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ADVANCES IN THE MECHANICS OF COMPOSITE AND SANDWICH STRUCTURES

Preface

Serge Abrate · Marco Gherlone · Roberta Massabò

This special issue entitled "Advances in the Mechanics of Composite and Sandwich Structures" is dedicated to Professor Marco Di Sciuva on the occasion of his 65th birthday. The issue contains ten articles written by former students, colleagues and friends of Prof. Di Sciuva who like to honor him for his significant contributions to mechanics and numerical modeling of composite materials and structures and engineering education. The topics covered by these articles include beams and plates with imperfect bonding, piezoelectric shells, refined models for sandwich beams, cohesive zone modeling for impact damage predictions, smooth particle hydrodynamic models for composite shells, and both numerical and experimental approaches for structural health monitoring. The biographical sketch below lists selected publications by Professor Di Sciuva that are most relevant to the theme of this special issue.

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1 Marco Di Sciuva

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10129 Torino, Italy

| Born | January 18, 1950, Cagnano Varano, Foggia, Italy |
| Marital Status | Married (wife Maria Grazia), two children (son Michele, daughter Antonella) |

2 Education

Professor Di Sciuva studied Aeronautical Engineering at the Politecnico di Torino from 1969 to 1974 and received his Master of Science degree in December 1974. The Ph.D. program was not offered in Italy at that time.

3 Academic career

1977–1980	Research and Teaching Assistant, Istituto di Progetto di Aeromobili, Politecnico di Torino
1980–1986	Assistant Professor, Department of Aeronautical and Space Engineering, Politecnico di Torino
1986–1999	Associate Professor, Department of Aeronautical and Space Engineering, Politecnico di Torino
1989	Teacher at Stuttgart University within the European Project SPIN
2000–Now	Full Professor, Department of Aeronautical and Space Engineering (till 2011)—Department of Mechanical and Aerospace Engineering (since 2012), Politecnico di Torino
2000–2007	Head of the Department of Aeronautical and Space Engineering, Politecnico di Torino
2004–2007	Coordinator of CRA (Committee for the Management of the Human Resources) of Politecnico di Torino)
2008–2011	Chairman of the Educational Program in Aerospace Engineering of the 1st Faculty of Politecnico di Torino
2012	Visiting Professor at the National Institute of Aerospace, Hampton (Virginia)
2014–Now	Coordinator of the PhD course in Aerospace Engineering at Politecnico di Torino

4 Research interests

Prof. Marco Di Sciuva's early interests have been in the field of the effects of vibrations on the human body.

In the early 1980s he pioneered the development of the so-called zigzag theories for the analysis of multilayered composite and sandwich structures. He proposed low- and high-order displacement-based theories for beams, plates and shells able to fulfill the requirement of thickness-wise continuity of transverse shear stresses and to accurately model the "zigzag" distortion of the cross-section and thickness normal typical of layered structures. The improved accuracy of these theories is accompanied by a reduced number of kinematic variables, that is independent of the number of material layers. He developed plate and shell finite elements and presented several applications of his theories to emerging problems in the field of composite materials, in particular imperfectly bonded interfaces and their effect on the load-carrying capacity of layered structures. A recent effort in this field has led to the development of further refined zigzag theories and to the development of plate and finite elements.

He developed a deep interest in structural dynamics and impact and was the major force behind the effort to establish a laboratory equipped for experimental studies in this area at the Politecnico di Torino. He supervised several experimental activities regarding ballistic and impact tests on aircraft engine components, static and dynamic response of composite and sandwich beams and plates, vibration-based damage detection.

He has worked on the application of optimization methods (especially based on genetic algorithms) to the design of multilayered structures, as well as on reliability and robust design concepts and to the use of neural networks to locate impacts.

His current interests include the inverse Finite Element Method for the reconstruction of the displacement field of a structure from the knowledge of some discretely measured surface strains. His recent papers focus on the experimental assessment of some of his theories and methods by taking advantage of the laboratory established under his leadership.

