Stefano Valvano

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Born [redacted]
Nationality: [redacted]

Current position

Assistant Professor, Kore University of Enna, Enna

Areas of specialization

Aerospace and Mechanical Engineering; Construction and Aerospace Structures.

Current research and interests

Composite materials, Sandwich structures, Numerical methods, Smart materials systems and structures, Thermoelastic modelling, Multifield analysis, Viscoelastic materials, Optimization analysis and algorithms, Modelling and control of vibroacoustic systems, Active noise control.

Appointments held

2013 ***Research Assistant***, November 2013 - December 2013
Department of Mechanical and Aerospace Engineering, Politecnico di Torino

Research Topic: Structural analysis of lander in the Amalia project

2014-2017 ***PhD student***, January 2014 - June 2017
Department of Mechanical and Aerospace Engineering, Politecnico di Torino

2017 ***Postdoctoral Fellow***, January 2017 - December 2017
Department of Mechanical and Aerospace Engineering, Politecnico di Torino

Research Topic: advanced modelling in CASTLE (CAbin Systems design Toward passenger welLbEing) project for dynamic response of multilayered composite and

smart plates and shells with viscoelastic layers, thermoelastic vibrations, modelling and control of vibroacoustic systems, active control of noise.

2018 ***Postdoctoral Fellow***, from January 2018 - May 2018
Department of Mechanical and Aerospace Engineering, Politecnico di Torino

Research Topic: advanced modelling in H2020-NMBP-COMPOSELECTOR project. Multi-scale Composite Material Selection Platform with a Seamless Integration of Materials Models and Multidisciplinary Design Framework.

2018 ***Assistant Professor***, from May 2018
Faculty of Engineering and Architecture, Kore University of Enna.

2021 ***Visiting Researcher***, from June 2021
Department of Aerospace Structures and Materials (ASM), Delft University of Technology

Research projects

2013 ***Amalia project***, November 2013 - December 2013
Department of Mechanical and Aerospace Engineering, Politecnico di Torino
Research Topic: Structural analysis of lander

2017 ***CASTLE (CAbin Systems design Toward passenger welLbEing) project***, January 2017 - December 2017
Department of Mechanical and Aerospace Engineering, Politecnico di Torino
Research Topic: advanced numerical modelling for dynamic response of multilayered composite and smart plates and shells with viscoelastic layers, thermoelastic vibrations, modelling and control of vibroacoustic systems, active control of noise.

2018 ***H2020-NMBP-COMPOSELECTOR project***, from January 2018 - May 2018
Department of Mechanical and Aerospace Engineering, Politecnico di Torino
Research Topic: advanced numerical modelling for Multi-scale Composite Material Selection Platform with a Seamless Integration of Materials Models and Multidisciplinary Design Framework.

2020 ***SIADD project (Soluzioni Innovative per la qualità e la sostenibilita' dei processi di ADDitive manufacturing)***, from January 2020
Faculty of Engineering and Architecture, Kore University of Enna
Research Topic: advanced numerical modelling for structures produced by additive manufacturing processes: lattice periodic material, variable angle tow composite, 3D-printed bi-material structures (composite and metal).

Education

Politecnico di Torino

2013 MSc in Aeronautical and Aerospace Engineering, October 2013
Thesis Title: Advanced finite element shell formulation for the analysis of mechanical and electro-mechanical problems
Advisors: Prof. Erasmo Carrera, Dr. Maria Cinefra

2017 PhD in Mehcanical Engineering, *27 June 2017*
Thesis Title: Development of computational efficient shell formulation for analysis of multilayered structures subjected to mechanical, thermal, and electrical loadings
Advisors: Prof. Erasmo Carrera, Prof. Maria Cinefra
DOI: http://dx.doi.org/10.6092/polito/porto/2675350

Grants, honors & awards

2017 **Quality Award 2016**, *November 2017*
1^{st} place for Mechanical Engineering Doctorate, Politecnico di Torino

2019 **Top Peer Reviewer Award 2019**, *September 2019*
For placing in the top 1% of reviewers in Cross-Field on Publons global reviewer database, determined by the number of peer review reports performed during the 2018-2019 award year.

