



Dr. Matteo Filippi

See:

<http://www.mul2.polito.it/index.php/past-projects/19-people/present>

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Research Interests, etc.:

Matteo Filippi is a Ph.D. student at Politecnico di Torino. He earned a BSc in Aerospace Engineering at Politecnico di Torino in March 2009. Afterwards he attended a MSc in the same university in December 2011, presenting a thesis on higher order one-dimensional structural models applied to static and dynamic of stiffened thin-walled structures. M. Filippi started his Ph.D. in January 2012 under the supervision of Prof. Erasmo Carrera. His research project will be focused to the development of an advanced formulation for interactions between fixed and rotating structures and the surrounding fluid.

Selected Publications:

E. Carrera, M. Filippi, E. Zappino, Refined beam elements with arbitrary cross-section geometries, *Comput. Struct.*, 88 (5–6) (2010), pp. 283-293

M. Filippi, A. Pagani, E. Carrera, M. Petrolo and E. Zappino, “Advanced Models for Static and Dynamic Analysis of Wing and Fuselage Structures”, 8th Pegasus-AIAA Student Conference held at Poitiers, France, 11-13 April, 2012.

Carrera E, Filippi M, Zappino E. Laminated beam analysis by polynomial, trigonometric, exponential and zig-zag theories. *European Journal of Mechanics - A/Solids* 2013; 41, pp. 58-69.

Carrera E, Filippi EM, Zappino E. Analysis of rotor dynamic by one-dimensional variable kinematic theories. *J Eng Gas Turbines Power* 2013;135(9):092501.

Carrera E, Filippi M, Zappino E. Free vibration analysis of rotating composite blades via Carrera Unified Formulation. *Compos Struct* 2013;106:317–25.

Carrera E, Filippi M. Variable kinematic one-dimensional finite elements for the analysis of rotors made of composite materials. *J Eng Gas Turbines Power* 2014;136(9):092501.

Erasmo Carrera and Matteo Filippi, “Capabilities of 1D CUF-based models to analyze metallic/composite

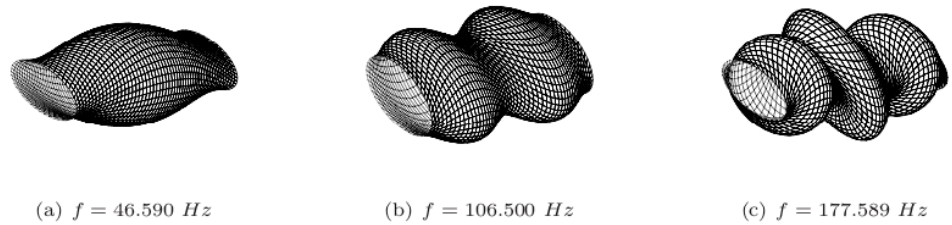


Figure 8. Torsional normal modes of the thin-walled cylinder. Cubic TE model.

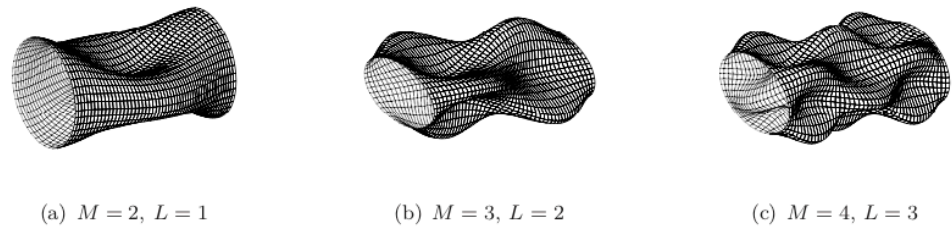


Figure 9. Shell-like modal shapes corresponding to different values of M and L .

From: M. Filippi, A. Pagani, E. Carrera, M. Petrolo and E. Zappino, “Advanced Models for Static and Dynamic Analysis of Wing and Fuselage Structures”, 8th Pegasus-AIAA Student Conference held at Poitiers, France, 11-13 April, 2012.

rotors”, 8th Australian Congress on Applied Mechanics (ACAM8), 23-26 November, 2014, Melbourne, Australia

Mashat, D. S., Carrera, E., Zenkour, A. M., Al-Khateeb S. A. and Filippi, M. [2014] “ Free vibration of FGM layered beams by various theories and finite elements,” *Composites Part B* 59, 269–278.

