

Nicholas Fantuzzi

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website: <http://software.dicam.unibo.it/diqumaspab-project>

book-link: <http://www.amazon.it/dp/887488687X>



Born in Bologna (Italy), 16th June 1984 (30 years old).

Education

- from June 2013 up to now, Research Assistant at DICAM Department, University of Bologna, Italy.
- from 2010 January to June 2013, PhD student in Structural and Hydraulics Engineering, University of Bologna, Italy.
- 2009 January, Laurea (M.S.) cum Laude, Civil Engineering, University of Bologna, Italy.
- 2006 October, Laurea (B.S.) cum Laude, Civil Engineering, University of Bologna, Italy.

Research Interests

- Structural theories of plates and shells and applied mathematical modeling.
- Study of composite laminated structures.
- Fracture mechanics and crack propagation and initiation.
- Applied numerical methods such as finite element method, differential quadrature technique and mesh free element method.

Computer Skills

- Highly skilled with every OS: MS Windows, Mac OS X, and linux (Ubuntu), including most common office packs, web browsing and vectorial image editing (e.g. PhotoShop, GIMP).
- Programming languages: MATLAB, Octave, C, C++, Python, Bash, HTML, Java, LaTeX, Swift.
- FEM programming: Straus 7, SAP 2000, ABAQUS, Altair HyperWorks, ANSYS.

Computer advanced courses

- 2010 April – Altair HyperMesh 1st module @Altair (Turin, Italy)
- 2010 June – Altair HyperMesh 2nd module @Altair (Turin, Italy)
- 2011 December – “C language introduction and scientific programming”
- 2012 January – Altair RADIOSS 1st module @Altair (Turin, Italy)
- 2013 April – “Introduction to Scientific and Technical Computing in C++”
- 2013 December – “An Introduction to Interactive Programming in Python” @Coursera (Rice University, USA)
- 2014 November – “Corso iOS8 base in Swift” by Objective Code (Bologna, Italy)

Academic Activities (Study aid)

- 2010 September-December – Tutor of Master II level “ENI Oil & Gas”
- 2011 September-December – Tutor of Master II level “ENI Oil & Gas”
- 2011 March-June – Tutor of “Theory of Structures” (Master degree)
- 2012 March-June – Tutor of “Structural Mechanics” (Bachelor degree)
- 2012 September-December – Tutor of Master II level “ENI Oil & Gas”
- 2013 September-December – Tutor of Master II level “ENI Oil & Gas”
- 2013 June – Winner of the Ian Marshall's award for best student paper at ICCS17.
- 2014 February-June – Tutor of Computational Mechanics (Master degree) in English
- 2014 September-December – Tutor of Master II level “ENI Oil & Gas”
- 2014 March-June – Tutor of “Plates and Shells” (Master degree)

Interests

- Certificate of Proficiency in English (CPE) self student.
- Object oriented programming languages. Hardware and software in general.
- Travelling abroad; running; food, health and cooking

Foreign Language

- English (fluent: speak, write, read, translate)
- 2011 June - First Certificate in English, Grade B

PUBLICATIONS

International Journal Papers

1. F. Tornabene, N. Fantuzzi, E. Viola, “Inter-Laminar Stress Recovery Procedure for Doubly-Curved, Singly-Curved, Revolution Shells with Variable Radii of Curvature and Plates Using Generalized Higher-Order Theories and the Local GDQ Method”, *Mechanics of Advanced Materials and Structures*, In Press.
2. N. Fantuzzi, F. Tornabene, E. Viola, “Four-Parameter Functionally Graded Cracked Plates of Arbitrary Shape: a GDQFEM Solution for Free Vibrations”, *Mechanics of Advanced Materials and Structures*, In Press.
3. E. Viola, M. Miniaci, N. Fantuzzi, A. Marzani, “Vibration analysis of multi-stepped and multi-damaged parabolic arches using GDQ”, *Curved and Layered Structures*, Vol. 2, pp. 28-49 (2015).
4. F. Tornabene, N. Fantuzzi, F. Ubertini, E. Viola, “Strong Formulation Finite Element Method Based on Differential Quadrature: A Survey”, *Applied Mechanics Reviews*, Vol. 67(2), pp. 1-55 (2015).
5. F. Tornabene, N. Fantuzzi, E. Viola, R.C. Batra, “Stress and Strain Recovery for Functionally Graded Free-Form and Doubly-Curved Sandwich Shells Using Higher-Order Equivalent Single Layer Theory”, *Composite Structures*, Vol. 119(1), pp. 67-89 (2015).
6. E. Viola, F. Tornabene, N. Fantuzzi, “Stress and Strain Recovery of Laminated Composite Doubly-Curved Shells and Panels Using Higher-Order Formulations,” *Key Engineering Materials*, Vol. 624, pp. 205-213 (2015).
7. N. Fantuzzi, “New insights into the strong formulation finite element method for solving elastostatic and elastodynamic problems”, *Curved and Layered Structures*, Vol. 1, pp. 93-