Teaching

2017-2018 ***Master Course in Aerospace Engineering***
Department of Mechanical and Aerospace Engineering, Politecnico di Torino
Course name: Structures for spacecraft. Module for mechanical design of a CubeSat, FEM simulation and real 3D-printing of satellite components with composite materials.

2018-2019 ***Bachelor Course in Aerospace Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Fundamentals of Aeronautics (Ownership of the course).

2018-2019 ***PhD Course in Civil Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Numerical methods for the solution of engineering problems (Ownership of the course).

2018-2019 ***Bachelor Course in Aerospace Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Aeronautical materials. Laboratory activity on the stress and strain failure criteria for composites, and applications of the lamination theory.

2018-2022 ***Bachelor Course in Aerospace Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Numerical models for aerospace problems (Ownership of the course).

2019-2021 ***Bachelor Course in Aerospace Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Aerodynamics (Ownership of the course).

2020-2021 ***Bachelor Course in Aerospace Engineering***
Faculty of Engineering and Architecture, Kore University of Enna
Course name: Aeronautical materials (Ownership of the course).

2021 ***PhD Course in Aerospace Engineering***
The Italian Association of Aeronautics and Astronautics (AIDAA)
Course name: Sound transmission control through optimized composite sandwich lattice panels (On-line webinar, Ownership of the course).

Editor Service

Editorial member: Journal of Aircraft and Spacecraft Technology, from 2019

Editorial member: Journal of Mechatronics and Robotics, from 2019

Editorial member: Facta Universitatis, Series: Mechanical Engineering, from 2019

Guest Editorial member: Aerospace (MDPI), Special Issue entitled *Control and Optimization Problems in Aerospace Engineering*, from 2019 to 2020

Editorial member: Curved and Layered Structures, from 2020

Editorial member: Reports in Mechanical Engineering, from 2020

Editorial member: Mathematical Problems in Engineering, from 2020

Associate Editor: Part C: Journal of Mechanical Engineering Science, from 2020

Editorial member: Frontiers in Built Environment, from 2020

Editorial member: HighTech and Innovation Journal, from 2020

Editorial member: Military Technical Courier, Scientific Journal of the Minisry of Defence and Serbian Armed Forces, from 2021

Editorial member: Composite Materials and Engineering, An International Journal, from 2021
Editorial member: Applied Sciences (MDPI), from 2021

Conference Organization

Symposium Organizer: "Mathematical Problems in Aerospace Science MPAS-2019",*17th International Conference of Numerical Analysis and Applied Mathematics ICNAAM2019*, 23-28 September 2019, Rhodes, Greece

Chairman: 17th International Conference of Numerical Analysis and Applied Mathematics ICNAAM2019, 23-28 September 2019, Rhodes, Greece

Symposium Organizer: "Mathematical Problems in Aerospace Science",*14th World Congress in Computational Mechanics and ECCOMAS Congress WCCM 2020*, 19-24 July 2020, Paris, France

Symposium Organizer: "Mathematical Problems in Aerospace Science MPAS-2021",*17th International Conference of Computational Methods in Sciences and Engineering*, 4-7 September 2021, Crete, Greece

Technical-Scientific Program Committee: 1st International Conference on Computational Intelligence for Engineering and Management Applications CIEMA-2022, 26-27 March 2022, India-Serbia (Through on-line mode)

Referee Service

Shock and Vibration
Journal of Intelligent Material Systems and Structures
Mechanics of Advanced Materials and Structures
Composite Structures
TWMS Journal of Pure and Applied Mathematics
Journal of King Saud University - Science
Composites Part B: Engineering
Journal of the Brazilian Society of Mechanical Sciences and Engineering
Coatings
Iranian Journal of Science and Technology, Transactions of Civil Engineering
Applied Mathematical Modelling
Computation
Materials
Acta Mechanica
Metals
International Journal of Computer Aided Engineering and Technology
Micromachines
Energies
Aerospace Science and Technology
Mechanics Based Design of Structures and Machines, An International Journal
Symmetry
Sensors