5 Member of academies

Corresponding Member of the Torino Academy of Sciences, of the New York Academy of Sciences, of the Council of AIDAA (Italian Association of Aeronautics and Astronautics) and of EUROMECH (EUROpean MECHanics Society).

Member of the Scientific Committee of Respira LAB, Renewable Energy Sources Piemonte Implementation Research Advocacy of COREP (Consorzio per la Ricerca e l'Educazione Permanente del Piemonte).

Delegate for CRUI (Conference of the Rectors of Italian Universities) into ACARE-I (Aeronautical Council of Aeronautics Research in Europe-Italy).

6 Awards

Best Paper in Composite Structures (2007).

Gherlone M., Di Sciuva M., Thermo-mechanics of undamaged and damaged multilayered composite plates: a sub-laminates finite element approach, Composite Structures, vol. 81(1), pp. 125–136, 2007.

7 Editorial activities

Guest editor of the special issues of the journals:

- Composites Part B: Engineering, Vol. 32B(3), 2001 (with L. Librescu).
- Composite Structures, Vol. 52(1), 2001 (with L. Librescu).

Member of the Editorial Board of the Journal of Sandwich Structures and Materials.

Member of the Editorial Board of the Journal of Aeronautics and Aerospace Engineering.

8 Teaching activity

He has taught aerospace engineering students several subjects related to the analysis of aircraft and space structures (Aircraft Constructions, Aircraft Structures, Dynamics of Aerospace Structures, Theoretical and Experimental Analysis of Aerospace Structures).

He has been advisor of 16 Ph.D. students and more than 100 M.S. students.

9 Invited lectures

Plenary lecture: Zigzag theories for composite laminates and sandwich structures, DRaF2014—International Symposium on Dynamic Response and Failure of Composite Materials, Island of Ischia, Napoli, September 15–17 2014.

10 Publications

10.1 Selected Articles in International Journals and Book Chapters

- Iurlaro L., Gherlone M., Di Sciuva M., Tessler A. (2015) The (3,2)-Mixed Refined Zigzag Theory for generally laminated beams: Theoretical development and C^0 finite element formulation, accepted for publication in International Journal of Solids and Structures
- Iurlaro L., Gherlone M., Di Sciuva M. (2015) Refined Zigzag Theory for laminated composite and sandwich plates derived from Reissner's

mixed variational theorem, accepted for publication in Composite Structures

- Di Sciuva M., Gherlone M., Iurlaro L., Tessler A. (2015) A class of higher-order C^0 composite and sandwich beam elements based on the Refined Zigzag Theory, Composite Structures, vol. 132, pp. 784–803
- Iurlaro L., Ascione A., Gherlone M., Mattone M., Di Sciuva M. (2015) Free vibration analysis of sandwich beams using the Refined Zigzag Theory: an experimental assessment, accepted for publication in Meccanica
- Cerracchio P., Gherlone M., Di Sciuva M., Tessler A. (2015) A novel approach for displacement and stress monitoring of sandwich structures based on inverse Finite Element Method, Composite Structures, vol. 127(1), pp. 69–76
- De Stefano M., Gherlone M., Mattone M., Di Sciuva M., Worden K. (2015) Optimum sensor placement for impact location using trilateration, Strain, vol. 51, pp. 89–100
- Iurlaro L., Gherlone M., Di Sciuva M. (2014) Bending and free vibration analysis of functionally graded sandwich plates using the Refined Zigzag Theory, Journal of Sandwich Structures and Materials, vol. 16(6), pp. 669–699
- Gherlone M., Cerracchio P., Mattone M., Di Sciuva M., Tessler A. (2014) An inverse finite element method for beam shape sensing: theoretical framework and experimental validation, Smart Materials and Structures, vol. 23(4)
- Iurlaro L., Gherlone M., Di Sciuva M. (2014) Energy based approach for shape parameter selection in radial basis functions collocation method, Composite Structures, vol. 107, pp. 70–78
- Versino D., Gherlone M., Di Sciuva M. (2014) Four-node shell element for doubly curved multilayered composites based on the Refined Zigzag Theory, Composite Structures, vol. 118, pp. 392–402
- Iurlaro L., Gherlone M., Di Sciuva M., Tessler A. (2013) Assessment of the Refined Zigzag Theory for bending, vibration, and buckling of sandwich plates: a comparative study of different theories, Composite Structures, vol. 106, pp. 777–792
- Versino D., Gherlone M., Mattone M., Di Sciuva M., Tessler A. (2013) C^0 triangular elements based on the Refined Zigzag Theory for multi-layered composite and sandwich plates, Composites Part B: Engineering, vol. 44B(1), pp. 218–230