8. F. Tornabene, N. Fantuzzi, M. Baccocchi, "Free Vibrations of Free-Form Doubly-Curved Shells Made of Functionally Graded Materials Using Higher-Order Equivalent Single Layer Theories", *Composite Part B Engineering*, Vol. 67(1), pp. 490-509 (2014).
9. N. Fantuzzi, F. Tornabene, E. Viola, A.J.M. Ferreira, "A Strong Formulation Finite Element Method (SFEM) Based on RBF and GDQ Techniques for the Static and Dynamic Analyses of Laminated Plates of Arbitrary Shape", *Meccanica*, Vol. 49(1), pp. 2503-2542 (2014).
10. F. Tornabene, N. Fantuzzi, M. Baccocchi, "The Strong Formulation Finite Element Method: Stability and Accuracy", *Fracture and Structural Integrity*, Vol.29(1), pp. 251-265 (2014).
11. F. Tornabene, N. Fantuzzi, M. Baccocchi, "The Local GDQ Method Applied to General Higher-Order Theories of Doubly-Curved Laminated Composite Shells and Panels: the Free Vibration Analysis", *Composite Structures*, Vol.116(1), pp. 637-660 (2014).
12. N. Fantuzzi, F. Tornabene, "Strong Formulation Finite Element Method for Arbitrarily Shaped Laminated Plates – I. Theoretical Analysis", *Advances in Aircraft and Spacecraft Science*, Vol.1(2), pp. 124-142 (2014).
13. N. Fantuzzi, F. Tornabene, "Strong Formulation Finite Element Method for Arbitrarily Shaped Laminated Plates – II. Numerical Analysis", *Advances in Aircraft and Spacecraft Science*, Vol. 1(2), pp. 143-173 (2014).
14. N. Fantuzzi, F. Tornabene, E. Viola, "Generalized Differential Quadrature Finite Element Method for Vibration Analysis of Arbitrarily Shaped Membranes", *International Journal of Mechanical Sciences*, Vol. 79, pp. 216-251 (2014).
15. E. Viola, L. Rossetti, N. Fantuzzi, F. Tornabene, "Static Analysis of Functionally Graded Conical Shells and Panels Using the Generalized Unconstrained Third Order Theory Coupled with the Stress Recovery", *Composite Structures*, Vol. 112(1), pp.44-65 (2014).
16. A.J.M. Ferreira, E. Carrera, M. Cinefra, E. Viola, F. Tornabene, N. Fantuzzi, A.M. Zenkour, "Analysis of Thick Isotropic and Cross-Ply Laminated Plates by Generalized Differential Quadrature Method and a Unified Formulation", *Composite Part B Engineering* Vol. 58(1), p. 544-552 (2014).
17. F. Tornabene, N. Fantuzzi, E. Viola, J.N. Reddy, "Winkler-Pasternak Foundation Effect on the Static and Dynamic Analyses of Laminated Doubly-Curved and Degenerate Shells and Panels", *Composites Part B Engineering* Vol. 57(1), p. 269-296 (2014).
18. F. Tornabene, N. Fantuzzi, E. Viola, E. Carrera, "Static Analysis of Doubly-Curved Anisotropic Shells and Panels Using CUF Approach, Differential Geometry and Differential Quadrature Method", *Composite Structures* Vol. 107(1), p. 675-697 (2014).
19. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi, "On Static Analysis of Composite Plane State Structures via GDQFEM and Cell Method", *CMES* Vol. 94(5), p. 421-458 (2013).
20. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi, "GDQFEM Numerical Simulations of Continuous Media with Cracks and Discontinuities", *CMES* Vol. 94(4), p. 331-369 (2013).
21. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi, "Soft Core Plane State Structures Under Static Loads Using GDQFEM and Cell Method", *CMES* Vol. 94(4), p. 301-329 (2013).
22. A.J.M. Ferreira, E. Viola, F. Tornabene, N. Fantuzzi, A.M. Zenkour, "Analysis of Sandwich Plates by Generalized Differential Quadrature Method", *Mathematical Problems in Engineering* Vol. 2013, Article ID 964367, 12 pages (2013).
23. F. Tornabene, N. Fantuzzi, E. Viola, A.J.M. Ferreira, "Radial Basis Function Method Applied to Doubly-Curved Laminated Composite Shells and Panels with a General Higher-Order Equivalent Single Layer Theory", *Composites Part B Engineering* Vol. 55(1), p. 642-659 (2013).
24. E. Viola, F. Tornabene, N. Fantuzzi, "Generalized Differential Quadrature Finite Element Method for Cracked Composite Structures of Arbitrary Shape", *Composite Structures* Vol. 106(1), p. 815-834 (2013).

