 24-26, 2019, Viana do Castelo, Portugal, Paper 51, pp. 1-13.
Lisitano D., Slavič J., Bonisoli E., Boltežar M., "Strain proportional damping in Bernoulli-Euler beam theory", *Mechanical Systems and Signal Processing*, **145**, November 2020, ISSN: 0888-3270, DOI: 10.1016/j.ymssp.2020.106907, pp. 106907-106921.
Lisitano D., Bonisoli E., "Direct identification of nonlinear damping: application to a magnetic damped system", *Mechanical Systems and Signal Processing*, **146**, January 2021, ISSN: 0888-3270, DOI: 10.1016/j.ymssp.2020.107038, pp. 107038-107056.
Bonisoli E., Marcuccio G., Venturini S., "Interference fit estimation through stress-stiffening effect on dynamics", *Mechanical Systems and Signal Processing*, **160**, November 2021, ISSN: 0888-3270, DOI: 10.1016/j.ymssp.2021.107919, pp. 107919-107942.

Torino, 21st February 2022