- Gherlone M., Iurlaro L., Di Sciuva M. (2012) A novel algorithm for shape parameter selection in radial basis functions collocation method, Composite Structures, vol. 94, pp. 453–461
- Gherlone M., Cerracchio P., Mattone M., Di Sciuva M., Tessler A. (2012) Shape sensing of 3D frame structures using an inverse Finite Element Method, International Journal of Solids and Structures, vol. 49(22), pp. 3100–3112
- Corradi M., Gherlone M., Mattone M., Di Sciuva M. (2012) A comparative study of uncertainty propagation methods in structural problems, Computational Methods in Stochastic Dynamics, Papadrakakis M., Stefanou G., Papadopoulos (Eds.), pp. 87–111, Springer
- Gherlone M., Tessler A., Di Sciuva M. (2011) C^0 beam elements based on the Refined Zigzag Theory for multilayered composite and sandwich laminates, Composite Structures, vol. 93(11), pp. 2282–2294
- Tessler A., Di Sciuva M., Gherlone M. (2011) A homogeneous limit methodology and refinements of computationally efficient zigzag theory for homogeneous, laminated composite, and sandwich plates, Numerical Methods for Partial Differential Equations, vol. 27(1), pp. 208–229
- Tessler A., Di Sciuva M., Gherlone M. (2010) A consistent refinement of first-order shear-deformation theory for laminated composite and sandwich plates using improved zigzag kinematics, Journal of Mechanics of Materials and Structures, vol. 5(2), pp. 341–367
- Di Sciuva M., Gherlone M., Tessler A. (2010) A robust and consistent first-order zigzag theory for multilayered beams, Solid Mechanics and its Applications, vol. 168, pp. 255–268
- Degiovanni M., Gherlone M., Mattone M., Di Sciuva M. (2010) A sub-laminates FEM approach for the analysis of sandwich beams with multilayered composite faces, Composite Structures, vol. 92(9), pp. 2299–2306
- Tessler A., Di Sciuva M., Gherlone M. (2009) A refined zigzag beam theory for composite and sandwich beams, Journal of Composite Materials, vol. 43(9), pp. 1051–1081
- Di Sciuva M., Gherlone M., Mattone M. (2009) Anisotropic cubic Hermitian polynomials and their use in the theory of laminated plates, Composite Structures, vol. 88(2), pp. 304–311