25. F. Tornabene, E. Viola, N. Fantuzzi, "General Higher-order Equivalent Single Layer Theory for Free Vibrations of Doubly-Curved Laminated Composite Shells and Panels", *Composite Structures* Vol 104(1), p. 94-117 (2013).
26. Y. Li, N. Fantuzzi, F. Tornabene, "On mixed mode crack initiation and direction in shafts: Strain energy density factor and maximum tangential stress criteria", *Engineering Fracture Mechanics* Vol. 109, p. 273-289.
27. E. Viola, F. Tornabene, N. Fantuzzi, "Static analysis of completely doubly-curved laminated shells and panels using general higher-order shear deformation theories", *Composite Structures* Vol. 101(1), p. 59-93 (2013).
28. E. Viola, F. Tornabene, N. Fantuzzi, "General higher-order shear deformation theories for the free vibration analysis of completely doubly-curved laminated shells and panels", *Composite Structures* Vol. 95(1), p. 639-666 (2013).
29. E. Viola, L. Rossetti, N. Fantuzzi, "Numerical investigation of functionally graded cylindrical shells and panels using the generalized unconstrained third order theory coupled with the stress recovery", *Composite Structures*, Vol. 94(12), p. 3736-3758 (2012).
30. E. Viola, Y.Li, N. Fantuzzi, "On the stress intensity factors of cracked beams for structural analysis", *Key Engineering Materials*, Vol. 488-489, p. 379-382 (2012).
31. E. Viola, N. Fantuzzi, A. Marzani, "Cracks interaction effect on the dynamic stability of beams under conservative and nonconservative forces", *Key Engineering Materials*, Vol. 488-489, p. 383-386 (2012).

Books

1. F. Tornabene, N. Fantuzzi, *Mechanics of Laminated Composite Doubly-Curved Shell Structures*, Esculapio, Bologna (2014).

International and National Conferences

1. E. Viola, F. Tornabene, N. Fantuzzi (2014) - Stress and Strain Recovery of Laminated Composite Doubly-Curved Shells and Panels Using Higher-Order Formulation, Mechanics of Masonry Structures Strengthened with Composite Materials - Modeling, Testing, Design, Control (MuRiCo4) - Ravenna, Italy, 9-11 September 2014.
2. N. Fantuzzi, F. Tornabene, E. Viola (2014) - Dynamic and Static Behavior of Arbitrarily Shaped Laminated Plates via Strong Formulation Finite Element Method, The 22st Annual International Conference on Composite/Nano Engineering (ICCE22) - Malta, 13-19 July 2014.
3. N. Fantuzzi, F. Tornabene, E. Viola (2014) - Multi-Layered Structures of Arbitrary Shape via Generalized Differential Quadrature Finite Element Method, 1st International Conference on Mechanics of Composites (MECHCOMP2014) - Stony Brook, USA, 8-12 June 2014.
4. F. Tornabene, N. Fantuzzi, E. Viola (2013) - General Higher-Order Equivalent Single Layer and Layer Wise Theories for Laminated Composite Shells and Panels Using GDQ Method, XXI° Convegno Italiano dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA2013) - Torino, Italy, 17-20 September 2013.
5. E. Viola, F. Tornabene, N. Fantuzzi (2013) - Static Analysis of Arbitrarily Shaped Composite Plates via GDQFEM, XXI° Convegno Italiano dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA2013) - Torino, Italy, 17-20 September 2013.
6. F. Tornabene, N. Fantuzzi, E. Viola (2013) - Dynamic and Static Analysis of Laminated Doubly-Curved Shells and Panels Using Layer-Wise and Equivalent-Single-Layer Theories via GDQ Method, The 21st Annual International Conference on Composite/Nano Engineering (ICCE21) - Tenerife, Spain, 21-27 July 2013.
7. F. Tornabene, N. Fantuzzi, E. Viola (2013) - Vibration Analysis of Laminated Doubly-

