

PART A

1 - Research Project Title

Advanced mechanical modeling of new materials and structures for the solution of 2020 Horizon challenges

2 - Duration (months)

36 months

3 - Main ERC field

PE - Physical Sciences and Engineering

4 - Possible other ERC field

5 - ERC subfields

1. PE8_3 Civil engineering, architecture, maritime/hydraulic engineering, geotechnics, waste treatment
2. PE8_8 Materials engineering (metals, ceramics, polymers, composites, etc.)
- 3.

6 - Key Words

1. INNOVATIVE STRUCTURES AND CONSTITUTIVE MODELING
2. ADVANCED MECHANICAL NUMERICAL METHODS
3. DESIGN OF CIVIL ENGINEERING STRUCTURES

7 - Principal Investigator

DI PAOLA
(Surname)

MARIO
(Name)

Professore Ordinario
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8 - List of the Research Units

n°	Associated Investigator	Category	University/Research Institution	E-mail address
1.	DI PAOLA Mario	Professore Ordinario	Università degli Studi di PALERMO	mario.dipaola@unipa.it (adesione completata il 24/12/2015)
2.	TROVALUSCI Patrizia	Professore Associato confermato	Università degli Studi di ROMA "La Sapienza"	patrizia.trovalusci@uniroma1.it (adesione completata il 14/12/2015)
3.	MAIORANA Carmelo	Professore Ordinario	Università degli Studi di PADOVA	carmelo.maiorana@dicea.unipd.it (adesione completata il 09/12/2015)
4.	CHIAIA Bernardino	Professore Ordinario	Politecnico di TORINO	bernardino.chiaia@polito.it (adesione completata il 13/12/2015)
5.	FEO Luciano	Professore Associato confermato	Università degli Studi di SALERNO	l.feo@unisa.it (adesione completata il 10/12/2015)
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7.	FALSONE Giovanni	Professore Ordinario	Università degli Studi di MESSINA	gfalsone@ingegneria.unime.it (adesione completata il 11/12/2015)
8.	CARPINTERI Andrea	Professore Ordinario	Università degli Studi di PARMA	andrea.carpinteri@unipr.it (adesione completata il 14/12/2015)
9.	TALIERCIO Alberto	Professore Ordinario	Politecnico di MILANO	alberto.taliercio@polimi.it (adesione completata il 11/12/2015)
10.	GUSELLA Vittorio	Professore Ordinario	Università degli Studi di PERUGIA	vittorio.gusella@unipg.it (adesione completata il 15/12/2015)
11.	BRUNO Domenico	Professore Ordinario	Università della CALABRIA	d.bruno@unical.it (adesione completata il 11/12/2015)
12.	ROSATI Luciano	Professore Ordinario	Università degli Studi di NAPOLI "Federico II"	rosati@unina.it (adesione completata il 15/12/2015)
13.	MAROTTI DE SCIARRA Francesco	Professore Associato confermato	Università degli Studi di NAPOLI "Federico II"	marotti@unina.it (adesione completata il 12/12/2015)
14.	CECCHI Antonella	Professore Ordinario	Università IUAV di VENEZIA	cecchi@iuav.it (adesione completata il 09/12/2015)
15.	ZAVARISE Giorgio	Professore Ordinario	Università del SALENTO	giorgio.zavarise@unisalento.it (adesione completata il 15/12/2015)
16.	RIZZI Nicola Luigi	Professore Ordinario	Università degli Studi ROMA TRE	nlr@uniroma3.it (adesione completata il 13/12/2015)
17.	CADDEMI Salvatore	Professore Ordinario	Università degli Studi di CATANIA	scaddemi@dica.unict.it (adesione completata il 14/12/2015)
18.	UBERTINI Francesco	Professore Ordinario	Università degli Studi di BOLOGNA	francesco.ubertini@unibo.it (adesione completata il 15/12/2015)
19.	TARANTINO Angelo Marcello	Professore Ordinario	Università degli Studi di MODENA e REGGIO EMILIA	angelomarcello.tarantino@unimore.it (adesione completata il 13/12/2015)

9 - Research project abstract

Challenges for the contemporary society call for significant technological improvements to be achieved in different fields,

such as risk mitigation of Cultural Heritage, sustainable raw material supply and safeguard of social security, in accordance with the topics of the Horizon 2020 Framework Programme. Among the cited challenges, we plan to solve the following target problems:

- Structural analysis of Heritage building and Reliability of masonry structures
- Next generation materials and methodologies for vibration abatement and enhanced design
- Structural nonlinear analysis of Concrete and Composite buildings

It is believed that the key to successfully approach such a broad range of problems is the study of the mechanical behavior of innovative materials, relying on effective constitutive and structural modeling and advanced numerical methods. Such investigations require a final validation step, implemented through the analysis of specific real-life case studies, belonging to different engineering areas in which innovation is needed.

The study of the mentioned problems will be performed by using a multidisciplinary approach, involving interactions of several internationally recognized research units, which have already proved their capability of mutual collaboration (having won many PRIN and European Grants). The Research will focus on the following four different levels:

1. CONSTITUTIVE MODELS to capture material responses of importance for the applications of interest. In particular, attention will be devoted to classes of materials and effects, ranging from concrete, masonry, FRCM composites to carbon-nanotubes.
2. STRUCTURAL MODELS to capture the response of macro- and micro-structures of interest.
3. NUMERICAL METHODS to perform simulations of real-life cases related to the project applications. In particular, attention will be devoted to integration schemes for the proposed constitutive equations as well as to techniques for the solution of initial/boundary-value problems, e.g., advanced approaches for nonlinear structural statics and dynamics, meshless methods for multiphysics interaction, homogenization and multiscale methods for micro/macro interaction.
4. REAL-LIFE CASE STUDIES to validate both the proposed constitutive models and numerical methods as tools to explore innovative solutions within the project target problems. In particular, the project will propose innovative solutions for the following real-life applications:

- Structural analysis of real masonry buildings (in Perugia, Venice, Palermo, Emilia Romagna, Rome);
- Design of sustainable retrofit techniques for civil structures based on high-performance concrete and composite materials;
- Development of advanced monitoring tools for structures and infrastructures.

For the topics under investigation we plan to adopt a virtual testing approach. Accordingly, the numerical models are calibrated using experimental data produced within the project.

10 - Total cost of the research project, per single item

Associated Investigator	item A.1	item A.2.1	item B	item C	item D	item E	item F	Total
DI PAOLA Mario	10.142 €	12.000 €	13.285 €	0 €	0 €	23.100 €	57.492 €	116.019 €
TROVALUSCI Patrizia	9.913 €	18.000 €	16.748 €	1.239 €	0 €	3.100 €	€	49.000 €
MAIORANA Carmelo	9.815 €	15.000 €	14.889 €	0 €	0 €	9.296 €	€	49.000 €
CHIAIA Bernardino	10.000 €	10.000 €	12.000 €	5.800 €	0 €	11.200 €	€	49.000 €
FEO Luciano	10.000 €	10.000 €	12.000 €	0 €	0 €	17.000 €	€	49.000 €
REGA Giuseppe	10.158 €	17.500 €	16.595 €	1.247 €	0 €	3.500 €	€	49.000 €
FALSONE Giovanni	10.380 €	12.000 €	13.428 €	0 €	0 €	13.192 €	€	49.000 €
CARPINTERI Andrea	10.857 €	15.000 €	15.514 €	0 €	0 €	7.629 €	€	49.000 €
TALIERCIO Alberto	10.711 €	10.700 €	12.847 €	0 €	0 €	14.742 €	€	49.000 €
GUSELLA Vittorio	9.725 €	15.000 €	14.835 €	5.400 €	0 €	4.040 €	€	49.000 €
BRUNO Domenico	9.840 €	9.722 €	11.737 €	5.500 €	0 €	12.201 €	€	49.000 €
ROSATI Luciano	9.657 €	20.000 €	17.794 €	449 €	0 €	1.100 €	€	49.000 €
MAROTTI DE SCIARRA Francesco	9.986 €	5.000 €	8.992 €	0 €	0 €	25.022 €	€	49.000 €
CECCHI Antonella	9.922 €	18.000 €	16.753 €	0 €	0 €	4.325 €	€	49.000 €
ZAVARISE Giorgio	9.282 €	12.000 €	12.769 €	4.949 €	0 €	10.000 €	€	49.000 €
RIZZI Nicola Luigi	10.000 €	8.000 €	10.800 €	0 €	0 €	20.700 €	€	49.500 €

CADDEMI Salvatore	10.160 €	12.000 €	13.296 €	0 €	0 €	13.544 €	€	49.000 €
UBERTINI Francesco	9.878 €	18.000 €	16.727 €	0 €	0 €	4.395 €	€	49.000 €
TARANTINO Angelo Marcello	10.000 €	15.000 €	15.000 €	0 €	0 €	9.000 €	€	49.000 €
Total	190.426 €	252.922 €	266.009 €	24.584 €	0 €	207.086 €	57.492 €	998.519 €

- item A.1: enhancement of months/person of permanent employees
- item A.2.1: cost of contracts of non-employees, specifically to recruit
- item B: Overheads (flat rate equal to 60% of the total cost of staff, A.1 + A.2.1, for each research unit)
- item C: cost of equipment, instruments and software
- item D: cost of consulting services and similar
- item E: other operating costs
- item F: prize (to take advantage of the prize it is mandatory to attach to the project a declaration signed by the Rector of the university, according to the outline of section B2.7)

PART B

B.1

1 - State of the art

The project will contribute to the development of accurate and computationally effective constitutive models and numerical procedures for geometric and material nonlinear problems in structural mechanics. For the scientific background on these topics, we refer to the papers published by the coordinators of the single units (see B.2.3 and B.2.4) that guarantee the capability of the Group to pursue the Research goals.

Specifically, the project will analyze macro-, micro- and nano-structures made of advanced heterogeneous materials containing different constituents distributed in the microstructure. Such materials are widely adopted in many engineering applications due to their superior overall properties in comparison with conventional materials.

In cultural heritage preservation, for example, fiber reinforced cementitious matrix (FRCM) and fiber reinforced plastic (FRP) composites are a suitable solution for innovative repair and strengthening interventions [1-3].

At a smaller scale, new technologies in the research field of nanoelectromechanical systems (NEMS) can be developed by using potentialities offered by nanomaterials, such as carbon nanotubes [4].

The mechanical behavior of innovative materials strongly depends on damage and other phenomena which take place at multiple scales, due to their heterogeneous nature [5-6]. Fracture and fatigue assessment of structural components, made of fibre-reinforced materials and weakened by multiple site damage (MSD), in fact, currently represent a challenging problem in advanced engineering applications [7]. Modern constitutive theories and a better overall understanding of nonlinear effects, such as damage, delamination, heterogeneity are powerful new tools that can improve significantly the mechanical performance of construction materials and structural systems [8-9].

Versatile approaches, that will play a key role in the design of advanced materials, have been proposed within the framework of multiscale methods [10]. Multiscale and multiphysics models, provide a sound base for many challenging structural engineering applications and, for this reason, will be widely adopted in the present research. Moreover, with respect to the historical masonry buildings the state of the art on the subject denotes a strong need to provide innovative structural modelling methodologies able to simulate the nonlinear behavior and to provide reliable results with a reasonable computational effort [11-12]. Available theoretical approaches are able to exactly describe microscale masonry behaviour, but unable to solve problems at construction level [13-14]. The development of the research at different levels will allow the definition of procedures suitable to study the construction as a whole.

Stochastic modeling can be advantageously used for the constitutive characterization of both masonry structures and composite materials [15]. Allowing to apply some classical and new approaches of static and dynamic structural analyses in which the structural parameters are considered to be random [16-17]. Advanced models are available in the literature to predict the behavior of composite structures reinforced with FRP materials, whereas a lack of approaches addressing the topic of their optimal design is found [18]. Much interest is currently being directed towards other kinds of composite structures, such as membranes. In this case, a significant effort is still needed to formulate ad-hoc constitutive models that fully exploit the features of the technical issues [19].

- [1] D'Ambrisi et al, Compos Struct, 43, 2938-2949, 2012.
- [2] Bruggi, Taliervo, Int J Solid Struct, 50, 121-136, 2013.
- [3] Mazzucco et al, Compu Struct, 154, 17-28, 2015.
- [4] Barretta et al, Compos Struct, 129, 80-89, 2015.
- [5] Brighenti et al, Int Fatig, 82, 98-109, 2015.
- [6] Brighenti et al, Compos Part B-Eng, 53, 169-178, 2013.
- [7] Mazzucco et al, Comput Struct, 154, 17-28, 2015.
- [8] Greco et al, Eng Fract Mech, 80, 92-113, 2012.
- [9] Chiaia et al, Constr Build Mater, 67, 386-392, 2014.
- [10] Greco et al, Compos Struct, 113, 249-263, 2014.
- [11] Calì et al, Eng Struct, 40, 237-238, 2012.
- [12] Zavarise, Comput Mech, 56, 1-17, 2015.
- [13] Carloni, Focacci, Eu J Mech, 55, 122-133, 2016.
- [14] Trovalusci, Pau, Acta Mech, 225, 157-177, 2014.
- [15] Settineri, Falsone, Comput Method Appl M, 278, 828-852, 2014.
- [16] Dimitri et al, Eng Struct, 33, 3172-3188, 2011.

[17] Cavalagli et al, Int J Solids Struct, 50, 4226-4240, 2013.

[18] Bruggi et al, Int J Solids Struct, 67-68, 311-325, 2015.

[19] Galliot et al, Compo Struct, 90, 438-447, 2009.