- Gherlone M., Di Sciuva M. (2007) Dynamic behavior of undamaged and damaged multilayered composite plates, Key Engineering Materials, vol. 347, pp. 531–536
- Gherlone M., Di Sciuva M. (2007) Thermomechanics of undamaged and damaged multilayered composite plates: a sub-laminates finite element approach, Composite Structures, vol. 81(1), pp. 125–136
- Gherlone M., Di Sciuva M. (2007) Thermomechanics of undamaged and damaged multilayered composite plates: assessment of the fem sublaminates approach, Composite Structures, vol. 81(1), pp. 137–155
- Di Sciuva M., Gherlone M. (2005) Quasi-3D static and dynamic analysis of undamaged and damaged sandwich beams, Journal of Sandwich Structures and Materials, vol. 7(1), pp. 31–52
- Di Sciuva M., Lomario D. (2003) A Comparison between Monte Carlo and FORMs in calculating the Reliability of a Composite Structure, Composite Structures, vol. 59(1), pp. 155–162
- Di Sciuva M., Frola C., Salvano S. (2003) Low and high velocity impact on Inconel 718 casing plates: ballistic limit and numerical correlation, International Journal of Impact Engineering, vol. 28(8), pp. 849–876
- Di Sciuva M., Gherlone M., Lomario D. (2003) Multiconstrained optimization of laminated and sandwich plates using evolutionary algorithms and higher-order theories, Composite Structures, vol. 59(1), pp. 149–154
- Di Sciuva M., Gherlone M. (2003) A global/local third-order Hermitian displacement field with damaged interfaces and transverse extensibility: FEM formulation, Composite Structures, vol. 59(4), pp. 433–444
- Di Sciuva M., Gherlone M. (2003) A global/local third-order Hermitian displacement field with damaged interfaces and transverse extensibility: analytical formulation, Composite Structures, vol. 59(4), pp. 419–431
- Di Sciuva M., Gherlone M., Librescu L. (2002) Implications of damaged interfaces and of other non-classical effects on the load carrying capacity of multilayered composite shallow shells, International Journal of Non-Linear Mechanics, vol. 37, pp. 851–867
- Di Sciuva M., Icardi U., Miraldi E., Ruvinetti G. (2001) Holographic interferometry assessment of stress distribution in sandwich beams in bending, Composites Part B: Engineering, vol. 32B(3), pp. 175–184
- Di Sciuva M., Librescu L. (2001) Contribution to the nonlinear theory of multilayered composite shells featuring damaged interfaces. Composites Part B: Engineering, vol. 32B(3), pp. 219–227
- Di Sciuva M., Icardi U. (2001) Numerical assessment of the core deformability effect on the behavior of sandwich beams, Composite Structures, vol. 52(1), pp. 41–53
- Icardi U., Di Sciuva M., Librescu L. (2000) Dynamic response of adaptive cross-ply cantilevers featuring interlaminar bonding imperfections, AIAA Journal, vol. 28(3), pp. 499–506
- Di Sciuva M., Icardi U. (2000) On modeling of global and local response of sandwich plates with laminated faces, Journal of Sandwich Structures and Materials, vol. 2(4), pp. 350–378
- Tay T. E., Shen F., Lee K. H., Di Sciuva M., Scaglione A. (1999) Mesh design in finite element analysis of post-buckled delamination in composite laminates, Composite Structures, vol. 47, pp. 603–611
- Icardi U., Di Sciuva M., Librescu L. (1999) Effects of interfacial damage on the global and local static response of cross-ply laminates, International Journal of Fracture, vol. 96(1), pp. 17–35
- Di Sciuva M. (1997) Geometrically nonlinear theory of multilayered plates with interlayer slips, AIAA Journal, vol. 35(11), pp. 1753–1759
- Di Sciuva M., Icardi U., Villani M. (1997) Failure analysis of composite laminates under large deflection, Composite Structures, vol. 40(3–4), pp. 239–255
- Librescu L., Lin W., Di Sciuva M., Icardi U. (1997) Postbuckling of laminated composite and sandwich plates and shells: on the significance of the fulfillment of static interlayer continuity conditions, Computer Methods in Applied Mechanics And Engineering, vol. 148(1–2), pp. 165–186
- Di Sciuva, M., Icardi, U., Librescu, L. (1997) On modeling of laminated composite structures featuring interlaminae imperfections, Studies in Applied Mechanics, vol. 45, pp. 395–404
- Icardi, U., Librescu, L., Di Sciuva, M. (1997) Thermomechanical response of laminated flat

panels featuring interlaminar bonding imperfections, American Society of Mechanical Engineers, Aerospace Division (Publication) AD