Carrera E, Filippi M, Zappino E. Free vibration analysis of laminated beam by polynomial, trigonometric, exponential and zig-zag theories. *Journal of Composite Materials*, Vol. 48, Issue 19, 2014, pp. 2299-2316.

E. Carrera and M. Filippi, “Vibration analysis of thin/thick, composites/metallic spinning cylindrical shells by refined beam models”, *ASME Journal of Vibration and Acoustics*, Vol. 137, No. 3, 031020, March 2015, DOI: 10.1115/1.4029688

M. Filippi, E. Carrera, A.M. Zenkour, Static analyses of FGM beams by various theories and finite elements, *Composites, Part B Eng.* 72 (2015) 1–9

M. Filippi, A. Pagani, M. Petrolo, G. Colonna, E. Carrera, “Static and free vibration analysis of laminated beams by refined theory based on Chebyshev polynomials”, *Compos Struct*, 132 (2015), pp. 1248-1259

Erasmus Carrera, Matteo Filippi, Prashanta KR Mahato, Alfonso Pagani, “Advanced models for free vibration analysis of laminated beams with compact and thin-walled open/closed sections”, *Journal of Composite Materials*, Vol. 49, No. 17, pp 2085-2101, July 2015

Filippi M, Petrolo M, Valvano S, Carrera E. Analysis of laminated composites and sandwich structures by trigonometric, exponential and miscellaneous polynomials and a MITC9 plate element. *Composite Structures* 2016; 150, pp. 103-114.

M. Filippi, E. Carrera, Bending and vibrations analyses of laminated beams by using a zig-zag-layer-wise theory, *Composites, Part B* 98 (2016) 269–280.

E. Carrera, M. Filippi, P.K. Mahato and A. Pagani, “Accurate static response of single- and multi-cell laminated box beams”, *Composite Structures*, Vol. 136, pp 372-383, February 2016

E. Carrera, M. Filippi, P.K. Mahato and A. Pagani, “Free-vibration tailoring of single- and multi-bay laminated box structures by refined beam theories”, *Thin-Walled Structures*, Vol. 109, pp 40-48, December 2016

M. Filippi, E. Carrera, and A. M. Regalli, “Layerwise analyses of compact and thin-walled beams made of viscoelastic materials,” *J. Vib. Acoust.*, vol. 138, no. 6, pp. 064501–064509, 2016.

E. Carrera, A. Entezari, M. Filippi, and M. A. Kouchakzadeh, “3D thermoelastic analysis of rotating disks having arbitrary profile based on a variable kinematic 1D finite element method,” *Journal of Thermal Stresses*, vol. 39, no. 12, pp. 1572–1587, 2016

A. Entezari, M. Filippi and E. Carrera, “On dynamic analysis of variable thickness disks and complex rotors subjected to thermal and mechanical prestresses”, *Journal of Sound and Vibration*, Vol. 405, pp 68-85, September 2017

M. Filippi and E. Carrera, “Various refined theories applied to damped viscoelastic beams and circular rings,” *Acta Mech.*, vol. 228, no. 12, pp. 4235–4248, 2017

E. Carrera, S. Valvano and M. Filippi, “Classical, higher-order, zig-zag and variable kinematic shell elements for the analysis of composite multilayered structures”, *European Journal of Mechanics – A/Solids*, Vol. 72, pp 97-110, November-December 2018

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B. Wu, A. Pagani, M. Filippi, W.Q. Chen and E. Carrera, “Accurate stress fields of post-buckled laminated composite beams accounting for various kinematics”, *International Journal of Non-Linear Mechanics*, Vol. 111, pp 60-71, May 2019

B. Wu, A. Pagani, M. Filippi, W.Q. Chen and E. Carrera, “Large-deflection and post-buckling analyses of isotropic rectangular plates by Carrera Unified Formulation”, *International Journal of Non-Linear Mechanics*, Vol. 116, pp 18-31, November 2019

Sandra Kvaternik, Matteo Filippi, Domagoj Lanc, Goran Turkalj and Erasmo Carrera, “Comparison of classical and refined beam models applied on isotropic and FG thin-walled beams in nonlinear buckling response”, *Composite Structures*, Vol. 229, Article 111490, 1 December 2019