2 – Detailed description of the project: methodology, targets and results that the project aims to achieve and their significance in terms of advancement of knowledge

The Research Group is characterized by:

Number of research units: 19

Main staff involved: 95

Total months/person expected: 245,5

The information about the main staff involved are shown in details in the TAB.1.

TAB.1 Main staff involved

	PO		PA		RTI		RTD		PhD student		Research grant		Total	
	n.	months/person	n.	months/person	n.	months/person	n.	months/person	n.	months/person	n.	months/person	n.	months/person
Unit 1	2	0,7	2	0,6	0	0	1	3	1	16	0	0	6	20,30
Unit 2	1	0,1	1	1	2	0,4	0	0	2	18	0	0	6	19,50
Unit 3	1	0,5	2	0,6	1	0,5	0	0	0	0	2	14	6	15,60
Unit 4	1	0,5	1	0,6	0	0	0	0	2	18	0	0	4	19,10
Unit 5	0	0	2	1,1	3	1,2	0	0	0	0	1	6	6	8,30
Unit 6	2	0,8	1	0,7	0	0	0	0	0	0	2	12	5	13,50
Unit 7	1	1,2	0	0	0	0	1	6	1	12	0	0	3	19,20
Unit 8	1	0,5	1	1	0	0	0	0	1	18	0	0	3	19,50
Unit 9	2	0,7	0	0	1	1	0	0	0	0	0	0	3	1,70
Unit 10	1	0,8	1	0,1	1	0,5	0	0	1	6	0	0	4	7,40
Unit 11	1	0,2	2	0,9	1	0,5	0	0	0	0	0	0	4	1,60
Unit 12	1	0,4	1	0,4	1	0,5	1	6	0	0	0	0	4	7,30
Unit 13	0	0	1	0,7	5	1,2	0	0	0	0	0	0	6	1,90
Unit 14	1	0,8	0	0	1	0,8	1	4	3	32	0	0	6	37,60
Unit 15	2	1	0	0	1	0,1	0	0	0	0	3	16	6	17,10
Unit 16	1	0,3	3	0,8	2	0,4	0	0	0	0	0	0	6	1,50
Unit 17	1	0,3	4	1,2	0	0	0	0	0	0	1	6	6	7,50
Unit 18	1	0,8	2	0,4	2	0,4	0	0	1	24	0	0	6	25,60
Unit 19	4	1,2	0	0	1	0,1	0	0	0	0	0	0	5	1,30
Total	24	10,80	24	10,10	22	7,60	4	19,00	12	144,00	9	54,00	95	245,50

Further the new collaborations are:

Number of research grants expected: 24

Predictable time commitment (months) for research grants: 173

The information about the major new contracts for staff specifically to recruit are shown in details in B.2.6.

The project will involve research activities carried out in several Laboratories

for a total of 30 Meuro

as shown in details in the TAB.2.

TAB.2 List of main Labs and related equipment values involved by the project

Laboratories and related equipment values						
Unit	Description	Lab n.1		Lab n.2		
		Available equipments	Total value of equipments (€)	Description	Available equipments	Total value of equipments (€)
UNICAL (Bruno)	Research Laboratories "Materials and Structures Engineering"	FE software for multi-physics, structural analysis and design, high Performance Computing cluster for parallel large-scale computations and workstations	60.000,00	Laboratory of material tests and structures	Machines for construction materials processing and testing, uniaxial shaking table for large-scale dynamic tests	1.000.000,00
UNICT (Caddemi)	Structural Engineering Laboratory	Controls Advantest System for compression/bending tests on concrete (load/displacement/strain controlled). Instron System for cyclic dynamic and fatigue tests. Static/dynamic HBM MGC plus data acquisition system software HBM CatmanAP. Static/dynamic National Instrument data acquisition system. Set displacement trasducers (24 Penny & Giles, 9 HBM), Set accelerometers (31), Set force transducers (HBM 200 kN, Novatech 500 kN, Controls 100 kN, Novatech 2000 kN, TMT 3000 kN, Laumas 25kN). Set hydraulic jacks: (n°6 Enerpac 10 ton, n°1 Euopress 30 ton, n°1 Larzep +/- 50 ton, n°2 FPT 150 ton, n°1 FPT 30ton, n°1 FPT 56 ton). Modular contrast structure for cyclic testing of reinforced concrete frames and masonry panels. Equipment for in situ tests.	1.000.000,00	/	/	/
UNIPR (Carpinteri)	Materials and Structural Testing Laboratory	Testing machines and measurements devices allowing the performance of static and dynamics loading mechanical tests, a servo-hydraulic testing machine	400000,00	/	/	/
IUAU (Cecchi)	LabSco - IUAU	Universal testing machine "Dartec" with 1200 kN load capacity and automatic data acquisition and management system, Press with 6000 kN load capacity, Data acquisition System, Georadar GSSI Sir System-3000, System for Structural Dynamic Testing (hydraulic power unit, 4 actuators)	1'000'000.00	Centro Studi MIMESI - Material Investigation, Modeling, Environmental, and Structural Identification	Digital data acquisition system DRC Data 500Digital data acquisition system DRC Data 500; High Sensitivity Accelerometers DRC KS48c; Ultrasound diagnostic system DRC D1000LF; Mortar Penetrometer; Digital Concrete Hammer; Digital video endoscope; Lightweight digital tromographs, acquisition systems for seismic noise and vibrations on soil and structures (Tromino® ENGY 3G)	40.000,00
POLITO (Chiola)	Research Laboratory "MASTRLAB"	/	100.000,00	Sezione Forza del Laboratorio di Taratura ACCREDIA LAT n. 139	/	100.000,00
UNIPA (Di Paola)	Experimental Structural Dynamics Testing Laboratory	Environmental noise structural monitoring through laser scanner vibrometer, interferometric radar, high sensitive sensors and related acquisition board. Small-scale lab testing through n.3 modal shakers, n.2 shaking tables, n.3 instrumented hammers and related sensor and acquisition board (NI PXI). Universal testing machine MTS axial/torsional.	590.000,00	L.E.D.A. - Laboratory of Earthquake engineering and Dynamic Analysis	Shaking tables system (two 6-DOFs 4mX4m tables, max payload 60t each and 100t coupled, max acc. 1.5g @ max payload, freq. range 0-60Hz). Real time control system able to drive the tables both separately and simultaneously (synchronous and asynchronous). TEAM Cube 6-DOFs hydraulic shaker (acc. 10g @ 450kg, freq. range 0-250Hz). LDS V875LS-440 1-DOF electromechanical shaker (acc. 100g @ 600kg, freq. range 5-3000Hz). Small-scale lab testing through n.2 modal shakers, n.1 shaking table, n.2 instrumented hammers, several piezoelectric force sensors, several piezoelectric accelerometers and NI PXI data acquisition system. Strong floor - strong wall reaction system (14m height, 14m large, 34m length). Hydraulic actuators (n. 4 @1000kN , n. 2 @500kN). Real time control system for static, pseudo dynamic and fatigue tests. Reaction frame equipped with a 2000 kN hydraulic actuator. Laboratory testing machines to perform mechanical characterization of building materials and advanced instrumentation to perform in situ destructive and non-destructive tests.	10.750.000,00
UNIME (Falsone)	L.A.M.A.S. (Experimental Materials and Structures Testing)	- Pseudo dynamic and static facility ITALSIGMA (6x6x5m) for large scale test, equipped by 6 servo - hydraulic actuators (load capacity 250 kN, 500 kN, 1MN, stroke +/-375 mm). - Dynamic facility ITALSIGMA (9x7x5m) for large scale test, equipped by 12 servo - hydraulic actuators (load capacity 100 kN, 250 kN, 500 kN, 1MN,stroke +/-100 mm). - Dynamic equipment for acceptance and qualification test on materials for anti-seismic devices ITALSIGMA compliant to UNI EN 13337. - IDS - IBS Interferometric instrument for static and dynamic tests on bridges with sub-millimetric precision and high acquisition frequency (100-200 Hz), equipped by 2 couples of radar sensors.	2.893.067,31	EUROLAB - laboratory of Structural Engineering of Center of Excellence, Research and Innovation for large Structures and Infrastructures (C.E.R.I.S.I.)	- Testing facility capable of real-time 6-DOF dynamic characterizations of full-scale bearing devices and dampers: the system is equipped by 4 vertical servo-hydraulic actuators (toil load: 16 MN), 2 high speed and low friction actuators for longitudinal displacements (maximum load: 3.1 MN), 2 high speed and low friction actuators for transversal displacements (maximum load: 1.4 MN). - Mechanical testing facility for fatigue and static test of Cable Systems up to 109 strands with 22m maximum length: the facility is equipped by 3 servo- hydraulic actuators TANDEM (maximum static load: 31 MN, superimposed dynamic load: 3,3 MN) an 1 servo-hydraulic for radial loads.	3.390.765,84
UNISA (Feo)	Structural Engineering Testing Hall	High-Pressure Hydraulic Distribution System (maximum oil flow rate: 10 l/s), Schenck Compression Testing Machine (capacity: 4000 kN) and SchenckHydropuls Testing Machine (capacity: 630 kN), recently upgraded with a ZwickRoell control system, Column Testing Machine, Rigid Steel Reaction Walls equipped with a MTS control system, oleodynamic actuators (range capacity: 250-2000 kN) and load cells.	2.000.000,00	/	/	/
UNIPG (Gusella)	Dynamics laboratory	Measuring devices: accelerometers; displacement transducers; load cells; CCD laser sensor for measuring displacements; inclinometers; pachometer; sclerometer; strummented hammer; centesimal comparators; HF Force balance. Acquisition systems: HBM-Spider-8 (16 channels), IOTECH-DATA SHUTTLE (8 channels), CRONOS-PL (16 channels), NI-PXI (48 channels) Actuator devices: shaker; load press; oleodinamic load jack; torsional electric drive.	250.000,00	Materials laboratory	Instruments for analysis and characterisation of granular materials. Static load press. Oledynamic load press for fatigue test. Triaxial press for dynamic test, programmable press with either load and displacement control.	300.000,00
UNIPD (Maiorana)	Construction materials testing laboratory	Hydraulic press, universal testing machine with automatic data acquisition, Charpy pendulum, system for fatigue testing, freeze-thaw machine equipment, 3D digital image correlation system, portable equipment (ultrasonic testing for rebars location, sclerometer, flat-jacks for masonry testing, strain-guages and transducers of different types)	1.000.000,00	Laboratory for drawing and industrial engineering methods	OGP SmartScope Flash CNC 300 Multi-sensor, CAM2 Faro Laser ScanArm Platinum, Konica Minolta VIVID-910, Zprinter 450, 3D System Cubex duo, Gabaldini Sun 2500, 3D Topographic system+control software, acquisition system	350.000,00

Laboratories and related equipment values						
Unit	Lab n.1			Lab n.2		
	Description	Available equipments	Total value of equipments (€)	Description	Available equipments	Total value of equipments (€)
UNINA (Marotti de Sciarrà)	LABORATORIO UFFICIALE PROVE MATERIALI E STRUTTURE "Adriano Galli"	Shaking table system, universal testing machine Italsigma, universal MTS810 machine	2.000.000,00	/	/	/
UNIROMA1 (Rega)	EXPERIMENTAL LABORATORY	Vibrating Table (Moog), Double effect jack (Schenck), Electrodynamic Shaker (Gearing & Watson), Electrodynamic Shaker (Dongling), Pulsating jacks, LVDT displacement transducers, various accelerometers	100.000,00	/	/	/
UNIROMA3 (Rizzi)	Modelling & Simulation Lab (LaMS)	In-house hardware comprises one cluster of multi-core processors workstations, one server SMP and one data server	30.000,00	LABoratory of computational MEchanics (LABMEC- SMARTLAB)	Linux Beowulf cluster of 18 CPU AMD Opteron at 2.4 GHz, Network of 16 workstations Pentium 4 at 3.2 GHz and 2GB of RAM, and 8 Workstation Pentium Intel® Xeon® Quad-Core 5450 3.0 GHz, and 4GB di RAM with printing and acquiring devices 8, Software library: compilers for the implementation of computational codes, scientific codes (Maple, Mathematica, Matlab, Femlab, Comsol) and finite elements computing tools (ABAQUS, ADINA, ANSYS CivilFEM, Lusas), scientific text editors	80.000,00
UNINA (Rosati)	LABORATORIO UFFICIALE PROVE MATERIALI E STRUTTURE "Adriano Galli"	Shaking table system, universal testing machine Italsigma, universal MTS810 machine	2.000.000,00	/	/	/
POUMI (Taliaccio)	Textiles and Polymers Research Lab (Textiles Hub)	Biaxial machine for testing technical textiles and polymeric foils, based on a rigid square frame, with 3 electromechanical actuators and load cells on each side (max force 50kN); displacement/force-controlled tests	150000,00	/	/	/
UNIMORE (Tarantino)	Materials and structures testing laboratory	Universal tensile machine 600 kN; bending three/four points machine 200 kN; compression machine 3000 kN; testing machine for diagonal compression on masonry walls; instrumentation DIC- Digital Imaging correlation system.	300.000,00	/	/	/
UNIROMA1 (Trovalusci)	"Heritage-Lab" laboratory in CISTeC - CR in Scienza e Tecnica per la Conservazione del Patrimonio Storico - Architettonico	Analytical instruments for the characterization of the properties of ancient and modern materials and their decay (microRaman, Surface Enhancement Raman (SERS), FT- Raman and microFTIR spectroscopies, Microscopes, Thermal analysis, porosimeters, spin coaters, Hi-speed mixers, climatic chambers, system for the preparation of thin sections	450000,00	/	/	/
UNIBO (Ubertini)	Materials, structures, and geotechnical laboratory (LISG)	Two recently-purchased servo-hydraulic universal MTS machines, a 3D fully-equipped digital image correlation system with two high-resolution cameras, a servo-hydraulic jack, several data acquisition systems, non-destructive testing evaluation	450.000,00	/	/	/
UNISALENTO (Zavarise)	Development of Integrated Procedures for Restoration of Monuments DIAPREM (http://www.unife.it/centri/diaprem)	Two 3D Laser Scanner flying time with millimeter prevision Leica (C10 and Leica P20), Two Portable 3D Laser Scanner with optical triangularization and sub-millimeter precision (Konica Minolta Vivid 910i e Rage5), 1 Total Station (Leica TCR1101), Total Station Leica TCR1202+ R1000 and GPS Leica RX1250GG and GPS1250GNSS ROVER. One Fiberscope for inspection with 2 meter cable, One Spectrophotometer Konica Minolta Cm 5300d, Two thermographic cameras IR (Flir E860x, B4), One Thermohygrometer.	150.000,00	/	/	/

The Coordinators of the Research Units are members of Editorial Board of several International Journals, see TAB.3.

