

Fernando Fraternali

Home: Via Terminio 24 -83100 Avellino, Italy

Phone: (+39) 338 5618449

Work: Department of Civil Engineering, University of Salerno
84084 Fisciano (SA), Italy -Phone: (+39) 089 96-4083

Personal website: <http://www.fernandofraternaliresearch.com/>

Institutional webpage: <https://docenti.unisa.it/001258/home>

Orcid ID: 0000-0002-7549-6405, **ResearcherID:** A-4237-2018,

Scopus ID: 7003627408 **Google Scholar, ResearchGate:** Fernando Fraternali



Biographical sketch

Fernando Fraternali is Professor of Structural Mechanics in the Department of Civil Engineering at the University of Salerno (Diciv), Italy. He received his B.Sc. and M.Sc. degrees in Civil and Environmental Engineering from the University of Salerno, and a Ph.D. in Multiscale Mechanics from King's College London. F. Fraternali has participated as a PI or co-PI in various research projects funded by the Italian National Research Council, the Ministry of Education, the Ministry of Foreign Affairs and International Cooperation (Italy-USA scientific cooperation), and US research agencies. He is PI of the PRIN Research Projects of National Relevance “Multiscale Innovative Materials and Structures (MIMS)” (PRIN 2017 project 2017J4EAYB, years 2019-2023) and “Innovative Lattice Structures and Architected Materials for civil engineering (ILAM)” (PRIN 2022 project 20224LBXMZ, years 2023-2025) granted by the Italian Ministry of University and Research (MUR). He is also PI of the Research Unit at the University of Salerno within the PRIN-PRRR 2022 Project of National Relevance “STABILization of contaminated SOILs (STABSOIL)” (project code P2022CR8AJ, years 2023 –202) granted by MUR. In the University of Salerno, Prof. Fernando Fraternali serves as Rector Deputy to Graduate Programs for the Scientific Area; as Coordinator of the PhD Course on “Risk and Sustainability in Civil, Architecture and Environmental Engineering Systems”; and as Delegate to Research and Doctorate Affairs of Diciv. Most of his research work concerns multiscale modeling and simulation of solids and structures, the nonlinear dynamics of materials and structures, and the design and engineering of sustainable materials at multiple scales. Prof. Fraternali was awarded a Fulbright Research Scholarship for the academic year 2005/06 and has been Visiting Professor at the Graduate Aerospace Laboratories of the California Institute of Technology since September 2005 (several periods), and the Department of Mechanical and Aerospace Engineering, University of California, San Diego, USA. Recently, he has been listed in the [Elsevier Data Repository of the 100,000 top scientists across all fields](#) according to the article by John P.A. Ioannidis: "Updated science-wide author databases of standardized citation indicators", doi: 10.17632/btchxktzyw.6 (v.6, 4 October 2023); among the Top Italian Scientists, Area: Engineering-Mechanics (<http://www.topitalianscientists.org>); and has received the "Major Contributions to Tensegrity Systems Research" Award from the Texas A&M Laboratory on Tensegrity Systems (April 2018); the “Bdr2017 Award – Category Green Economy” for the University of Salerno spin-off Newmatt within the Startup Competition on Innovation and Entrepreneurship “Borsa della Ricerca 2017” (Fisciano, May 2017), and the "2015 Hetenyi Award" from the Society for Experimental Mechanics, Inc. (Bethel, CT 06801, USA). Prof. Fraternali is Associate Editor of Mechanics Research Communications (Elsevier, ISSN: 0093-6413), Frontiers in Materials (Frontiers Publishing, ISSN: 2296-8016) and Ingegneria Sismica - International Journal of Earthquake Engineering (Patron Editore, ISSN: 0393-1420). He is also on the Editorial Advisory Board of Curved and Layered Structures (De Gruyter Open, ISSN: 2353-7396), Science and Engineering of Composite Materials (De Gruyter Open, ISSN: 2191-0359), and the World Journal of Engineering (Emerald Publishing, ISSN: 1708-5284). F. Fraternali is Guest Editor of the special issues: "*Multi-Scale Modeling and Characterization of Innovative Materials and Structures*", Mechanics Research Communications, Volume 58, Pages 1-156 (June 2014, [link](#)); "*Composite Lattices and Multiscale Innovative Materials and Structures*", Composites Part B: Engineering (Elsevier, ISSN: 1359-8368), Volume 115, Pages 1-504 (15 April 2017, [link](#)); "*Multiscale lattices and composite materials: Optimal design, modeling and characterization*", Frontiers in Materials (August 2019, doi: 10.3389/fmats.2019.00199, [link](#)); "*Advances in Mechanical Metamaterials and Smart Structures*", Mechanics Research Communications, Volume 107, 2020, 103531 (July 2020, [link](#)); "*Nanomaterials: Multiscale Innovative Materials and Structures*" (MDPI, ISSN: 2079-4991, January 2022, doi:10.3390/nano12010096, [link](#)); "*Recent Advances on Multiscale Engineered Metamaterials and Structures*", Mechanics Research Communications, Volume 131, 2023, 104159, doi: 10.1016/j.mechrescom.2023.104159 (August 2023, [link](#)).

Fernando Fraternali
Curriculum Vitae

Education

- MSc&BSc (“*Laurea magna cum laude - Laurea vecchio ordinamento*”, 5-year course), Civil and Environmental Engineering, University of Salerno, Italy, 1987. Advisors: Maurizio Angelillo, Luigi Ascione, Bruno Palazzo.
- PhD, Multiscale Mechanics, King's College London, UK, 2011 - PhD Dissertation title: "Multiscale Modeling of Biomembranes and Nanostructures". Advisors: Gianluca Marcelli, Christian D. Lorenz and Georgios Papadakis.

Professional Appointments (Department of Civil Engineering, University of Salerno)

- 05/2016-Present: Full Professor of Mechanics of Materials, Solids and Structures.
- 11/2001-04/2016: Associate Professor of Mechanics of Materials, Solids and Structures.
- 03/1990-10/2001: Assistant Professor of Mechanics of Materials, Solids and Structures.
- 01/1987-02/1990: Teaching Assistant and Research Scientist.

Visiting Appointments

- 09/2019 – 11/2019: Visiting Professor, Department of Materials Science & Engineering, University of Sheffield, UK
- 09/2018: Visiting Professor, Université Paris Diderot, Paris, France
- 07/2017 – 08/2017: Visiting Professor, Department of Mechanical and Civil Engineering, California Institute of Technology, USA
- 07/2014 – 08/2017 (several periods): Visiting Professor, Department of Mechanical and Aerospace Engineering, University of California, San Diego, USA
- 09/2005 – 02/2009: Visiting Associate in Aeronautics, Graduate Aerospace Laboratories, California Institute of Technology, USA
- 08/1991-12/1991: Visiting Research Scientist, Department of Engineering Science and Mechanics, Virginia Polytechnic Institute and State University, USA.

Courses Taught (University of Salerno)

- “Industrial Design and Strength of Materials” (“Disegno Industriale e Scienza delle Costruzioni” and “Sicurezza ed Affidabilità delle Costruzioni”), BS in Chemical Engineering, 1994-1999, (6 ECTS credits)
- Strength of Materials” (“Sicurezza ed Affidabilità delle Costruzioni”), BS in Civil Engineering, 1996-1999, (6 ECTS credits)

- “Theory of Structures” (“Teoria delle Strutture”), MS in Civil and Environmental Engineering, 1998-2001, (12 ECTS credits)
- “Mechanics of Solids and Structures” (“Scienza delle Costruzioni”), BS in Civil and Environmental Engineering, 2001-present, (12 ECTS credits)
- “Advanced Computational Mechanics with Applications to Composite Materials and Structures”, MS in Civil Engineering, 2016-present, (6 ECTS credits)
- “Advances in ICT” (seminar class), PhD Course in “Risk and Sustainability in Civil, Architecture and Environmental Engineering Systems”, 2016-present, (2 ECTS credits)

Guest Lecturer:

- “Special Topics in Solid Mechanics: Linear and nonlinear waves in periodic media” (2012), California Institute of Technology (Ae/AM/ME 225)
- “Mechanics of Structures and Solids” (2008-2010), California Institute of Technology (Ae/AM/CE/ME 102).

Current Graduate Students and Postdoctoral Scholars

- Hossein Honarvar, Univ. Salerno, PhD Student (XXXVIII cycle), “Mechanical modeling and experimental validation of sustainable materials for additive manufacturing”.
- Giovanni Germano, Univ. Salerno, PhD Student (XXXVIII cycle), “Innovative sensors and actuators for civil engineering structures”.
- Baidehi Das, Univ. of Catania and Univ. Salerno, PhD Student (XXXVIII cycle), “Mechanical modeling of innovative timber structures incorporating superelastic materials ”.
- Julia de Castro Motta, Univ. Salerno, PhD Student (XXXVII cycle), “Mathematical modeling of wave propagation in materials and structures”.
- Valentina Adinolfi, Univ. Salerno, PhD Student (XXXVII cycle), “Using mechanical metamaterials for seismic isolation devices”.
- Saeedeh Qaderi, Univ. Salerno, Postdoctoral Scholar, “Experimental response of prototypes of innovative seismic isolation devices”.

Current Undergraduate Students

- Lucia Senatore, Civil & Environmental Engineering, Univ. Salerno, B.Sc. Student, 3rd year.
- Cristian Santomauro, Civil & Environmental Engineering, Univ. Salerno, B.Sc. Student, 3rd year.

Selected Former Graduate Students and Postdoctoral Scholars Supervised

- Giuseppe Rocchetta, Univ. Salerno, Ph.D. Student 2000-2003, “Lumped stress models for masonry structures” . Currently: High School Teacher.
- Andrea Marino, Univ. Salerno, Ph.D. Student 2002-2005, “Energetic approaches to shape optimization”. Currently: Officer of the Italian Fire and Rescue Service.
- Davide Zuppa, Univ. Salerno, Ph.D. Student 2004-2007, “Impact dynamics of soft material systems”. Currently: Professional Engineer.

- Fabio Formato, Univ. Salerno, Ph.D. Student 2004-2007, “Theoretical-experimental study on the statics of masonry vaults” . Currently: Professional Engineer.
- Marco Picone, Univ. Salerno, M.Sc. Student 2005-2007, “Energy trapping in granular systems”. Currently: Research Engineer, Institute for Environmental Protection and Research (ISPRA), Rome, Italy.
- Luca Cardamone, Univ. Salerno, Ph.D. Student 2006-2008, “On the mechanics of arterial growth and remodeling”. Currently: Project Manager at Progetti Europa & Global S.p.A, Rome, Italy.
- Rosaria Chechile, Univ. Salerno, Ph.D. Student 2008-2011, “Mechanical and durability properties of ecosustainable concretes”. Currently: Project Manager, Real Edil s.p.a. Salerno, Italy.
- Nicholas Boechler – California Institute of Technology, Ph.D. Student, 2008-2011, “Granular crystals: controlling mechanical energy with nonlinearity and discreteness” (co-supervisor). Currently: Associate Professor, Department of Mechanical and Aerospace Engineering, University of California, San Diego, USA.
- Jordan R. Raney – California Institute of Technology, Ph.D. Student, 2009-2012, “Hierarchical structures of aligned carbon nanotubes as low-density energy-dissipative materials” (co-supervisor). Currently: Assistant Professor, Architected Materials Laboratory, University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA, USA.
- Ivan Szelengowicz – California Institute of Technology, Ph.D. Student, 2008-2013, “Topology and material optimization for granular protective systems” (co-supervisor). Currently: Software developer at Medcurio, Inc, Pasadena, CA, USA.
- Andrea Leonard – California Institute of Technology, Ph.D. Student, 2008-2013, “Stress wave propagation in two-dimensional granular crystals” (co-supervisor). Currently: Senior Scientist at TreeFrog Therapeutics, Bordeaux, France.
- Thevamaran Ramathasan – California Institute of Technology, Ph.D. Student, 2009-2014, “Dynamics of carbon nanotube foams” (co-supervisor). Currently: Assistant Professor at the Department of Engineering Physics of the University of Wisconsin-Madison, WI, USA.
- Gerardo Carpentieri– Civil Engineering, Univ. Salerno, Ph.D. Student, 2012-2014, “On the mechanical modeling and the optimal design of tensegrity structures”. Currently: Officer at the City of Monselice (Padova), Italy.
- Ada Amendola – Civil and Environmental Engineering, Univ. Salerno, Ph.D. Student, 2014-2016, “On the mechanical modeling and the optimal design of tensegrity structures”. Currently: Associate Professor, Applied Mathematics and Mechanics of Solids and Structures, University of Salerno.
- Mariella De Piano – Civil and Environmental Engineering, Univ. Salerno, Ph.D. Student, 2016-2018, “Continuum and discrete approaches to the statics of masonry vaults”. Currently: Engineer at Geoconsult srl, Manocalzati (AV), Italy.
- Raffaele Miranda – Civil Engineering and Architecture, Univ. Salerno, Ph.D. Student, 2017-2019, “Modeling and development of innovative structures for smart façades of energy efficient buildings”, Currently: Officer of Regione Campania, Italy.
- Narinder Singh, Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems, Univ. Salerno, Ph.D. Student, 2019-2022, “Design, mechanical modelling and testing of innovative seismic isolation devices”, Currently: Post-Doc Research Assistant, University of Naples “Parthenope”).

Service Provided to the University of Salerno

- Rectory Deputy to Graduate Programs for the Scientific Area.

- Delegate of the Department of Civil Engineering to Research and Doctorate Affairs.
- Coordinator of the PhD Course on “Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems” (cycles XXXII-XXXVIII).
- Chair of the Commission for Departmental Research Grants, Department of Civil Engineering.
- Member of the Faculty Board of the PhD Course in Risk and Sustainability in Civil, Architectural and Environmental Engineering Systems, Department of Civil Engineering.
- Scientific Director of the start-up company "NEWMATT: NEW MATerials and Techniques for sustainable engineering” <https://www.newmatt.it/> (formerly approved academic spin-off of the University of Salerno, incubation period: February 2018 – February 2023).
- Co-Founder and Member of NANO_MATES (Research Centre for NANOMaterials and nano-TEchnology at Salerno), University of Salerno (from 2007 to present, <http://www.nanomates.unisa.it>).
- Director of the Rapid Prototyping Laboratory, Department of Civil Engineering.
- Senior Researcher: Structural Engineering Laboratory.
- Advisor and Lecturer for Ph.D. Programs in Structural and Civil Engineering.

Honors and Awards

- Listed in the Elsevier Repository of the 100,000 top scientists across all fields according to the composite citation index published in John P.A. Ioannidis, “October 2023 data-update for "Updated science-wide author databases of standardized citation indicators", Elsevier Data Repository, v6, doi: 10.17632/btchxktzyw.6, <https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6>, both for the year 2022 and for the career 1996-2022 (listed in this ranking since 2017, latest update 4 Oct. 2023).
- "Major Contributions to Tensegrity Systems Research" Award, Texas A&M Laboratory on Tensegrity Systems (April 2018).
- Listed among Top Italian Scientists, Area: Engineering-Mechanics, since 2017 (<http://www.topitalianscientists.org>).
- “Bdr2017 Award – Category Green Economy” for the University of Salerno spin-off [Newmatt](#) (founder and CEO) within the Startup Competition on Innovation and Entrepreneurship “Borsa della Ricerca 2017” (Fisciano, May 2017, [link](#)).
- 2015 Hetényi Award from the Society for Experimental Mechanics, (Bethel, CT, USA) for the Best Research Paper published in the Journal of Experimental Mechanics (Springer, ISSN: 0014-4851) in the year 2013 (*paper “Directional Wave Propagation in a Highly Nonlinear Square Packing of Spheres”, A. Leonard, F. Fraternali, C. Daraio,, Experimental Mechanics, 53(3), 327-337, 2013*), June 2015, Costa Mesa, CA, USA.
- Start Cup Campania 2012, Business Plan Competition, 3rd prize, Project “New Materials and Techniques for Sustainable Engineering”, Salerno, Italy, Oct. 2012 (<http://www.startcupcampania.unina.it/>).
- “Contributions to the Variational Theory of Fracture” Award, Vibration and Wave Propagation Laboratory, Georgia Institute of Technology, Sept. 2012
- “Contributions to Understanding the Behavior of Waves in Granular Systems” Award, Granular Science Laboratory, New Jersey Institute of Technology, Aug. 2012

- Start Cup Campania 2011, Business Plan Competition, Finalist, “Environmentally-Sustainable Fiber-Reinforced Products for the Construction Industry”, Napoli, Italy, Sep. 2011.
- Fulbright Research Scholarship, California Institute of Technology, Sep. 2005 - Sep. 2006.
- Province of Salerno Scholarship, California Institute of Technology, Aug. 2008 - Jan. 2009
- Italian National Research Council (CNR) Scholarship, California Institute of Technology, Oct. 2006.
- Distinguished Graduate Student Award, Celebrations for the 20th Anniversary of the Engineering Faculty, University of Salerno, Jul. 2003 (delivered by the Italian Minister of Education, University and Research).
- Italian Ministry of Education, University and Research (MIUR) Scholarship, Virginia Tech, Aug.-Dec. 1991.
- Special Mention of Honor for Scientific Interest of the Thesis and Publication ("Dignità di Stampa") Dec. 1986.

Journal Editorships

- Associate Editor of Mechanics Research Communications, Elsevier, ISSN: 0093-6413 (www.journals.elsevier.com/mechanics-research-communications/editorial-board)
- Associate Editor of Frontiers in Materials, Section: Mechanics of Materials, Frontiers Publishing, ISSN: 2296-8016 (www.frontiersin.org/journals/materials#editorial-board)
- Associate Editor of Ingegneria Sismica – International Journal of Earthquake Engineering, ISSN: 0393-1420 (ingegneriasismica.org/editorial-board/)
- Member of the Editorial Advisory Board of Curved and Layered Structures, De Gruyter Open, ISSN: 2353-7396 (www.degruyter.com/view/j/cls)
- Member of the Editorial Advisory Board of Science and Engineering of Composite Materials, De Gruyter Open, ISSN: 2191-0359 (www.degruyter.com/view/j/secm).
- Member of the Editorial Advisory Board of the World Journal of Engineering, Emerald Publishing, ISSN: 1708-5284 (emeraldgrouppublishing.com/products/journals/editorial_team.htm?id=wje).
- Guest Editor of the special issue of Mechanics Research Communications “Multiscale Methods for Innovative Materials and Structures”, Volume 58, Pages 1-156, June 2014. (www.sciencedirect.com/science/journal/00936413/58)
- Guest Editor of the special issue of Composites Part B: Engineering "Composite Lattices and Multiscale Innovative Materials and Structures", Volume 115, Pages 1-504, April 2017. (www.sciencedirect.com/journal/composites-part-b-engineering/vol/115/suppl/C, ISSN: 1359-8368)
- Guest Editor of the research topic of Frontiers in Materials: Engineering “Multiscale lattices and composite materials: Optimal design, modeling and characterization”, August 2019, doi: 10.3389/fmats.2019.00199 (www.frontiersin.org/research-topics/8136).
- Guest Editor of the special issue of Mechanics Research Communications "Advances in Mechanical Metamaterials and Smart Structures", Volume 107, 2020, 103531, July 2020 (www.sciencedirect.com/science/article/pii/S0093641320300604?via%3Dihub).
- Guest Editor of the special issue of Nanomaterials “ Multiscale Innovative Materials and Structures”, MDPI, ISSN: 2079-4991, January 2022, doi:10.3390/nano12010096, (www.mdpi.com/journal/nanomaterials/special_issues/Multiscale_Innovative_Materials_Structures).
- Guest Editor of the special issue of Mechanics Research Communications "Recent Advances on Multiscale Engineered Metamaterials and Structures" (Mechanics Research Communications, Volume 131, Agosto 2023, 104159, , doi: [10.1016/j.mechrescom.2023.104159](https://doi.org/10.1016/j.mechrescom.2023.104159)).