Science and Engineering of Composite Materials
Thin-Walled Structures
Mathematical Problems in Engineering
Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science
Advanced Modeling and Simulation in Engineering Sciences
Journal of Vibration Engineering & Technologies
Mechanical Systems and Signal Processing
Facta Universitatis, Series: Mechanical Engineering
Mathematical Methods in the Applied Sciences
Mathematics
Journal of Optimization Theory and Applications
Latin American Journal of Solids and Structures
Engineering Fracture Mechanics
Applied Acoustics
Advances in Computational Design, An International Journal
Waves in Random and Complex Media
Modelling
Practice Periodical on Structural Design and Construction

Citation Informations

ORCID ID: 0000-0003-4349-1092

Scopus
Scopus Author ID: 56376050100
Total citations: 648
h-index: 18

Web of Science
ResearcherID: D-1017-2017
Total citations: 587
h-index: 18

Google Scholar
Stefano Valvano
Total citations: 758
h-index: 19
i10-index: 22

Other Informations

Languages: Italian (mother tongue), English (fluent), French (elementary)

Piano and acoustic guitar player (teaching experience)

Tennis player, professional activity (regional champion Basilicata (Italy) 2002 (U18), teaching experience)

Publications & talks

Journal articles

2015 Cinefra M, Carrera E, Valvano S (2015), "Variable kinematic shell elements for the analysis of electro-mechanical problems", *Mechanics of Advanced Materials and Structures* 22(1-2): 77-106
DOI: http://dx.doi.org/10.1080/15376494.2014.908042

2015 Cinefra M, Valvano S, Carrera E (2015), "Heat conduction and Thermal Stress Analysis of laminated composites by a variable kinematic MITC9 shell element", *Curved and Layered Structures* 2: 301-320
DOI: http://dx.doi.org/10.1515/cls-2015-0017

2015 Cinefra M, Valvano S, Carrera E (2015), "A layer-wise MITC9 finite element for the free-vibration analysis of plates with piezo-patches", *International Journal of Smart and Nano Materials* 6(2): 85-104
DOI: http://dx.doi.org/10.1080/19475411.2015.1037377

2016 Cinefra M, Valvano S (2016), "A variable kinematic doubly-curved MITC9 shell element for the analysis of laminated composites", *Mechanics of Advanced Materials and Structures* 23(11): 1312-1325
DOI: http://dx.doi.org/10.1080/15376494.2015.1070304

2016 Filippi M, Petrolo M, Valvano S, Carrera E (2016), "Analysis of laminated composites and sandwich structures by trigonometric, exponential and miscellaneous polynomials and a MITC9 plate element", *Composite Structures* 150: 103-114
DOI: http://dx.doi.org/10.1016/j.compstruct.2015.12.038

2016 Cinefra M, Valvano S, Carrera E (2016), "Thermal stress analysis of laminated structures by a variable kinematic MITC9 shell element", *Journal of Thermal Stresses* 39(2): 121-141
DOI: http://dx.doi.org/10.1080/01495739.2015.1123591

2017 Carrera E, Valvano S (2017), "A variable kinematic shell formulation applied to thermal stress of laminated structures", *Journal of Thermal Stresses* 40(7): 803-827
DOI: http://dx.doi.org/10.1080/01495739.2016.1253439

2017 Carrera E, Pagani A, Valvano S (2017), "Shell elements with through-the-thickness variable kinematics for the analysis of laminated composite and sandwich structures", *Composites Part B, Engineering* 111: 294-314
DOI: http://dx.doi.org/10.1016/j.compositesb.2016.12.001

2017 Carrera E, Pagani A, Valvano S (2017), "Multilayered plate elements accounting for refined theories and node-dependent kinematics", *Composites Part B, Engineering* 114: 189-210
DOI: http://dx.doi.org/10.1016/j.compositesb.2017.01.022

2017 Valvano S, Carrera E (2017), "Multilayered plate elements with node-dependent kinematics for the analysis of composite and sandwich structures", *FACTA UNIVERSITATIS, Series: Mechanical Engineering* 15(1): 1-30
DOI: http://dx.doi.org/10.22190/FUME170315001V