TAB.3 Editorial Board membership

DI PAOLA	TROVALUSCI	MAIORANA	CHIAIA	FEO	REGA	CARPINTERI	BRUNO	MAROTTI DE SCIARRA	ZAVARISE	CADDEMI	UBERTINI
Advanced Studies in Theoretical Physics	Journal of Civil Engineering and Science	Periodica Polytechnica Civil Engineering (Editor of the Civil Engineering Section)	The Open Construction & Building Technology Journal	Composites Part B: Engineering (European Editor)	Meccanica (1998-2004 Editor)	Theoretical and Applied Fracture Mechanics	International Journal of Structures	Open Numerical Methods Journal	Computational Mechanics	Mathematical Problems in Engineering	Mathematical Problems in Engineering
Meccanica dei Materiali e delle Strutture (Editor)	ISRN Mechanical Engineering Journal		International Journal of Forensic Engineering	Advanced Composites (Editor-in-Chief of Section Board)	Chaos Solitons & Fractals (1996-2009 Associate Editor)	Structural Engineering and Mechanics - An International Journal	International Journal of Bridge Engineering				Curved and Layered Structures
Probabilistic Engineering Mechanics			Heliyon (Chiaia)	Curved and Layered Structures	Mathematical Problems in Engineering (2003-2015 Associate Editor)	Journal of Testing and Evaluation					Current Advances in Civil Engineering
International Journal of Nonlinear Mechanics				Journal Technologies.	ASME Journal of Computational and Nonlinear Dynamics (2005-2011 Associate Editor)	Frattura ed Integrità Strutturale					Open Journal of Civil Engineering
				Progettazione Sismica	Journal of Vibration and Control (2014-present Associate Editor)	Scientific Technical Review					Journal of Civil Engineering and Construction Technology
				Materials	International Journal of Dynamics and Control	Strength of Materials					JP Journal of Solids and Structures
				Current Nanoscience	Journal of Vibration and Control						
				International Journal of Nanoelectronics and Materials.	Prikladnaya Matematika i Mekhanika (PMM)- Journal of Applied Mathematics and Mechanics						
				Composites Part B: Engineering							
				Composites Theory and Practice							
				World Journal of Engineering							

The sets of objectives (O), methodologies (M) and results (R) are arranged according to the work packages (WPs) and related sub-packages, which have been envisaged for the project development. Please NOTE that the numbering of objectives, methodologies and results does NOT follow that of Tasks (listed in Section B.1.3) and that the correspondence between objectives, methodologies, results and the pertaining Tasks is shown in TAB.4.

WP1 Constitutive models (Leader: MAIORANA UNIPD)

WP1.1 Masonry. O1.1.1: Advanced tools for the separation of phases. O1.1.2: Enhanced constitutive response of masonry structures. O1.1.3: Prediction of multiphysics phenomena in masonry structures strengthened with composites. M1.1.1: Known and novel methods for digital image processing. M1.1.2: Multiscale models; interface elements for mortar joints; energy-based methods for masonries modeled as no-tension bodies; limit analysis based on non-associated laws; numerical simulation of masonry behavior; FE formulation of contact specific constitutive laws; fractional calculus for single and multi-phase stress-strain relations; image analysis and statistic approaches. M1.1.3: Multiphase models for hygro-thermal analysis and prediction of salt diffusion/crystallization in masonries strengthened with FRCC. R1.1.1: Computer code for identification of phases and texture of masonry. R1.1.2: Limit surfaces and homogenized constitutive responses; novel constitutive models for damaged masonry; routines for crack propagation analysis in masonry; validation via case studies and experimental tests; enhancement of FE nonlinear contact algorithms. R1.1.3: Variably refined models for hygro-thermal analysis of constituents and their interaction: numerical implementation and simulation.

WP1.2 Cements. O1.2.1: Enhanced constitutive response of concretes. O1.2.2: FRCC/masonry cohesive interface models. O1.2.3: Models of freezing and salt transport in cementitious materials. O1.2.4: Mechanical characterization of ultra-high performance fiber-reinforced concretes. O1.2.5: Assessment of eco-mechanical performances of cement-based composites.

M1.2.1: Multiscale models; novel cohesive elements for FRP/concrete delamination; novel multiple site damage (MSD) approaches under static or cyclic loading; fractional calculus for single and multi-phase stress-strain relations. M1.2.2: Numerical investigation of FRCM/masonry debonding by means of cohesive models. M1.2.3: Theoretical and numerical models for analysis of freezing and salt transport processes in cementitious materials. M1.2.4: Experimental investigation and analytic interpretation of results. M1.2.5: Theoretical models and experimental analyses for the tensile behavior of high-performance cement-based composites; experimental tests on recycled aggregate concretes. R1.2.1: Limit surfaces and homogenized constitutive responses; routines for crack propagation analysis in cement-based materials; numerical simulation and validation via case studies and experimental tests. R1.2.2: Validation of theoretical and numerical models. R1.2.3: Validation of theoretical and numerical models. R1.2.4: Novel constitutive laws for design. R1.2.5: Novel design-by-testing procedure for achieving the strain hardening in tension; new eco-mechanical index for new structures.

WP1.3 Composites and smart materials. O1.3.1: Enhanced constitutive response of composites and smart materials. O1.3.2: New models for masonry/FRP interfaces. O1.3.3: Realization of conglomerates with recycled aggregates. O1.3.4: Comprehensive constitutive behavior for shape memory materials. O1.3.5: New techniques for application of shape memory alloy (SMA) to masonry. O1.3.6: Thermo-mechanical behavior of micro-cracked composites. O1.3.7: Validation of new sustainable natural fiber composites for strengthening of masonry. M1.3.1: Multiscale models; cohesive elements for FRP/concrete delamination; novel multiple site damage (MSD) approaches under static or cyclic loading; novel coupled damage-plasticity laws for cementitious materials; continuum theory of porous media mechanics and FEM implementation of the derived fully coupled thermo-hygro-mechanical (T-H-M) model. M1.3.2: New discrete interface to model FRP/masonry delamination. M1.3.3: Characterization of recycled aggregates using experimental tests. M1.3.4: Formulation of novel free energy and dissipation functions. M1.3.5: Dissipative features of SMA in the austenitic phase by pre-tension of wires. M1.3.6: Multiscale modeling. M1.3.7: Laboratory tests for mechanical and durability characterization of composites with natural/recycled fibers. R1.3.1: Routines for crack propagation analysis in composites; numerical simulation and validation via case studies and experimental tests. R1.3.2: Numerical implementation and simulation of experimental results. R1.3.3: Design of conglomerates with lower consumption of natural aggregate. R1.3.4: Numerical implementation and simulation of experimental results. R1.3.5: Software implementation. R1.3.6: Thermomechanical relations for periodic/random materials. R1.3.7: Numerical simulation of strengthening effects on masonry structures.

WP1.4 Nanomaterials. O1.4.1: Capturing the real behavior of materials through advanced modeling of constitutive laws. O1.4.2: Validation of innovative techniques of strengthening, based on self-repairing materials for cement and/or lime mortar. M1.4.1: Multiphysics modeling of nanocomposites; multiscale modeling; fractional calculus for single and multi-phase stress-strain relations and experimental validation. M1.4.2: Laboratory tests for mechanical characterization of cement/lime mortars with self-healing materials. R1.4.1: Enhanced models for predicting the multiphysics response of nanocomposites. R1.4.2: Identification of parameters governing self-healing processes in mortar.

WP2 Structural models (Leader: ROSATI UNINA)

WP2.1 Beams. O2.1.1: Enhanced beam models for nonlinear analysis of composite materials. O2.1.2: Numerical strategies for seismic analysis of irregular buildings. M2.1.1: Structural modeling: finite element implementation and numerical simulation. M2.1.2: Advanced seismic structural analysis. R2.1.1: Implementation and validation by means of benchmark models. R2.1.2: Building code prescriptions.

WP2.2 Plane models. O2.2.1: Advanced modelling and numerical analysis of masonry walls. O2.2.2: New damage theories for thin membranes. M2.2.1: A macro-element approach for the nonlinear behavior of plane masonry structures; use of known and novel numerical methods to analyze masonry structures taking into account their microstructure; limit analysis. M2.2.2: Thermodynamic formulation of equilibrium problems by using non-convex potentials. R2.2.1: Numerical implementation and simulation of experimental results. R2.2.2: Predictive models for structural functionality of membranes.

WP2.3 Plates. O2.3.1: Development of enhanced plate models for mechanical and multiphysics analysis of laminates. M2.3.1: Advanced structural modeling: finite element implementation and numerical simulation; theoretical investigations. R2.3.1: Implementation and validation by means of benchmark models.

WP2.4 Shells. O2.4.1: Advanced modelling and numerical analysis of curved unreinforced and reinforced masonry elements. O2.4.2: Numerical methods for the optimal design of the fiber-reinforcement to strengthen existing masonry structures. O2.4.3: Modeling thin structures undergoing damage. M2.4.1: Advanced structural modeling: finite element implementation and numerical simulation; theoretical investigations. M2.4.2: Extension of an energy-based approach to solve a problem of optimal distribution of reinforcement material. M2.4.3: Dimensional reduction of enriched 3D continua. R2.4.1: Numerical implementation and simulation of experimental results. R2.4.2: Achievement of novel reinforcement solutions. R2.4.3: Continuum theory consistent with the 3D parent theory.

WP2.5 Half-spaces. O2.5.1: Evaluate internal forces in the structure due to soil flexibility under vertical and horizontal loads, either static or dynamic. M2.5.1: Extend classical Boussinesq and Cerruti solutions to account for arbitrary distributions of vertical and horizontal loads. R2.5.1: Validation of models under static and dynamic actions.

WP2.6 Carbon nanosheets and tubes. O2.6.1: Discrete and continuum modelling of carbon nanostructures. M2.6.1: Constitutive identification algorithms based on variational formulations; atomistic models for carbon structures. R2.6.1: Nanoscopically informed nonlinear beam models for carbon nanostructures.

WP3 Numerical methods (Leader: ZAVARISE UNISALENTO)

WP3.1 Homogenization and multiscale methods. O3.1.1: Efficient and accurate multiscale approaches for the analysis of composite materials (masonry, concrete, FRP) undergoing damage growth. M3.1.1: DEM and combined FEM/DEM; homogenization techniques; multiscale methods; extended variational principles; numerical techniques to return statistical characterization of the response; digital image processing; estimation of the errors; stochastic approaches for structures with uncertain mechanical parameters. R3.1.1: Numerical implementation, simulation of case studies and validation of laboratory experimental results.

WP3.2 Meshless methods. O3.2.1: Versatile procedures for solving any-shaped transversal section under shear and torsion. M3.2.1: Harmonic polynomial functions. R3.2.1: Valid solutions leading to analytical ones.

WP3.3 Vibration analysis, control and dissipation. O3.3.1: Analysis and control of nonlinear dynamic response. O3.3.2: Innovative modeling of advanced techniques for dissipation and vibration control of structures. M3.3.1: New concepts/techniques for analysis/control of nonlinear phenomena. M3.3.2: Dynamic analysis and experimental tests; dissipative features of SMA in the austenitic phase by pre-tension of wires. R3.3.1: Efficient tools for reliable prediction of dynamic response. R3.3.2: Innovative theoretical formulation for matching experimental results; new design criteria; nonlinear tools for enhancing energy transfer and vibration damping.

WP3.4 Structural optimization and identification. O3.4.1: Optimization and identification techniques as structural analysis methods. M3.4.1: Energy methods for the analysis of 3D structures modeled as no-tension bodies; constitutive model for the behavior of structural membranes at first loading; integral-equation-based identification strategies to predict the cause of the detected damage. R3.4.1: Numerical codes for identification of damage and optimal reinforcement.

WP3.5 Integration of constitutive equations. O3.5.1: Nonlinear modeling of beams in the framework of finite elasticity and of multilayer structures with time-dependent effect. M3.5.1: Unified multiphysics formulation to compare a variety of nonlinear models with constitutive law in integral form. R3.5.1: Models for reliable prediction of mechanical behavior of complex structures.

WP3.6 High-performance finite element methods. O3.6.1: High-performance FE formulations for nonlinear problems. M3.6.1: Mixed FE formulations based on extended variational principles; finite elements for Koiter analysis of shells and beams; FE formulation of contact constraints algorithms with high efficiency. R3.6.1: Experimentation of the algorithms.