Reviewer (Selection)

- ACS Nano
- Acta Mechanica
- Additive Manufacturing
- Advances in Materials and Processing Technologies
- AIAA Journal
- Applied Mathematical Modeling
- Applied Sciences
- ASME Journal of Vibration and Acoustics
- Carbon
- Cement and Concrete Composites
- Biomechanics and Modeling in Mechanobiology
- Bulletin of the Polish Academy of Sciences
- Composites Part B: Engineering
- Composite Structures
- Computer and Structures
- Computer Methods in Applied Mechanics and Engineering
- Construction and Building Materials
- Continuum Mechanics and Thermodynamics
- Current Opinion in Solid State & Materials Science
- Energy and Buildings
- Engineering with Computers
- Engineering Structures
- Entropy
- European Journal of Mechanics / A Solids
- European Physical Journal – Plus
- Europhysics Letters
- Extreme Mechanics Letters
- Frontiers in Mechanics
- Frontiers in Built Environment
- International Journal of Architectural Heritage
- International Journal of Fracture
- International Journal of Solids and Structures
- International Journal of Space Structures
- Journal of Applied Physics
- Journal of Biomechanics
- Journal of Elasticity
- Journal of Geophysics and Engineering
- Journal of Manufacturing Processes
- Journal of Materials Engineering and Performance
- Journal of Materials Science
- Journal of the Mechanics and Physics of Solids
- Journal of Sound and Vibration
- Journal of Physics D: Applied Physics

- Journal of Polymers and the Environment
- Journal of Vibration and Control
- KSCE Journal of Civil Engineering
- Materials
- Materials Today
- Meccanica
- Mechanics of Advanced Materials and Structures
- Mechanics of Materials
- Mechanics Research Communications
- Mechanism and Machine Theory
- Metals
- Nanomaterials
- Nonlinear Dynamics
- Nonlinear Theory and Its Applications, IEICE (NOLTA)
- PLoS One
- Physica D: Nonlinear Phenomena
- Polymer Engineering & Science
- Polímeros
- Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences
- Theoretical and Applied Fracture Mechanics
- Science and Engineering of Composite Materials
- Smart Materials and Structures
- Steel and Composite Structures
- Structural Engineering and Mechanics
- Symmetry
- Waste Management
- World Journal of Engineering
- Member of the External Advisory Board, Project Eva 4.0, Czech University of Life Sciences, Prague, 2018-2022
- Horizon 2020, M-era.Net and Swiss Science Foundation, Reviewer
- ERC projects, Reviewer

Recent Research Grants and Contracts

- PRIN 2022, Italian Ministry of University and Research, Research Projects of National Relevance, South Line, “Innovative Lattice Structures and Architected Materials for civil engineering (ILAM)”, Project code 20224LBXMZ, Years 2023 –2025, Total Funded Amount: 231.154 Eur, PI: Fernando Fraternali
- PRIN-PRRR 2022, Italian Ministry of University and Research, Research Projects of National Relevance, “STABilization of contaminated SOILs (STABSOIL)”, Project code P2022CR8AJ, Years 2023 –2025, Total Funded Amount: 240.000 Eur, Local PI of the Research Unit at the University of Salerno.
- Joint Research Project as Part of Science and Technology Cooperation Between Italy and The United States of America, Italian Ministry of Foreign Affairs and International Cooperation, Project title: Next-generation green structures for natural disaster-proof building, grant number US23GR15. University of Salerno (Italy), University of Colorado Boulder and University of California Irvine (USA), Period: 01/01/2023-31/12/2025, Member of the research team at the University of Salerno, Total Funded Amount: 150.000,00 Eur (Italian PI: Ada Amendola, USA PI: Massimo Ruzzene)

- PRIN 2017, Italian Ministry of University and Research, Research Projects of National Relevance, South Line, “Multiscale Innovative Materials and Structures (MIMS)”, Project code 2017J4EAYB, Years 2019 –2023, Total Funded Amount: 816.760 Eur, PI: Fernando Fraternali
- @Paestum – “Digital technologies in support of post-Covid recovery of the Paestum Archaeological Park and surrounding area”, Alumni Small Grant 2020 from the US Mission to Italy. Years 2021-2022, Total Funded Amount: 14.438,00 Eur, PI: Fernando Fraternali
- Research Contract between the Department of Civil Engineering of the University of Salerno and AQUAFIL S.p.A. (Arco, Trento, Italy), “DEVELOPMENT OF INNOVATIVE ECOCOMPATIBLE FILAMENTS FOR 3D PRINTING” (“SVILUPPO DI NUOVI FILAMENTI ECOCOMPATIBILI PER LA STAMPA 3D”), Period: 20/05/2016 – 31/12/2017, PI: Fernando Fraternali
- Laboratories University Network of Seismic Engineering (RELUIS), Executive Project 2014-2018, “SEISMIC RETROFITTING OF MASONRY VAULTS” (“RINFORZI STRUTTURALI ANTISISMICI PER VOLTE IN MURATURA”), Period: 01/02/2014 – 31/12/2018, Research Line PI: Valentino Berardi
- Joint Research Project as Part of Science and Technology Cooperation Between Italy and The United States of America, Italian Ministry of Foreign Affairs, Project title: INNOVATIVE STRUCTURES FOR ENERGY EFFICIENT BUILDINGS, University of Salerno (Italy) – University of California, San Diego (USA), Period: 01/01/2013-31/12/2015, Italian PI: Fernando Fraternali, USA PI: Mauricio de Oliveira
- FARB Projects 2012-2023, University of Salerno, Local funding for basic research, Years 2012 –2018, PI: Fernando Fraternali
- Research Contract between the University Centre for Risk Prediction and Prevention (CUGRI, Universities of Salerno and Napoli “Federico II”) and Alenia Aeronautica (Pomigliano D’Arco, Napoli, Italy), “EXPERIMENTATION OF AN INNOVATIVE STRUCTURAL HEALTH MONITORING TECHNIQUE THROUGH LASER VIBROMETRY” (“SPERIMENTAZIONE DI UNA PROCEDURA DI STRUCTURAL HEALTH MONITORING MEDIANTE VIBROMETRO LASER”), Period: 17/06/2010 -1 31/12/2010, PI: Fernando Fraternali
- Research Contract between the Department of Civil Engineering of the University of Salerno and CAPAROL Italiana GmbH & Co. KG (Vermezzo, Milano, Italy), “DURABILITY AND MECHANICAL PROPERTIES OF HI-TECH PRODUCTS FOR THE PROTECTION AND THE REINFORCEMENT OF CONCRETE STRUCTURES” (“CARATTERISTICHE MECCANICHE E DI DURABILITA’ IN AMBIENTI AGGRESSIVI DI PRODOTTI PER IL RISANAMENTO E LA PROTEZIONE DEL CALCESTRUZZO”), Period: 15/03/2010 – 15/03/2011, PI: Fernando Fraternali
- TENSEGRITY 2012, Province of Avellino, “INNOVATIVE SYSTEMS FOR SEISMIC ENGINEERING AND STRUCTURAL HEALTH MONITORING” (“SISTEMI INNOVATIVI PER L’INGEGNERIA SISMICA ED IL MONITORAGGIO STRUTTURALE”), Period: 01/07/2012 – 15/03/2013, PI: Fernando Fraternali

Selected Meeting Chairmanships

- 2023, 9th Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023), Athens, Greece, 12-14 June 2023 (Scientific Committee, <https://2023.compdyn.org/content/scientific-committee>)
- 2022, 1st International Conference on Mechanics of Solids (MS 2022), Porto, Portugal, 3-4 November 2022 (Scientific Committee, <https://web.fe.up.pt/~ms2022/>)

- 2022, 2nd International Conf. on Nonlinear Solid Mechanics (ICoNSoM 2022), Alghero, Italy, June 13-16 2022 (Scientific Committee, <http://www.memocsevents.eu/iconsom2022/committees/scientific-committee/>)
- 2022, 4th International Workshop on Multiscale Innovative Materials and Structures (MIMS22), Cetara (SA), Italy, September 29- October 1st, 2022 (Chair & Editor, www.multiscale.unisa.it)
- 2021, 24th International Conference on Composite Structures (ICCS24), Porto, Portugal, June 14-18 2021 (Scientific Committee, <https://eventi.unibo.it/iccs24/scientific-committee>)
- 2021, 8th Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2021), Streamed from Athens, Greece, 28-30 June 2021 (MS co-organizer)
- 2021, 8th International Conference on Materials, Mechanics & Modelling (ICMMM 2021), Streamed from Washington, USA, Sept. 25-27, 2021 (Scientific Committee).
- 2020, Joint 23rd International Conference on Composite Structures (ICCS23) & 6th International Conference on Mechanics of Composites (MECHCOMP6), Streamed from Porto, Portugal, Sept.1-4 2020 (Scientific Committee)
- 2019, 3rd International Workshop on Multiscale Innovative Materials and Structures (MIMS19), Cetara (SA), Italy, February 28- March 2, 2019 (Chair & Editor)
- 2019 International Conference on Nonlinear Solid Mechanics (ICoNSoM 2019), 16-19 June 2019, Rome, Italy (Scientific Committee and co-organizer of the minisymposium “Nonlinear Mechanics of Lattice Metamaterials”)
- ICCM2018: 9th International Conference on Computational Methods, Rome, Italy, 6-10 August 2018 (local Co-Chairman and member of the International Scientific Advisory Committee)
- WCCM 2018: 13th World Congress in Computational Mechanics, New York City, USA, July 22-27 2018 (co-organizer with Vitali Nesterenko, Julian Rimoli and Bob Skelton of the minisymposium "Computational design of multifunctional lattice materials").
- ESMC 2018: 10th European Solids Mechanics Conference, Bologna, Italy, 2-6 July 2018 (co-organizer with Bob Skelton of the minisymposium “Mechanics of tensegrity structures and multifunctional lattice materials”)
- Aimeta 2017: XXIII National Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy. September 4-7, 2017 (Organizing Committee and Editor, <https://salerno2017.aimeta.it/comitati.html>)
- 2016 International Workshop on Multiscale Innovative Materials and Structures" (MIMS16), Cetara (SA), Italy, October 28-30, 2016 (Chair and Editor, www.multiscale.unisa.it).
- The Italian Steel Days 2015, XXV Congress of the Italian Association of Steel Engineering, Salerno, Italy, October 1-3, 2015 (Scientific Committee)
- 42th AIAS National Congress, Italian Association of Stress Analysis, Salerno, September 11-14-2013 (Scientific Committee, <http://www.aiasnet.it/Convegno/Convegno-2013/Comitato-Scientifico>)
- Workshop "Multiscale Modeling and Characterization of Innovative Materials and Structures" (MIMS13), Cetara (SA), Italy, May 1-5, 2013 (Chair and Editor, www.multiscale.unisa.it).
- Workshop "Carbon Nanotubes (CNTs) as Components in Bulk Materials”, Università degli Studi di Salerno, Fisciano (SA), Italy, October 25 - November 4, 2011 (Chairman).
- Workshop "Analysis and Design of Innovative Network Structures”, Università degli Studi di Salerno, Fisciano (SA), Italy, June 18-23 2011 (Chairman).
- Workshop "Ponteggiando”, University of Salerno, Fisciano (SA), May 24, 2010 (Chairman).
- ICMMS'08, “International Conference on Multiscale Modeling and Simulation”, Bangalore, India. January 2-4, 2008 (Session Chairman).
- ICSSD 2005, “Third International Conference on Structural Stability and Dynamics”, Kissimmee, Florida, USA, June 2005 (Session Chairman).

- Workshop “Biomechanics of Soft Tissues”, Università degli Studi di Salerno, Fisciano (SA), April 2005 (Chairman).
- Workshop “Contact Mechanics and Free Discontinuity Problems”, Università degli Studi di Salerno, Fisciano (SA), July 2004 (Co-Chairman).
- ASEM 2002, “Second International Conference on Advances in Structural Engineering and Mechanics”, Busan, Corea, August 2002 (Session Chairman).
- Workshop “Engineering Applications of Fracture Mechanics”, ”, Università degli Studi di Salerno, Fisciano (SA), July 2002 (Chairman).
- RRRTEA '04, “International Conference of Restoration, Recycling and Rejuvenation Technology for Engineering and Architecture Application”, Cesena, June 2004 (Comitato Scientifico e Session Chairman).
- Mesomechanics 2000, “International Conference on Role of Mesomechanics for Development of Science and Technology”, June 2000, Xi'an, Cina (Session Chairman).

Selected Invited Lectures

- Designing Seismic Isolators through Lattice Metamaterials, 2nd Italian Workshop on Shell and Spatial Structures (IWSS 2023), Valentino Castle, Turin, Italy, 26th - 28th June 2023 (Keynote lecture: <https://sites.google.com/view/iwss/iwss2023/fraternali?authuser=0>)
- Computational Modeling of Biomimetic Seismic Metaisolators, 3rd International Conference on Computations for Science and Engineering, 20-23th September, Naples, Italy (Keynote lecture: <https://events.unibo.it/iccse/keynote-speakers-iccse3>)
- Experimental Testing of Innovative, Biomimetic Seismic Metaisolators, 2023, 9th Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023), Athens, Greece, 12-14 June 2023 (Invited lecture, Minisymposium 30)
- On the Wave Dynamics of Composite Tensegrity Metamaterials, Joint event ICCS26 - 26th International Conference on Composite Structures & MECHCOMP8 - 8th International Conference on Mechanics of Composites, FEUP - Faculty of Engineering, University of Porto, Portugal, 27-30 June 2023 (Invited lecture)
- Employing Metamaterial Concepts for Seismic Isolation, META 2022, 12th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Torremolinos, Spain, July 19 – 22, 2022 (Invited talk in collaboration with Ada Amendola, <https://metaconferences.org/META/>)
- Innovative Seismic Isolators, Euromech Colloquium 610 “Emerging Topics in Acoustic and Mechanical Metamaterials”, 25 April – 27 April 2022, Castellón de la Plana, Spain (Invited lecture, <https://610.euromech.org/speakers/>).
- Tensegrity Metamaterials, 4th International Workshop on Multiscale Innovative Materials and Structures (MIMS22), Cetara (SA), Italy, Sept. 29- Oct. 1st, 2022 (Keynote lecture, in collaboration with Ada Amendola, <http://www.multiscale.unisa.it/>).
- On the Compact Wave Dynamics of Tensegrity Metamaterials, META-MAT.ORG Webinar no. 31, March 02, 2021 (<https://meta-mat.org/previous-seminars/season1/>).
- Computational Design of Tensegrity Metamaterials, ICCSE - 1st Int. Conference on Computations for Science and Engineering, June 19 2021, Porto, PT (Keynote lecture, <https://eventi.unibo.it/iccse/keynote-lectures>).
- Innovative Cement Composite Materials for Energy Efficient Buildings, 12th International Conference on Materials Processing and Characterization, Oct. 7, 2021. NITTTR Chandigarh, India (Keynote lecture).
- 3D Printing Services for Pandemic Prevention, Conference on Fulbright Fellows’ Contribution to the Fight against Covid-19, Celebrations for the 75th anniversary of the Fulbright Program, Embassy of Italy in Washington D.C., USA (Invited lecture, https://ambwashingtondc.esteri.it/ambasciata_washington/it).

- Solitary Wave Dynamics of Tensegrity Metamaterials, Joint MEMOCS Workshop on Models of Complex Materials and Systems, 20-23 June 2019, Arpino, Italy (Invited lecture, <http://www.memocsevents.eu/wordpress/cossevilla/joint-memocs-workshop-talks/>).
- Novel acoustic applications of tensegrity structures, International Workshop on Multiscale Innovative Materials and Structures (MIMS19), Cetara (SA), Italy, February 28- March 2, 2019 (Keynote lecture, <http://www.multiscale.unisa.it/>).
- On the Dynamics of Highly Nonlinear Lattice Materials, 9th International Conference on Computational Methods (ICCM2018), Rome, Italy, 6-10 August 2018 (Thematic Plenary Lecture, <http://www.sci-en-tech.com/ICCM2018/PL&TPL%20List.pdf>).
- Highly Nonlinear Tensegrity Metamaterials, Workshop on Advances in Mechanical Metamaterials “From Ultrasonic to Seismic applications”, 15-16 May 2018, Imperial College London (Invited Lecture, <http://www.imperial.ac.uk/plasmonics-metamaterials/advances-in-metamaterials/>).
- Series of Invited Lectures on the subject of “Waste management by three dimensional/ four dimensional printing”, Global Initiatives of Academic Networks, Ministry of Human Resource Development, Government of India, Guru Nanak Dev Engineering College, Ludhiana, India, 18-22 December 2017, (<http://www.gian.iitkgp.ac.in/ccourses/approvecourses2>).
- On the Mechanics and Engineering of Composite Lattices, 3rd International Conference on Mechanics of Composites (MECHCOMP3), University of Bologna, Italy, 4-7th July 2017 (Plenary Lecture, <https://events.unibo.it/mechcomp3/speakers>).
- Selected Lecture, Dynamics and control of tensegrity structures and multifunctional materials (in collaboration with Robert Skelton), 2016 International Workshop on Multiscale Innovative Materials and Structures" (MIMS16), Cetara (SA), Italy, October 28-30, 2016 (Selected Lecture, www.multiscale.unisa.it).
- Innovative Materials, Structures and Algorithms for Energy Efficient Buildings, Department of Civil Engineering, Université de Pau et des Pays de l'Adour, France, May 19, 2015
- Wave Dynamics of Innovative Nonlinear Lattices, Colloquium Series “Nonlinear Analysis”, University of Augsburg, Germany, Dec. 04, 2014
- Multiscale Variational Modeling and Characterization of Materials and Structures, Department of Civil Engineering, KU Leuven, Belgium, Dec. 02 2014
- Multiscale Approaches to Computational Mechanics, Department of Mechanical Engineering, University of Melbourne, Australia, April 04. 2014
- Dynamics of Energy Transport in Phononic Crystals, 2014 Colloquium Series “Granular and Multiphase Flows”, Granular Science Laboratory, New Jersey Institute of Technology, Feb. 19 2014.
- Special session “Tensegrity, Tensile, Textile and Unconventional Structures", XXIV Giornate Italiane della Costruzione in Acciaio, Torino, Oct. 2013 (Keynote lecture).
- On the optimal design of acoustic metamaterials, University of Sheffield, Department of Material Science and Engineering (room HB-LT20), March 8, 2013.
- On the Nonlinear Dynamics of Granular Lattices, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, June 2013.
- Development and Convergence Analysis of Computational Models in Variational Fracture, Vibration and Wave Propagation Laboratory, Georgia Institute of Technology, Oct. 2012

- On the Highly Nonlinear Dynamics of 1D Granular Materials and Tensegrity Systems, 2012 Colloquium Series “Granular and Multiphase Flows”, Granular Science Laboratory, New Jersey Institute of Technology, Oct. 2012.
- On the Convergence of Numerical Models in Variational Fracture Mechanics. IUTAM 2012 International Symposium on "Fracture Phenomena in Nature and Technology", Brescia, Italy, July 2012.
- Multiscale modelling of membrane networks, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Sept. 2011.
- Multiscale mass-spring models of carbon nanotube foams, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Sept. 2010.
- Some recent results in computational variational fracture, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Jan. 2010.
- An equilibrium fluctuation approach to the elastic moduli of red blood cells, Nanomaryland '09, University of Salerno, Italy, Dec. 2009.
- Modeling brittle fracture through eigendeformations and variational element erosion, Technical University of Munich, Germany, Nov. 2009.
- Optimal thermalization of composite granular systems, Laboratoire Lagrange Colloquium Lagrangianum 2008/2009, Maratea, Italy, Feb. 2009.
- On a Variational Approach to Finite Element Erosion in Brittle Solids, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Nov. 2008.
- An Eigendeformation Approach to Brittle Fracture, Seminar ‘Materials’, Max-Planck Institute for Mathematics in the Sciences, Leipzig, Germany, June 2008.
- Biomechanics of Brain Injuries, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Feb. 2007.
- Free Discontinuity Finite Element Models in Fracture Mechanics, Workshop on Free Discontinuity Problems: From Image Processing to Material Science, Baton Rouge-New Orleans, Louisiana, Jan. 2007.
- Free Discontinuity Approaches to Fracture and Folding, Department of Mathematics, Louisiana State University, Baton Rouge, Louisiana, Aug. 2006.
- Discontinuous Finite Elements for Crack Propagation, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, California, Sep. 2005.
- Limit analysis of reinforced masonry walls, RRRTEA 2004, International Conference of Restoration, Recycling and Rejuvenation Technology for Engineering and Architecture Application, Cesena, Italy, Jun. 2004.
- Variational formulation of the equilibrium problem of masonry-like bodies, AIAS Conference '03, University of Salerno, Italy, Sep. 2003.
- Evolutionary Variational Approaches to Linear Elastic Fracture Mechanics, Workshop on Computational and Variational Problems In Fracture Mechanics, SISSA, Trieste, Italy, Nov 2002.
- A Lumped Stress Method for Plane Masonry-Like Bodies, University of Ferrara, Italy, Oct. 2001.
- A New Variational Approach for Plane Elastic Problems with Singularities, Mesomechanics 2000, Xi'an, China, Jul. 2000.

Patents and Invention Disclosures

- “*Sunscreen Device with Variable Geometry*” (“*Dispositivo Frangisole a Geometria Variabile*”) F. Fraternali, A. Amendola, PCT International Patent Application No. PCT/IB2023/0572724, Filed July 17, 2023.
- “*Deformable Sunscreen Device*” (“*Dispositivo Frangisole di Tipo Deformabile*”) F. Fraternali, A. Amendola, Italian Patent No. 102022000004784, Filed March 11, 2022, Granted on March 01, 2024.
- “*Seismic isolator device*” (“*Dispositivo di isolamento sismico*”), F. Fraternali, Italian Patent No. 102015000015521, Granted Oct. 25, 2017, Filed May 18, 2015. European Patent No. EP3298217, Granted on May 1, 2019 (PCT publication number WO2016185376).
- “*Multiscale Structural Element*” (“*Elemento Strutturale a Geometria Multiscala*”) F. Fraternali, F. Fabbrocino, I. Farina, Italian Patent Application No. 102015000044896, Filed August 17, 2015.
- “*Method and Apparatus for Wave Generation and Detection Using Tensegrity Structures*”, C. Daraio, F. Fraternali, US Pat. No. 8,616,328, Granted on December 31, 2013. (DOI: 10.13140/2.1.2224.4166)
- “*Design of a deployable tensegrity lamp*”, F. Fraternali, R.E. Skelton, Registered European Community Design. Registration No: 002058255-0001, Filed June 14, 2012. (DOI: 10.13140/2.1.4485.4084)
- “*Reinforcing element for composite materials: design and technology*” (“*Elemento di rinforzo per materiali compositi e relativo metodo di produzione*”), F. Fraternali, Italian Patent Application No. RM2012A000333, Filed July 13, 2012.