- Icardi U., Di Sciuva M. (1996) Large-deflection and stress analysis of multilayered plates with induced-strain actuators, Smart Materials and Structures, vol. 5(2), pp. 140–164
- Di Sciuva M. (1995) Third-order triangular multilayered plate finite element with continuous interlaminar stresses, International Journal for Numerical Methods in Engineering, vol. 38, pp. 1–26
- Di Sciuva M., Icardi U. (1995) Analysis of thick multilayered anisotropic plates by a higher order plate element, AIAA Journal, vol. 33(12), pp. 2345–2347
- Di Sciuva M., Icardi U. (1995) Large deflection of adaptive multilayered Timoshenko beams, Composite Structures, vol. 31(1), pp. 49–60
- Di Sciuva M. (1993) A general quadrilateral multilayered plate element with continuous interlaminar stresses, Computers and Structures, vol. 47(1), pp. 91–105
- Di Sciuva M., Icardi U. (1993) Discrete-layer models for multilayered shells accounting for interlayer continuity, Meccanica, vol. 28(4), pp. 281–291
- Di Sciuva M. (1992) Multilayered anisotropic plate models with continuous interlaminar stresses, Composite Structures, vol. 22(3), pp. 149–167
- Di Sciuva M., Carrera E. (1992) Elastodynamic behavior of relatively thick, symmetrically laminated, anisotropic circular cylindrical shells, Journal of Applied Mechanics, vol. 59(1), pp. 222–224
- Di Sciuva M., Carrera E. (1990) Static buckling of moderately thick, anisotropic, laminated and sandwich cylindrical shell panels, AIAA Journal, vol. 28(10), pp. 1782–1793
- Di Sciuva M. (1987) Improved shear-deformation theory for moderately thick multilayered anisotropic shells and plates, Journal of Applied Mechanics, vol. 54, pp. 589–596
- Di Sciuva M. (1986) Bending, vibration and buckling of simply-supported thick multilayered orthotropic plates, an evaluation of a new displacement model, Journal of Sound and Vibration, vol. 105(3), pp. 425–442
- Di Sciuva M. (1986) Evaluation of some multilayered, shear-deformable plate elements, Computers and Structures, vol. 24(6), pp. 845–854
- Di Sciuva M. (1985) Development of an anisotropic, multilayered, shear-deformable rectangular plate element, Computers and Structures, vol. 21(4), pp. 789–796
- Di Sciuva M. (1984) A refinement of the transverse shear deformation theory for multilayered of orthotropic plates, Aerotecnica, Missili e Spazio, vol. 2, pp. 84–92

10.2 Selected Conference Papers

- Di Sciuva M. (2014) Zigzag theories for composite laminates and sandwixh structures (Plenary Lecture) DRaF2014 International Symposium on Dynamic Response and Failure of Composite Materials, Ischia (I), September 2014
- Iurlaro L., Gherlone M., Mattone M., Di Sciuva M. (2014) Free vibration analysis of sandwich beams using the Refined Zigzag Theory: an experimental assessment, DRaF2014 International Symposium on Dynamic Response and Failure of Composite Materials, Ischia (I), September 2014
- Iurlaro L., Gherlone M., Di Sciuva M. (2014) A Comparison of zigzag functions for bending, vibration and buckling analysis of multilayered composite and sandwich plates, XI World Congress on Computational Mechanics (WCCM XI), V European Conference on Computational Mechanics International Conference (ECCM V), VI European Conference on Computational Fluid Dynamics (ECFD VI), Barcelona (S), Iuly 2014
- Iurlaro L., Gherlone M., Di Sciuva M. (2014) A Mixed cubic zigzag model for multilayered composite and sandwich plates including transverse normal deformability, XI World Congress on Computational Mechanics (WCCM XI), V European Conference on Computational Mechanics International Conference (ECCM V), VI European Conference on Computational Fluid Dynamics (ECFD VI), Barcelona (S), Iuly 2014
- Cerracchio P., Gherlone M., Di Sciuva M., Tessler A. (2013) Shape and stress sensing of multilayered composite and sandwich structures using an inverse Finite Element Method, V International Conference on Coupled Problems in Science and Engineering, Ibiza (S), June 2013
- Iurlaro L., Gherlone M., Di Sciuva M., Tessler A. (2013) A Multi-scale Refined Zigzag Theory for

multilayered composite and sandwich plates with improved transverse shear stresses, V International Conference on Coupled Problems in Science and Engineering, Ibiza (S), June 2013