2017 Carrera E, Valvano S (2017), "Analysis of laminated composite structures with embedded piezoelectric sheets by variable kinematic shell elements", *Journal of Intelligent Material Systems and Structures* 28(20): 2959-2987
DOI: http://dx.doi.org/10.1177/1045389X17704913

2018 Carrera E, Valvano S, Kulikov GM (2017), "Multilayered plate elements with node-dependent kinematics for electro-mechanical problems", *International Journal of Smart and Nano Materials* 9(4): 279-317
DOI: http://dx.doi.org/10.1080/19475411.2017.1376722

2018 Pagani A, Valvano S, Carrera E (2018), "Analysis of laminated composites and sandwich structures by variable-kinematic MITC9 plate elements", *Journal of Sandwich Structures and Materials* 20(1): 4-41
DOI: http://dx.doi.org/10.1177/1099636216650988

2018 Keshava Kumar S, Harursampath D, Carrera E, Cinefra M, Valvano S (2018), "Modal analysis of delaminated plates and shell using Carrera Unified Formulation-MITC9 shell element", *Mechanics of Advanced Materials and Structures* 25(8): 681-697
DOI: http://dx.doi.org/10.1080/15376494.2017.1302024

2018 Carrera E, Valvano S, Kulikov GM (2018), "Electro-mechanical analysis of composite and sandwich multilayered structures by shell elements with node-dependent kinematics", *International Journal of Smart and Nano Materials* 9(1): 1-33
DOI: http://dx.doi.org/10.1080/19475411.2017.1414084

2018 Carrera E, Valvano S, Filippi M (2018), "Classical, higher-order, zig-zag and variable kinematic shell elements for the analysis of composite multilayered structures", *European Journal of Mechanics / A Solids* 72: 97-110
DOI: http://dx.doi.org/10.1016/j.euromechsol.2018.04.015

2018 Filippi M, Carrera E, Valvano S (2018), "Analysis of multilayered structures embedding viscoelastic layers by higher-order, and zig-zag plate elements", *Composites Part B: Engineering* 154: 77-89
DOI: http://dx.doi.org/10.1016/j.compositesb.2018.07.054

2019 Valvano S, Orlando C, Alaimo A (2019), "Design of a noise reduction passive control system based on viscoelastic multilayered plate using P_DSO", *Mechanical Systems and Signal Processing* 123: 153-173
DOI: http://dx.doi.org/10.1016/j.ymssp.2019.01.011

2019 Carrera E, Valvano S (2019), "A variable ESL/LW kinematic plate formulation for free-vibration thermoelastic analysis of laminated structures", *Journal of Thermal Stresses* 42(4): 452-474
DOI: http://dx.doi.org/10.1080/01495739.2018.1474513

2019 Valvano S, Alaimo A, Orlando C (2019), "Sound transmission analysis of viscoelastic composite multilayered shells structures", *Aerospace* 6(6): 69
DOI: http://dx.doi.org/10.3390/aerospace6060069

2019 Alaimo A, Orlando C, Valvano S (2019), "Analytical frequency response solution for composite plates embedding viscoleastic layers", *Aerospace Science and Technology* 92: 429-445
DOI: http://dx.doi.org/10.1016/j.ast.2019.06.021

2019 Alaimo A, Orlando C, Valvano S (2019), "An alternative approach for modal analysis of stiffened thin-walled structures with advanced plate elements", *European Journal of Mechanics/A Solids* 77: 103820
DOI: http://dx.doi.org/10.1016/j.euromechsol.2019.103820

2020 Valvano S, Alaimo A, Orlando C (2020), "Analytical analysis of sound transmission in passive damped multilayered shells", *Composite Structures* 253: 112742
DOI: http://dx.doi.org/10.1016/j.compstruct.2020.112742

2021 Alaimo A, Orlando C, Valvano S (2021), "Analytical higher-order-theories for noise reduction analysis of viscoelastic composite multilayered shells", *Proceedings of the IMechE Part C: Journal of Mechanical Engineering Science* 235(14): 2629-2636
DOI: http://dx.doi.org/10.1177/0954406220982334