WP3.7 Imperfection sensitivity analysis. O3.7.1: Imperfection sensitivity analysis of slender structures in cases of multimodal buckling using Koiter asymptotic method. M3.7.1: Effective and accurate Koiter algorithm based on the use of mixed solid finite elements. R3.7.1: Experimentation of the algorithms.

WP4 Real-life case studies. (Leader: DI PAOLA UNIPA)

WP4.1 Masonry buildings. (see Picture n.1) O4.1.1: Dynamic and seismic analysis of masonry buildings. M4.1.1: Identification and structural analysis of case studies, including nonlinear static analysis, non-standard limit analysis, spectrum and signal analysis, modal analysis. R4.1.1: Benchmark analysis on real scale historical buildings.

WP4.2 Composite structures. O4.2.1: Durability analysis of concretes subjected to freezing and salt transport. M4.2.1: Definition of the theoretical model; standard FE formulation for the numerical model. R4.2.1: Model validation and application to real cases.

WP4.3 Nanomaterials. O4.3.1: Analysis of CNT nanocomposites and innovative nanodevices. M4.3.1: SEM analyses and nonlocal modeling; designing nanodevices based on small-scale effects. R4.3.1: Design tools for innovative nanodevices.

WP4.4 Laboratory and in situ testing. O4.4.1: Experimental tests on cement and innovative composite materials. M4.4.1: Shear bond tests performed on steel FRCC tapes bonded to concrete and masonry; characterization of recycled aggregates using experimental tests; experimental investigation of mortars reinforced by basalt fibers; digital image correlation and optical fibers; experimental tests on hybrid reinforced concrete beams; laboratory tests for mechanical and durability characterization of composites with natural/recycled fibers; strengthening of masonry specimens with composites; laboratory tests for mechanical characterization of cement/lime mortars with self-healing materials; non-destructive tests on case studies. R4.4.1: Calibration and validation of numerical and theoretical models.

WP4.5 Monitoring. O4.5.1: Advanced tools for processing recorded data from monitoring using environmental noise. M4.5.1: Stochastic analysis, signal theory, low-cost sensors. R4.5.1: Remote control of structures through low-cost sensors.

TAB.4

		Objectives (O), Methodologies (M), Results (R)																	
WP1		1.1.1	1.1.2	1.1.3	1.2.1	1.2.2	1.2.3	1.2.4	1.2.5	1.3.1	1.3.2	1.3.3	1.3.4	1.3.5	1.3.6	1.3.7	1.4.1	1.4.2	
Task 1.1.1	Damage: Micromechanical models		X																
Task 1.1.2	Fracture: Cohesive crack models		X																
Task 1.1.3	Digital image processing for the separation of phases	X																	
Task 1.1.4	No-tension models		X																
Task 1.1.5	Continuum macro-models and multiscale strategies: homogenization and micropolar continua				X														
Task 1.1.6	Limit analysis based on non-associated laws		X																
Task 1.1.7	Multi-physics modelling of environmental ageing of masonry			X															
Task 1.1.8	Micromechanical and interface models		X																
Task 1.1.9	Fractional stress-strain relations		X																
Task 1.1.10	Stochastic constitutive models		X																
Task 1.2.1	Damage: Micromechanical models				X														
Task 1.2.2	Fracture: LEFM-based models				X														
Task 1.2.3	Fracture: Cohesive crack models				X	X													
Task 1.2.4	Fatigue: damage model of characteristic parameters				X														
Task 1.2.5	Durability of cementitious materials with special regard to freezing						X												
Task 1.2.6	Salt diffusion and precipitation and related mechanical effects						X												
Task 1.2.7	UHPFRC-ultra high performance fiber reinforced concretes							X											
Task 1.2.8	High performance cement-based composites								X										
Task 1.2.9	Eco-mechanical analysis of cement-based composites								X										
Task 1.2.10	Fractional stress-strain relations				X														
Task 1.3.1	Damage: Micromechanical models									X									
Task 1.3.2	Fracture: Cohesive crack models									X	X								
Task 1.3.3	Fatigue: damage model of characteristic parameters and local fiber/matrix parameters									X									
Task 1.3.4	Conglomerates with aggregate from recycling: coupled damage and plasticity models									X		X							
Task 1.3.5	Conglomerates with aggregate from recycling: T-H-M models									X									
Task 1.3.6	Concrete with polypropylene fibres for spalling risk mitigation: T-H-M models									X									
Task 1.3.7	Shape memory materials												X	X					
Task 1.3.8	Composite materials for tension membranes									X									
Task 1.3.9	Continuum macro-models and multiscale strategies: random and/or periodic homogenization, multifield continua									X									
Task 1.3.10	Thermo-mechanical behavior of microcracked composites														X				
Task 1.3.11	Wave propagation in microcracked media: dispersion									X									
Task 1.3.12	Micromechanical models for composite materials with natural fibres, durability															X			
Task 1.3.13	Fractional stress-strain relations									X									
Task 1.3.14	Stochastic constitutive models									X									
Task 1.4.1	MEMS-NEMS: multiphysics modeling																X		
Task 1.4.2	Nanocomposites																X		
Task 1.4.3	Self-healing materials for mortar																	X	
Task 1.4.4	Fractional stress-strain relations																X		

Objectives (O), Methodologies (M), Results (R)

WP2		2.1.1	2.1.2	2.2.1	2.2.2	2.3.1	2.4.1	2.4.2	2.4.3	2.5.1	2.6.1
Task 2.1.1	Multi-layer models	X									
Task 2.1.2	Modeling of the bond behavior between steel FRCM and concrete/masonry members	X									
Task 2.1.3	Bernoulli	X									
Task 2.1.4	Timoshenko	X									
Task 2.1.5	Finite displacement and strain models	X									
Task 2.1.6	MEMS-NEMS: nonlinear dynamic behavior	X									
Task 2.1.7	Thin-walled beams	X									
Task 2.1.8	Fiber-free models	X									
Task 2.1.9	Buildings		X								
Task 2.1.10	Non-local effects	X									
Task 2.1.11	Reddy model	X									
Task 2.1.12	Modeling of non-linear beam with singularities	X									
Task 2.2.1	Masonry walls			X							
Task 2.2.2	Damaged nonlinear membranes				X						
Task 2.3.1	Multi-layer models					X					
Task 2.3.2	Kirchhoff-von Karman					X					
Task 2.3.3	Reissener-Mindlin-Reddy					X					
Task 2.3.4	Laminated and FGM-based plates: thermomechanical coupling					X					
Task 2.3.5	Microcracked plates					X					
Task 2.4.1	Fatigue: surface cracks interaction						X				
Task 2.4.2	Masonry vaults						X	X			
Task 2.4.3	Microcracked shells								X		
Task 2.4.4	Modeling for spatial macro-elements						X				
Task 2.4.5	Modeling of reinforced elements						X				
Task 2.5.1	Generalized Boussinesq model									X	
Task 2.5.2	Generalized Cerruti model									X	
Task 2.5.3	Transversely isotropic half-spaces									X	
Task 2.6.1	Carbon nanosheets and tubes as nonstandard beams										X
Task 2.6.2	Micro and macro modeling of carbon nanosheets and tubes										X

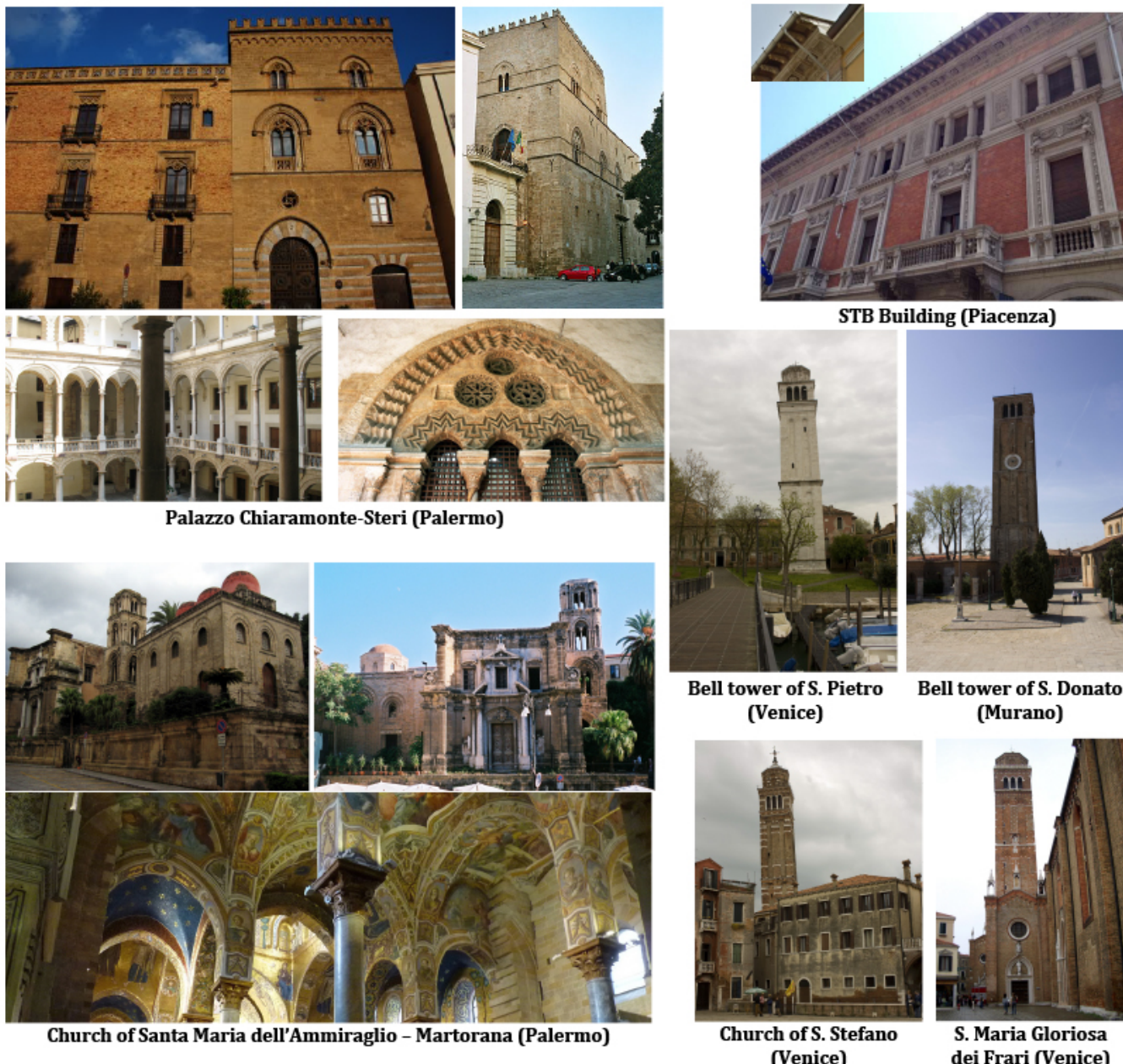
Objectives (O), Methodologies (M), Results (R)

WP3		3.1.1	3.2.1	3.3.1	3.3.2	3.4.1	3.5.1	3.6.1	3.7.1
Task 3.1.1	Homogenization and multiscale methods	X							
Task 3.1.2	Multiscale crack propagation algorithms	X							
Task 3.1.3	Damage: micromechanical models	X							
Task 3.1.4	Random models	X							
Task 3.1.5	Periodic models	X							
Task 3.1.6	Statistically Equivalent Periodic Unit Cell (SEPUC) - Homogenization residuals	X							
Task 3.1.7	DEM & FEM/DEM models	X							
Task 3.1.8	Static and dynamic stochastic analyses of masonry structures	X							
Task 3.1.9	Static and dynamic stochastic analyses of composite structures	X							
Task 3.2.1	Line element-less method		X						
Task 3.2.2	Reliability of masonry structures		X						
Task 3.2.3	Reliability of composite structures		X						
Task 3.3.1	Reduced order modeling and methods for nonlinear dynamic analyses				X				
Task 3.3.2	Analysis and control of nonlinear dynamic response			X					
Task 3.3.3	Dynamic integrity as a novel approach to engineering design				X				
Task 3.3.4	Energy transfer/harvesting via adaptive materials, devices and structures				X				
Task 3.3.5	Tuned mass dampers				X				
Task 3.3.6	Tuned liquid column dampers				X				
Task 3.3.7	Rocking				X				
Task 3.3.8	Vibration mitigation by means of shape memory wires				X				
Task 3.4.1	Optimization and identification techniques as structural analysis methods					X			
Task 3.4.2	Optimization methods for structural design					X			
Task 3.5.1	Time-dependent structures with integral-form laws						X		
Task 3.6.1	Mixed finite elements for multi-field continua							X	
Task 3.6.2	Multi-field finite elements for fiber model-based 3D beams							X	
Task 3.6.3	Mixed solid shell Finite Elements							X	
Task 3.6.4	Efficiency of contact algorithms							X	
Task 3.7.1	Imperfection sensitivity analysis								X

Objectives (O), Methodologies (M), Results (R)