Technology Transfer

- Scientific Director of the innovative start-up "NEWMATT: NEW MATerials and Techniques for sustainable engineering", <https://www.newmatt.it/> (formerly approved academic spin-off of the University of Salerno, incubation period: February 2018 – February 2023).

Professional Memberships

- AIMETA, Italian Association of Theoretical and Applied Mechanics (Associazione Italiana di Meccanica Teorica ed Applicata), Member of the Executive Board and Manager of international affairs, <https://www.aimeta.it/index.php/en/about-us/organization>
- European Mechanics Society (EUROMECH).
- Italian Association of Theoretical and Applied Mechanics (AIMETA).
- European Research Center "Laboratoire Lagrange".
- UK Acoustic Network (UKAN)
- U.S. Green Building Council (USGBC)
- Board Member - Association of Engineers of the Province of Avellino, Italy.

Research Experience

Materials and Structural Testing Laboratory, University of Salerno, Italy

1990 to present

Seismic design of structures. Collapse spectra. Development and assessment of mechanical theories of laminated composite structures. Effects of moderately large rotations and bimodular material behavior. Local-

global stability analysis and post buckling response. Mechanical models of FRP-reinforced structures. Modeling of delamination effects. Service life and failure behavior. Experimental validation. Interlaminar stress measurement. Design and experimentation of junctions for FRP reinforcements. Delamination tests on composite beams. Testing of real scale models of FRP-reinforced structures. Failure test of reinforced concrete beams strengthened with FRP plates and wrappings. Construction, instrumentation, testing and modeling of a FRP-reinforced pavilion vault in masonry bricks. Stress measurement through instrumented bricks. From discrete to continuum variational methods in computational mechanics. Unilateral materials and structures (no-tension/no-compression materials and structures). Structural optimization via variational methods and evolutionary strategies. Free discontinuity models in fracture mechanics. Buckling tests of thin-walled cylinders and tubes. Crack tracking in elastic and no-tension structures.

Division of Engineering and Applied Science & GALCIT - Graduate Aeronautical Labs, CalTech, Pasadena, CA, USA

2005 to present

Collaboration with Michael Ortiz's research group, the Solid Dynamics group of the Center for the Simulation of the Dynamic Response of Materials (ASC), and the Caltech's Center for Advanced Computing Research (CACR). Formulation of constitutive models for the dynamics of polymers and soft biological tissue. Variational multiscale models for fracture and fragmentation of brittle and cohesive materials. Dynamics, damage and fragmentation of composite structures under blast and ballistic loadings. Simulation of traumatic head injuries. Prediction of mechanical and physiological damage to brain tissue. Collaboration with Chiara Daraio's research group on the mechanical and numerical modeling of strongly nonlinear phononic crystals. Multiscale analysis of wave propagation in granular materials. Study of solitary wave propagation, anomalous wave reflections, shock disintegration, tunability of wave properties. Particle methods for the numerical analysis of granular systems. Design of optimal composite granular protectors and granular band-gap materials by computation. Use of solitary waves for non-destructive evaluation. Multiscale mechanical modeling of nanostructures composed of carbon nanotube foams and polymeric films. Study of strain localization, dynamic instability on the micro scale and rate-independent hysteresis on the macro scale. Analysis of the Gamma-convergence of proposed models and their validation against experimental results on compression tests in statics and dynamics.

Vibrations and Wave Propagation Laboratory

University of Colorado, Boulder (USA)

2022 to present

Collaboration with the research group directed by Massimo Ruzzene. Propagation of mechanical waves in metamaterials and metastructures. Collaboration framed within the Italy-USA Joint Research Project, Italian Ministry of Foreign Affairs, Project title: Next-generation green structures for natural disaster-proof building, grant number US23GR15, Period: 01/01/2023-31/12/2025.

Samueli School of Engineering,

University of California, Irvine (USA)

Jan. 2023 to present

Collaboration with the research group directed by Julian Rimoli. Design and mechanical modelling of innovative tensegrity structures. Collaboration framed within the Italy-USA Joint Research Project, Italian Ministry of Foreign Affairs, Project title: Next-generation green structures for natural disaster-proof building, grant number US23GR15, Period: 01/01/2023-31/12/2025.

Department of Structural Engineering & Department of Mechanical and Aerospace Engineering, University of California, San Diego, USA

2012 to present

Collaboration with Robert Skelton and Vitali Nesterenko research groups. Building and testing of real-scale models of tensegrity structures. Optimal design of minimum mass tensegrity structures with parametric architecture. Innovative structures for energy efficient buildings. Computational design and experimentation of soft tensegrity metamaterials.

Collaboration with the Caltrans Seismic Response Modification Device (SRMD) Test Facility on the experimental testing of prototypes on novel seismic isolation devices based on lattice metamaterials.

Department of Mechanical and Process Engineering, ETH Zurich, CH**2013 to present**

Collaboration with Chiara Daraio's research group on the design and engineering of acoustic metamaterials based on granular materials and tensegrity lattices. Modeling and testing of carbon nanotube structures and hierarchical materials. Tensegrity actuators and sensors.

Department of Materials Science and Engineering - Mercury Centre for Advanced Manufacturing Technology & Production, University of Sheffield, UK**2013 to present**

Collaborations with Conny Rodenburg and Russel Goodall. Plasma irradiation and particle mask treatments to enhance the surface roughness of polymeric materials. 3D printing of periodic lattices based on tensegrity structures and shape memory metals.

Biomechanics Laboratory, University of Salerno, Italy**2003 to present**

Characterization of the mechanical behavior of brain tissue. Measurement of regional and directional mechanical properties of brain pig specimens through tensile tests. Development of constitutive models of brain tissue. Construction of a finite element model of the human head from MRI and CT scans. Validation against laboratory data. Simulations of traumatic brain injuries. Head injury criteria. Experimentation of honeycomb materials and foams for use as dissipative fillers in head protection devices. Falling weight impact tests.

King's College, London, UK, Biological Physics & Soft Matter Group**2008 through 2011**

Multiscale models of biomembranes and nanostructures, with applications to the red blood cell membrane and carbon nanotube assemblies. Variational multiscale approach. Continuum limits of the interaction potentials acting at the microscopic scale. Modeling of membrane networks as point particles interacting via harmonic and dihedral potentials. Modeling of carbon nanotube structures as chains of nanoparticles interacting via bistable spring potentials. In situ characterization of the mechanical properties of biomembranes and carbon nanotube structures.

Virginia Tech, Dept. Engineering Science and Mechanics, Blacksburg, VA, USA**Aug-Dec 1991**

Development of mechanical models of laminated composite shells.

Current/Recent International Collaborations

College of Engineering and Applied Sciences, University of Colorado, Boulder, USA
Samueli School of Engineering, University of California, Irvine, USA

Division of Engineering and Applied Science and Graduate Aeronautical Laboratories, California Institute of Technology, USA

Department of Structural Engineering and Department of Mechanical and Aerospace Engineering, University of California, San Diego, USA

Department of Materials Science and Engineering, University of Sheffield, UK

Faculty of Natural, Mathematical & Engineering Sciences, King's College, London, UK

Schools of Aerospace and Mechanical Engineering, Georgia Institute of Technology, USA

Department of Mechanical Engineering, New Jersey Institute of Technology, USA

Fernando Fraternali
List of Publications

(PDFs of selected publications are available at www.fernandofraternaliresearch.com)

Scopus Author ID: 7003627408

Orcid ID: 0000-0002-7549-6405

Refereed Journal Articles

- J1. [AF90] Ascione, L., **Fraternali, F.** On the Mechanical Behavior of Curved Composite Beams. Reprint ATTI DELLA ACCADEMIA NAZIONALE DEI LINCEI. RENDICONTI DELLA CLASSE DI SCIENZE FISICHE, MATEMATICHE E NATURALI, I (S. IX), 223-233, 1992. ISSN: 0392-7881.
- J2. [AF92] Ascione, L., **Fraternali, F.** A Penalty Model for the Analysis of Composite Curved Beams. COMPUTERS & STRUCTURES, 45, 985-999, 1992. ISSN: 0045-7949.
- J3. [FR93] **Fraternali, F.**, Reddy, J.N.. A Penalty Model for the Analysis of Laminated Composite Shells. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, 30, 3337-3355, 1993. ISSN: 0020-7683.
- J4. [AF94a] Ascione, L., **Fraternali, F.** A Moderate Rotation Theory of Laminated Composite Curved Beams. INTERNATIONAL JOURNAL FOR ENGINEERING ANALYSIS AND DESIGN, 1, 161-176, 1994. ISSN: 0971-541X (currently International Journal of Computational Methods in Engineering Science and Mechanics).
- J5. [AF94a] Ascione, L., **Fraternali, F.** A Finite Element Analysis of the Stability of Bimodular Composite Curved Beams. INTERNATIONAL JOURNAL FOR ENGINEERING ANALYSIS AND DESIGN, 1, 315-334, 1994. ISSN: 0971-541X (currently International Journal of Computational Methods in Engineering Science and Mechanics).
- J6. [Fra96] **Fraternali, F.** Energy Release Rates for Delamination of Composite Beams. THEORETICAL AND APPLIED FRACTURE MECHANICS, 25, 225-232, 1996. ISSN: 0167-8442.
- J7. [FB97] **Fraternali, F.**, Bilotti, G. Non-Linear Elastic Stress Analysis in Curved Composite Beams. COMPUTERS & STRUCTURES, 62, 837-869, 1997. ISSN: 0045-7949.
- J8. [FF00] **Fraternali, F.**, Feo, L. On a Moderate Rotation Theory of Thin-Walled Composite Beams. COMPOSITES. PART B, ENGINEERING, 31, 141-158, 2000. ISSN: 1359-8368.
- J9. [Fra01] **Fraternali, F.** Complementary Energy Variational Approach for Plane Elastic Problems with Singularities. THEORETICAL AND APPLIED FRACTURE MECHANICS, 35, 129-135, 2001. ISSN: 0167-8442.
- J10. [FAF02] **Fraternali, F.**, Angelillo, M., Fortunato, A.. A Lumped Stress Method for Plane Elastic Problems and the Discrete-Continuum Approximation. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, 39, 6211-6240, 2002. ISSN: 0020-7683.
- J11. [AFF05] Ascione, L., Feo, L., **Fraternali, F.** Load Carrying Capacity of 2D FRP/Strengthened Masonry Structures. COMPOSITES. PART B, ENGINEERING, 36, 619-626, 2005. ISSN: 1359-8368.

- J12. [VFA06] Velardi, F., **Fraternali, F.**, Angelillo, M. Anisotropic Constitutive Equations and Experimental Tensile Behavior of Brain Tissue. BIOMECHANICS AND MODELING IN MECHANOBIOLOGY. 5(1), 53-61, 2006. ISSN: 1617-7959. DOI: [10.1007/s10237-005-0007-9](https://doi.org/10.1007/s10237-005-0007-9)
- J13. [Fra07a] **Fraternali, F.** Error Estimates for a Lumped Stress Method for Plane Elastic Problems, MECHANICS OF ADVANCED MATERIALS AND STRUCTURES, 14 (4), 309-320, 2007. ISSN: 1537-6494. DOI: [10.1080/15376490600845587](https://doi.org/10.1080/15376490600845587).
- J14. [Fra07b] **Fraternali, F.** Free Discontinuity Finite Element Models in Two-Dimensions for In-Plane Crack Problems. THEORETICAL AND APPLIED FRACTURE MECHANICS, 47, 274-282, 2007. ISSN: 0167-8442. DOI: [10.1016/j.tafmec.2007.01.006](https://doi.org/10.1016/j.tafmec.2007.01.006).
- J15. [EMFO08b] Elsayed, T., Mota, A., **Fraternali, F.**, Ortiz, M. A Variational Constitutive Model for Soft Biological Tissues, JOURNAL OF BIOMECHANICS. 41(7), 1458-1466, 2008. ISSN: 0021-9290. DOI: [10.1016/j.jbiomech.2008.02.023](https://doi.org/10.1016/j.jbiomech.2008.02.023).
- J16. [EMFO08a] Elsayed, T., Mota, A., **Fraternali, F.**, Ortiz, M.. Biomechanics of Traumatic Brain Injury. COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING, 197 (51), 4692-4701, 2008. ISSN: 0045-782. DOI: [10.1016/j.cma.2008.06.006](https://doi.org/10.1016/j.cma.2008.06.006).
- J17. [EMM+09] El Sayed, T., Mock, W., Mota, A., **Fraternali, F.**, Ortiz M. Computational Assessment of Ballistic Impact on a High Strength Structural Steel/Polyurea Composite Plate. COMPUTATIONAL MECHANICS, 43(4), 525-534, 2009. ISSN: 0178-7675 (Print) 1432-0924 (Online). DOI: [10.1007/s00466-008-0327-6](https://doi.org/10.1007/s00466-008-0327-6).
- J18. [SFO09] Schmidt, B, **Fraternali, F.**, Ortiz, M. Eigenfracture: An Eigendeformation Approach to Variational Fracture. MULTISCALE MODELING & SIMULATION, 7 (3), 1237-1266, 2009. ISSN: 1540-3459. DOI: [10.1137/080712568](https://doi.org/10.1137/080712568).
- J19. [DFP09] Daraio, C, **Fraternali, F.**, Porter, M.A. Stress Wave Mitigation in Granular Chains. BULLETIN OF THE AMERICAN PHYSICAL SOCIETY, 54 (1), Q14.00004, 2009. ISSN: 0003-0503
- J20. [FPD10] **Fraternali, F.**, Porter, M.A., Daraio, C, Optimal Design of Composite Granular Protectors. MECHANICS OF ADVANCED MATERIALS AND STRUCTURES, 17 (1); 1-19, 2010. ISSN: 1537-6494, DOI: [10.1080/15376490802710779](https://doi.org/10.1080/15376490802710779)
- J21. [Fra10] **Fraternali, F.** A Thrust Network Approach to the Equilibrium Problem of Unreinforced Masonry Vaults via Polyhedral Stress Functions. MECHANICS RESEARCH COMMUNICATIONS, 37, 198-204, 2010. ISSN: 0093-6413, DOI: [10.1016/j.mechrescom.2009.12.010](https://doi.org/10.1016/j.mechrescom.2009.12.010)
- J22. [DNNF10] Daraio, C.; Ngo, D, Nesterenko, V. F., **Fraternali, F.** Highly Nonlinear Pulse Splitting and Recombination in a Two Dimensional Granular Network. PHYSICAL REVIEW E, 82, 036603, 2010. DOI: [10.1103/PhysRevE.82.036603](https://doi.org/10.1103/PhysRevE.82.036603)
- J23. [FNO10] **Fraternali, F.**, Negri, M, Ortiz, M. On the Convergence of 3D Free Discontinuity Models in Variational Fracture. INTERNATIONAL JOURNAL OF FRACTURE, 166 (1-2), 3-11, 2010. ISSN: 0376-9429, DOI: [10.1007/s10704-010-9462-0](https://doi.org/10.1007/s10704-010-9462-0)
- J24. [FCR+10] **Fraternali, F.**, Ciancia, V., Rizzano, G., Feo, L., Hui, D. Experimental Analysis of the Thermo-Mechanical Properties of Recycled PET Fiber Reinforced Concrete. WORLD JOURNAL OF ENGINEERING, 7, p. 1-2, 2010. ISSN: 1708-5284

- J25. [FBAD10] **Fraternali, F.**, Blesgen, T., Amendola, A., Daraio, C. Multiscale Mass-Spring Models of Carbon Nanotube Foams. JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, 59, 89-102, 2011. ISSN: 0022-5096. DOI: [10.1016/j.jmps.2010.09.004](https://doi.org/10.1016/j.jmps.2010.09.004).
- J26. [FMEDC11] **Fraternali, F.**, Marino, A., Elsayed, T., Della Cioppa, A. On the structural shape optimization via variational methods and evolutionary algorithms. MECHANICS OF ADVANCED MATERIALS AND STRUCTURES, 18:225-243, 2011. ISSN: 1537-6494, DOI: [10.1080/15376494.2010.483319](https://doi.org/10.1080/15376494.2010.483319)
- J27. [RFAD11] Raney, J.R., **Fraternali, F.**, Amendola, A., Daraio, C. Modeling and In Situ Identification of Material Parameters for Layered Structures based on Carbon Nanotube Arrays. COMPOSITE STRUCTURES 93:3013–3018, 2011. ISSN: 0263-8223. DOI: [10.1016/j.compstruct.2011.04.034](https://doi.org/10.1016/j.compstruct.2011.04.034).
- J28. [FCC+11a] **Fraternali, F.**, Ciancia, V., Chechile, R., Rizzano, G., Feo, L., Incarnato, L. Experimental Study of the Thermo-Mechanical Properties of Recycled PET Fiber Reinforced Concrete. COMPOSITE STRUCTURES, 93, 2368–2374, 2011. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2011.03.025](https://doi.org/10.1016/j.compstruct.2011.03.025).
- J29. [FCC+11b] **Fraternali, F.**, Ciancia, V., Chechile, R., Rizzano, G., Feo, L., Incarnato, L. Studio Sperimentale sulle Proprietà Termo-Meccaniche di Calcestruzzi Rinforzati con Fibre di Plastica da Riciclo. IN CONCRETO, 110, 116-119, 2011. ANCE CODE: E188137 (In Italian). <http://ita.zinio.com/>
- J30. [Fra11] **Fraternali, F.** A Mixed Lumped Stress – Displacement Approach to the Elastic Problem of Masonry Walls. MECHANICS RESEARCH COMMUNICATIONS, 38, 176-180, 2011. ISSN: 0093-6413, DOI: [10.1016/j.mechrescom.2011.03.008](https://doi.org/10.1016/j.mechrescom.2011.03.008).
- J31. [FLM12] **Fraternali, F.**, Lorenz, C.D., Marcelli, G. On the estimation of the curvatures and bending rigidity of membrane networks via a local maximum-entropy approach. JOURNAL OF COMPUTATIONAL PHYSICS, 231, 528-540, 2012. ISSN: 0021-9991. DOI: [10.1016/j.jcp.2011.09.017](https://doi.org/10.1016/j.jcp.2011.09.017).
- J32. [SF12] Schmidt, B., **Fraternali, F.** Universal formulae for the limiting elastic energy of membrane networks. JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, 60, 172-180, 2012. ISSN: 0022-5096. DOI: [10.1016/j.jmps.2011.09.003](https://doi.org/10.1016/j.jmps.2011.09.003).
- J33. [FM12] **Fraternali, F.**, Marcelli, G. A multiscale approach to the elastic moduli of biomembrane networks. BIOMECHANICS AND MODELING IN MECHANOBIOLOGY, 11 (7), 1097-1108, 2012. ISSN: 1617-7959. DOI: [10.1007/s10237-012-0376-9](https://doi.org/10.1007/s10237-012-0376-9).
- J34. [NFD12] Ngo, D, **Fraternali, F.**, Daraio, C. Highly Nonlinear Solitary Wave Propagation in Y-Shaped Granular Crystals with Variable Branch Angles. PHYSICAL REVIEW E, 85, 036602-1-10, 2012. DOI: [10.1103/PhysRevE.85.036602](https://doi.org/10.1103/PhysRevE.85.036602)
- J35. [FSD12] **Fraternali, F.**, Senatore, L., Daraio, C. Solitary waves on tensegrity lattices. JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, 60, 1137–1144, 2012. ISSN: 0022-5096 DOI: [10.1016/j.jmps.2012.02.007](https://doi.org/10.1016/j.jmps.2012.02.007)
- J36. [BFR+12] Blesgen, T., **Fraternali, F.**, Raney, J.R., Amendola, A., Daraio, C. Continuum Limits of Bistable Spring Models of Carbon Nanotube Arrays accounting for Material Damage. MECHANICS RESEARCH COMMUNICATIONS, 45, 58-63, 2012. ISSN: 0093-6413, DOI: [10.1016/j.mechrescom.2012.07.006](https://doi.org/10.1016/j.mechrescom.2012.07.006).