- Tessler A., Gherlone M., Versino D., Di Sciuva M. (2012) Analytic and computational perspectives of multi-scale theory for homogeneous, laminated composite, and sandwich beams and plates, XI International Conference on Computational Structures Technology, Dubrovnik (C), September 2012

- Gherlone M., Cerracchio P., Mattone M., Di Sciuva M., Tessler A. (2011) Dynamic shape reconstruction of three-dimensional frame structures using the inverse finite element method, III ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Corfù (G), May 2011

- Corradi M., Gherlone M., Mattone M., Di Sciuva M. (2011) A comparative study of uncertainty propagation methods in structural problems, III ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Corfù (G), May 2011

- Gherlone M., Iurlaro L., Di Sciuva M. (2011) A novel algorithm for shape parameter selection in radial basis functions collocation method, XVI International Conference on Composite Structures, Porto (P), June 2011

- Gherlone M., Cerracchio P., Mattone M., Di Sciuva M., Tessler A. (2011) Beam shape sensing using inverse Finite Element Method: theory and experimental validation, VIII International Workshop on Structural Health Monitoring, Stanford, CA (USA), September 2011

- Tessler A., Spangler J. L., Mattone M., Gherlone M., Di Sciuva M. (2011) Real-time characterization of aerospace structures using onboard strain measurement technologies and inverse Finite Element Method, VIII International Workshop on Structural Health Monitoring, Stanford, CA (USA), September 2011

- De Stefano M., Gherlone M., Mattone M., Di Sciuva M., Worden K. (2010) On sensor placement for impact location: optimization of an uncertain objective, V European Workshop on structural health monitoring, Sorrento (I), June 2010

- Hensman J., Gherlone M., Surace C., Di Sciuva M. (2010) Probabilistic Proper Orthogonal Decomposition, V European Workshop on structural health monitoring, Sorrento (I), June 2010

- Cerracchio P., Gherlone M., Mattone M., Di Sciuva M., Tessler A. (2010) Shape sensing of three-dimensional frame structures using the inverse finite element method, V European Workshop on structural health monitoring, Sorrento (I), June 2010

- Corradi M., Daina N., Di Sciuva M., Gherlone M., Mattone M. (2010) Sensitivity analysis and optimization of sandwich plates with metallic foam cores in presence of uncertain parameters, CST2010 X International Conference on Computational Structures Technology, Valencia (S), September 2009

- Degiovanni M., Gherlone M., Mattone M., Di Sciuva M. (2009) A sub-laminates fem approach for the analysis of sandwich beams with multilayered composite faces, XV International Conference on Composite structures, Porto (P), June 2009

- Mattone M., Daina N., Degiovanni M., Gherlone M., Di Sciuva M. (2009) Mechanical and acoustic characterization of metallic foam for application to aerospace sandwich core panels, XV International Conference on Composite structures, Porto (P), June 2009

- Corradi M., De Stefano M., Gherlone M., Mattone M., Di Sciuva M. (2009) Optimization of stiffened composite plates under aleatory uncertainties, VIII World Congress on structural multidisciplinary optimization, Lisbon (P), June 2009

- Di Giacomo C., Di Sciuva M., Gherlone M. (2008) A FEM sub-laminates approach for progressive failure analysis of multilayered beams, V European Congress on Computational Methods in Applied Sciences and Engineering, Venice (I), June 2008

- Tessler A., Di Sciuva M., Gherlone M. (2008) A shear-deformation theory for composite and sandwich plates using improved zigzag kinematics, IX International Conference on Computational Structures Technology, Athens (G), September 2008