WP4		4.1.1	4.2.1	4.3.1	4.4.1	4.5.1
Task 4.1.1	Risk and resilience assessment of Perugia masonry constructions	X				
Task 4.1.2	Analysis of strategic buildings in Emilia	X				
Task 4.1.3	Dynamic and seismic behavior of masonry buildings. Case study: Baths of Diocletian (Rome)	X				
Task 4.1.4	Out-of-plane response of masonry infill walls: nonlinear analyses and comparisons with experimental results	X				
Task 4.1.5	Analysis of masonry buildings in Venice	X				
Task 4.1.6	Frequency mapping of buildings of Palermo cultural heritage	X				
Task 4.1.7	Structural analysis of Sicilian Heritage building	X				
Task 4.2.1	Fire behavior analysis of a tunnel		X			
Task 4.2.2	Spalling analysis of aggregates from recycling		X			
Task 4.2.3	Durability analysis of concretes subjected to freezing		X			
Task 4.2.4	Durability analysis of concretes subjected to salt diffusion and precipitation		X			
Task 4.3.1	Analysis of CNT nanocomposites			X		
Task 4.3.2	Analysis of innovative devices			X		
Task 4.4.1	Experimental tests on cement and innovative composite materials				X	
Task 4.4.2	Experimental analysis of the end debonding in masonry and concrete specimens strengthened with steel FRCM strips				X	
Task 4.4.3	Experimental tests of innovative materials and of materials from recycling for application in buildings				X	
Task 4.4.4	Experimental tests of concrete reinforced with natural (basalt) fibers				X	
Task 4.4.5	Experimental analysis of the FRCM-masonry interface				X	
Task 4.4.6	Assessing the old concrete structures				X	
Task 4.4.7	Hybrid reinforced concrete beams				X	
Task 4.4.8	Experimentation for new materials and recycled materials in constructions				X	
Task 4.4.9	In situ experimental campaign and structural dynamic identification				X	
Task 4.5.1	Remote monitoring					X
Task 4.5.2	Environmental noise					X
Task 4.5.3	Advanced tools for monitoring					X
Task 4.5.4	Innovative mathematical models					X

Picture n.1



Palazzo Chiaramonte-Steri (Palermo)

STB Building (Piacenza)

Bell tower of S. Pietro (Venice)

Bell tower of S. Donato (Murano)

Church of Santa Maria dell'Ammiraglio – Martorana (Palermo)

Church of S. Stefano (Venice)

S. Maria Gloriosa dei Frari (Venice)

3 - Project development, with identification of the role of each research unit and research organizations involved, with regards to expected targets, and related modalities of integration and collaboration

Each research unit is characterized by specific competences, which will be integrated through the project consortium, also taking care of the results organization (including dissemination activities) and of the technical and scientific support to other partners. In the following a short description of the project will be provided. It has been organized in four work-packages (WPs), each of which is composed of different tasks (Ts).

WP1 Constitutive models

WP1.1 Masonry: T1.1.1 Damage: Micromechanical models; T1.1.2 Fracture: Cohesive crack models; T1.1.3 Digital image processing for the separation of phases; T1.1.4 No-tension models; T1.1.5 Continuum macro-models and multiscale strategies: homogenization and micropolar continua; T1.1.6 Limit analysis based on non-associated laws; T1.1.7 Multiphase modelling of environmental ageing of masonry; T1.1.8 Micromechanical and interface models; T1.1.9 Fractional stress-strain relations; T1.1.10 Stochastic constitutive models.

WP1.2 Cements: T1.2.1 Damage: Micromechanical models; T1.2.2 Fracture: LEFM-based models; T1.2.3 Fracture: Cohesive crack models; T1.2.4 Fatigue: damage model of characteristic parameters; T1.2.5 Durability of cementitious materials with special regard to freezing; T1.2.6 Salt diffusion and precipitation and related mechanical effects; T1.2.7 UHPFRC-ultra high performance fiber reinforced concretes; T1.2.8 High performance cement-based composites; T1.2.9 Eco-mechanical analysis of cement-based composites; T1.2.10 Fractional stress-strain relations.

WP1.3 Composites and smart materials: T1.3.1 Damage: Micromechanical models; T1.3.2 Fracture: Cohesive crack models; T1.3.3 Fatigue: damage model of characteristic parameters and local fiber/matrix parameters; T1.3.4 Conglomerates with aggregate from recycling: coupled damage and plasticity models; T1.3.5 Conglomerates with aggregate from recycling:

T-H-M models; T1.3.6 Concrete with polypropylene fibres for spalling risk mitigation: T-H-M models; T1.3.7 Shape memory materials; T1.3.8 Composite materials for tension membranes; T1.3.9 Continuum macro-models and multiscale strategies: random and/or periodic homogenization, multifield continua; T1.3.10 Thermo-mechanical behavior of microcracked composites; T1.3.11 Wave propagation in microcracked media: dispersion; T1.3.12 Micromechanical models for composite materials with natural fibres, durability; T1.3.13 Fractional stress-strain relations; T1.3.14 Stochastic constitutive models.

WP1.4 Nanomaterials: T1.4.1 MEMS-NEMS: multiphysics modeling; T1.4.2 Nanocomposites; T1.4.3 Self-healing materials for mortar; T1.4.4 Fractional stress-strain relations.

WP2 Structural models

WP2.1 Beams: T2.1.1 Multi-layer models; T2.1.2 Modeling of the bond behavior between steel FRCM and concrete/masonry members; T2.1.3 Bernoulli; T2.1.4 Timoshenko; T2.1.5 Finite displacement and strain models; T2.1.6 MEMS-NEMS: nonlinear dynamic behavior; T2.1.7 Thin-walled beams; T2.1.8 Fiber-free models; T2.1.9 Buildings; T2.1.10 Non-local effects; T2.1.11 Reddy model; T2.1.12 Modeling of non-linear beam with singularities.

WP2.2 Plane models: T2.2.1 Masonry walls; T2.2.2 Damaged nonlinear membranes.

WP2.3 Plates: T2.3.1 Multi-layer models; T2.3.2 Kirchhoff-von Karman; T2.3.3 Reissener-Mindlin-Reddy; T2.3.4 Laminated and FGM-based plates: thermomechanical coupling; T2.3.5 Microcracked plates.

WP2.4 Shells: T2.4.1 Fatigue: surface cracks interaction; T2.4.2 Masonry vaults; T2.4.3 Microcracked shells; T2.4.4 Modeling for spatial macro-elements; T2.4.5 Modeling of reinforced elements.

WP2.5 Half-spaces: T2.5.1 Generalized Boussinesq model; T2.5.2 Generalized Cerruti model; T2.5.3 Transversely isotropic half-spaces.

WP2.6 Carbon nanosheets and tubes: T2.6.1 Carbon nanosheets and tubes as nonstandard beams; T2.6.2 Micro and macro modeling of carbon nanosheets and tubes.

WP3 Numerical methods

WP3.1 Homogenization and multiscale techniques: T3.1.1 Homogenization and multiscale methods; T3.1.2 Multiscale crack propagation algorithms; T3.1.3 Damage: micromechanical models; T3.1.4 Random models; T3.1.5 Periodic models; T3.1.6 Statistically Equivalent Periodic Unit Cell (SEPUC) - Homogenization residuals; T3.1.7 DEM & FEM/DEM models; T3.1.8 Static and dynamic stochastic analyses of masonry structures; T3.1.9 Static and dynamic stochastic analyses of composite structures.

WP3.2 Meshless methods: T3.2.1 Line element-less method; T3.2.2 Reliability of masonry structures; T3.2.3 Reliability of composite structures.

WP3.3 Vibration analysis, control and dissipation: T3.3.1 Reduced order modeling and methods for nonlinear dynamic analyses; T3.3.2 Analysis and control of nonlinear dynamic response; T3.3.3 Dynamic integrity as a novel approach to engineering design; T3.3.4 Energy transfer/harvesting via adaptive materials, devices and structures; T3.3.5 Tuned mass dampers; T3.3.6 Tuned liquid column dampers; T3.3.7 Rocking; T3.3.8 Vibration mitigation by means of shape memory wires.

WP3.4 Structural optimization and identification: T3.4.1 Optimization and identification techniques as structural analysis methods; T3.4.2 Optimization methods for structural design.

WP3.5 Integration of constitutive equations: T3.5.1 Time-dependent structures with integral-form laws.

WP3.6 High-performance finite element methods: T3.6.1 Mixed finite elements for multi-field continua; T3.6.2 Multi-field finite elements for fiber model-based 3D beams; T3.6.3 Mixed solid shell Finite Elements; T3.6.4 Efficiency of contact algorithms.

WP3.7 Imperfection sensitivity analysis: T3.7.1 Imperfection sensitivity analysis.

WP4 Real-life case studies

WP4.1 Masonry buildings: T4.1.1 Risk and resilience assessment of masonry constructions; T4.1.2 Analysis of strategic buildings in Emilia; T4.1.3 Dynamic and seismic behavior of masonry buildings. Case study: Baths of Diocletian (Rome); T4.1.4 Out-of-plane response of masonry infill walls: nonlinear analyses and comparisons with experimental results; T4.1.5 Analysis of masonry buildings in Venice; T4.1.6 Frequency mapping of buildings of Palermo cultural heritage; T4.1.7 Structural analysis of Heritage building.

WP4.2 Composite structures: T4.2.1 Fire behavior analysis of a tunnel; T4.2.2 Spalling analysis of aggregates from recycling; T4.2.3 Durability analysis of concretes subjected to freezing; T4.2.4 Durability analysis of concretes subjected to salt diffusion and precipitation.

WP4.3 Nanomaterials: T4.3.1 Analysis of CNT nanocomposites; T4.3.2 Analysis of innovative devices.

WP4.4 Laboratory and in situ testing: T4.4.1 Experimental tests on cement and innovative composite materials; T4.4.2 Experimental analysis of the end debonding in masonry and concrete specimens strengthened with steel FRCM strips; T4.4.3 Experimental tests of innovative materials and of materials from recycling for application in buildings; T4.4.4 Experimental tests of concrete reinforced with natural (basalt) fibers; T4.4.5 Experimental analysis of the FRCM-masonry interface; T4.4.6 Assessing the old concrete structures; T4.4.7 Hybrid reinforced concrete beams; T4.4.8 Experimentation for new materials and recycled materials in constructions; T4.4.9 In situ experimental campaign and structural dynamic identification.

WP4.5 Monitoring: T4.5.1 Remote monitoring; T4.5.2 Environmental noise; T4.5.3 Advanced tools for monitoring; T4.5.4 Innovative mathematical models.

The role of each research unit and related modalities of integration and collaboration can be deduced from the attached Tables, referring to the proposed WPs.

TAB.1 Project development and role of each research unit

WP1		UNICAL (Bruno)	UNICT (Caddemi)	UNIPR (Carpinteri)	IUAV (Cecchi)	POLITO (Chiaia)	UNIPA (Di Paola)	UNIME (Falsone)	UNISA (Feo)	UNIPG (Gusella)	UNIPD (Maiorana)	UNINA (Marotti de Sclarra)	UNIROMA1 (Rega)	UNIROMA3 (Rizzi)	UNINA (Rosati)	POLIMI (Talliercio)	UNIMORE (Tarantino)	UNIROMA1 (Trovalusci)	UNIBO (Ubertini)	UNISALENTO (Zavarise)
WP1.1	Task 1.1.1	X																X		
	Task 1.1.2	X	X																	
	Task 1.1.3									X										
	Task 1.1.4															X				
	Task 1.1.5																	X		
	Task 1.1.6																	X		
	Task 1.1.7																		X	
	Task 1.1.8																			X
	Task 1.1.9																			
	Task 1.1.10																			
WP1.2	Task 1.2.1	X																		
	Task 1.2.2	X																		
	Task 1.2.3	X	X																	
	Task 1.2.4			X																
	Task 1.2.5										X									
	Task 1.2.6										X									
	Task 1.2.7																X			
	Task 1.2.8																			
	Task 1.2.9																			
	Task 1.2.10																			
WP1.3	Task 1.3.1	X																X		
	Task 1.3.2	X																	X	
	Task 1.3.3			X																
	Task 1.3.4			X																
	Task 1.3.5																			
	Task 1.3.6																			
	Task 1.3.7		X										X							
	Task 1.3.8																			
	Task 1.3.9																			
	Task 1.3.10																			
	Task 1.3.11																			
	Task 1.3.12																			
	Task 1.3.13																			
	Task 1.3.14																			
WP1.4	Task 1.4.1																			
	Task 1.4.2																			
	Task 1.4.3																			
	Task 1.4.4																			

WP2		UNICAL (Bruno)	UNICT (Caddemi)	UNIPR (Carpinteri)	IUAV (Cecchi)	POLITO (Chiaia)	UNIPA (Di Paola)	UNIME (Falsone)	UNISA (Feo)	UNIPG (Gusella)	UNIPD (Maiorana)	UNINA (Marotti de Sclarra)	UNIROMA1 (Rega)	UNIROMA3 (Rizzi)	UNINA (Rosati)	POLIMI (Talliercio)	UNIMORE (Tarantino)	UNIROMA1 (Trovalusci)	UNIBO (Ubertini)	UNISALENTO (Zavarise)
WP2.1	Task 2.1.1	X																		
	Task 2.1.2																			
	Task 2.1.3		X										X	X						
	Task 2.1.4		X										X	X						
	Task 2.1.5												X	X						
	Task 2.1.6												X	X						
	Task 2.1.7																			
	Task 2.1.8																			
	Task 2.1.9																			
	Task 2.1.10																			
	Task 2.1.11																			
	Task 2.1.12		X																	
WP2.2	Task 2.2.1		X																	
	Task 2.2.2																			
WP2.3	Task 2.3.1	X																		
	Task 2.3.2																			
	Task 2.3.3																			
	Task 2.3.4																			
	Task 2.3.5																			
WP2.4	Task 2.4.1			X																
	Task 2.4.2		X																	
	Task 2.4.3																			
	Task 2.4.4		X																	
	Task 2.4.5		X																	
WP2.5	Task 2.5.1																			
	Task 2.5.2																			
	Task 2.5.3																			
WP2.6	Task 2.6.1																			
	Task 2.6.2																			