2021 Alaimo A, Marino F, Valvano S (2021), "BCC lattice cell structural characterization", *Reports in Mechanical Engineering* 2(1): 77-85
DOI: http://dx.doi.org/10.31181/rme200102077v

2021 Fazzi L, Valvano S, Alaimo A, Groves R M (2021), "A simultaneous dual-parameter optical fibre single sensor embedded in a glass fibre/epoxy composite", *Composite Structures* 270: 114087
DOI: http://dx.doi.org/10.1016/j.compstruct.2021.114087

Conference Proceedings

2013 Cinefra M, Carrera E, Valvano S (2013), "Refined shell elements for the analysis of multilayered structures with piezoelectric layers", *In 6th ECCOMAS Thematic Conference on Smart Structures and Material (SMART2013)*, Torino (Italy), 24-26 June

2013 Cinefra M, Carrera E, Valvano S (2013), "Doubly-curved shell finite elements based on MITC-type technique and Unified Formulation for the analysis of multilayered structures", *In International Conference on Science and Technology of Heterogeneous Materials and Structures*, Wuhan University, China, 11-13 October

2014 Cinefra M, Valvano S, Carrera E (2014), "A Finite Elements Model embedding Piezoelectric Patches", *In 5th International Symposium on Aircraft Materials*, Marrakech, Morocco, 23-26 April

2014 Cinefra M, Valvano S, Carrera E (2014), "A Finite Elements with Continue Trans-

verse Electric Displacement for the Electro-Mechanical Analysis of Shell Structures", *In DeMEASS VI*, Ede, Netherlands, 25-28 May

2014 Cinefra M, Carrera E, Valvano S (2014), "Refined shell elements for the thermo-mechanical analysis of multilayered structures", *In First International Conference on Mechanics of Composites (MechComp2014)*, Stony Brook, Long Island (NY), USA, 8-12 June

2014 Cinefra M, Valvano S, Carrera E (2014), "Refined Shell Elements for the Analysis of Multifield Problems in Multilayered Structures", *In 11th World Congress on Computational Mechanics WCCM XI, 5th European Conference on Computational Mechanics ECCM V, 6th European Conference on Computational Fluid Dynamics ECFD VI*, Barcelona, Spain, 20-25 July

2015 Cinefra M, Valvano S, Carrera E (2015), "A Finite Element with Continous Transverse Electric Displacement for Static and Free-Vibration Analysis of Piezoelectric Shells", *In 7th ECCOMAS Thematic Conference on Smart Structures and Materials*, Ponta Delgada, Azores, Portugal, 3-6 June

2015 Cinefra M, Carrera E, Valvano S (2015), "Free-Vibration Analysis of Delaminated Shells via Unified Formulation", *In 18th International Conference on Composite Structures*, Lisbon, Portugal, 15-18 June

2015 Pagani A, Valvano S, Carrera E (2015), "Analysis of Laminated Structures by combined ESL-LW Variable Kinematics Plate Elements", *In XXIII Congresso - Associazione Italiana di Aeronautica e Astronautica (AIDAA)*, Torino, Italy, 17-19 November

2016 Carrera E, Pagani A, Valvano S (2016), "A variable-kinematic plate element including cohesive mechanics", *In 2nd International Conference on Mechanics of Composites*, Porto, Portugal, 11-14 July

2016 Carrera E, Pagani A, Valvano S (2016), "CUF-based layered shell elements with mixed LW-ESL assumptions", *In 19th International Conference on Composite Structures*, Porto, Portugal, 5-9 September

2017 Carrera E, Valvano S , Kulikov GM (2017), "Node-dependent kinematic shell elements for the analysis of smart structures", *In DeMEASS VIII*, Moscow, Russia, 21-24 May

2017 Carrera E, Kulikov GM, Valvano S (2017), "A multilayered plate elements accounting node-dependent kinematics for static analysis of piezoelectric structures", *In 8th ECCOMAS Thematic Conference on Smart Structures and Materials SMART 2017*, Madrid, Spain, 5-8 June