- J37. [FRD12] **Fraternali, F.**, Raney, J.R., Daraio, C. Modeling microscale instabilities in compressed carbon nanotube bundles using multistable spring models. COMPOSITE STRUCTURES, 96, 745-750, 2013. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2012.09.013](https://doi.org/10.1016/j.compstruct.2012.09.013).
- J38. [FFP+12] **Fraternali, F.**, Farina, I., Polzone, C., Pagliuca, E., Feo, L. On the use of R-PET strips for the reinforcement of cement mortars. COMPOSITES. PART B, ENGINEERING, 46, 207-210, 2013. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2012.09.070](https://doi.org/10.1016/j.compositesb.2012.09.070).
- J39. [LFD13] Leonard, A., **Fraternali, F.**, Daraio, C. Directional wave propagation in a highly nonlinear square packing of spheres. EXPERIMENTAL MECHANICS, 53(3), 327-337, 2013. ISSN: 00144851. DOI: [10.1007/s11340-011-9544-6](https://doi.org/10.1007/s11340-011-9544-6).
- J40. [FSA13] **Fraternali, F.**, Spadea, S., Ascione, L. Buckling behavior of curved composite beams with different elastic response in tension and compression. COMPOSITE STRUCTURES, 100, 280-289, 2013. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2012.12.021](https://doi.org/10.1016/j.compstruct.2012.12.021).
- J41. [ACF+13] Ardovino, M., Castaldi, M.A., **Fraternali, F.**, Ardovino, I., Colaurci, N., Signoriello, G., Cobellis, L. Bidirectional barbed suture in total laparoscopic hysterectomy and lymph node dissection for endometrial cancer: technical evaluation and one-year follow-up of 61 patients. JOURNAL OF LAPAROENDOSCOPIC AND ADVANCED SURGICAL TECHNIQUES, 23 (4), 347-350, 2013. ISSN: 10926429. DOI: [10.1089/lap.2012.0079](https://doi.org/10.1089/lap.2012.0079).
- J42. [RFD13] Raney, J.R., **Fraternali, F.**, Daraio, C. Rate independent dissipation and loading direction effects in compressed carbon nanotube arrays. NANOTECHNOLOGY, 24, 255707 (10pp), 2013 ISSN: 0957-4484. DOI: [10.1088/0957-4484/24/25/255707](https://doi.org/10.1088/0957-4484/24/25/255707).
- J43. [BFRD13] Blesgen, T., **Fraternali, F.**, Raney, J.R., Daraio, C. Multiscale Mass-Spring Spring Models of Carbon Nanotube Arrays accounting for Mullins-Like Behavior And Permanent Deformation. MULTISCALE MODELING & SIMULATION, 11(2), 545–565, 2013. ISSN: 1540-3459. DOI: [10.1137/12087311X](https://doi.org/10.1137/12087311X).
- J44. [ACF+13_2] Ardovino, M., Castaldi, M.A., **Fraternali, F.**, Ardovino, I., Colaurci, N., Signoriello, G., Cobellis, L. Bidirectional barbed suture in laparoscopic myomectomy: Clinical features. JOURNAL OF LAPAROENDOSCOPIC AND ADVANCED SURGICAL TECHNIQUES, 23 (12), 1006-1010, 2013. ISSN: 10926429. DOI: [10.1089/lap.2013.0103](https://doi.org/10.1089/lap.2013.0103).
- J45. [CFA+14] Castaldi, M.A., Cobellis, L., **Fraternali, F.**, Ardovino, M., Ardovino, I., Colaurci, N. Biomechanical Features of Bidirectional-barbed Suture: A Randomized Laboratory Analysis. SURGICAL TECHNOLOGY INTERNATIONAL, 24:45-8, 2014. ISSN: 1090-3941. ISBN: 1-890131-20-2. PMID: 24700213. <http://www.ump.com/24-Surgical-Overview.htm>
- J46. [FFC14] **Fraternali, F.**, Farina, I., Carpentieri, G. A discrete-to-continuum approach to the curvatures of membrane networks and parametric surfaces. MECHANICS RESEARCH COMMUNICATIONS, 56, 18-15, 2014. ISSN: 0093-6413, DOI: [10.1016/j.mechrescom.2013.10.015](https://doi.org/10.1016/j.mechrescom.2013.10.015).
- J47. [SFCM14] Skelton, R.E., **Fraternali, F.**, Carpentieri, G., Micheletti, A. Minimum mass design of tensegrity bridges with parametric architecture and multiscale complexity. MECHANICS RESEARCH COMMUNICATIONS, 58, 124-132, 2014. ISSN: 0093-6413, DOI: [10.1016/j.mechrescom.2013.10.017](https://doi.org/10.1016/j.mechrescom.2013.10.017).

- J48. [FSB14] **Fraternali, F.**, Spadea, S., Berardi, V.P.. Effects of recycled PET fibers on the mechanical properties and seawater curing of Portland cement-based concretes. CONSTRUCTION AND BUILDING MATERIALS, 61, 293-302, 2014. ISSN: 0950-0618, DOI: [10.1016/j.conbuildmat.2014.03.019](https://doi.org/10.1016/j.conbuildmat.2014.03.019).
- J49. [FCP14] **Fraternali, F.**, Carpentieri, G., Palazzo, B. Multiaxial Prestress of Reinforced Concrete I-Beams. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 31(1), 17-30, 2014. ISSN: 0393-1420.
- J50. [FFA14] Fortunato, A., **Fraternali, F.**, Angelillo, A. Structural capacity of masonry walls under horizontal loads. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 31(1), 41-51, 2014. ISSN: 0393-1420.
- J51. [AFC+14] Amendola, A., Carpentieri, G., De Oliveira, M., Skelton, R.E., **Fraternali, F.** Experimental investigation of the softening-stiffening response of tensegrity prisms under compressive loading. COMPOSITE STRUCTURES, 117, 234-243, 2014. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2014.06.022](https://doi.org/10.1016/j.compstruct.2014.06.022).
- J52. [FGA15] **Fraternali, F.**, Carpentieri, G., Amendola, A. On the mechanical modeling of the extreme softening/stiffening response of axially loaded tensegrity prisms. JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, 74, 136-157, 2015. ISSN: 0022-5096 DOI: [10.1016/j.jmps.2014.10.010](https://doi.org/10.1016/j.jmps.2014.10.010).
- J53. [FCP14] Spadea, S., Farina, I., Berardi, V.P., Dentale, F., **Fraternali, F.** Energy dissipation capacity of concretes reinforced with R-PET fibers. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 2, 61-70, 2014. ISSN: 0393-1420.
- J54. [CTA+15] Carpentieri, G., Tornabene, F., Ascione, L., **Fraternali, F.** An accurate one-dimensional theory for the dynamics of laminated composite curved beams. JOURNAL OF SOUND AND VIBRATION, 336, 96-105, 2015. ISSN: 0022-460X, DOI: [10.1016/j.jsv.2014.09.041](https://doi.org/10.1016/j.jsv.2014.09.041).
- J55. [SFC+15] Spadea, S., Farina, I., Carrafiello, A., **Fraternali, F.** Recycled nylon fibers as cement mortar reinforcement. CONSTRUCTION AND BUILDING MATERIALS, 80, 200-209, 2015. ISSN: 0950-0618, DOI: [10.1016/j.conbuildmat.2015.01.075](https://doi.org/10.1016/j.conbuildmat.2015.01.075)
- J56. [FC14] **Fraternali, F.**, Carpentieri, G. On the correspondence between 2D force networks and polyhedral stress functions. INTERNATIONAL JOURNAL OF SPACE STRUCTURES, 29(3), 145-159, 2014. ISSN 0266-3511.
- J57. [FCA+14] **Fraternali, F.**, Carpentieri, G., Amendola, A., Skelton, R.E., Nesterenko, V. F. Multiscale tunability of solitary wave dynamics in tensegrity metamaterials. APPLIED PHYSICS LETTERS, 105(20), 201903, 2014. ISSN: 0003-6951, DOI: [10.1063/1.4902071](https://doi.org/10.1063/1.4902071).
- J58. [TFD14] Thevamaran, R., **Fraternali, F.**, Daraio, C., Multi-scale mass-spring model for high-rate compression of vertically aligned carbon nanotube foams. JOURNAL OF APPLIED MECHANICS, 81(12), 121006, 2014. ISSN:0021-8936, DOI: [10.1115/1.4028785](https://doi.org/10.1115/1.4028785).
- J59. [AHG+15] Amendola, A., Nava, E.H., Goodall, R., Todd, I., Skelton, R.E., **Fraternali, F.** On the additive manufacturing, post-tensioning and testing of bi-material tensegrity structures. COMPOSITE STRUCTURES, 131, 66-71, 2015. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2015.04.038](https://doi.org/10.1016/j.compstruct.2015.04.038).

- J60. FCM+15] **Fraternali, F.**, Carpentieri, G., Modano, M., Fabbrocino, F., Skelton, R.E. A tensegrity approach to the optimal reinforcement of masonry domes and vaults through fiber-reinforced composite materials. COMPOSITE STRUCTURES, 134, 247-254, 2015. ISSN: 0263-8223, [DOI: 10.1016/j.compstruct.2015.08.087](https://doi.org/10.1016/j.compstruct.2015.08.087).
- J61. [FFB+15] Fabbrocino, F., Farina, I., Berardi, V.P., Ferreira, A.J.M., **Fraternali, F.** On the thrust surface of unreinforced and FRP-/FRCM-reinforced masonry domes. COMPOSITES. PART B, ENGINEERING, 83, 297-305, 2015. ISSN: 1359-8368, [DOI: 10.1016/j.compositesb.2015.08.061](https://doi.org/10.1016/j.compositesb.2015.08.061)
- J62. [FDS15] **Fraternali, F.**, De Chiara, E., Skelton, R.E. On the use of morphing and wind stable tensegrity structures for shading facades of smart buildings. SMART MATERIALS AND STRUCTURES, 24, 105032 (10pp), 2015. ISSN: 0964-1726, [DOI:10.1088/0964-1726/24/10/105032](https://doi.org/10.1088/0964-1726/24/10/105032).
- J63. [CSF15a] Carpentieri, G., Skelton, R.E., **Fraternali, F.** Minimum mass and optimal complexity of planar tensegrity bridges. INTERNATIONAL JOURNAL OF SPACE STRUCTURES, 30(3-4), 221-244, 2015. ISSN: 0266-3511, [DOI: http://dx.doi.org/10.1260/0266-3511.30.3-4.221](http://dx.doi.org/10.1260/0266-3511.30.3-4.221).
- J64. [FFC+16a] Farina, I., Fabbrocino, F., Carpentieri, G., Modano, M., Amendola, A., Goodall, R., Feo, L., **Fraternali, F.**, On the reinforcement of cement mortars through 3D printed polymeric and metallic fibers. COMPOSITES. PART B, ENGINEERING, 90, 76-85, 2016. ISSN: 1359-8368, [DOI: 10.1016/j.compositesb.2015.12.006](https://doi.org/10.1016/j.compositesb.2015.12.006)
- J65. [FCS+16]. **Fraternali, F.**, Carpentieri, G., Skelton, R.E, Micheletti, A. Progettazione parametrica di ponti tensegrity (Parametric design of tensegrity bridges, in Italian). STRUCTURAL, 201, paper 02 (11pp), 2016. ISSN 2282-3794. [DOI: 10.12917/Stru201.02](https://doi.org/10.12917/Stru201.02)
- J66. [ASG+16] Amendola, A., Smith, C.J., Goodall, R., Auricchio, F., Feo, L., Benzoni, G., **Fraternali, F.** Experimental response of additively manufactured metallic pentamode materials confined between stiffening plates. COMPOSITE STRUCTURES, 142, 254–262, 2016. ISSN: 0263-8223, [DOI: 10.1016/j.compstruct.2016.01.091](https://doi.org/10.1016/j.compstruct.2016.01.091)
- J67. [SSF16] Singh, R., Singh, S., **Fraternali F.** Development of in-house composite wire based feed stock filaments of fused deposition modelling for wear-resistant materials and structures. COMPOSITES. PART B, ENGINEERING, 98, 244-249, 2016. ISSN: 1359-8368. [DOI:10.1016/j.compositesb.2016.05.038](https://doi.org/10.1016/j.compositesb.2016.05.038)
- J68. [FFC+16b] Farina, I., Fabbrocino, F., Colangelo, F., Feo, L., **Fraternali, F.**, Surface roughness effects on the reinforcement of cement mortars through 3D printed metallic fibers. COMPOSITES. PART B, ENGINEERING, 99, 305-311, 2016. ISSN: 1359-8368, [DOI:10.1016/j.compositesb.2016.05.055](https://doi.org/10.1016/j.compositesb.2016.05.055)
- J69. [SKF+16] Singh, R., Kumar, R., Feo, L., **Fraternali F.** Friction welding of dissimilar plastic/polymer materials with metal powder reinforcement. COMPOSITES. PART B, ENGINEERING, 101, 77-86, 2016. ISSN: 1359-8368, [DOI: 10.1016/j.compositesb.2016.06.082](https://doi.org/10.1016/j.compositesb.2016.06.082)<http://dx.doi.org/10.1016/j.compositesb.2016.05.038>
- J70. [CSF16] Carpentieri, G., Skelton, R.E., **Fraternali, F.** A minimal mass deployable structure for solar energy harvesting on water canals. STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION, 55(2), 449-458, 2017, ISSN: 1615-147X, [DOI:10.1017/s00158-016-1503-5](https://doi.org/10.1017/s00158-016-1503-5).
- J71. [CMF+16] Carpentieri, G., Modano, M., Fabbrocino, F., Feo, L, **Fraternali, F.** On the minimal mass reinforcement of masonry structures with arbitrary shapes. MECCANICA, 52(7), 1561-1576, 2017. ISSN: 0025-6455, [DOI: 10.1007/s11012-016-0493-0](https://doi.org/10.1007/s11012-016-0493-0).

- J72. [ACF+16] Amendola, A., Carpentieri, G., Feo, L., **Fraternali, F.** Bending dominated response of layered mechanical metamaterials alternating pentamode lattices and confinement plates. COMPOSITE STRUCTURES, 157, 71–77, 2016. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2016.07.031](https://doi.org/10.1016/j.compstruct.2016.07.031).
- J73. [FAB+16] Fabbrocino, F., Amendola, A., Benzoni, G., **Fraternali, F.** Seismic application of pentamode lattices. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 1-2, 62-71, 2016. ISSN: 0393-1420.
- J74. [SKF+16] Singh, R., Kumar, V., Feo, L., **Fraternali, F.**, Experimental investigations for mechanical and metallurgical properties of friction stir welded recycled dissimilar polymer materials with metal powder reinforcement. COMPOSITES. PART B, ENGINEERING, 103, 90-97, 2016. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.08.005](https://doi.org/10.1016/j.compositesb.2016.08.005)
- J75. [SSF+16] Singh, R., Singh, N., Fabbrocino, F., **Fraternali, F.**, Ahuja, I., Waste management by recycling of polymers with reinforcement of metal powder. COMPOSITES. PART B, ENGINEERING, 105, 23-29, 2016. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.08.029](https://doi.org/10.1016/j.compositesb.2016.08.029)
- J76. [SBF+16] Singh, R., Bedia, P., **Fraternali, F.**, Ahuja, I. Effect of single particle size, double particle size and triple particle size Al₂O₃ in Nylon-6 matrix on mechanical properties of feed stock filament for FDM. COMPOSITE. PART B, ENGINEERING, 106, 20-27, 2016. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.08.039](https://doi.org/10.1016/j.compositesb.2016.08.039).
- J77. [BSF+16] Boparai, K.S., Singh, R., Fabbrocino, F., **Fraternali, F.** Thermal characterization of recycled polymer for additive manufacturing applications. COMPOSITE. PART B, ENGINEERING, 106, 42-47, 2016. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.09.009](https://doi.org/10.1016/j.compositesb.2016.09.009)
- J78. [SHS+16] Sing, N., Hui, D., Singh, R., Ahuja, I. Feo, L., **Fraternali, F.** Recycling of plastic solid waste: A state of art review and future applications. COMPOSITE. PART B, ENGINEERING, 115, 409-422, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.09.013](https://doi.org/10.1016/j.compositesb.2016.09.013).
- J79. [FMF+16] Fabbrocino, F., Modano, M., Farina, I., Carpentieri, G., **Fraternali, F.**, Optimal Prestress Design of Composite Cable-Stayed Bridges. COMPOSITE STRUCTURES, 169(1), 167-172, 2017. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2016.09.008](https://doi.org/10.1016/j.compstruct.2016.09.008).
- J80. [CMS+16] Cimmino, M.C., Miranda, R., Sicignano, E., Ferreira, A. J. M.; Skelton, R. E., **Fraternali, F.** Composite solar façades and wind generators with tensegrity architecture. COMPOSITE. PART B, ENGINEERING, 115, 275-281, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.09.077](https://doi.org/10.1016/j.compositesb.2016.09.077)
- J81. [FA16] **Fraternali, F.**, Amendola, A. Mechanical modeling of innovative metamaterials alternating pentamode lattices and confinement plates. JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, 99, 259-271, 2017. ISSN: 0022-5096, DOI: [10.1016/j.jmps.2016.11.010](https://doi.org/10.1016/j.jmps.2016.11.010)
- J82. [ABF16] Amendola, A., Benzoni, G., **Fraternali, F.** Non-linear elastic response of layered structures, alternating pentamode lattices and confinement plates. COMPOSITE. PART B, ENGINEERING, 115, 117-123, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.10.027](https://doi.org/10.1016/j.compositesb.2016.10.027).
- J83. [OMF+16] Orefice, A., Mancusi, G., Feo, L., **Fraternali, F.**, Cohesive interface behaviour and local shear strains in axially loaded composite annular tubes. COMPOSITE STRUCTURES, 160, 1126–1127, 2017. ISSN: 0263-8223, DOI: <http://dx.doi.org/10.1016/j.compstruct.2016.10.117>

- J84. [SSS+16] Singh, R., Sing, S., Singh, I.P., Fabbrocino, F., **Fraternali, F.** Investigation for surface finish improvement of FDM parts by vapor smoothing process. COMPOSITE. PART B, ENGINEERING, 111, 228-234, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.11.062](https://doi.org/10.1016/j.compositesb.2016.11.062)
- J85. [MFF+16] Mancusi, G., Feo, L., **Fraternali, F.**, Fabbrocino, F., Size effect and dynamic properties of 2D lattice materials. COMPOSITE. PART B, ENGINEERING, 112, 235-242, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2016.12.026](https://doi.org/10.1016/j.compositesb.2016.12.026)
- J86. [FAF+18] Fortunato, A., Angelillo, M., Fabbrocino, F., **Fraternali, F.** Limit analysis of masonry structures with free discontinuities. MECCANICA, 53(7), 1793–1802, 2018. ISSN: 0025-6455, DOI: [10.1007/s11012-017-0663-8](https://doi.org/10.1007/s11012-017-0663-8).
- J87. [SSS+17] Singh Chohan, J., Singh, R., Singh Boparai, K., Penna, R., **Fraternali, F.** Dimensional accuracy analysis of coupled fused deposition modeling and vapour smoothing operations for biomedical applications process. COMPOSITE. PART B, ENGINEERING, 117, 138-149, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2017.02.045](https://doi.org/10.1016/j.compositesb.2017.02.045)
- J88. [SSA+17] Singh, R., Singh, N., Amendola, A., **Fraternali, F.** On the wear properties of Nylon6-SiC- Al₂O₃ based fused deposition modelling feed stock filament. COMPOSITE. PART B, ENGINEERING, 119, 125-131, 2017. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2017.03.042](https://doi.org/10.1016/j.compositesb.2017.03.042).
- J89. [CRC+17] Colangelo, F., Russo, P., Cimino, F., Cioffi, R., Farina, I., **Fraternali, F.**, Feo, L. Epoxy/glass fibres composites for civil applications: Comparison between thermal and microwave crosslinking routes. COMPOSITE. PART B, ENGINEERING, 126, 100-107, 2017. ISSN: 1359-8368, DOI: <https://doi.org/10.1016/j.compositesb.2017.06.003>.
- J90. [BFD+17] Babilio, E., Fabbrocino, F., Durand, M., **Fraternali, F.** On the mechanics of tetrakis-like lattices in the stretch-dominated regime. EXTREME MECHANICS LETTERS, 15, 57-62, 2017. ISSN:2352-4316, DOI: <https://doi.org/10.1016/j.eml.2017.06.003>.
- J91. [SKR+18] Singh, R., Kumar, R., Ranjan, N. , Penna, R., **Fraternali, F.** On the recyclability of polyamide for sustainable composite structures in civil engineering. COMPOSITE STRUCTURES, 184, 704–713, 2018. ISSN: 0263-8223, DOI: <https://doi.org/10.1016/j.compstruct.2017.10.036>
- J92. [SSP+18] Sharma, S., Singh, R., Penna, R., **Fraternali, F.** Investigations for mechanical properties of Hap, PVC and PP based 3D porous structures obtained through biocompatible FDM filaments. COMPOSITE. PART B, ENGINEERING, 132, 237-243, 2018. ISSN: 1359-8368, DOI: <https://doi.org/10.1016/j.compositesb.2017.08.021>.
- J93. [KSH+18] Kumar, R., Singh, R., Hui, D., Feo, L., **Fraternali, F.** Graphene as biomedical sensing element: State of art review and potential engineering applications. COMPOSITE. PART B, ENGINEERING, 134, 193-206, 2018. ISSN: 1359-8368, DOI: <https://doi.org/10.1016/j.compositesb.2017.09.049>.
- J94. [DPM+17] De Piano, M., Modano, M., Benzoni, G., Berardi, V.P., **Fraternali, F.** A numerical approach to the mechanical modeling of masonry vaults under seismic loading. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 4, 104-120, 2017. ISSN: 0393-1420.
- J95. [MMF+18] Modano, M., Mascolo, I., **Fraternali, F.**, Bieniek, Z. Numerical and analytical approaches to the self-equilibrium problem of class $\theta = 1$ tensegrity metamaterials. FRONTIERS IN MATERIALS, 5:5, 2018. ISSN: 2296-8016, DOI: <https://doi.org/10.3389/fmats.2018.00005>