WP3		UNICAL (Bruno)	UNICT (Caddemi)	UNIPR (Carpinteri)	IJAV (Cecchi)	POLITO (Chiola)	UNIPA (Di Paola)	UNIME (Falsone)	UNISA (Feo)	UNIPG (Gusella)	UNIPD (Maiorana)	UNINA (Marotti de Sciarra)	UNIROMA1 (Rega)	UNIROMA3 (Rizzi)	UNINA (Rosati)	POLIMI (Talliercio)	UNIMORE (Tarantino)	UNIROMA1 (Trovalusci)	UNIBO (Ubertini)	UNISALENTO (Zavarise)
WP3.1	Task 3.1.1	X			X						X	X				X		X		
	Task 3.1.2	X																		
	Task 3.1.3	X		X							X									
	Task 3.1.4				X		X				X									
	Task 3.1.5				X															
	Task 3.1.6									X										
	Task 3.1.7				X							X								
	Task 3.1.8							X												
	Task 3.1.9							X												
WP3.2	Task 3.2.1						X													
	Task 3.2.2							X												
	Task 3.2.3							X												
WP3.3	Task 3.3.1												X							
	Task 3.3.2											X								
	Task 3.3.3											X								
	Task 3.3.4											X								
	Task 3.3.5						X													
	Task 3.3.6						X													
	Task 3.3.7						X													
	Task 3.3.8		X										X							
WP3.4	Task 3.4.1															X				X
	Task 3.4.2															X				
WP3.5	Task 3.5.1																X			
WP3.6	Task 3.6.1																	X		
	Task 3.6.2																	X		
	Task 3.6.3													X						
WP3.7	Task 3.6.4																			X
	Task 3.7.1													X						

WP4		UNICAL (Bruno)	UNICT (Caddemi)	UNIPR (Carpinteri)	IJAV (Cecchi)	POLITO (Chiola)	UNIPA (Di Paola)	UNIME (Falsone)	UNISA (Feo)	UNIPG (Gusella)	UNIPD (Maiorana)	UNINA (Marotti de Sciarra)	UNIROMA1 (Rega)	UNIROMA3 (Rizzi)	UNINA (Rosati)	POLIMI (Talliercio)	UNIMORE (Tarantino)	UNIROMA1 (Trovalusci)	UNIBO (Ubertini)	UNISALENTO (Zavarise)
WP4.1	Task 4.1.1									X										
	Task 4.1.2																X			
	Task 4.1.3																	X		
	Task 4.1.4																	X		
	Task 4.1.5				X															
	Task 4.1.6						X													
	Task 4.1.7		X																	
WP4.2	Task 4.2.1										X									
	Task 4.2.2										X									
	Task 4.2.3										X									
	Task 4.2.4										X									
WP4.3	Task 4.3.1											X								
	Task 4.3.2											X								
WP4.4	Task 4.4.1			X																
	Task 4.4.2								X											
	Task 4.4.3																X			
	Task 4.4.4																			
	Task 4.4.5																	X		
	Task 4.4.6					X													X	
	Task 4.4.7					X														
	Task 4.4.8				X															
	Task 4.4.9				X															
WP4.5	Task 4.5.1						X													
	Task 4.5.2						X													
	Task 4.5.3						X													
	Task 4.5.4						X													

Moreover, the achieved results will be published in scientific papers, whose quality and quantity will constitute another important evaluation element.

Each Leader of WP (see B.1.2) will ensure the collaboration and the integration of the corresponding tasks by using the following tools:

- The website of the group: <http://www.unipa.it/persona/docenti/p/antonina.pirrotta/prin-2015/> collecting final results, journal papers and conference proceedings and containing the necessary information about project, research units, past and future meetings. It will be of primary importance to maintain, update and keep in evidence the website.
- Intermediate workshops and meetings involving the research units, necessary in order to verify the synergy of activities and to face specific topics, also with the contribution of external scientists.
- Initial conference. This meeting, to be held in conjunction with Stochastic Mechanics Conference in Capri 12-15 June, will give to the research units the opportunity to present the objectives of the research to external scientists. The web site of the Conference is: <https://workplace.unipa.it/persona/docenti/p/antonina.pirrotta/congresso-capri/>
- The Conference is co-chaired by Prof. Antonina Pirrotta member of the project.
- Final conference. This meeting, to be held at the end of the three-years project, will give to the research units the opportunity to present the achieved results to external scientists.
- Involvement of external experts as discussants (see collaborations' table), authors and referees of the scientific products presented during the workshops.
- Involvement of institutional authorities, topical associations, companies interested to the project.
- International conference proceedings are needed to prove the quality of the research and also to receive useful feedbacks.
- Publication of papers in international scientific journals. Publication in well cited and high impact-factor journals is necessary to obtain a confirmation of the scientific product quality from the referees.

Finally, we show the timetable of the WP activities.

TAB.2 Timetable



4 – Possible application potentialities and scientific and/or technological and/or social and/or economic impact of the project

The present project shares several targets and aims with Horizon 2020 programmatic documents, i.e. with the European Commission Proposal 2011/0402 (CNS) named "Establishment of The specific program implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and subsequent Regulation (EU) No 1291/2013. In particular, in accordance with Article 5(2) the general Horizon2020 objective shall be pursued through three mutually reinforcing priorities dedicated to: "Excellent science" (Part I), "Industrial leadership" (Part II), "Societal challenges" (Part III), but also "Spreading excellence and widening participation" (Part IV) and "Science with and for society" (Part V). We believe that the present proposal has very strong connections with Horizon 2020 within the first three mentioned priorities, as discussed in the following. The specific objectives of Part I are met by our proposal, specifically in the following points: (a) strengthening frontier research; (b) strengthening research in Future and Emerging Technologies (FET); (d) strengthening European research infrastructures. For what concerns Part II, the project accomplishes the following specific objective mentioned in the programmatic document: a) boosting Europe's industrial leadership through research, technological development, demonstration and innovation in advanced materials. In fact, one of the core activity of the project is the constitutive modeling of advanced materials, such as new concrete mixes and carbon-nanotubes (see TAB.1 for connections with the specific Calls of Horizon 2020). Advanced modeling and nonlinear dynamics may be exploited to significantly improve performance and safety of macro-to-nano structural elements and develop novel design criteria. Nowadays Computational Mechanics is becoming a more and more fundamental tool for many engineering disciplines. Micro- and nano-technologies constitute a perfect example of revolutionary fields where reliable numerical simulations play a crucial role.

Finally, our research targets can be linked to Horizon 2020 in view of Part III with particular reference to: (a) improving the lifelong health and well-being; (c) making the transition to a reliable, sustainable and efficient energy system (see TAB.2 for details).

Specifically, the project will monitor and analyze the structural behavior of at least 6 real historical and strategical buildings in Rome, Palermo, Venice and Emilia Romagna (see B.1.2). Such an activity will imply a primary social impact linked to safety in constructions.

Moreover, no Italian CNR guideline addresses the strengthening of existing structures by using FRCMs. The results obtained within the proposed research program will make a significant contribution in order to issue an Italian CNR guideline on the design of externally bonded FRCM systems for strengthening existing structures. In this sense many members of the research group have developed the following guidelines recently issued by CNR on the structural use of FRPs: CNR-DT 200/2004, CNR-DT 200/2013 - R1, CNR-DT 201/2005, CNR-DT 202/2005, CNR-DT 203/2006, CNR-DT 204/2006, CNR-DT 205/2007 (<http://www.cnr.it/sitocnr/IICNR/Attivita/NormazioneeCertificazione/>).

Also, in terms of climate action, resource efficiency and raw materials, the EU with the Directive 2008/98/EC has recently adopted a policy meant to promote the use of recycled aggregates for concrete production up to 70% for 2020, even for structural purposes. Therefore the involvement of many research units on the characterization of recycled aggregates in concrete is in line with this specific objective (see B.1.3).

The study of the set of problems reported in TAB.2 will be approached in the present project through the significant interaction of all research units, which in the past have already proved their capability of mutual collaboration and networking also with internationally recognized research units (see TAB.3 for details). The created active network among research groups, still ongoing in most cases, is expected to be a valid background for the success of the proposed project and a clear advantage for its impacts on Horizon2020 scopes.

A summary of the main impact indicators related to the present project is reported in the attached TAB.4.

TAB.1 Connections with Horizon 2020 Calls

Connections with Horizon 2020 Calls

Unit	CALLS H2020					
	H2020-EEB-2014-2015	H2020-DRS-2014-2015	H2020-WASTE-2014-2015	H2020-NMBP-2016-2017	H2020-LCE-2016-2017	H2020-SCS-2016-2017
	CALL FOR ENERGY-EFFICIENT BUILDINGS	DISASTER-RESILIENCE: SAFEGUARDING AND SECURING SOCIETY, INCLUDING ADAPTING TO CLIMATE CHANGE	WASTE: A RESOURCE TO RECYCLE, REUSE AND RECOVER RAW MATERIALS	CALL FOR NANOTECHNOLOGIES, ADVANCED MATERIALS, BIOTECHNOLOGY AND PRODUCTION	COMPETITIVE LOW-CARBON ENERGY	GREENING THE ECONOMY
UNICAL (Bruno)	Development of integrated approach to retrofitting of buildings based on the use of innovative and smart materials.	Development of eco-innovative solutions for mitigating the effects of climate change and natural hazards on sites, structures and artefacts of cultural heritage, taking into account their value and respecting their cultural and historical integrity.		Development of novel numerical methods, fast algorithms and modelling tools, to be used as a support for the design of innovative materials and structures, thus promoting more efficient manufacturing processes.	Improvement of structural performances of composite materials for the realization of sophisticated control, automation and monitoring systems for buildings and infrastructures.	Cultural heritage as a driver for sustainable growth
UNICT (Caddemi)	Development of integrated approach to retrofitting of buildings based on the use of innovative and smart materials.	Development of eco-innovative solutions for mitigating the effects of climate change and natural hazards on sites, structures and artefacts of cultural heritage, taking into account their value and respecting their cultural and historical integrity.		Innovative solutions for the conservation of 20th century cultural heritage based on the use of innovative materials, including shape memory alloys.	Improvement of structural performances of composite materials for the realization of sophisticated control, automation and monitoring systems for buildings and infrastructures.	Cultural heritage as a driver for sustainable growth
IUAV (Cecchi)	New technologies and strategies for the development of pre-fabricated elements through the reuse and recycling of construction materials and structures.			Innovative solutions for the conservation of 20th century cultural heritage; improved material durability in buildings and infrastructures, including offshore.		Cultural heritage as a driver for sustainable growth
POLITO (Chiala)			Development of innovative technological solutions in the field of recycling and recovering raw materials from complex end-of-life products			
UNIPA (Di Paola)		Investigation on potential of current and new measures and technologies to enhance the response capacity to extreme weather and climate events affecting the security of people; development of eco-innovative solutions to help mitigate the effects of climate change and natural hazards on cultural heritage sites, structures and artifacts.		Materials-based solutions for protection or preservation of European cultural heritage		Cultural heritage as a driver for sustainable growth
UNIME (Falsone)		Advanced tools for assessing the safety of cultural heritage sites, structures and artefacts against exceptional natural actions, as the earthquakes; advanced techniques for the risk mitigation based on the use of advanced materials.				Cultural heritage as a driver for sustainable growth
UNIPG (Gusella)		Advanced tools for assessing the safety of cultural heritage sites, structures and artefacts against exceptional natural actions, as the earthquakes; advanced techniques for the risk mitigation based on the use of advanced materials.		Innovative solutions for the conservation of 20th century cultural heritage based on the use of innovative materials.		Cultural heritage as a driver for sustainable growth
UNIPD (Maiorana)		The studies related to the durability of cementitious materials (in the specific project, against freezing and salt diffusion) are in line with the challenge of inclusive, innovative and secure societies.		The studies related to the durability of cementitious materials (in the specific project, against freezing and salt diffusion) are in line with the development of European industrial capabilities (Key Enabling Technologies, KETs) in the field of advanced materials.		Cultural heritage as a driver for sustainable growth

Connections with Horizon 2020 Calls

Unit	CALLS H2020					
	H2020-EEB-2014-2015	H2020-DRS-2014-2015	H2020-WASTE-2014-2015	H2020-NMBP-2016-2017	H2020-LCE-2016-2017	H2020-SCS-2016-2017
	CALL FOR ENERGY-EFFICIENT BUILDINGS	DISASTER-RESILIENCE: SAFEGUARDING AND SECURING SOCIETY, INCLUDING ADAPTING TO CLIMATE CHANGE	WASTE: A RESOURCE TO RECYCLE, REUSE AND RECOVER RAW MATERIALS	CALL FOR NANOTECHNOLOGIES, ADVANCED MATERIALS, BIOTECHNOLOGY AND PRODUCTION	COMPETITIVE LOW-CARBON ENERGY	GREENING THE ECONOMY
UNINA (Marotti)				Analysis and design of innovative nanotechnological devices in order to push forward innovation and societal challenges. New design criteria in order to improve the industrial development in medical and engineering fields.		
UNIROMA1 (Rega)				Architected /Advanced material concepts for intelligent bulk material structures; innovative solutions for the conservation of 20th century cultural heritage; systems of materials characterization for model, product and process optimization; novel materials by design for substituting critical materials		
UNIROMA3 (Rizzi)				Industrial innovation in the field of fabrication and design of slender structures (thin-walled beams, timber structures, composites, etc.); optimization in the use of material, with obvious advantages from the economic and ecological points of view.		
UNINA (Rosati)				Improved material durability in buildings and infrastructures, including offshore; innovative solutions for the conservation of 20th century cultural heritage.		
POLIMI (Tallercio)		Topology optimization methods to derive innovative solutions regarding the optimal reinforcement of existing structures, in particular historical building, having important impacts the field of the protection of the architectural heritage.		Optimization methods as sustainable solutions at competitive computational costs for industrial applications.		Cultural heritage as a driver for sustainable growth
UNIROMA1 (Trovalusci)				Development of materials with new functionalities and improved performance for use in order to obtain products more competitive, especially in the exploitation of resources and raw materials.		
UNIBO (Ubertini)		Mitigation of the effects of climate change and natural hazards on cultural heritage sites, structures and artefacts taking into account the values they hold for people and respecting their historic and cultural integrity.		The study of the ageing processes of historic masonry structures and their interaction with strengthening techniques based on advanced materials is aligned with Part II - Industrial Leadership.		Cultural heritage as a driver for sustainable growth
UNISALENTO (Zavarise)		Topology optimization methods to derive innovative solutions regarding the optimal reinforcement of existing structures, in particular historical building, having important impacts the field of the protection of the architectural heritage.		Optimization methods as sustainable solutions at competitive computational costs for industrial applications.		Cultural heritage as a driver for sustainable growth

TAB.2 Main impact details

MAIN IMPACT DETAILS

Possible application potentialities	
1)	Production of guidelines and/or technical codes for the structural design under both static and dynamic loadings of civil constructions involving the use of innovative materials.
2)	Development and testing of prototypes for industrial applications devoted to the seismic protection of both new and existing buildings.
3)	Definition of design methodologies for strengthening ancient masonry structures by using innovative materials and techniques, with particular reference to monumental and strategic buildings, whose collapse may lead to severe risks for public safety.
4)	Production of research publications (journal articles, technical reports, conference papers...) and worked-out case studies.