- Tessler A., Di Sciuva M., Gherlone M. (2007) A refined linear zigzag theory for composite beams: reformulation of zigzag function and shear stress constraints, VI International Symposium on

Advanced Composites and Applications for the New Millennium, Corfu (G), May 2007

- Gherlone M., Di Sciuva M. (2005) A higher-order FEM approach for the analysis of damaged composite multilayered plates subjected to thermal loads, VI International Congress on Thermal Stresses, Wien (A), May 2005

- Di Sciuva M., Gherlone M. (2004) Static and dynamic analysis of sandwich beams: a FEM approach based on the Hermitian Zig-Zag model, MDP-8 Cairo University Conference on Mechanical Design and Production, Cairo (E), January 2004

- Di Sciuva M., Gherlone M. (2003) Analytical models for the homogenization of sandwich honeycomb cores, XVII AIDAA Conference, Rome (I), September 2003, pp. 457–466

- Di Sciuva M., Gherlone M. (2003) Quasi-3D analysis of damaged multilayered composite laminates subjected to thermo-mechanical loads, V International Congress on Thermal Stresses and Related Topics, Blacksburg, VA (USA), June, 2003

- Iannucci L., Raimondo L., Di Sciuva M., Gherlone M. (2003) The modeling of birdstrike onto a thin woven glass composite panel, IX European Propulsion Forum, Rome (I), October

- Di Sciuva M., Gherlone M. (2002) Finite element analysis of damaged multilayered composite beams with transverse deformability, VI International Conference on Computational Structures Technology, Prague (CR), September 2002

- Di Sciuva M., Gherlone M., Lomario D. (2001) Discrete multiconstrained optimization of laminated and sandwich plates, XVI AIDAA Conference, Palermo (I), September 2001

- Di Sciuva M., Icardi U., Ruotolo R. (2001) Effects of the interlayer continuities fulfillment and Lamé coefficients expansion in laminated cylindrical shells, ICCE/8 VIII International Conference on Composites Engineering, Tenerife (S), August 2001

- Di Sciuva M., Lomario D., Voyat J. P. (2001) Evolutionary algorithms. Their use in multiconstrained optimization of laminated and sandwich plates, II European Conference on Computational Mechanics, Cracow (P), June, 2001

- Di Sciuva M., Librescu L. (2000) A dynamic nonlinear model of multilayered composite shells featuring damaged interfaces, XLI AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, April 2000

- Di Sciuva M., Gherlone M. (2000) The post-buckling behavior of laminated composite and sandwich shallow shells with damaged interfaces, IASS-IACM 2000 IV International Colloquium on Computation of Shell and Spatial Structures, Chania (G), June 2000

- Di Sciuva M., Librescu L. (1999) A contribution to the non linear theory of multilayered composite shells featuring damaged interfaces, ASME Mechanics & Materials Conference, Blacksburg, VA (USA), June 1999

- Di Sciuva M., Icardi U. (1999) Actively controlled beams with damaged interfaces, ASME Mechanics and Materials Conference, Blacksburg, VA (USA), June 1999

- Icardi U., Di Sciuva M., Librescu L. (1998) Smart structures featuring imperfect bonding interfaces: modeling and implications, Smart Structures and Materials 1998 Mathematics and Control in Smart Structures, San Diego, CA (USA), May 1998

- Di Sciuva M., Icardi U., Librescu L. (1997) On modeling of laminated composite structures featuring interlaminae imperfections, III International Conference on Materials Processing Defects, Cachan (F), July 1997

- Icardi U., Di Sciuva M., Librescu L. (1997) Thermomechanical response of laminated flat panels featuring interlaminar bonding imperfections, ASME International Mechanical Engineering Congress and Exposition, Dallas, TX (USA), November 1997

- Di Sciuva M., Icardi U. (1997) The Effect of Interfacial Imperfections on the Structural Behavior of Multilayered Plates, XIV AIDAA Conference, Naples (I), October 1997