- J96. [AF18] Amendola, A., **Fraternali, F.** Incremental auxetic response of composite lattices under isotropic prestress. COMPOSITE STRUCTURES, 191, 145–153, 2018. ISSN: 0263-8223, DOI: <https://doi.org/10.1016/j.compstruct.2018.02.020>
- J97. [MAZ+18] Mascolo, I., Amendola, A., Zuccaro, G., Feo, L., **Fraternali, F.** On the geometrically nonlinear elastic response of class $\theta = 1$ tensegrity prisms. FRONTIERS IN MATERIALS, 5:16, 2018. ISSN: 2296-8016, DOI: <https://doi.org/10.3389/fmats.2018.00016>
- J98. [AKD+18] Amendola, A., Krushynska A., Daraio C., Pugno N.M., **Fraternali F.** Tuning frequency band gaps of tensegrity mass-spring chains with local and global prestress, INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, 155, 47-56, 2018. ISSN: 0020-7683, DOI: <https://doi.org/10.1016/j.ijsolstr.2018.07.002>. (arXiv:1803.03472 [nlin.PS]).
- J99. [KAB+18] Krushynska, A., Amendola, A., Bosia, F., Daraio C., Pugno N.M., **Fraternali F.** Accordion-like metamaterials with tunable ultra-wide low-frequency band gaps. NEW JOURNAL OF PHYSICS, 20, 07305, 2018. ISSN: 1376-2630, DOI: <https://doi.org/10.1088/1367-2630/aad354>. (arXiv:1804.02188 [physics.app-ph]).
- J100. [ZZD+18] Zhang, Q., Zhang, D., Dobah, Y., Scarpa, F., **Fraternali, F.**, Skelton, R.E. Tensegrity cell mechanical metamaterial with metal rubber, APPLIED PHYSICS LETTERS 113, 031906, 2018. ISSN: 0003-6951, DOI: <https://doi.org/10.1063/1.5040850>.
- J101. [MZD+18] Ma, Y., Zhang, Q., Dobah, Y., Scarpa, F., **Fraternali, F.**, Skelton, R.E., Zhang, D., Hong, J. Meta-tensegrity: Design of a tensegrity prism with metal rubber. COMPOSITE STRUCTURES, 206, 644-657, 2018. ISSN: 0263-8223, DOI: [10.1016/j.compstruct.2018.08.067](https://doi.org/10.1016/j.compstruct.2018.08.067).
- J102. [PSF+18] Prakash, C., Singh, S., Farina, I., Feo, L., **Fraternali, F.** Physical-mechanical characterization of biodegradable Mg-3Si-HA composites, PSU RESEARCH REVIEW, 2018. ISSN: 2399-1747, DOI [10.1108/PRR-04-2018-0013](https://doi.org/10.1108/PRR-04-2018-0013).
- J103. [MMF+18] Mascolo, I., Modano, M., Fiorillo, A., Fulgione, M., Pasquino, V., **Fraternali, F.** Experimental and numerical study on the lateral-torsional buckling of steel C-beams with variable cross-section, Metals, 8(1), 941, 2018. ISSN: 2075-4701, DOI: [10.3390/met8110941](https://doi.org/10.3390/met8110941).
- J104. [FAB18] **Fraternali, F.**, Amendola, A., Benzoni, G. Innovative seismic isolation devices based on lattice materials: A review. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 35(4), 93-113, 2018. ISSN: 0393-1420.
- J105. [MMA+18] Mascolo, I., Modano, M., Amendola, A., **Fraternali, F.** A finite element analysis of the stability of composite beams with arbitrary curvature. FRONTIERS IN BUILT ENVIRONMENT, 4:57, 2018. ISSN: 2297-3362, DOI: [10.3389/fbuil.2018.00057](https://doi.org/10.3389/fbuil.2018.00057)
- J106. [SSC+19] Singh, R., Singh, H., Colangelo, F., Farina, I., **Fraternali, F.** On the additive manufacturing of an energy storage device from recycled materials. COMPOSITES PART B, ENGINEERING, 156, 259-265, 2019. ISSN: 1359-8368, DOI: [10.1016/j.compositesb.2018.08.080](https://doi.org/10.1016/j.compositesb.2018.08.080).
- J107. [SSA+19] Sing, N., Singh, R., Ahuja, I.P.S., Farina, F., **Fraternali, F.** Metal matrix composite from recycled materials by using additive manufacturing assisted investment casting, COMPOSITE STRUCTURES, 207, 129-135, 2019. ISSN: 0263-8223. DOI: [10.1016/j.compstruct.2018.09.072](https://doi.org/10.1016/j.compstruct.2018.09.072)
- J108. [SKF+19] Singh, R., Kumar, R., Farina, I., Colangelo, F., Feo, L., **Fraternali, F.** Multi-material additive manufacturing of sustainable innovative materials and structures, POLYMERS, 11, 62, 1-14, 2019. ISSN: 2073-4360. DOI: [10.3390/polym11010062](https://doi.org/10.3390/polym11010062)

- J109. [BMF19] Babilio, E., Miranda, R., **Fraternali, F.** On the kinematics and actuation of dynamic sunscreens with tensegrity architecture. *FRONTIERS IN MATERIALS*, 6:7, 2019. ISSN: 2296-8016, DOI:[10.3389/fmats.2019.00007](https://doi.org/10.3389/fmats.2019.00007)
- J110. [RDP+19] Rocchetta, G., De Piano, M., Berardi, V.P., **Fraternali, F.** On the shape optimization of the force networks of masonry structures. *INTERNATIONAL JOURNAL OF MASONRY RESEARCH AND INNOVATION*, 4 (1/2), 78-96, 2019. ISSN: 2056-9459. DOI:[doi:10.1504/IJMRI.2019.096825](https://doi.org/10.1504/IJMRI.2019.096825)
- J111. [FGH+19] Farina, I., Goodall, R., Hernández-Nava, E., di Filippo, A., Colangelo, F., **Fraternali, F.**, Design, microstructure and mechanical characterization of Ti6Al4V reinforcing elements for cement composites with fractal architecture, *MATERIALS & DESIGN*, 172, 107758, 2019. ISSN: 0264-1275. DOI: <https://doi.org/10.1016/j.matdes.2019.107758>
- J112. [BAF19] Blesgen, T., Amendola, A., **Fraternali, F.** On a modified Becker-Döring model for two-phase materials, *CONTINUUM MECHANICS AND THERMODYNAMICS*, 2019, Online First, ISSN: 0935-1175. DOI: <https://doi.org/10.1007/s00161-019-00774-2>.
- J113. [MRF19] Micheletti, A., Ruscica, G., **Fraternali, F.** On the compact wave dynamics of tensegrity beams in multiple dimensions. *NONLINEAR DYNAMICS*, 98, 2737–2753, 2019. ISSN: 0924-090X, DOI: [10.1007/s11071-019-04986-8](https://doi.org/10.1007/s11071-019-04986-8). (arXiv:1905.00234 [nlin.PS])
- J114. [SBF19] Santos, F., Benzoni, G., **Fraternali, F.** Seismic performance of superelastic tensegrity braces. *INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING*, 36(3), 20-37, 2019. ISSN: 0393-1420.
- J115. [FS19] **Fraternali, F.**, Santos, F. Mechanical modeling of superelastic tensegrity braces for earthquake-proof structures. *EXTREME MECHANICS LETTERS*, 33, 100578, 2019. ISSN:2352-4316, DOI: <https://doi.org/10.1016/j.eml.2019.100578>. (arXiv:1910.07080v1 [physics.app-ph])
- J116. [FSC+19] Farina, I., Singh, N., Colangelo, F., Luciano, R., Bonazzi, G., **Fraternali, F.** High-performance Nylon-6 sustainable filaments for additive manufacturing, *MATERIALS*, 12, 3955, 2019. ISSN: 1996-1944, DOI:[10.3390/ma12233955](https://doi.org/10.3390/ma12233955)
- J117. [VMG+20] Vangelatos, Z.; Micheletti, A.; P. Grigoropoulos, C.; **Fraternali, F.** Design and testing of bistable lattices with tensegrity architecture and nanoscale features fabricated by multiphoton lithography. *NANOMATERIALS*, 10, 652, 2020. ISSN: 2079-4991, DOI: [10.3390/nano10040652](https://doi.org/10.3390/nano10040652)
- J118. [MBS+20] Miranda, R., Babilio, E., Singh, N., Santos, F., **Fraternali, F.** Mechanics of smart origami sunscreens with mechanical energy harvesting ability, *MECHANICS RESEARCH COMMUNICATIONS*, 105, 103503, 2020. ISSN: 0093-6413. DOI: [10.1016/j.mechrescom.2020.103503](https://doi.org/10.1016/j.mechrescom.2020.103503).
- J119. [MMS+20] Modano, M., Majumder, A., Santos, F., Luciano, R. **Fraternali, F.** Fast and optimized calculation of the cable pretension forces in arch bridges with suspended deck. *FRONTIERS IN BUILT ENVIRONMENT*. 6:114, 2020. ISSN: 2297-3362, DOI [10.3389/fbuil.2020.00114](https://doi.org/10.3389/fbuil.2020.00114)
- J120. [FSA+20] **Fraternali, F.**, Stehling, N., Amendola, A., Tiban Anrango, B.A., Holland, C., Rodenburg, C. Tensegrity modelling and the high toughness of spider dragline silk. *NANOMATERIALS*, 10, 1510, 2020. ISSN: 2079-4991, DOI: [10.3390/nano10081510](https://doi.org/10.3390/nano10081510)
- J121. [MPF20] Martinelli, E., Pepe, M., **Fraternali, F.**, Meso-scale formulation of a cracked-hinge model for hybrid fiber-reinforced cement composites. *FIBERS*, 8(9), 56, 2020. ISSN: 2079-6439, DOI: [10.3390/fib8090056](https://doi.org/10.3390/fib8090056)

- J122. [ZFB+20] Zinco, A., **Fraternali, F.**, Benzoni, G., Martinelli, E. On the distribution in height of base shear forces in linear static analysis of base-isolated structures. BUILDINGS, 10(11), 197, 2020. ISSN 2075-5309, DOI: [10.3390/buildings10110197](https://doi.org/10.3390/buildings10110197)
- J123. [SRC+21] Santos, F.A., Rebelo, H, Coutinho, M., Sutherland,L.S., Cismasiu, C., Farina, I., **Fraternali, F.** Low velocity impact response of 3D printed structures formed by cellular metamaterials and stiffening plates: PLA vs. PETg. COMPOSITE STRUCTURES, 256, 1131282, 2021. ISSN: 0263-8223, DOI: <https://doi.org/10.1016/j.compstruct.2020.113128>
- J124. [RFF21] Russillo, A.F., Failla, G., **Fraternali, F.** Free and forced vibrations of damped locally-resonant sandwich beams. European Journal of Mechanics - A/Solids, 86, 104188, 2021. ISSN: 0997-7538, DOI: [10.1016/j.euromechsol.2020.104188](https://doi.org/10.1016/j.euromechsol.2020.104188). (arXiv:2104.04870 [physics.app-ph])
- J125. [MMA+21] M. Miniaci, M., Mazzotti, M., Amendola, A., **Fraternali, F.** Effect of prestress on phononic band gaps induced by inertial amplification. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, 216, 156-166, 2021. ISSN: 0020-7683, DOI: <https://doi.org/10.1016/j.ijsolstr.2020.12.011> (arXiv:2109.03933 [physics.app-ph])
- J126. [MSF+21] Majumder, A., Stochino, F., **Fraternali, F.**, Martinelli, E. Seismic and thermal retrofitting of masonry buildings with fiber reinforced composite systems: a state of the art review. INTERNATIONAL JOURNAL OF STRUCTURAL GLASS AND ADVANCED MATERIALS RESEARCH, 5(1), 41-67, 2021. ISSN: 2616-4507, DOI: <https://doi.org/10.3844/sgamrsp.2021.41.67>
- J127. [FSA+21] **Fraternali, F.**, Singh, N., Amendola, A., Benzoni, G., Milton, G.W. A biomimetic sliding–stretching approach to seismic isolation. NONLINEAR DYNAMICS, 106(4), 3147-3159, 2021. ISSN: 0924-090X, DOI: <https://doi.org/10.1007/s11071-021-06980-5>
- J128. [FSA+21b] **Fraternali, F.**, Singh, N., Amendola, A., Benzoni, G., Milton, G.W. The 3D print job that keeps quake damage at bay. NATURE 600(7887), 10. ISSN: 0028-0836. DOI: [10.1038/d41586-021-03506-2](https://doi.org/10.1038/d41586-021-03506-2)
- J129. [FSA+21c] **Fraternali, F.**, Singh, N., Amendola, A., Benzoni, G., & Milton, G. W. A scalable approach to the design of a 3d-printable sliding- stretching seismic isolator. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, 38(4), 2021. ISSN: 0393-1420.
- J130. [BCF+21] Babilio, E., Cascini, L., **Fraternali, F.**, Scoppettuolo, M.G. Investigating the evolution of landslides via dimensionless displacement trends. MATHEMATICS AND MECHANICS OF COMPLEX SYSTEMS, 9(3), 231-272, 2021. ISSN: 2326-7186. DOI: [10.2140/memocs.2021.9.231](https://doi.org/10.2140/memocs.2021.9.231)
- J131. [MSF+22] Majumder, A., Stochino, F., Farina, I., Valdes, M., **Fraternali, F.**, Martinelli, E. Physical and mechanical characteristics of raw jute fibers, threads and diatons. CONSTRUCTION AND BUILDING MATERIALS, 326, 126903, 2022. ISSN: 0950-0618, DOI: [10.1016/j.conbuildmat.2022.126903](https://doi.org/10.1016/j.conbuildmat.2022.126903)
- J132. [SF22] Santos, F, **Fraternali, F.** Novel magnetic levitation systems for the vibration control of lightweight structures and artworks. STRUCTURAL CONTROL AND HEALTH MONITORING, 29(8), e2973, 2022. ISSN:1545-2263. DOI: <https://doi.org/10.1002/stc.2973>

- J133. [SCA+22] Santos, F., Caroço, C., Amendola, A., Miniaci, M., **Fraternali, F.** 3D tensegrity braces with superelastic response for seismic control. INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING, 20(5), 53-64, 2022. ISSN 1543-1649. DOI: [10.1615/IntJMultCompEng.2022041968](https://doi.org/10.1615/IntJMultCompEng.2022041968).
- J134. [JVS+22] Jänicke, G. , Vintache, A., Smaniotta, B., Fau, A., Farina, I., **Fraternali, F.**, Hild, F. Debonding analysis via digital volume correlation during in-situ pull-out tests on fractal fibers. COMPOSITES PART C: Open Access, 9, 100302, 2022. ISSN 2666-6820. DOI: [10.1016/j.jcomc.2022.100302](https://doi.org/10.1016/j.jcomc.2022.100302).
- J135. [AFF+22] Amendola, A., Fortunato, F., **Fraternali, F.**, Mattei, O., Milton, G.W., Seppecher, P. Limit analysis of strut nets. MATHEMATICS AND MECHANICS OF SOLIDS, Online First, 2022 DOI: [10.1177/10812865221136814](https://doi.org/10.1177/10812865221136814). ISSN:10812865. (Preprint: [arXiv:2208.06429](https://arxiv.org/abs/2208.06429) [physics.class-ph]).
- J136. [dCM+24] de Castro Motta, J., Qaderi, S., Farina, I. Singh, N., Amendola, A., **Fraternali, F.** Experimental characterization and mechanical modeling of additively manufactured TPU components of innovative seismic isolators. ACTA MECHANICA, **235**(3), 1637-1648, 2024. ISSN: 0001-5970, DOI: [10.1007/s00707-022-03447-5](https://doi.org/10.1007/s00707-022-03447-5).
- J137. [GQA+23] Germano, G., Qaderi, S., Adinolfi, V., de Castro Motta, J., Benzoni, G., Amendola, A., Ruzzene, M., **Fraternali, F.** Design and modeling of an in-house-built shake table setup for testing prototypes of innovative seismic isolators. INGEGNERIA SISMICA/INTERNATIONAL JOURNAL OF EARTHQUAKE ENGINEERING, **40**(1), 58-73, 2023. ISSN: 0393-1420.
- J138. [FdCM23] **Fraternali, F.**, de Castro Motta, J. Mechanics of superelastic tensegrity braces for timber frames equipped with buckling-restrained devices. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, **281**, 112414, 2023. ISSN: 0020-7683, DOI: [10.1016/j.ijsolstr.2023.112414](https://doi.org/10.1016/j.ijsolstr.2023.112414).
- J139. [QAG+23] Qaderi, S., Adinolfi, V., Germano, G., Benzoni, G., Luciano, R., **Fraternali, F.** An experimental and mechanical study of a two-layer, bioinspired seismic isolator for multistory buildings. BUILDINGS **13**, 2272, 2023. ISSN: 2075-5309, DOI: [10.3390/buildings13092272](https://doi.org/10.3390/buildings13092272).
- J140. [FdCM+24] **Fraternali, F.**, de Castro Motta, J., Germano, G., Babilio, E., Amendola, A. Mechanical response of tensegrity-origami solar modules. APPLICATIONS IN ENGINEERING SCIENCE. **17**, 100174, 2024. ISSN 2666-4968, DOI: [10.1016/j.apples.2023.100174](https://doi.org/10.1016/j.apples.2023.100174).

Editorial Articles

- E1. **Fraternali, F.**, Rosato, A.D., Multi-scale modeling and characterization of innovative materials and structures, Mechanics Research Communications, Volume 58, 2014, ISSN 0093-6413, <https://doi.org/10.1016/j.mechrescom.2014.05.001>.
- E2. Ascione, L. , Berardi, V. , Feo, L. , **Fraternali, F.** , Tralli, A.M., AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Volume 1, 2017, 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, AIMETA 2017; Salerno; Italy; 4-7 September 2017; Code 133541.
- E3. Ascione, L. , Berardi, V. , Feo, L. , **Fraternali, F.** , Tralli, A.M., AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Volume 5, 2017,

23rd Conference of the Italian Association of Theoretical and Applied Mechanics, AIMETA 2017; Salerno; Italy; 4-7 September 2017; Code 133541

- E4. Feo, L., **Fraternali, F.**, Skelton, R.E., Special issue on composite lattices and multiscale innovative materials and structures, Composites Part B: Engineering, Volume 115, 2017, ISSN 1359-8368, <https://doi.org/10.1016/j.compositesb.2016.10.066>.
- E5. **Fraternali, F.**, Daraio, C., Rimoli, J. (2019) Editorial: Multiscale Lattices and Composite Materials: Optimal Design, Modeling and Characterization. Front. Mater. 6:199. <https://doi.org/10.3389/fmats.2019.00199>
- E6. **Fraternali, F.**, Paulino, G.H., Mechanics Research Communications special issue on advances in mechanical metamaterials and smart structures, Volume 107, 2020, 103531, ISSN 0093-6413, <https://doi.org/10.1016/j.mechrescom.2020.103531>.
- E7. Barretta, R., De Tommasi, D., **Fraternali, F.**, Multiscale innovative materials and structures (MIMS). NANOMATERIALS, 12(1), 2022, ISSN: 2079-4991, DOI: [10.3390/nano12010096](https://doi.org/10.3390/nano12010096).
- E8. **Fraternali, F.**, Rosato, A.D., Recent advances on multiscale engineered metamaterials and structures, Mechanics Research Communications, Volume 131, 2023, 104159. ISSN 0093-6413, DOI: [10.1016/j.mechrescom.2023.104159](https://doi.org/10.1016/j.mechrescom.2023.104159).