Scientific and/or technological impact of the project	
1)	Assessment of an up-to-date state-of-the-art concerning advanced systems of seismic protection of existing buildings by using innovative materials.
2)	Improvement of existing predictive models of the mechanical behavior of innovative materials.
3)	Development and validation of innovative numerical tools for the analysis of the mechanical behavior of innovative materials at different scales of observation.
4)	Development of integrated numerical simulation codes for the structural analysis and design involving the use of innovative materials.
5)	Development of a deeper knowledge level about future trends in structural retrofitting by using advanced materials and technologies as a suitable alternative to traditional solutions.
6)	Definition of mitigation strategies for historical buildings, through the design of adequate components and the development of specific devices for damage reduction.

Social and/or economic impact of the project	
1)	The proposed research addresses documented societal security needs, regarding the safeguard of human lives, the environment and the cultural heritage.
2)	The research addresses threats to society, since it may deal with the mitigation of the impact of natural and/or man-originated hazards on constructions.
3)	Promotion and dissemination of an increasing social consciousness of the relevance of the scientific research activity in the safety of constructions.

TAB.3 List of the main research institutions involved by the project

Geographical area	NORTH AMERICA	SOUTH AMERICA	ASIA	EUROPE	OCEANIA
UNICAL (Bruno)				Ecole Polytechnique of Paris, FRANCE; University of Montpellier II, FRANCE; Ecole Nationale des Travaux Publics de Etat, FRANCE; Ecole Nationale Supérieure de Techniques Avancées, FRANCE.	
UNICT (Caddemi)				University of Minho, PORTUGAL; Imperial College London, UK; Cardiff University, UK; Technical University of Denmark, Lyngby, DENMARK.	Waikato University, NEW ZEALAND.
UNIPR (Carpinteri)	U. S. Army Research Laboratory, USA.	Universidade de Brasília, BRAZIL; Federal University of Rio Grande do Sul, Porto Alegre, BRAZIL.		Opole University of Technology, POLAND.	
IUAV (Cecchi)				Ecole des Ponts ParisTec, FRANCE; DRC - Diagnostic Research Company, Ancona, ITALY; Fibre Net, Udine, ITALY; HD System Tassullo, Tassullo (TN), ITALY; Building School of Padova, ITALY.	
POLITO (Chiala)	Washington University di Seattle, USA; Cemex, MEXICO.		Tohoku University di Sendai, JAPAN.	Buzzi Unicem, ITALY.	
UNIPA (Di Paola)	Rice University, Houston (TX) USA; Wayne State University, Detroit (MI) USA; Columbia University, New York (NY) USA; University of San Diego, San Diego (CA) USA; University Urbana-Champaign, Urbana-Champaign (IL) USA; Indiana University-Purdue University Fort Wayne, Fort Wayne, (IN) USA.		Zhejiang University, Xihu, Hangzhou, Zhejiang (China); Dong Hua University, Shanghai (China).	University of Oxford (UK); Department of Mathematical Sciences - University of Liverpool (UK); Technical University of Vienna (AT); University Of Innsbruck (AT).	
UNIME (Falsone)	Florida Atlantic University, Boca Raton (FL), USA.			Czech Technical University in Prague, Czech Republic.	
UNISA (Feo)	University of New Orleans (LA) USA			University of Porto, Porto (PT)	
UNIPG (Gusella)	Cornell University Ithaca NY, USA; University of Massachusetts Amherst, USA.			University of Minho, Guimarães, PORTUGAL.	
UNIPD (Maiorana)				ENEA; INFN Legnaro (PD); Czech Technical University in Prague-Faculty of Civil Engineering, Czech Republic; Imperial College-Department of Civil and Environmental Engineering, UK.	
UNINA (Marotti de Sciarra/Rosati)				Technical University of Catalonia, Barcellona, Catalonia (ES)	
UNIROMA1 (Rega)	Michigan State University, USA.	Federal University of Rio de Janeiro, BRAZIL; Universidade Tecnológica Federal do Paraná, BRAZIL.	Technion, Haifa, ISRAEL.	Lublin University of Technology, Lublin, POLAND.	
UNIROMA3 (Rizzi)	Princeton University, USA; Florida Atlantic University, USA. George Institute of Tecnology, Atlanta, GA;	Structures department, National University of Cordoba, Argentina	Department of Civil Engineering International University - VNU HCMC Ho Chi Minh City Vietnam;	Technical University of Lisbon, Lisbon, PORTUGAL. Instituto Superior Tecnico, Universidade de Lisboa; Faculdade de Ciencias e Tecnologia, Universidade Nova de Lisboa; Institute fur ALLGEMEINE MECHANIK, Aachen, Germany; Laboratoire de Mecanique, Université des Sciences 1, Lille, France; Politehnica University of Timisoara Department of Steel Structures and Structural Mechanics, Timisoara, Romania.	
POLIMI (Taliervo)				University of Liege, Liege, BELGIUM; Newcastle University, ENGLAND	
UNIMORE (Tarantino)	University of Minnesota, USA		University of Fuzhou, China	Ecole centrale de Lyon, France; Keele University Staffordshire, UK; University Road, Galway, Ireland; Heig-VD, Yverdon, Switzerland	
UNIROMA1 (Trovalusci)	University of Illinois at Urbana-Champaign, USA.			Skyset company, ITALY; Municipal Environment Enterprise (AMA-ROMA), ITALY.	
UNIBO (Ubertini)	Missouri University of Science and Technology, USA; Northwestern University, USA.			Laboratoire de Mecanique et Technologie (LMT)- Cachan dell'Universite Paris-Saclay, FRANCE; University of Natural Resources and Life Sciences (BOKU), Vienna, AUSTRIA.	
UNISALENTO (Zavarise)	University of California at Berkeley, USA.		Nagoya University, JAPAN; Palestinian Natial Authority, PALESTINE;	University of Hannover, GERMANY; ILVA, Taranto, ITALY; ENGINSOFT, ITALY; University of Prague, CZECH REPUBLIC; ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development, ITALY; Queen Mary College, London, UK; Wessex Institute, Southampton, UK; UNESCO.	

TAB.4 Main impact indicators

MAIN IMPACT INDICATORS	
Total H-index	>250 scopus e 230 isi web
Minimum number of industries involved in the project	9
Number Conferences with meetings	6
Minimum number expected Articles	200
Minimum number expected Special Issues	3
Number Horizon 2020 objectives involved	6
WP	4
Tasks	121
Web page	http://www.unipa.it/persone/docenti/p/antonina.pirrotta/prin-2015/

5 – Costs and fundings, for each research unit (automatically calculated)

n°	Associated or principal investigator	Total cost	Co-funding (item A.1)	MIUR funding (other items)
1.	DI PAOLA Mario	116.019 €	10.142 €	105.877 €
2.	TROVALUSCI Patrizia	49.000 €	9.913 €	39.087 €
3.	MAIORANA Carmelo	49.000 €	9.815 €	39.185 €
4.	CHIAIA Bernardino	49.000 €	10.000 €	39.000 €
5.	FEO Luciano	49.000 €	10.000 €	39.000 €
6.	REGA Giuseppe	49.000 €	10.158 €	38.842 €
7.	FALSONE Giovanni	49.000 €	10.380 €	38.620 €
8.	CARPINTERI Andrea	49.000 €	10.857 €	38.143 €
9.	TALIERCIO Alberto	49.000 €	10.711 €	38.289 €
10.	GUSELLA Vittorio	49.000 €	9.725 €	39.275 €
11.	BRUNO Domenico	49.000 €	9.840 €	39.160 €
12.	ROSATI Luciano	49.000 €	9.657 €	39.343 €
13.	MAROTTI DE SCIARRA Francesco	49.000 €	9.986 €	39.014 €
14.	CECCHI Antonella	49.000 €	9.922 €	39.078 €
15.	ZAVARISE Giorgio	49.000 €	9.282 €	39.718 €
16.	RIZZI Nicola Luigi	49.500 €	10.000 €	39.500 €
17.	CADDEMI Salvatore	49.000 €	10.160 €	38.840 €
18.	UBERTINI Francesco	49.000 €	9.878 €	39.122 €
19.	TARANTINO Angelo Marcello	49.000 €	10.000 €	39.000 €
	Total	998.519 €	190.426 €	808.093 €

B.2

1 – Scientific curriculum of PI (highlighting, for LS and PE fields, of bibliometric indicators related to publications and citations, and, for SH field, of the quality and impact of publications; awards and other honors; degree of success in Italian or international previous projects)

DI PAOLA Mario

PERSONAL WEBPAGE: <https://www.unipa.it/persone/docenti/d/mario.dipaola/>

RESEARCH GROUP WEBPAGE: <http://www.unipa.it/dipartimenti/dicam>

EMAIL: mario.dipaola@unipa.it

NUMBER OF PUBLICATIONS AND DISSEMINATION

139 Publications in International Journals

H-INDEX 17 ISI Web of Knowledge, 20 SCOPUS

CURRENT ACADEMIC POSITION AND AFFILIATIONS

2013- Head of the PhD Scientific committee in "Civil, Environmental, Aerospace and Materials", Università degli Studi di Palermo

1986- Professor of Structural Engineering, Università degli Studi di Palermo

PROFESSIONAL EXPERIENCE

2009-2012 Head of the Department of Civil, Environmental, Aerospace and of Materials, Università degli Studi di Palermo

2004-2006 President of the aerospace engineering school, Università degli Studi di Palermo

1998-2004 Head of the PhD Scientific committee in "Structural Engineering", Università degli Studi di Palermo

1989-1992 Head of the Department of Structural Engineering and Geotechnics, Università degli Studi di Palermo

1974-1986 Associated Professor of Structural Engineering, Università degli Studi di Palermo

1970-1974 Researcher of Structural Engineering, Università degli Studi di Palermo

EDUCATION

1970-1975 MSc Civil Engineering (5-years program), Università degli Studi Di Palermo, Italy

1965-1970 Diploma (5-years program), Università degli Studi Di Palermo, Italy

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW

2013- Member of Editorial Board of "Advanced Studies in Theoretical Physics"

2007- Editor of "Meccanica dei Materiali e delle Strutture"

2005- Member of Editorial Board of "Probabilistic Engineering Mechanics"

2005- Member of Editorial Board of "International Journal of Nonlinear Mechanics"

COMMITTEES AND PROFESSIONAL ACTIVITIES

2015- Associate member of American Society of Civil Engineers (ASCE)

2015- Member of Engineering Mechanics Institute (EMI)

2008- Head of the Interuniversity centre of Experimental and theoretical Dynamics (CIDIS)

2002-2010 Member of the directive committee of Theoretical and Applied Mechanics (AIMETA)

1995-2006 Member of council ANIV (National Association of Wind Engineering)

1994-1997 President of the Italian Group of Stochastic Mechanics (AIMETA)

1970- Registered as Civil Engineer

1986- Member of AIMETA (Italian Association of Theoretical and Applied Mechanics)

CURRENT FUNDINGS FOR THE RESEARCH

2013-2017 "Sustainable Pavement and Railway, International Training Network, SUP&R ITN" funded by European Union's Seventh Framework Programme

PAST FUNDINGS FOR THE RESEARCH

2011-2013 "Strutture Leggere Integrate e Modulari per diverse applicazioni incluse le emergenze SLIM" funded by Regione Sicilia

2007-2013 "SIMIT - Costituzione di un sistema integrato di protezione civile italo maltese" funded by CEE

2008 "A physical approach to non-local viscoelasticity and to phase transition: Application to fracture mechanics" funded by PRIN

2004 "Vibrations in Civil Engineering Structures (VINCES)" funded by PRIN

2001 "Safety and Control of masonry bridges" funded by PRIN

2000 "Structural identification and diagnostics: General methods and applications" funded by PRIN

1999 "Identification of dynamical parameters of damaged structures" funded by COFIN

1997 "Structural Stochastic analysis in presence of multivariate processes" funded by COFIN

CONSULTING ACTIVITIES

Structural design of viaducts, dams, buildings:

1992 "Related connections with Reservoir of Petrazzi" for Ferrocemento – F.lli Costanzo, € 21.060.070

1991 "Structural design of the Dam of Blufi (29.000.000 mc), Imera river" for Ansaldo – Di Panta, € 68.672.642

1990 "Structural design of Hotel S. Paolo (Palermo)" for Moderna Edilizie S.p.A.