- Di Sciuva M, Icardi U. (1996) Failure analysis of composite laminates under large deflection, ICEE/3 III International Conference on Composites Engineering, New Orleans, LO (USA), July 1996

- Di Sciuva M., Icardi U., Villani M. (1996) Finite element analysis of composite plates with induced-strain actuators: an evaluation of smeared-laminate and discrete-layer models, VII ICAST, Seventh International Conference on Adaptive Structures, Rome (I), September 1996

- Di Sciuva M., Icardi U. (1996) On modeling of global response behavior of sandwich plates with

laminated faces, CST 96 III International Conference on Computational Structures, Budapest (H), August 1996

- Librescu L., Lin W., Di Sciuva M., Icardi U. (1996) Postbuckling of laminated composite and sandwich-type plates and shells: on the significance of the fulfilment of static interlayer continuity conditions, XX Congress of the International Council of the Aeronautical Sciences, Sorrento (I), September 1996
- Di Sciuva M., Icardi U. (1995) A geometrically nonlinear theory of composite plates with induced-strain actuators, XIII AIDAA Conference, Rome (I), September 1995
- Di Sciuva M., Icardi U., Gualtieri N. (1993) On the buckling analysis of imperfect laminated stiffened conical shells, XII AIDAA Conference, Como (I), July 1993, pp. 987-998
- Di Sciuva M., Icardi U. (1993) Stability behavior of adaptive multilayered plates and shells under combined loads, Bieniek Symposium on Mechanics of Materials and Structures in conjunction with the MEET'N '93, I SES-ASME-ASCE Joint Meeting on Mechanics, Charlottesville (USA), June 1993
- Di Sciuva M., Icardi U. (1991) Analytical and finite element modeling of multilayered plates, XI AIDAA Conference, Forlì (I), October 1991, pp. 1427-1441
- Di Sciuva M. (1991) Improved third-order shear deformation theory for multilayered anisotropic plate. Analytical and FEM results, European Conference on New Advances in Computational Structural Mechanics, Giens (F), April 1991
- Di Sciuva M. (1989) Finite element models for the analysis of the elastodynamic behaviour of arbitrarily laminated, anisotropic cantilever wings of arbitrary plan form, X AIDAA Conference, Pisa (I), October 1989, pp. 636-644

- Di Sciuva M. (1985) Evaluation of some multi-layered, shear-deformable plate elements, AIAA/ASME/ASCE/AHS XXVI Structures, Structural Dynamics and Materials Conference, Orlando, FL (USA), April 1985
- Di Sciuva M. (1983) A refinement of the transverse shear deformation theory for multilayered orthotropic plates, VII AIDAA Conference, Naples (I), October 1983, pp. 83-95
- Di Sciuva M., Pandolfi M. (1983) A perturbation approach to the dynamical behaviour of generally orthotropic plates,. Euromech Colloquium 168, Manchester (UK), June 1983

10.3 NASA reports

- Tessler A., Gherlone M., Versino D., Di Sciuva M. (2012) Analytic and computational perspectives of multi-scale theory for homogeneous, laminated composite, and sandwich beams and plates, NASA/TP-2012-217573
- Gherlone M., Cerracchio P., Mattone M., Di Sciuva M., Tessler A. (2011) Dynamic shape reconstruction of three-dimensional frame structures using the inverse finite element method, NASA/TP-2011-217315
- Tessler A., Di Sciuva M., Gherlone M. (2010) Refined zigzag theory for homogeneous, laminated composite, and sandwich plates: a homogeneous limit methodology for zigzag function selection, NASA/TP-2010-216214
- Tessler A., Di Sciuva M., Gherlone M. (2009) Refined Zigzag Theory for laminated composite and sandwich plates, NASA/TP-2009-215561
- Tessler A., Di Sciuva M., Gherlone M. (2007) Refinement of Timoshenko beam theory for composite and sandwich beams using zigzag kinematics, NASA/TP-2007-215086