Book Chapters

- B1. Majumder, A., Farina, I., Stochino, F., **Fraternali, F.**, Martinelli, E.. Natural Fibers Reinforced Mortars: Composition and Mechanical Properties. In Key Engineering Materials Pag.149-153 Trans Tech Publications Ltd. ISSN:1013-9826. DOI: [10.4028/p-027t71](https://doi.org/10.4028/p-027t71)
- B2. Ruggiero, M., Farina, I., Salzano, C., Moccia, I., Colangelo, F., **Fraternali, F.**, Cioffi, R. Eco-Friendly Concretes with Recycled Plastic Aggregates. In Key Engineering Materials Pag.137-142 Trans Tech Publications Ltd. ISSN:1013-9826. DOI: [10.4028/p-5opa25](https://doi.org/10.4028/p-5opa25)

Articles in Scientific Monographs with Editor

- M1. Ascione, L., Feo, L., **Fraternali, F.** *On the Stability Behaviour of Laminated Composite Curved Beams: A Numerical Investigation*. In: Advancing with Composites '94, Vol. 2, I. Crivelli Visconti (Ed.), Woodhead Publishing Limited, Abington Hall, Abington, Cambridge, CB1 6AH, England, 81-92, 1994, ISBN: 1855731614
- M2. Ascione, L., Feo, L., **Fraternali, F.** *Stress Analysis of Reinforced Concrete Beams Wrapped with FRP Plates*, in: ECCM-8, 8th European Conference on Composite Materials, I. Crivelli Visconti (Ed), Woodhead Publishing Limited, Abington Hall, Abington, Cambridge, CB1 6AH, England, 197-204, 1998, ISBN: 1855733773.
- M3. Ascione, L., Feo, L., **Fraternali, F.** *On the Plating of Reinforced Concrete Beams with Composite Laminates*, in: Lecture Notes in Applied and Computational Mechanics, Vol. 14: "Novel Approaches in Civil Engineering", M. Fremond and F. Maceri (Eds), Springer-Verlag, Berlin-Heidelberg, 277-284, 2004. ISBN: 3-540-41836-9.

- M4. **Fraternali, F.**, Ascione, L., Feo, L. Limit Analysis of Composite Reinforced Masonry Walls, in: Restoration, Recycling and Rejuvenation Technology for Engineering and Architecture Application, G.C. Sih and G. Nobile (Eds), Aracne, Bologna, 351-357, 2004. ISBN 88-7999-765-3.
- M5. **Fraternali, F.** *An Eigendeformation Finite Element Model in Variational Fracture Mechanics*, in: Advances in Geomaterials and Structures, Vol. 1: "Advanced Computations of Structures and Engineering Works", F. Darve, I. Doghri, R. El Fatmi, H. Hassis and H. Zenzri (Eds), SDST, El M'nihia, Tunisia, 43-50, 2008. ISBN: 978-9973-0-0299-0.
- M6. **Fraternali, F.**, Carpentieri, G., Skelton, R.E., Micheletti, A. *Architetture Tensegrity Innovative per Ponti di Massa Minima*, in: The Italian Steel Days, Vol. 2, Chap. "Tensegrity, Tensile, Textile and Unconventional Structures", Collegio dei Tecnici dell'Acciaio (Ed.), La Stamperia Digitale srl, Napoli 890-897, 2013. ISBN: 978-88-905870-0-9.
- M7. Carpentieri, G., **Fraternali, F.**, Skelton, R.E. *A Tensegrity Paradigm for Minimal Mass Design of Roofs and Bridges*, in: Lecture Notes in Applied and Computational Mechanics, Vol. 81: "Innovative Numerical Approaches for Multi-Field and Multi-Scale Problems", K. Weinberg and A. Pandolfi (Eds), Springer International Publishing Switzerland, 91-114, 2016. ISBN 978-3-319-39021-5.
- M8. **Fraternali, F.**, Rocchetta, G., Carpentieri, G. *Sulla Ricerca di Forma delle Strutture*, Collana Scientifica di Ateneo, Università degli Studi di Salerno, 2021.
- M9. Singh, R., **Fraternali, F.**, Bonazzi, G., Hashmi, M.S.J., Kumar, R., Ranjan, N. Investigations for Development of Feed Stock Filament of Fused Deposition Modeling From Recycled Polyamide. In: Reference Module in Materials Science and Materials Engineering, Hashmi, S. (Ed.), Oxford: Elsevier; 2018. pp. 1-20. ISBN: 978-0-12-803581-8. Online First, DOI: 10.1016/B978-0-12-803581-8.10391-1.
- M10. Singh, R., **Fraternali, F.**, Farina, I., Hashmi, M.S.J. Experimental Investigations for Development of Hybrid Feed Stock Filament of Fused Deposition Modeling. In: Reference Module in Materials Science and Materials Engineering, Hashmi, S. (Ed.), Oxford: Elsevier; 2018. pp. 1-26. ISBN: 978-0-12-803581-8. DOI: 10.1016/B978-0-12-803581-8.10392-3.
- M11. **Fraternali, F.**, Benzoni, G., Rocchetta, G. *Tecniche Innovative di Isolamento Sismico in Italia – Raccolta di casi studio e linee guida progettuali per interventi con isolamento sismico e dissipazione di energia*, Rubbettino Editore per la Collana Scientifica dell'Università di Salerno - Ingegneria, Soveria Mannelli (CZ), 2020. ISBN 9788849861075.
- M12. **Fraternali, F.**, Amendola, A., Benzoni, G., Pentamode bearings: mechanical modeling and structural applications, In: Recenti sviluppi nell'ingegneria strutturale, Bruno, D., Greco, F., Olivito, R.S., (Ed.), Proceedings of the Meeting in honor of Antonio Grimaldi, Maratea, Italy, September 27-28, 2018. EdiBios, Cosenza (Italy).

Refereed Conference Proceedings

- C1. **Fraternali, F.**, Palazzo, B. L'Influenza dell'Effetto P- Δ sulla Risposta Sismica di Sistemi a Comportamento Elasto-Plastico: Proposta di una Diversa Formulazione del Coefficiente di Struttura, CTA Meeting "Giornate Italiane delle Costruzioni in Acciaio", Trieste, Italy, 1987.
- C2. **Fraternali, F.**, Palazzo, B. Comportamento Sismico Tridimensionale di Edifici Planimetricamente Irregolari, III AIDIS National Congress "L'Ingegneria Sismica in Italia", 437-450, Rome, Italy, 1987.

- C3. **Fraternali, F.**, Palazzo, B. L'Uso degli Spettri di Collasso nell'Analisi Sismica, III AIDIS National Congress "L'Ingegneria Sismica in Italia", 425-436, Rome, Italy, 1987.
- C4. **Fraternali, F.**, Palazzo, B. L'Influenza della Distribuzione Planimetrica della Resistenza di Piano sulla Risposta Sismica di Sistemi Strutturali Dissimmetrici, AICAP Meeting "I Problemi delle Grandi Costruzioni in Zona Sismica", 123-137, Stresa, Italy, 1987.
- C5. **Fraternali, F.**, Palazzo, B. Confinamento Laterale Attivo di Elementi Presso-Inflessi in C. A., 7th CTE National Congress "Evoluzione della Industrializzazione Edilizia", 123-133, Venice, Italy, 1988.
- C6. **Fraternali, F.**, Palazzo, B. Seismic Ductility Demand in Buildings Irregular in Plane, IX World Conference on Earthquake Engineering, Tokyo-Kyoto, Japan, 1988.
- C7. **Fraternali, F.**, Palazzo, B. Confinamento Laterale Attivo di Elementi Presso-Inflessi in C. A.: L'Influenza di Una Presollecitazione Laterale di Compressione sulla Risposta sino a Rottura di Elementi Presso-Inflessi, AICAP Meeting "Materiali e Tecniche Speciali nella Realizzazione di Opere in C.A. e in C.A.P.", 263-274, Naples, Italy, 1989.
- C8. Ascione, L., Bilotti, G., **Fraternali, F.** Sulla Dinamica delle Travi Lamine Composite ad Asse Curvo, X AIMETA National Congress, 213-218, Pisa, Italy, 1990.
- C9. Ascione, L., Bilotti, G., **Fraternali, F.** Sul Calcolo delle Sollecitazioni in Travi Curve Composite, XVIII AIAS National Congress, 129-138, Amalfi, Italy, 1990.
- C10. Ascione, L., Bilotti, G., **Fraternali, F.** Sul Calcolo delle Tensioni Interlaminari in Travi Curve Composite, XX AIAS National Congress, 441-451, Palermo, Italy, 1991.
- C11. Ascione, L., **Fraternali, F.** Un Modello Penalty per lo Studio delle Travi Curve Composite, AIMETA Meeting "Problemi di Meccanica dei Materiali e delle Strutture", 1-5, Amalfi, Italy, 1991.
- C12. Ascione, L., **Fraternali, F.** Un Modello Meccanico per lo Studio di Strutture Lamine Composite a Volta, XI AIMETA National Congress, 43-48, Trento, Italy, 1992.
- C13. Bilotti, G., **Fraternali, F.** Le Tensioni di Origine Igrotermica nelle Travi Curve Lamine, XXIII AIAS National Congress, 693-708, Rende, Italy, 1994.
- C14. Ascione, L., **Fraternali, F.** Influenza della Deformabilità da Ingobbamento sul Carico Critico di Travi Lamine Elastiche, XXIII AIAS National Congress, 717-729, Rende, Italy, 1994.
- C15. Ascione, L., **Fraternali, F.** On the Stability Behaviour of Laminated Composite Curved Beams: A Numerical Investigation, Advancing with Composites '94, Vol. 2, 81-92, Milan, Italy, 1994, Woodhead Publishing Limited, ISBN: 1855731614.
- C16. Bilotti, G., **Fraternali, F.** Analisi di Alcuni Aspetti Non-Lineari del Calcolo delle Tensioni Interlaminari nelle Travi Lamine Composite, XII AIMETA National Congress, 289-294, Naples, Italy, 1995.
- C17. Ascione, L., **Fraternali, F.** Problemi di Delaminazione in Travi Lamine Composite, XII AIMETA National Congress, 321-326, Naples, Italy, 1995.
- C18. Ascione, L., **Fraternali, F.** Anisotropia e Distanza di Estinzione nelle Travi Composite di Parete Sottile, XIII AIMETA National Congress, Vol. IV, 115-120, Siena, Italy, 1997.

- C19. Ascione, L., Feo, L., **Fraternali, F.** The Wrapping of Reinforced Concrete Beams with FRP Plates: A Mechanical Model, *Advancing with Composites '97*, 155-170, Milan, Italy, 1997.
- C20. Ascione, L., **Fraternali, F.** Edge Effects in Thin-Walled Composites Beams, *International Saint-Venant Symposium "Multiple scale analysis and coupled physical systems"*, Presses de l'école nationale des ponts et chaussées, Paris, 28–29 August 1997.
- C21. Ascione, L., Feo, L., **Fraternali, F.** Stress Analysis of Reinforced Concrete Beams Wrapped with FRP Plates, *ECCM-8, 8th European Conference on Composite Materials*, 3-6 June, 1998 Naples, Italy, 197-204, Woodhead Publishing Limited, ISBN: 1855733773
- C22. Ascione, L., Feo, L., **Fraternali, F.** Stress Analysis of Composite Thin-Walled Beams, *ICCE/5, 5th International Conference on Composites Engineering*, 43-44, July 5-11, Las Vegas, USA, 1998.
- C23. Ascione, L., Feo, L., **Fraternali, F.** On the Plating of Reinforced Concrete Beams with Composite Laminates, *Proceedings COLLOQUIUM LAGRANGIANUM 2000*, 277-284, Taormina, Palazzo dei Duchi di S. Stefano December 6-9, 2000, Springer-Verlag, Berlin-Heidelberg, ISBN: 3-540-41836-9 (Year of publication: 2004).
- C24. **Fraternali, F.**, Angelillo, M., Rocchetta, G. On the Stress Skeleton of Masonry Vaults and Domes, *PACAM VII, 7th Pan American Congress of Applied Mechanics*, 369-372, Temuco, Chile, 2002.
- C25. **Fraternali, F.**, Rocchetta, G. Shape Optimization of Masonry Vaults, *ASEM 2002 (2nd International Conference on Advances in Structural Engineering and Mechanics)*, Busan, Korea, 2002 (CD-ROM Proceedings: W6A).
- C26. **Fraternali, F.** Formulazione Variazionale del Problema di Equilibrio di Solidi Elastici Non Reagenti a Trazione, *AIAS '03, CD-ROM Proceedings*, Salerno, Italy, 2003.
- C27. **Fraternali, F.** Un Approccio Numerico alle Tensioni per i Solidi Murari Piani, *AIMETA '03, CD-ROM Proceedings*, Ferrara, Italy, 2003.
- C28. Angelillo, M., Babilio, E., Fortunato, A., **Fraternali, F.** Finite Element Analysis of 2D Fracture Problems through Energy Minimization, *AIMETA '03, CD-ROM Proceedings*, Ferrara, Italy, 2003.
- C29. Ascione, L., Feo, L., **Fraternali, F.** On the Strengthening of Masonry Structures with FRP Strips, *ICCE/11, Eleventh International Conference on Composites Engineering*, 33-34, Hilton Head Island, South Carolina, USA, 2004.
- C30. **Fraternali, F.**, Ascione, L., Feo, L., Limit analysis of composite reinforced masonry walls. *International Conference of Restoration, Recycling and Rejuvenation Technology for Engineering and Architecture Application*, 7-11 June, 2004, ISBN 88-7999-765-3.
- C31. **Fraternali, F.** Discontinuous Finite Element Models for 2D Fracture Problems, *ICSSD 2005, Third International Conference on Structural Stability and Dynamics*, CD-ROM Proceedings, Kissimmee, Florida, USA, 2005.
- C32. **Fraternali, F.**, Feo, L., Limit analysis of composite reinforced masonry structures, *ICCE-12, International Conference on Composites Engineering 2005*, Tenerife, Spain, 2005.
- C33. **Fraternali, F.**, Mota, A., Ortiz, M. Response of Brain Tissue to Impact/Acceleration Loading. *7th World Congress on Computational Mechanics (wccm2006)*, Los Angeles, California. Los Angeles, California. July 16 - 22, 2006. (CD-ROM).

- C34. **Fraternali, F.**, Negri, M., Pandolfi, A., Ortiz, M., Free Discontinuity Finite Element Models in Fracture Mechanics. 113th Annual Meeting of the American Mathematical Society (AMS), New Orleans, LA, USA, January 5-8, 2007.
- C35. **Fraternali, F.**, Pandolfi, A., Negri, M., Ortiz, M. Variational Arbitrary Lagrangian-Eulerian (VALE) Finite Element Models in Fracture Mechanics. In: Mini-Symposium 104 "Computational Techniques Related to Configurational Mechanics". 9th US National Congress on Computational Mechanics (USNCCM9). San Francisco, CA, USA. July 22-26, 2007. (CD-ROM).
- C36. **Fraternali, F.**, Negri, M., Pandolfi, A., Ortiz, M. Free Discontinuity Finite Element Models in Fracture Mechanics. 113th Annual Meeting of the American Mathematical Society (AMS). New Orleans, LA, USA. January 5-8, 2007. (CD-ROM). AMS Special Session on Free Discontinuity Problems: From Image Processing to Materials Science January 6, 2007.
- C37. Elsayed, T., **Fraternali, F.**, Mota, A., Ortiz, M. Blast and Ballistic Impact on Polymer reinforced Plates and Shells. In: Minisymposium 020 "Computational Methods in Impact Engineering". 9th U.S National Congress on Computational Mechanics (USNCCM9). San Francisco, CA, USA. July 22-26, 2007. (CD-ROM).
- C38. **Fraternali, F.**, Feo, L., Daraio, C. A Multiscale Approach to Highly Nonlinear Acoustics in Solid Systems. International Conference on Multiscale Modeling and Simulation (ICMMS'08). Bangalore, India. 2-4 January 2008. (CD-ROM).
- C39. **Fraternali, F.**, An Eigendeformation Finite Element Model in Variational Fracture Mechanics. Advances in Geomaterial and Structures 2008 (AGS 08), Hammamet Tunisia, 5-7 May 2008, Vol. 1, 43-50, 2008. ISBN: 978-9973-0-0299-0.
- C40. **Fraternali, F.**, Daraio, C., Shock Absorption Optimization of Composite Granular Protectors . 8th World Congress on Computational Mechanics, Venice, Italy, 30 June - 4 July, 2008, ISBN 9788496736559.
- C41. **Fraternali, F.**, Daraio, C. Optimal Thermalization of Composite Granular Systems, Colloquium Lagrangianum 2008, Maratea, Italy, February 19-22, 2009.
- C42. **Fraternali, F.**, Feo, L., Ascione, L., Fracture Behavior of FRP-Reinforced Masonry Structures. In: MURICO3, Mechanics of masonry structures strengthened with composite materials. Modeling, testing, design, control. Venezia, Italy, April 1-3, 2009, p. 292-299, ISBN/ISSN: ISBN 88-371-1771-X
- C43. **Fraternali F.**, Feo L., Ciancia V., Rizzano G., Di Maio L., Incarnato, L. Mechanical Properties of Recycled PET Fiber Reinforced Concrete. In: ICCE17. Hawaii, USA, 26 July - 1 August 2009
- C44. **Fraternali, F.** On an Eigendeformation Approach to Brittle Fracture. In: Modelli variazionali di frattura, XIX Congresso dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA), Ancona, Italy, 14-17 September 2009.
- C45. **Fraternali, F.**, Blesgen, T., Misra, A., Daraio, C., "*On the Mechanical Behavior of Multilayered Carbon Nanotube Foams*" Special Session on the Mechanics of Micro and Nanoscaled materials and systems, XIX Congresso dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA), Ancona, Italy, 14-17 September 2009.
- C46. Daraio, C. , **Fraternali, F.**, Porter, M.A. Stress Wave Mitigation in Granular Chains. American Physical Society (APS) Meeting, Pittsburgh, PA, USA. March 16-20, 2009.

- C47. **Fraternali F.**, Schmidt, B., Ortiz, M. Modeling Brittle Fracture through Eigendeformations. In: ISDMM09. Trento, Italy, July 6-9, 2009
- C48. Boechler, N., **Fraternali, F.**, Daraio, C. Dynamical Behavior of Optimized Acoustic Band-Gap Materials. 2009 Biennial Conference on Mechanical Vibration and Noise (VIB'09), San Diego, CA, USA, August 30 - September 2, 2009.
- C49. **Fraternali, F.**, Marcelli, G., From discrete to continuum approaches to the prediction of the elastic moduli of the red blood cell. International Meeting Bioengineering09, University of Oxford Institute of Biomedical Engineering & Department of Engineering Science, 24-25 September 2009.
- C50. **Fraternali, F.**, Amendola A, Del Regno R, Blesgen T, Daraio C. On the Mechanical Behavior of Carbon Nanotube Foams. In: AGS2010, "Applications of Nonlinear Continuum Mechanics in Civil and in Materials Engineering". Djerba, Tunisia, 10-12 May 2010
- C51. **Fraternali, F.**, Schmidt, B., Ortiz, M.. A Variational Element Erosion Technique for Brittle Fracture. Proceedings of the IV European Conference on Computational Mechanics (ECCM 2010), Solids, Structures and Coupled Problems in Engineering, May 16-21, 2010, Palais des Congrès, Paris, France.
- C52. Ngo, D., **Fraternali, F.**, Daraio, C. Angular Dependence of Highly Nonlinear Pulse Splitting in a Two Dimensional Granular Network. Proceedings of the ASME 2010 International Mechanical Engineering Congress & Exposition (IMECE2010), November 12-18, 2010, Vancouver, British Columbia, Canada.
- C53. El Sayed, T., Mock, W., Mota, A., **Fraternali, F.**, Ortiz, M., A variational model for the ballistic impact on composite plates. 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics: WWCCM/APCOM, University of New South Wales - Centre for Infrastructure Engineering & Safety, 2010, ISBN 0980824400, 9780980824407.
- C54. Senatore, L., **Fraternali, F.**, Solitary Waves on Chains of Tensegrity Prisms. Workshop "Analysis and design of innovative network structures", University of Salerno, Fisciano (SA), Italy, May 18-26, 2011 (CD-ROM Proceedings).
- C55. **Fraternali, F.**, Multiscale Mechanical Modeling of CNT Structures. Workshop "Carbon Nanotubes (CNTs) as Components in Bulk Materials", University of Salerno, Fisciano (SA), Italy, October 25 – November 4, 2011 (CD-ROM Proceedings).
- C56. **Fraternali, F.**, Senatore, L., Daraio, C., On the Nonlinear Dynamics of Tensegrity Lattices. Proceedings of the 12th Pan American Congress of Applied Mechanics (PACAM XII), January 2-6, 2012, Port of Spain, Trinidad (CD-ROM Proceedings).
- C57. **Fraternali, F.**, Skelton, R.E. On the Continuum Limit of Tensegrity Structures. 10th World Congress on Computational Mechanics (WCCM 2012), São Paulo, Brazil, 8 -13 July 2012 (CD-ROM Proceedings).
- C58. **Fraternali, F.** Some Recent Results in Computational Variational Fracture. IUTAM 2012 International Symposium on "Fracture Phenomena in Nature and Technology", Brescia, Italy, July 1-5, 2012 (CD-ROM Proceedings).
- C59. Spadea, S., Sessa, E., Berardi, V.P., Dentale, F., **Fraternali, F.** On the Mechanical Properties of Portland Limestone Cement Concretes Reinforced with Recycled PET Fibers, 42° Convegno Nazionale AIAS, 11-14 Settembre 2013, Università degli Studi di Salerno, AIAS 2013 – 273, ISBN: 9788869380242, <http://www.padovauniversitypress.it/content/aias-2013>.