2017 Carrera E, Valvano S (2017), "A free-vibration thermo-elastic analysis of laminated structures by variable ESL/LW plate finite element", *In 3rd International Conference on Mechanics of Composites MECHCOMP3*, Bologna, Italy, 4-7 July

2017 Carrera E, Cinefra M, Filippi M, Pagani A, Petrolo M, Zappino E, Garcia A, Kaleel I, Manish N, Li G, Guarnera D, Viglietti A, Valvano S (2017), "Advanced

numerical methods for failure analysis of metallic and composite aerospace structures", *In Technical Interchange Meeting (TIM) on fracture control of spacecraft, launchers and their payloads and experiments*, Noordwijk, European Space Agency, ESA/ESTEC, Holland, 2-3 November

2018 Valvano S, Filippi M, Carrera E (2018), "Analysis of passive and active composite structures embedding piezoelectric and viscoelastic layers via advanced zig-zag plate elements", 9^{th} *International Conference DeMEASS2018 Design Modelling and Experiments of Advanced Structures and Systems*, Sesimbra, Portugal, 30 September - 03 October

2018 Carrera E, Valvano S, Filippi M (2018), "Higher-order shell element for the static and free-vibration analysis of sandwich structures", *Proceedings of the ASME 2018 International Mechanical Engineering Congress & Exposition IMECE2018*, Pittsburgh, USA, 9-15 November

2019 Alaimo A, Orlando C, Valvano S (2019), "Analysis of reinforced shell structure with global-local FEM-BEM approach", *Proceedings of the International Conference on Boundary Element and Meshless Techniques BeTeq 2019*, Palermo, Italy, 22-24 July

2019 Valvano S, Alaimo A, Orlando C (2019), "Sound transmission analytical solution of passive damped multilayered plate structures", *In XXV Congresso - Associazione Italiana di Aeronautica e Astronautica (AIDAA)*, Rome, Italy, 9-12 September

2019 Alaimo A, Valvano S (2019), "Modal analysis of stiffened plates with advanced 2D finite element model", *Proceedings of the 17th International Conference of Numerical Analysis and Applied Mathematics, ICNAAM 2019*, Rhodes, Greece, 23-28 September

2020 Alaimo A, Orlando C, Valvano S (2020), "Sound transmission analytical solution of composite shell structures embedding viscoelastic layers", *Proceedings of the 3rd Euro-Mediterranean Conference on Structural Dynamics and Vibroacoustics, MEDYNA 2020*, Napoli, Italy, 17-19 February

2020 Valvano S, Alaimo A, Orlando C (2020), "Analytical solution for viscoelastic composite shells", *ICCS23 - 23rd International Conference on Composite Structures & MECHCOMP6 - 6th International Conference on Mechanics of Composites*, Porto, Portugal, 1-4 September

2020 Fazzi L, Valvano S, Alaimo A, Groves R M (2020), "Simultaneous temperature-strain measurement in a thin composite panel with embedded tilted Fibre Bragg Grating sensors", *ICCS23 - 23rd International Conference on Composite Structures & MECHCOMP6 - 6th International Conference on Mechanics of Composites*, Porto, Portugal, 1-4 September

2021 Valvano S, Alaimo A, Orlando C (2021), "Advanced kinematic models for the passive damping analysis of variable-angle-tow composite shells", *14th World Congress on Computational Mechanics (WCCM) & ECCOMAS Congress 2020*, Paris, France, 11-15 January

2021 Fazzi L, Valvano S, Groves R M, Alaimo A (2021), "Fully coupled thermo-mechanical

analysis of fiber Bragg gratings embedded in composite panels", *14th World Congress on Computational Mechanics (WCCM) & ECCOMAS Congress 2020*, Paris, France, 11-15 January

2021 Alaimo A, Milazzo A, Valvano S (2021), "Nonlocal analytical solution for multilayered composite shells", *ICCS24 - 24th International Conference on Composite Structures*, Porto, Portugal, 14-18 June

2021 Tumino D, Alaimo A, Orlando C, Valvano S (2021), "A preliminary study on the effect of strut waviness on the mechanical properties of BCC lattice unit cells", *ADM 2021 International Conference*, Rome, Italy, 9-10 September