- Curved Shells and Panels Using Higher-Order Equivalent-Single-Layer and Layer-Wise Theories, 9th International Symposium on Vibrations of Continuous Systems (ISVCS13) - Courmayeur, Italy, 22-26 July 2013.
8. N. Fantuzzi, F. Tornabene, E. Viola (2013) - Free Vibration of Functionally Graded Cracked Plates of Arbitrary Shape via GDQFEM, 6th ECCOMAS Thematic Conference on Smart Structures and Materials (SMART13) - Torino, Italy, 24-26 June 2013.
 9. E. Viola, F. Tornabene, N. Fantuzzi (2013) - Generalized Differential Quadrature Finite Element Method for Arbitrary Shaped Composite Structures, 17th International Conference on Composite Structures (ICCS17) - Porto, Portugal, 17-21 June 2013.
 10. F. Tornabene, N. Fantuzzi, E. Viola (2013) - Layer-Wise and Equivalent-Single-Layer Theories for Laminated Composite Doubly-Curved Shells and Panels Using Differential Geometry and GDQ Method, 17th International Conference on Composite Structures (ICCS17) - Porto, Portugal, 17-21 June 2013.
 11. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi (2013) - Soft Core Plane State Structures Under Static Loads Using GDQFEM and Cell Methods, International Conference on Computational & Experimental Engineering and Sciences (ICCES2013) - Seattle, USA, 24-28 May 2013.
 12. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi (2013) - GDQFEM and Cell Method Numerical Simulations of Continuous Media with Cracks and Discontinuities, International Conference on Computational & Experimental Engineering and Sciences (ICCES2013) - Seattle, USA, 24-28 May 2013.
 13. E. Viola, F. Tornabene, E. Ferretti, N. Fantuzzi (2013) - On Static Analysis of Composite Plane State Structures via GDQFEM and Cell Method, International Conference on Computational & Experimental Engineering and Sciences (ICCES2013) - Seattle, USA, 24-28 May 2013.
 14. N. Fantuzzi, L. Rossetti, E. Viola (2012) - Free Vibration of Laminated Shells via GDQ Method Using Third-Order Theories, International Conference on Mechanics of Nano, Micro and Macro Composite Structures (ICMNMCS2012) - Torino, Italy, 18-20 June 2012..
 15. L. Rossetti, N. Fantuzzi, E. Viola (2012) - Stress and Displacement Recovery for Functionally Graded Conical, Cylindrical Shells and Annular Plates, International Conference on Mechanics of Nano, Micro and Macro Composite Structures (ICMNMCS2012) - Torino, Italy, 18-20 June 2012.
 16. L. Rossetti, N. Fantuzzi, E. Viola (2011) - Static Analysis of Functionally Graded Conical Shells Based on an Unconstrained Third Order Theory, XX° Convegno Italiano dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA2011) - Bologna, Italy, 12-15 September 2011.
 17. E. Viola, N. Fantuzzi, A. Marzani, Y. Li (2011) - Dynamic stability and critical loads of cracked beams under subtangential forces, XX° Convegno Italiano dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA2011) - Bologna, Italy, 12-15 September 2011.
 18. S. de Miranda, A. De Rosis, N. Fantuzzi, L. Patruno, F. Ubertini (2011) - Controdeformazioni di materiali ceramici, XX° Convegno Italiano dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA2011) - Bologna, Italy, 12-15 September 2011.
 19. E. Viola, Y. Li, N. Fantuzzi (2011) - On the stress intensity factors of cracked beams for structural analysis, 10th International Conference on Fracture and Damage Mechanics (FDM 2011), Dubrovnik, Croatia, 19-21 September 2011.
 20. E. Viola, N. Fantuzzi, A. Marzani (2011) - Cracks interaction effect on the dynamic stability of beams under conservative and nonconservative forces, 10th International Conference on