- C60. **Fraternali, F.**, Carpentieri, G., Skelton, R.E., Micheletti, A.. Architetture Tensegrity Innovative per Ponti di Massa Minima, XXIV Giornate Italiane della Costruzione in Acciaio, Torino, Ottobre 2013, Vol. 2, Chap. " Tensegrity, Tensile, Textile and Unconventional Structures", Collegio dei Tecnici dell'Acciaio (Ed.), La Stamperia Digitale srl, Napoli 890-897, 2013. ISBN: 978-88-905870-0-9..
- C61. Carpentieri, C., **Fraternali, F.**, Daraio, C., Skelton, R.E., On the non linear dynamics of tensegrity structures, Workshop "Multiscale Modeling and Characterization of Innovative Materials and Structures", Cetara (SA), Italy, May 1-5, 2013 (CD-ROM Proceedings).
- C62. **Fraternali, F.**, Carpentieri, C., On the Cauchy stress associated with planar force networks, Workshop "Multiscale Modeling and Characterization of Innovative Materials and Structures", Cetara (SA), Italy, May 1-5, 2013 (CD-ROM Proceedings).
- C63. Ascione, L., **Fraternali, F.**, Spadea, S., Buckling and post-buckling behavior of curved composite beams accounting for different response in tension and compression, 17th International Conference on Composite Structures (ICCS17), 17-21 June 2013, University of Porto , Porto, Portugal (CD-ROM Proceedings).
- C64. **Fraternali, F.**, Raney, J.R., Amendola, A., Daraio, C. In-situ identification techniques for layered structures based on carbon nano tube arrays, 17th International Conference on Composite Structures (ICCS17), 17-21 June 2013, University of Porto , Porto, Portugal (CD-ROM Proceedings).
- C65. **Fraternali, F.**, Carpentieri, G., Amendola, A., Nesterenko, V.F., Skelton, R.E., Propagation of Solitary Waves on Acoustic Metamaterials, 13th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials (MM&FGM), São Paulo, Brazil, October 19-22, 2014 (CD-ROM Proceedings).
- C66. Angelillo, M., Carpentieri, G., Fortunato, A., **Fraternali, F.**, On the continuum limits of tensegrity structures, International Conference on Computational Methods (ICCM2014), 28-30th July, 2014, Cambridge, England (CD-ROM Proceedings).
- C67. Angelillo, M., Carpentieri, G., Fortunato, A., **Fraternali, F.**, Stress fields associated with discrete element models, Variational Modeling in Solid Mechanics, September 22-24, 2014, University of Udine, Italy (CD-ROM Proceedings).
- C68. **Fraternali, F.**, Boechler, N., Carpentieri, G., Amendola, A., Nesterenko, V.F., Acoustic band gaps in tensegrity metamaterials, Metamaterials 2014, Technical University of Denmark, Copenhagen, 25-30 August 2014 (CD-ROM Proceedings).
- C69. Spadea, S., Farina, I., **Fraternali, F.**, Reinforcement of cement mortars through recycled nylon fibers, 18th International Conference on Composite Structures (ICCS18), Lisbon, Portugal, 15-18 June 2015.
- C70. **Fraternali, F.**, Amendola, A., Carpentieri, G., On the optimal design of tensegrity lattices, 18th International Conference on Composite Structures (ICCS18), Lisbon, Portugal, 15-18 June 2015.
- C71. **Fraternali, F.**, Carpentieri, G., Montuori, R., Amendola, A., Benzoni, G., On the use of mechanical metamaterials for innovative seismic isolation systems, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 349-358.

- C72. **Fraternali, F.**, De Chiara, E., Fortunato, A., Sicignano, E., Skelton, R.E, Renewable energy tensegrity structures, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 3621-3628.
- C73. Carpentieri, G., Modano, M., Fabbrocino, F., **Fraternali, F.** Optimal design and dynamics of truss bridges, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 1731-1740.
- C74. **Fraternali, F.**, Amendola, A., Hernandez-Nava, E., Goodall, R., Skelton, R.E., Nesterenko, V. F., Prestress tuning of the nonlinear dynamics of tensegrity metamaterials, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 1960-1970.
- C75. Modano, M., Fabbrocino, F., Gesualdo, A., Matrone, G., Farina, I., **Fraternali, F.** On the forced vibration test by vibrodyne, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 209-217.
- C76. Fortunato, A., De Chiara, E., **Fraternali, F.**, Angelillo, M. Advanced models for the limit analysis of masonry structures, COMPDYN 2015 - 5th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 3716-3725.
- C77. **Fraternali, F.**, Teodosio, G., De Piano, M., Carpentieri, G., Berardi, V.P. , Advanced numerical models of masonry vaults, XXII Congresso dell'Associazione Italiana di Meccanica Teorica e Applicata (AIMETA), Genova, September 14-17 2015.
- C78. **Fraternali, F.**, De Chiara, E., Fortunato, A., Sicignano, E., Skelton, R.E. Tensegrity structures for adaptive facades of smart buildings, Proceedings XXV Italian Steel Days (Salerno, Oct. 1-3, 2015), Vol. 1: Tensegrity and Stability, 83-90, ISBN: 978-88-940089-4-4.
- C79. **Fraternali, F.**, Amendola, A., Hernandez-Nava, E., Goodall, R., Skelton, R.E., Nesterenko, V.F. On the use of tensegrity structures in the non-linear dynamic regime, Proceedings XXV Italian Steel Days (Salerno, Oct. 1-3, 2015), Vol. 1: Tensegrity and Stability, 91-98, ISBN: 978-88-940089-4-4.
- C80. Amendola, A., **Fraternali, F.**, Carpentieri, G., Montuori, R., Benzoni, G. Seismic isolation devices based on tensegrity lattices, Proceedings XXV Italian Steel Days (Salerno, Oct. 1-3, 2015), Vol. 1: Tensegrity and Stability, 107-115, ISBN: 978-88-940089-4-4.
- C81. Modano, M., Fabbrocino, F., Gesualdo, A., Carpentieri, G., **Fraternali, F.** On the optimal design of the pre-tensioning of cable-stayed bridges, Proceedings XXV Italian Steel Days (Salerno, Oct. 1-3, 2015), Vol. 1: Tensegrity and Stability, 117-124, ISBN: 978-88-940089-4-4
- C82. Skelton, R.E., Carpentieri, G., **Fraternali, F.** Energy harvesting tensegrity bridges, Proceedings XXV Italian Steel Days (Salerno, Oct. 1-3, 2015), Vol. 1: Tensegrity and Stability, 125-135, ISBN: 978-88-940089-4-4.
- C83. Amendola, A., Fabbrocino, F., Feo, L., **Fraternali, F.** Dependence of the mechanical properties of pentamode materials on the lattice microstructure, (2016) ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering, 1, pp. 2134-2150.
- C84. Carpentieri, G., Fabbrocino, F., De Piano, M., Berardi, V.P., Feo, L, **Fraternali, F.** Minimal mass design of strengthening techniques for planar and curved masonry structures, (2016) ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering, 2, pp. 2210-2219.

- C85. Fabbrocino, F., Farina, I., Amendola, A., Feo, L. **Fraternali, F.** Optimal design and additive manufacturing of novel reinforcing elements for composite materials, (2016) ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering, 1, pp. 1893-1908.
- C86. Carpentieri, G., Modano, M., Fabbrocino, F., Feo, L., **Fraternali, F.** On the optimal design of cable-stayed bridges, (2016) ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering, 2, pp. 3386-33941.
- C87. Mancusi, G., Orefice, A., Feo, L., **Fraternali, F.** Structural analysis of adhesive bonding for thick-walled tubular composite profiles, (2016) ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering, 4, pp. 7837-7852.
- C88. Carpentieri, G., Modano, M., Fabbrocino, F., Farina, I., Skelton, R.E., Feo, L., **Fraternali, F.** On the mechanics of FRP/FRC-reinforced masonry structures, in Proceedings of MechComp2 - 2nd International Conference on Mechanics of Composites, 11-14 July 2016 Porto, Portugal, 172, F. Tornabene (Ed.), Esculapio, Bologna, ISSN 2421-2822, ISBN 978-88-7488-963-1, DOI 10.15651/978-88-748-8963-1.
- C89. Farina, I, De Piano, M, Fabbrocino, F, Amendola, A, Carpentieri, G, Goodall, R., Feo, L, **Fraternali, F.** Use of 3D printing techniques to improve the mechanical response of cementitious composites, in Proceedings of MechComp2 - 2nd International Conference on Mechanics of Composites, 11-14 July 2016 Porto, Portugal, 50, F. Tornabene (Ed.), Esculapio, Bologna, ISSN 2421-2822, ISBN 978-88-7488-963-1, DOI 10.15651/978-88-748-8963-1.
- C90. Cimmino, M.C., Miranda, R., Sicignano, E., Ferreira, A. J. M.; Skelton, R. E., **Fraternali, F.** Solar façades with tensegrity architecture, 2016 International Workshop "Multiscale Innovative Materials and Structures" (MIMS2016), Cetara (SA), Italy, Oct. 28-30, 2016 (E-Book of Proceedings), DOI: 10.13140/RG.2.2.21778.86728.
- C91. Amendola, A., Benzoni, G., **Fraternali, F.** Non-Linear Elastic Response of Layered Structures, Alternating Pentamode Lattices and Confinement Plates, 2016 International Workshop "Multiscale Innovative Materials and Structures" (MIMS2016), Cetara (SA), Italy, Oct. 28-30, 2016 (E-Book of Proceedings), DOI: 10.13140/RG.2.2.21778.86728.
- C92. Berardi, V.P, De Piano, M., Teodosio, G., Bilotti, G., **Fraternali, F.** Innovative modeling of unreinforced and FRP/FRCM strengthened vaults, 2016 International Workshop "Multiscale Innovative Materials and Structures" (MIMS2016), Cetara (SA), Italy, Oct. 28-30, 2016 (E-Book of Proceedings), DOI: 10.13140/RG.2.2.21778.86728.
- C93. Fascetti, A., Feo, L., **Fraternali, F.**, Nisticò, N., Penna, R., A lattice model to study FRP elements, 2016 International Workshop "Multiscale Innovative Materials and Structures" (MIMS2016), Cetara (SA), Italy, Oct. 28-30, 2016 (E-Book of Proceedings), DOI: 10.13140/RG.2.2.21778.86728.
- C94. Mancusi, G., Orefice, A. Feo, L., **Fraternali, F.**, Dynamic properties of 2D lattice materials, 2016 International Workshop "Multiscale Innovative Materials and Structures" (MIMS2016), Cetara (SA), Italy, Oct. 28-30, 2016 (E-Book of Proceedings), DOI: 10.13140/RG.2.2.21778.86728.
- C95. Fabbrocino F., Carpentieri G., Amendola A., Penna R., **Fraternali, F.**, Accurate numerical methods for studying the nonlinear wave-dynamics of tensegrity, 2017 6th International Conference on "Computational Methods in Structural Dynamics and Earthquake Engineering" (COMPDYN 2017), Rhodes Island, Greece , June 15-17 2017, vol. II, pp. 3911-3922, ISBN: 978-618-82844-2-5

- C96. Miranda R., Carpentieri G., Fabbrocino F., Sicignano E., Skelton R. E., **Fraternali, F.**, Innovative structures for dynamic solar façades, 2017 6th International Conference on “Computational Methods in Structural Dynamics and Earthquake Engineering” (COMPDYN 2017), Rhodes Island, Greece , June 15-17 2017, vol. II, pp. 4007-4016, ISBN: 978-618-82844-2-5.
- C97. Fabbrocino F., Titirla M., Amendola A., Benzoni G., **Fraternali, F.**, Innovative devices for the base isolation of existing buildings, 2017 6th International Conference on “Computational Methods in Structural Dynamics and Earthquake Engineering” (COMPDYN 2017), Rhodes Island, Greece , June 15-17 2017, vol. II, pp. 4393-4407, ISBN: 978-618-82844-2-5.
- C98. Amendola A., Fabbrocino F., Favata A., Micheletti A., **Fraternali, F.**, Daraio C., Experimental and numerical study of wave dynamics in tensegrity columns, 2017 6th International Conference on “Computational Methods in Structural Dynamics and Earthquake Engineering” (COMPDYN 2017), Rhodes Island, Greece , June 15-17 2017, vol. II, pp. 4796-4809, ISBN: 978-618-82844-2-5.
- C99. Ascione L., Berardi V., Feo L., **Fraternali F.**, Tralli A.M., Preface, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. V, p. iii, ISBN: 978-889424847-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus: 2-s2.0-85045770614.
- C100. Miranda R., Fabbrocino F., Matheou M., Phocas M.C., **Fraternali F.**, Adaptive tensegrity structures for dynamic facades of energy efficient buildings, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. 1, pp.1074-1081, ISBN: 978-889-42484-7-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus:2-s2.0-85045560985.
- C101. Titirla M., Fabbrocino F., Amendola A., Benzoni G., **Fraternali F.**, On the mechanics of pentamode lattices, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. 1, pp.1082-1092, ISBN: 978-889-42484-7-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus:2-s2.0-85045535382.
- C102. Babilio E., Fabbrocino F., Durand M., **Fraternali F.**, Explicit conditions on geometry and elastic moduli of stiffest anisotropic tetrakis and tetrakis-like lattices, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. 1, pp.1136-1144, ISBN: 978-889-42484-7-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus:2-s2.0-85045766134.
- C103. Berardi V.P., Chiozzi A., **Fraternali F.**, Grillanda N., De Piano M., Milani G., Tralli A., A numerical approach to the evaluation of collapse load multiplier of masonry curved structures, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. 2, pp.1515-1525, ISBN: 978-889-42484-7-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus: 2-s2.0-85040465604.
- C104. Farina I., Cioffi R., Fabbrocino F., Russo P., **Fraternali F.**, Reinforcement of cement mortars with additively manufactured recycled nylon fibers, AIMETA 2017 - Proceedings of the 23rd Conference of the Italian Association of Theoretical and Applied Mechanics, Salerno, Italy, September 4-7 2017, vol. 3 pp.2038-2046, ISBN: 978-889-42484-7-0 (E-Book of Proceedings available at www.aimeta2017.unisa.it/node/53). Scopus:2-s2.0-85045738095.

- C105. Amendola A., Krushynska A., De Piano M., Daraio C., Pugno N.M., **Fraternali F.**, Mechanical modeling of the bandgap response of tensegrity metamaterials, Proceedings of the 16TH International conference of numerical analysis and applied mathematics - ICNAAM 2018. AIP Conference Proceedings, Volume 2116, 24 July 2019, Article number 260010, doi:10.1063/1.5114261
- C106. **Fraternali F.**, Carpentieri G., Amendola A., Orefice A., Skelton R.E., Nesterenko V.F., Nonlinear wave dynamics of tensegrity metamaterials, Proceedings of the 16TH International conference of numerical analysis and applied mathematics - ICNAAM 2018. AIP Conference Proceedings, Volume 2116, 24 July 2019, Article number 260012, doi:10.1063/1.5114263
- C107. Amendola A., Mascolo I., Orefice A., Benzoni G., **Fraternali F.**, Effective stiffness properties of multi-layered pentamode lattices in the stretching-dominated regime, Proceedings of the 16TH International conference of numerical analysis and applied mathematics - ICNAAM 2018. AIP Conference Proceedings, Volume 2116, 24 July 2019, Article number 260011, doi:10.1063/1.5114262
- C108. Mascolo I., Amendola A., De Piano M., Feo L., **Fraternali F.**, On the equilibrium problem and infinitesimal mechanisms of class theta tensegrity systems, Proceedings of the 16TH International conference of numerical analysis and applied mathematics - ICNAAM 2018. AIP Conference Proceedings, Volume 2116, 24 July 2019, Article number 260013, doi:10.1063/1.5114264
- C109. Kumar R., Singh R., Farina I., De Piano M., Amendola A., Feo L., **Fraternali F.**, Innovative sensing elements based on graphene, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018).
- C110. Singh R., Singh N., Farina I., Mascolo I., De Piano M., Amendola A., **Fraternali F.**, Green design of novel metal matrix composites, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018), IOP Conference Series: Materials Science and Engineering, 473(1), doi:10.1088/1757-899X/473/1/012008.
- C111. Singh R., Ranjan N., Farina I., De Piano M., Amendola A., **Fraternali F.**, Mathematical modeling of surface roughness in the forming of innovative materials, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018), IOP Conference Series: Materials Science and Engineering, 473(1), doi:10.1088/1757-899X/473/1/012009.
- C112. Singh R., Kumar R., Farina I., De Piano M., Amendola A., **Fraternali F.**, Mechanical and experimental study on the use of sustainable materials for additive manufacturing, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018), IOP Conference Series: Materials Science and Engineering, 473(1), doi:10.1088/1757-899X/473/1/012010.
- C113. Mascolo I., Modano M., Amendola A., **Fraternali F.**, Lateral-torsional buckling of C-beams with varying inertia, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018), IOP Conference Series: Materials Science and Engineering, 473(1) doi:10.1088/1757-899X/473/1/012011.
- C114. Modano M., Mascolo I., **Fraternali F.**, Staging and Pretensioning of Cable-Stayed Bridges, Proceedings of the 5th International Conference on Advanced Materials, Mechanics and Structural Engineering (AMMSE 2018), IOP Conference Series: Materials Science and Engineering, 473(1) doi:10.1088/1757-899X/473/1/012012.

- C115. Singh R., Kumar R., Amendola A., Farina I., Singh N., **Fraternali F.**, On the optimal design of metal matrix composites as functionally graded innovative materials for sensor devices, Proceedings of the 7th International Conference on Materials and Applications for Sensors and Transducers (IC-MAST 2018).
- C116. Krushynska, A. O., Amendola, A., Bosia, F., Daraio, C., Pugno, N. M., **Fraternali, F.** Tunable extremely wide low-frequency band gaps in accordion-like metamaterials, Proceedings of the 12th International Congress on Artificial Materials for Novel Wave Phenomena, METAMATERIALS 2018, 237-239. doi:10.1109/MetaMaterials.2018.8534115.
- C117. Farina, I., **Fraternali, F.**, Singh, N., Cioffi, R., & Colangelo, F. Sustainable construction materials based on recycled asbestos cement wastes. Proceedings of the 5th International Conference on Sustainable Construction Materials and Technologies, SCMT 2019; Kingston upon Thames; United Kingdom; 14 -17 July 2019; Code 149940, Vol. 3, 2019.
- C118. **Fraternali F.**, Amendola A., Novel actuators and sensors with tensegrity architecture, Proceedings of the 7th International Conference on Materials and Applications for Sensors and Transducers (IC-MAST 2018), Bratislava, Slovakia 27-28 September 2018, published in Key Engineering Materials, Volume 826, KEM, 2019, Pages 105-1107, doi:10.4028/www.scientific.net/KEM.826.105.
- C119. Singh, R., Kumar, R., Amendola, A., Farina, I., Singh, N., **Fraternali F.**, Graphene reinforced composites as sensing elements, Proceedings of the 7th International Conference on Materials and Applications for Sensors and Transducers (IC-MAST 2018), Bratislava, Slovakia 27-28 September 2018, published in Key Engineering Materials, Volume 826, KEM, 2019, Pages 33-34, doi:10.4028/www.scientific.net/KEM.826.33
- C120. Mascolo, I., **Fraternali, F.**, Modano, M. Design and optimization of pre-tension forces in cable-stayed bridges. Paper presented at the Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications - Proceedings of the 7th International Conference on Structural Engineering, Mechanics and Computation, 2019, 1051-1055. doi:10.1201/9780429426506-183
- C121. Miranda, R., **Fraternali, F.**, Amendola, A., Krushynska, A. Optimal prestress design of the band gap dynamics in tensegrity metamaterials. Paper presented at the Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications - Proceedings of the 7th International Conference on Structural Engineering, Mechanics and Computation, 2019, 995-999. doi:10.1201/9780429426506-173.
- C122. Amendola, A., **Fraternali, F.**, Mascolo, I., Modano, M. On the lateral-torsional buckling of non-uniform c-beams. Paper presented at the Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications - Proceedings of the 7th International Conference on Structural Engineering, Mechanics and Computation, 2019, 866-869. doi:10.1201/9780429426506-150
- C123. Miranda, R., Amendola, A., Mascolo, I., **Fraternali, F.**, Babilio, E.. Design and control of adaptive tensegrity sunscreens. Paper presented at the Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications - Proceedings of the 7th International Conference on Structural Engineering, Mechanics and Computation, 2019, 1027-1032. doi:10.1201/9780429426506-179

- C124. Babilio, E., Miranda, R., Carpentieri, G., **Fraternali, F.** Computational modeling of the dynamics of active sunscreens with tensegrity architecture. Proceedings of the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2019; Crete; Greece; 24 - 26 June 2019; Volume 2, 2019, Pages 2159-2166.
- C125. Micheletti, A., Ruscica, G., Amendola, A., Mascolo, I., **Fraternali, F.** On the solitary wave dynamics of tensegrity lattices with stiffening response: A numerical study. Proceedings of the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2019; Crete; Greece; 24 - 26 June 2019; Volume 1, Pages 1563-1570.
- C126. Krushynska, A. O., Amendola, A., Miranda, R., Daraio, C., **Fraternali, F.** Harnessing tensegrity to design tunable metamaterials for broadband low-frequency wave attenuation. Proceedings of the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2019; Crete; Greece; 24 - 26 June 2019; Volume 1, 2019, Pages 1571-1581.
- C127. **Fraternali, F.**, Amendola, A., De Piano, M., Rocchetta, G., Benzoni, G. On the computational design of innovative seismic isolation devices based on lattice materials. Proceedings of the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2019; Crete; Greece; 24 - 26 June 2019; ID 18384. ISSN 26233347. ISBN 978-618828446-3.
- C128. Bieniek, Z., Mascolo, I., Amendola, A., Micheletti, A., Luciano, R., **Fraternali, F.** Computational prediction of the stability of tensegrity structures. Proceedings of the 7th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2019; Crete; Greece; 24 - 26 June 2019; Volume 2, 2019, Pages 2146-2158.
- C129. Vangelatos Z., Farina I.,Micheletti A.,Singh N.,Grigoropoulos C.P., **Fraternali F.**, On the fabrication and mechanical modelling microscale bistable tensegrity systems. Proceedings of the 7th International Conference on Mechanical, Materials and Manufacturing, ICMMM 2020; Washington; 25-27 September 2020; Volume 999, 2020, 012002.
- C130. Farina, I., Singh, R., Sing, M., Preet, P., Kumar, R., **Fraternali, F.**, Colangelo, F., Thermomechanical and morphological properties of sustainable mortars employing blast furnace slag and fly ash reinforced cement. Proceedings of the 7th International Conference on Mechanical, Materials and Manufacturing, ICMMM 2020; Washington; 25-27 September 2020; Volume 999, 2020, 012009.
- C131. Singh, N., Amendola, A., Santos, F., Benzoni, G., **Fraternali, F.**, Mechanical response of tensegrity dissipative devices incorporating shape memory alloys. Proceedings of the 7th International Conference on Mechanical, Materials and Manufacturing, ICMMM 2020; Washington; 25-27 September 2020; Volume 999, 2020, 012001.
- C132. Farina, I., Sharma, R., Singh, R., Batish, A., Sing, N., **Fraternali, F.**, Colangelo, F., Mechanical characterization of FDM filaments with PVDF matrix reinforced with Graphene and Barium Titanate. Proceedings of the 7th International Conference on Mechanical, Materials and Manufacturing, ICMMM 2020; Washington; 25-27 September 2020; Volume 999, 2020, 012010
- C133. Miranda, R., Babilio, E., Singh, N., Villamil, D.P., Santos, F., **Fraternali, F.**, Mechanics of energy harvesters based on tensegrity solar facades. Proceedings of the 7th International Conference on Mechanical, Materials and Manufacturing, ICMMM 2020; Washington; 25-27 September 2020; Volume 999, 2020, 012003.

- C134. Miranda, R., Babilio, E., Singh, N., Villamil, D.P., Santos, F., **Fraternali, F.**, Dynamics of tensegrity solar façades operating as mechanical energy harvesters. Proceedings of the International Conference on Structural Dynamic, EUROODYN 2020; Virtual, Athens; 23-26 November 2020; Volume 1, pp. 2113–2122.
- C135. Placidi, L., Amendola, A., Miniaci, M., **Fraternali, F.**, A discrete-to-continuum approach to frequency bandgaps in 1D biatomic metamaterials. Proceedings of the International Conference on Structural Dynamic, EUROODYN, 2020; Virtual, Athens; 23-26 November 2020; 1, pp. 604–611.
- C136. Miniaci, M., Mazzotti, M., Amendola, A., **Fraternali, F.**, Inducing dispersion curves with negative group velocity in inertially amplified phononic crystals through the application of an external state of prestress. Proceedings of the International Conference on Structural Dynamic, EUROODYN 2020; Virtual, Athens; 23-26 November 2020; Volume 1, pp. 612–620.
- C137. Micheletti, A., Vangelatos, Z., Singh, N., Grigoropoulos, C.P., **Fraternali, F.**, On the wave dynamics of microscale bistable tensegrity structures. Proceedings of the International Conference on Structural Dynamic, EUROODYN 2020; Virtual, Athens; 23-26 November 2020; Volume 1, pp. 482–488.
- C138. Singh, N., Amendola, A., Santos, F., Benzoni, G., **Fraternali, F.**, Innovative dissipative devices with tensegrity architecture and super elastic behaviour for the seismic protection of structures. Proceedings of the International Conference on Structural Dynamic, EUROODYN 2020; Virtual, Athens; 23-26 November 2020; Volume 2, pp. 3079–3085.
- C139. Miranda, R., Babilio, E., Singh, N., Santos, F., **Fraternali, F.**, Computational modeling of the mechanics of energy harvesters based on tensegrity solar façades. Proceedings of 14th World Congress of Computational Mechanics and ECCOMAS Congress, WCCM-ECCOMAS 2020; Virtual, Online; 11- 15 January 2021, Volume 900.
- C140. Vangelatos, Z., Micheletti, A., Singh, N., Grigoropoulos, C.P., **Fraternali, F.**, Computational modeling of the experimental response of microscale bistable tensegrity structures. Proceedings of 14th World Congress of Computational Mechanics and ECCOMAS Congress, WCCM-ECCOMAS 2020; Virtual, Online; 11- 15 January 2021, Volume 300.
- C141. Singh, N., Amendola, A., Santos, F., Benzoni, G., **Fraternali, F.**, Computational modeling of the seismic response of tensegrity dissipative devices incorporating shape memory alloys. Proceedings of 14th World Congress of Computational Mechanics and ECCOMAS Congress, WCCM-ECCOMAS 2020; Virtual, Online; 11- 15 January 2021, Volume 100, pp.1-7.
- C142. Abbate, V., Babilio, E., dos Santos, F.A., Singh, N., **Fraternali, F.**, Geometric patterns and dynamics of foldable moduli for adaptive façades. Proceedings of 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2021; Athens; 28- 30 June 2021.
- C143. Amendola, A., Sigh, N., Rodenburg, C., Holland, C., **Fraternali, F.**, A mesoscale tensegrity model of spider dragline silk fiber. Proceedings of 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2021; Athens; 28- 30 June 2021.
- C144. Micheletti, A., Intriglia, C., Nodargi, N., Artioli, E., **Fraternali, F.**, Bisegna, P., Modeling and design of periodic lattices with tensegrity architecture and highly nonlinear response. Proceedings of 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2021; Athens; 28- 30 June 2021.

- C145. Santos, F., Singh, N., Amendola, A., **Fraternali, F.**, Micheletti, A., Seismic metamaterials with tensegrity architecture. Proceedings of 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2021; Athens; 28- 30 June 2021.
- C146. Russillo, A.F., Failla, G., Pirrotta, A., **Fraternali, F.**, A dynamic-stiffness approach for damped locally-resonant Timoshenko beams. Proceedings of 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN 2021; Athens; 28- 30 June 2021.
- C147. Singh, R., Kumar, R., Farina, I., **Fraternali, F.**, On process modelling of cold chamber die casting of Al alloy by using Buckingham's Π approach. 2nd Symposium on Synthesis, Characterization & Processing of Inorganic, Bio and Nano Materials, SCPINM 2021, Chandigarh University, India, 30st -31st July 2021. Materials Today: Proceedings, Volume 48, Part 5, 2022, Pages 1416-1420, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2021.09.191>.
- C148. Ruggiero, M., Farina, I., Salzano, C., Moccia, I., Colangelo, F., **Fraternali, F.**, Cioffi, R.. Eco-Friendly Concretes with Recycled Plastic Aggregates. 2021 8th International Conference on Mechanical, Materials and Manufacturing (ICMMM 2021). September 25-27, 2021, Virtual Conference. Published in Key Engineering Materials (Vol. 913, pp. 137–142, 2022). Trans Tech Publications, Ltd. <https://doi.org/10.4028/p-5opa25>
- C149. Majumder, A., Farina, I., Stochino, F., **Fraternali, F.**, Martinelli, E. Natural fibers reinforced mortars: Composition and mechanical properties. 2021 8th International Conference on Mechanical, Materials and Manufacturing (ICMMM 2021). September 25-27, 2021, Virtual Conference. Published in Key Engineering Materials (Vol. 913, pp. 149–153, 2022). Trans Tech Publications, Ltd. <https://doi.org/10.4028/p-027t71>
- C150. Amendola, A., **Fraternali, F.**, Saccomandi, G. Mathematical modeling and numerical results on the propagation of solitary waves on tensegrity lattices. Proceedings of the 8th European Congress on Computational Methods in Applied Sciences and Engineering. ECCOMAS Congress 2022. 5-9 June 2022, Oslo, Norway, Volume Computational Solid Mechanics, DOI: 10.23967/eccomas.2022.173
- C151. Amendola, A., Mattei, O., Fortunato, A., Seppacher, P. **Fraternali, F.**, Milton, G.W. On the existence of compression-only discrete force networks that support assigned sets of nodal forces. Proceedings of the 8th European Congress on Computational Methods in Applied Sciences and Engineering. ECCOMAS Congress 2022. 5-9 June 2022, Oslo, Norway, Volume Computational Solid Mechanics, DOI: 10.23967/eccomas.2022.212.
- C152. Santos, F., Amendola, A., Miniaci, M., Ruzzene, M., **Fraternali, F.** On the mechanical modeling and the experimental response of meta-buildings. Proceedings of the 25th Conference of the Italian Association of Theoretical and Applied Mechanics, Palermo, Italy, September 4-9 2022, In press.
- C153. Majumder, A., Stochino, F., Frattolillo, A., Valdes, M., **Fraternali, F.**, Martinelli, E. Jute fiber mortar composites for integrated retrofitting. Proceedings of the 14th fib PhD Symposium, Rome , 5-7 September 2022, Italy, 613-620.
- C154. Majumder, A., Stochino, F., Frattolillo, A., Valdes, M., **Fraternali, F.**, Martinelli, E. Sustainable Building Material: Recycled Jute Fiber Composite Mortar for Thermal and Structural Retrofitting. In: Computational Science and Its Applications – ICCSA 2022 Workshops Cham Springer Vol.13379 LNCS, Pag.657-669, 2022. ISBN:978-3-031-10544-9; 978-3-031-10545-6

Department reports (Department of Civil Engineering, University of Salerno)

- R1. Faella, C., **Fraternali, F.**, *Modellazione delle Superfici di Resistenza di Sezioni Rettangolari in Cemento Armato Sollecitate a Flessione Composta Deviata*, Rep. No. 19, 1989.
- R2. Di Meo, R., **Fraternali, F.**, Palazzo, B. Un Nuovo Modello di Oscillatore Elasto-Plastico per lo Studio degli Effetti Torsionali sulle Costruzioni, Rep. No. 3, 1989.
- R3. **Fraternali, F.**, Esposito, A., Giordano, R., Daraio, C. Wave Propagation and Shock Absorption in 2D and 3D Granular Systems. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2009.
- R4. **Fraternali, F.**, B. Schmidt, B., Marcelli, G., A multiscale approach to the elastic moduli of membrane networks. Preprint, Department Report, Department of Civil Engineering, University of Salerno, Italy, 2011
- R5. Faella, C., **Fraternali, F.**, Modellazione delle Superfici di Resistenza di Sezioni Rettangolari in Cemento Armato Sollecitate a Flessione Composta Deviata. Department Report, Department of Civil Engineering, University of Salerno, Italy. SALERNO: Dipart. Ing. Civile, Univ. Salerno, 1989.
- R6. Ascione, L., **Fraternali, F.**, Sulla Statica delle Travi ad Asse Curvo. Department Report, Department of Civil Engineering, University of Salerno, Italy, 1989.
- R7. Velardi, F., **Fraternali, F.**, Angelillo, M., On the mechanical behavior of brain tissue. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2004.
- R8. Velardi, F., Brigante, L., El Sayed, T., Mota, A., **Fraternali, F.**, Ortiz, M., On the Correlation Between Impact Induced Damage in Brain Tissue and Physiological Dysfunction. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2007.
- R9. Blesgen, T., **Fraternali, F.**, On a Modified Becker-Doring Model for Two-Phase Materials. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2009.
- R10. Boechler, N., **Fraternali, F.**, Daraio, C., Optimal Design of Acoustic Band-Gap Materials. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2009.
- R11. Di Meo, R., **Fraternali, F.**, Palazzo, B., Un Nuovo Modello di Oscillatore Elasto-Plastico per lo Studio degli Effetti Torsionali sulle Costruzioni. Department Report, Department of Civil Engineering, University of Salerno, Italy, 1992.
- R12. Ascione, L., **Fraternali, F.**, Un Modello Penalty per lo Studio delle Travi Curve Composite. p. 1-5, Ristampa Proceedings of AIMETA Meeting "Problemi di Meccanica dei Materiali e delle Strutture", Amalfi, Italy, 1992.
- R13. Ascione, L., **Fraternali, F.**, Sulla Statica delle Travi ad Asse Curvo. p. 1-20, Department Report, Department of Civil Engineering, University of Salerno, Italy, 1992.
- R14. Ascione, L., **Fraternali, F.**, Bilotti G., Sulla Dinamica delle Travi Lamine Composite ad Asse Curvo. p. 213-218, Reprint Proceedings XVIII AIAS National Congress, Department of Civil Engineering, University of Salerno, 1992.
- R15. Ascione, L., **Fraternali, F.**, Bilotti G., Sul Calcolo delle Tensioni Interlaminari in Travi Curve Composite. p. 441-451, Proceedings of AIAS National Congress, Palermo, Italy, 1992.
- R16. Ascione, L., **Fraternali, F.**, Bilotti G., Sul Calcolo delle Sollecitazioni in Travi Curve Composite, . p. 129-138, Reprint Proceedings XVIII AIAS National Congress, Department of Civil Engineering, University of Salerno, 1992.

- R17. **Fraternali, F.**, Palazzo, B., Seismic Ductility Demand in Buildings Irregular in Plane. Ristampa Proceedings of IX World Conference on Earthquake Engineering, Tokyo-Kyoto, Japan, 1992.
- R18. **Fraternali, F.**, Ascione, L., On the mechanical behaviour of curved composite beams, Reprint ATTI DELLA ACCADEMIA NAZIONALE DEI LINCEI. . vol. I (S. IX), p. 223-233, RENDICONTI DELLA CLASSE DI SCIENZE FISICHE, MATEMATICHE E NATURALI, I (S. IX), 223-233, 1992.
- R19. Faella, C., **Fraternali, F.**, Modellazione delle Superfici di Resistenza di Sezioni Rettangolari in Cemento Armato Sollecitate a Flessione Composta Deviate. Department Report, Department of Civil Engineering, University of Salerno, Italy, 1992.
- R20. Faella, C., **Fraternali, F.**, Modellazione Delle Superfici Di Resistenza Di Sezioni Rettangolari In Cemento Armato Sollecitate A Flessione Composta Deviate. Fisciano, Salerno:Dept. Civil Engineering, University of Salerno, 1992.
- R21. **Fraternali, F.**, Palazzo, B., L'Uso degli Spettri di Collasso nell'Analisi Sismica. p. 425-436, Proceedings of III AIDIS National Congress "L'Ingegneria Sismica in Italia", Rome, Italy, 1992.
- R22. **Fraternali, F.**, Palazzo, B., L'Influenza della Distribuzione Planimetrica della Resistenza di Piano sulla Risposta Sismica di Sistemi Strutturali Dissimetrici. p. 123-137, Ristampa Proceedings of AICAP Meeting "I Problemi delle Grandi Costruzioni in Zona Sismica", Stresa, Italy, 1992.
- R23. **Fraternali, F.**, Palazzo, B., L'Influenza dell'Effetto P- Δ sulla Risposta Sismica di Sistemi a Comportamento Elasto-Plastico: Proposta di una Diversa Formulazione del Coefficiente di Struttura. Ristampa Proceedings of CTA Meeting "Giornate Italiane delle Costruzioni in Acciaio", Trieste, Italy, 1992.
- R24. **Fraternali, F.**, Palazzo, B., Confinamento Laterale Attivo di Elementi Presso-Inflessi in C.A.: L'Influenza di Una Presollecitazione Laterale di Compressione sulla Risposta sino a Rottura di Elementi Presso-Inflessi. p. 263-274, Ristampa Proceedings of AICAP Meeting "Materiali e Tecniche Speciali nella Realizzazione di Opere in C.A. e in C.A.P.", Naples, Italy, 1992.
- R25. **Fraternali, F.**, Palazzo, B., Confinamento Laterale Attivo di Elementi Presso-Inflessi in C.A.. p. 123-133, Ristampa Proceedings of 7th CTE National Congress "Evoluzione della Industrializzazione Edilizia", Venice, Italy, 1992.
- R26. **Fraternali, F.**, Palazzo, B., Comportamento Sismico Tridimensionale di Edifici Planimetricamente Irregolari. p. 437-450, Ristampa Proceedings of III AIDIS National Congress "L'Ingegneria Sismica in Italia", Rome, Italy, 1992.
- R27. Di Meo, R., **Fraternali, F.**, Palazzo, B., Un Nuovo Modello di Oscillatore Elasto-Plastico per lo Studio degli Effetti Torsionali sulle Costruzioni - II Edizione. FISCIANO, SALERNO:Dept. Civil Engineering, University of Salerno, 1993.
- R28. Ascione, L., **Fraternali, F.**, Sulla Statica delle Travi ad Asse Curvo - II Edizione. FISCIANO:Dept. of Engineering, University of Salerno, 1994.
- R29. Ascione, L., Feo, L., **Fraternali, F.**, On the plating of reinforced concrete beams with composite laminates. vol. 14, p. 277-284, SPRINGER, ISBN: 3540418369, 2004.

- R30. Velardi, F., **Fraternali, F.**, Angelillo, M., ON THE MECHANICAL BEHAVIOR OF BRAIN TISSUE. Department of Civil Engineering, University of Salerno, Italy, 2004.
- R31. Velardi, F., Brigante, L., Elsayed, T., Mota, A., **Fraternali, F.**, Ortiz, M., On the Correlation Between Impact Induced Damage in Brain Tissue and Physiological Dysfunction. Department Report, Department of Civil Engineering, University of Salerno, Italy, 2007.
- R32. **Fraternali, F.**, Appunti del Corso di Scienza delle Costruzioni 1. I Edizione. Department of Civil Engineering, University of Salerno, Italy, 2008.
- R33. **Fraternali, F.**, Esposito, A., Giordano, R., Daraio, C., Wave Propagation and Shock Absorption in 2D and 3D Granular Systems.. Department of Civil Engineering, University of Salerno, Italy, 2009.
- R34. Boechler, N., Daraio, C., Picone, M., **Fraternali, F.**, Della Cioppa, A., The Optimization of Vibration Attenuation in One-Dimensional Granular Crystals. Department of Civil Engineering, University of Salerno, Italy, 2009.
- R35. Blesgen, T., **Fraternali, F.**, On a Modified Becker-Doring Model for Two-Phase Materials. p. 1-17, Department Report, Department of Civil Engineering, University of Salerno, Italy, 2009.
- R36. Ascione, L., Feo, L., **Fraternali, F.**, Appunti sulla teoria della piastre. SALERNO:Cues Ed., ISBN: 889502849X, 2010.
- R37. Ascione, L., Feo, L., **Fraternali, F.**, Appunti sul metodo degli elementi finiti. SALERNO:Cues Ed., ISBN: 9788895028507, 2010.
- R38. **Fraternali, F.**, Schmidt, B., Marcelli, G., Limiting elastic properties of membrane networks. Department of Civil Engineering, University of Salerno, Italy, 2011.
- R39. **Fraternali, F.**, Ngo Duc M., Daraio, C., Design of Y-Shaped Granular Crystals with Variable Branch Angles. p. 1-32, Graduate Aerospace Laboratories, California Institute of Technology, Pasadena, CA 91125, 2011.
- R40. **Fraternali, F.**, Appunti del Corso di Scienza delle Costruzioni 1 - II Edizione. Department of Civil Engineering, University of Salerno, Italy, 2011.

Educational Books and Monographs

- D1. Ascione, L., **Fraternali, F.**, *Sulla Statica delle Travi ad Asse Curvo*, Department of Civil Engineering, University of Salerno, 1992.

- D2. **Fraternali, F.**, *Appunti del Corso di Scienza delle Costruzioni I*, Online Class Notes: <https://docenti.unisa.it/001258/en/resources?categoria=335&risorsa=290>.
- D3. Ascione, L., Feo, L., **Fraternali, F.**, *Appunti sul metodo degli elementi finiti*, CUES Salerno, 2010, ISBN 9788895028507 (167 pages)
- D4. Ascione, L., Feo, L., **Fraternali, F.**, *Appunti sulla teoria della piastra*, CUES Salerno, 2010, ISBN 889502849X (135 pages)
- D5. **Fraternali, F.**, Ascione, L. *Modellazione geometrica e meccanica delle travi curve e sghembe*. CUES Salerno, 2012, ISBN 9788897821106 (207 pages).