- Fracture and Damage Mechanics (FDM 2011), Dubrovnik, Croatia, 19-21 September 2011.
21. E. Viola, N. Fantuzzi, L. Rossetti (2010) - Initial Curvature Effect on the behaviour of cylindrical shell structures, The 4th International Conference on Structural Engineering, Mechanics and Computation, Cape Town, South Africa, 6-8 September 2010.

Collaborations

The candidate has been collaborating with national and international Professors about common research topics. In particular, there is an active collaboration with **Prof. J.N. Reddy from Texas A&M University (USA)** (Papers: 549, h-index: 39), about modelling of nonlinear behavior of composite structures; with **Prof. E. Carrera from Politecnico di Torino (Italy)** (Papers: 235, Citations: 4708, h-index: 38), about higher order theories on composite structures; with **Prof. A.J.M. Ferreira from Universidade do Porto (Portugal)** (Papers: 154, Citations: 2211, h-index: 26), about modelling of composite structures using meshless methods; with **Prof. A.M. Zenkour from Kafr Ashaykh University (Egypt)** (Papers:103, Citations: 1050, h-index: 17), about modelling of composite structures using meshless methods. Moreover one collaboration paper with Prof. Carrera, won the Ian Marshall's Award for Best Student Paper in 2013.

Accomplishments

- **Invited chairman** at the 1st International Conference on Mechanics of Composites (MECHCOMP2014) Stony Brook, USA, 2014.
- **Invited chairman** at the 23rd Annual International Conference on Composite/Nano Engineering (ICCE22) Malta 2014.
- **Invited chairman** at the 22nd Annual International Conference on Composite/Nano Engineering (ICCE21) Tenerife, Spain 2013.
- **Assistant Editor of Curved and Layered Structures Journal** at **De Gruyter Open Publisher**.
- **Winner of the “ICCS17 Ian Marshall's Award for Best Student Paper”** with the work entitled: Static Analysis of Doubly-Curved Anisotropic Shells and Panels Using CUF Approach, Differential Geometry and Differential Quadrature Method by F. Tornabene, N. Fantuzzi, E. Viola and E. Carrera, published in Composite Structures 107, 675-697 (2014).
- **Speaker** at several international conferences as reported in the list of publications (conferences section).
- **Owner of the research grant** entitled: About Shell Structures Made of Anisotropic Materials. Unified Formulation and Numerical Analysis since June 2013 at the Alma Mater Studiorum – University of Bologna.
- **First position** obtained in the competition for admission to the **PhD in Structural Engineering and Hydraulics** at the Alma Mater Studiorum – University of Bologna in December 2009. PhD in Structural Engineering and Hydraulics at the Alma Mater Studiorum – University of Bologna on 31/05/2013. PhD Thesis title: Generalized Differential Quadrature Finite Element Method Applied to Advanced Structural Mechanics.
- **Master degree** in Civil Engineering (Course of Studies in Structural Engineering) obtained at the Alma Mater Studiorum – University of Bologna on 16/01/2009, grade 110/110 cum laude. Thesis title (in Italian): Curvature Effect on the Behavior of Shells with Anisotropic Material.
- **Member of the Scientific Committee**, Promoter and Secretary of CIMEST Center, Center for Studies and Research on the Identification of Materials and Structures – “Michele Capurso” – at the Department DICAM of the Alma Mater Studiorum – University of Bologna, since 2011.

Reviewer of the following journals

1. Composite Structures (Elsevier)
2. Composite Part B: Engineering (Elsevier)
3. European Journal of Mechanics - A/Solids (Elsevier) 4.
4. Engineering Science and Technology: an International Journal (Elsevier)
5. Steel and Composite Structures, An International Journal (Techno-Press)
6. International Scholarly Research Notices (Hindawi)
7. Mathematical Problems in Engineering (Hindawi)
8. Curved and Layered Structures (De Gruyter)
9. Engineering Computations (Emerald)