1989 "Structural design of the faculty of Architecture and of Magistero" for Università degli Studi di Palermo

1988 "Structural design of Viaduct connecting Mussomeli – S. Giovanni Gemini (AG)" for Impresem S.p.A., € 24.118.537

1985 "Structural design of receiver tunnels in Monte Grifone Palermo (90.000 mc)" for Ferrocemento, € 4.493.352

1983 "Structural design of the purification plant of Athens, psitalia Island, Greece" for Cassina, € 300.000.000

1983 "Structural design of the Post office of Caltanissetta" for SICE S.p.A. – COES S.p.A, € 20.000.000

1982 "Structural design of the purification plant of the Palermo City" for Cogefar Impresem, € 50.000.000

1980 "Structural design of the bridges of Palermo's bypasses" for Cassina Farsura, € 26.000.000

Retrofit of historical monuments:

2012 "Monitoring of the Passetto Vaticano (Rome, XV century)"

2007 "Retrofit of the S. Teresa Church in Palermo (XVI century)"
1997 "Retrofit of the Chiostro of the Cathedral of Cefalù (XII-th century) made by Federico II di Svevia"
1994 "Retrofit of the Villino Florio in Palermo (made by arch. Basile XIX-th century)"
1991 "Retrofit of the S. Domenico building in Cefalù (XVI-th century)"
1990 "Retrofit of the Carini Castle (XVI century, Carini)"
1989 "Retrofit of the "Osterio Magno of Cefalù" XII-th century, made by Federico II di Svevia"

TEACHING ACTIVITIES

Theory of elasticity – Strength of Materials (Scienza delle Costruzioni), course of Mechanical and Aerospace Engineering, Università degli Studi di Palermo
Structural Vibrations (Dinamica delle Strutture), course of Civil Engineering, Università degli Studi di Palermo
Structural Safety (Sicurezza Strutturale), course of Civil Engineering, Università degli Studi di Palermo
Theory of elasticity – Strength of Materials (Scienza delle Costruzioni), course of Civil Engineering, Università degli Studi di Messina
Structural Safety (Sicurezza Strutturale), course of Civil Engineering, Università degli Studi di Messina
Seismic Engineering (Ingegneria Sismica), course of Civil Engineering, Università degli Studi di Messina
Theory of elasticity – Strength of Materials (Scienza delle Costruzioni), Università Nazionale Somala

RESEARCH TOPICS

Stochastic differential calculus
Analysis of structures exposed to the wind, the earthquake, the stormy sea
Analysis of non-local continuum
Fractional viscoelasticity
Innovative techniques for the mitigation of seismic risk

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES AND/OR SCHOOLS (from 2005)

Keynote Lectures

2015 "XXII Congresso - Associazione Italiana di Meccanica Teorica e Applicata", Genova (Italy)
2013 "Vienna Congress on Recent Advances in Earthquake Engineering and Structural Dynamics, VEESD", Vienna (Austria)
2012 "International conference: Stochastic Mechanics", Ustica (Italy)
2008 "International Conference on Seismic Engineering, MERCEA", Reggio-Calabria (Italy)

Advanced Lectures

2013 "Fractals and fractional calculus" & "The fractal approach to non-local mechanics" in Università di Bologna
2013 "Complex fractional moments for the characterization of stochastic processes" in Rice University
2013 "Viscoelastic devices for seismic devices, fractional approach" in Università degli Studi di Parma
2013 "Complex fractional moments for the solution of the FPK equation", in Zhejiang University
2013 "Viscoelasticity and fractional calculus", in Zhejiang University
2013 "Fractional calculus and viscoelasticity" in University of Oxford
2010 "The fractal approach to non-local mechanics" & "Fractals and fractional calculus" in Università politecnica delle Marche
2010 "The fractal approach to non-local mechanics" & "Fractals and fractional calculus" in Università degli Studi di Pisa
2009 "Engineering Applications of Fractional Calculus" & "Physical-based approach to non-local mechanics" in Università degli Studi di Perugia
2009 "Innovative Techniques for Response Mitigation of Structures under Seismic and Wind Actions" in Università degli Studi di Firenze
2009 "Engineering Applications of Fractional Calculus" in Università Mediterranea di Reggio Calabria
2009 "Fractals and Fractional Calculus, Application to non-local continuum" & "Fractals and Fractional Calculus, Waves propagation in non-local continuum" in Università di Torino
2008 "Fractional Calculus in Stochastic Dynamics" in Technical University of Wien
2008 "Analysis of Non-Local Continua by Fractional Calculus" in Università degli Studi Trento
2008 "Non-local Mechanics via Fractional Calculus" in Università degli Studi di Genova
2008 "Physically-Based Approach to the Mechanics of Non-Local Theory" in Università di Roma
2007 "Fractional Calculus in the study of non-local mechanics" in Università di Torino

ORGANIZATION OF INTERNATIONAL CONFERENCES

2014 "7th International Conference on Fractional Differentiation and its Applications (ICFDA), special session on Stochastic Dynamics and Fractional Calculus" (with Prof. P.D. Spanos), Catania (Italy)
2014 "7th Computational Stochastic Mechanics" (with Prof. P.D. Spanos), Santorini (Greece)
2010 "6th Computational Stochastic Mechanics" (with Prof. P.D. Spanos), Rodos (Greece)
2008 "30th National congress of Wind – Engineering (IN-VENTO)", Palermo (Italy)
2006 "5th Computational Stochastic Mechanics (with Prof. P.D. Spanos), Rodos (Greece)
2000 "Euromech 413: Stochastic Dynamics of nonlinear mechanical systems", Palermo (Italy)

INTERNATIONAL AWARDS AND OTHER HONORS

2015 Guest editor of the special issue "Fractional operators in the analysis of mechanical systems under stochastic agencies" for the ASCE-ASME Journal of Risk and Uncertainty In Engineering Systems, Part B: Mechanical Engineering
2013 Visiting Professor of Mechanics in Zhejiang University
1997 "Research prize in the area of Stochastic Dynamics" given by International Association for Structural Safety and Reliability, IASSAR

2 - Scientific curriculum of associated investigators (highlighting, for LS and PE fields, of bibliometric indicators related to publications and citations, and, for SH field, of the quality and impact of publications; awards and other honors)

1. TROVALUSCI Patrizia

PERSONAL WEB-PAGE: <http://dsg.uniroma1.it/trovalusci/>

RESEARCH GROUP WEB PAGE:

<https://sites.google.com/a/uniroma1.it/multiscale-and-multiphysics-modelling-for-complex-materials/>

Email: Patrizia.trovalusci@uniroma1.it

NUMBER OF PUBLICATIONS AND DISSEMINATION

Int refereed Journals (30), Volumes/Special Issues/Monographs (7), in refereed Books (27), Int Proc (36), Nat Proc (25), other (7)

H index 11 (Scopus), 10 (ISI-WOS); Tot Cits 357 (Scopus), 350 (ISI-WOS); Most cited papers: 44, 42, 35 (Scopus)

CURRENT ACADEMIC POSITION AND AFFILIATION

◦ 2013-present Nat Academic Qualification as Full Professor of 'Solids and Structural Mechanics' (

◦ 2000-present Associate Professor of 'Solids and Structural Mechanics', Sapienza Univ Rome

PROFESSIONAL EXPERIENCE

◦ 1992-2000 Assistant Professor, Sapienza

◦ 1989-1992 PhD in 'Structural Architecture', Univ Florence

◦ 1987-1989 Research Fellow, Dep. Struct Engrn Geotech

ACADEMIC INSTITUTIONAL APPOINTMENTS

◦ 2010-present Coordinator of Bachelor Degree's Courses: 'Science of Architecture'; 'Techniques of Architecture and Construction'; 'Restoration and Conservation of Monuments'. Sapienza, Univ Rome, School of Architecture

RESEARCH AREAS

Continuum mechanics; non-classical continua; masonry materials and structures; composites; multiscale modelling; molecular theory of elasticity; elastic wave propagation; theory of plasticity and non-standard limit analysis; mathematical programming; non-linear finite element analysis; structural language of architecture

SCIENTIFIC COMMITTEES MEMBERSHIP

◦ 2016 - Int Conf 'Computational Methods' (ICCM)

◦ 2015 - Sci Comm 'Nat Ass Solids Structures' (AIMETA)

◦ 2014 - Board of Directors of 'Centro Ricerca Scienza Tecnica Conservazione Patrimonio Storico-Architettonico' (CISTeC), Sapienza

◦ 2013 - Sci Comm 'Computational & Structural Mechanics Ass' (CSMA)

◦ 2013/16 - Sci Comm 'Int Conf Structures & Architecture' (ICSA)

◦ 2011/09/06 - Exec Comm; Advisory Comm; Sci Comm 'Int. Conf Proc Manufact Advanced Materials'

THERMEC

◦ 2008 - Board of PhD Program in 'Structural Engineering', Sapienza Univ Rome

◦ 2009-2011 - Faculty Comm 'Development, Communication and Coordination of Cultural Activities'

SCIENTIFIC EVALUATION PANELS

◦ 2013 - European Research Council (ERC Advanced Grants)

◦ 2009 - Georgia Nat Science Foundation

◦ 2000-2006 - Faculty Research Funds Committee

FUNDINGS

Coordinator of Prin 2010-11 Sapienza-Unit. Participant of EU Research Project FP7-245479 (Coordinator T. Sadowski, Lublin University of Technology, Poland. Coordinator of National (Sapienza-University) Research Projects (1996, 1998, 2000, 2001, 2002, 2005, 2006, 2007, 2008, 2009, 2010, 2013, 2015)

EDITORIAL BOARDS

◦ 2012- J Civil Eng Sci

◦ 2010- ISRN Mech Eng J

GUEST EDITORSHIP

- Special Issues:

◦ T. Sadowski, P. Trovalusci, B. Schrefler, R. de Borst (eds): 'Multiscale and Multiphysics Modelling for Complex Materials', *Meccanica*, 49(9), 2014

◦ P. Trovalusci, B. Schrefler (eds), 'Multiscale Modelling for Materials with Internal Length', *Int J Multiscale Comp Engrn*, 10(6), 2012

◦ P. Trovalusci, M. Ostojca-Starzewski (eds), 'Multiscale Mechanical Modelling of Complex Materials and Engineering Applications 2', *Int J Multiscale Comput Engrn*, 9 (5), 2011

◦ P. Trovalusci (ed), 'Multiscale Mechanical Modelling of Complex Materials and Engrn Appl', *Int J Multiscale Comput Engrn*, 5(2), 2007

- Books:

◦ P. Trovalusci (ed), *Materials with Internal Structure. Multiscale and Multifield Modelling and Simulation*, 'Springer Tracts in Mech Engrng', 2015, DOI 10.1007/978-3-319-21494-8)

◦ T. Sadowski, P. Trovalusci (eds.), 'Multiscale Modeling of Complex Materials: Phenomenological, Theoretical and Computational Aspects, CISM 'Courses and Lectures', 556, Springer, Berlin, 2014

ORGANIZATION/CHAIR

- Conference:

◦ 2015, On the "Tectonics" in Architecture: between Aesthetics and Ethics' (TAAE'Rome). Chair.

- Minisymposia:

'Multiscale and Multiphysics Modelling for Complex Materials'

° 2016 - MMCM7-ICCM, Berkeley (CA, USA). Invited Coordinator, Key-Note speaker

° 2015 - MMCM6-ICCM, Auckland (New Zealand). Invited Coordinator, Key-Note speaker

° 2014 - MMCM5-WCCM, Barcelona (Spain). Invited Coordinator

° 2012 - MMCM4-ECCOMAS, Wien (Austria). Co-coordinator

° 2010 - M2CM2-ECCM, Paris (France). Principal Coordinator, Key-Note speaker

° 2009/2006 - MCM/MCM2-THERMEC, Vancouver (Canada); Berlin (Germany). Coordinator

'On the "Tectonics" in Architecture: between Aesthetics and Ethics'

° 2016/13/10 TAAE3/TAAE2/TAAE3-ICSA, Guimarães (Portugal). Invited Coordinator/Co-coordinator

° 2010 - 'Computational multiscale and multifield modelling of composites' - WCCM/APCOM, Sidney (Australia). Co-coordinator

- Special Sessions:

° 2016 - 'Mechanics of interfaces and evolving microstructures (including phase transformation and recrystallization)' - EMMC15, Bruxelles, (Belgium). Invited Co-coordinator

° 2015 - History of Mechanics, GAMM2015, Gesellschaft für Angewandte Mathematik und Mechanik. Invited Co-coordinator

- Advanced Courses:

° 2012 - 'Multiscale Modelling of Complex Materials', CISM, Udine (Italy). Co-coordinator, Lecturer

° 2009 - 'Masonry Constructions. Seismic Safety, Conservation', Doctoral School of Engn and Arch, Sapienza. Co-coordinator, Lecturer

PRESENTATIONS

- Keynotes (5):

° 'Particulate microcracked composites as multifield continua with "configurational forces"', 6th Int Conf on 'Computational Methods' (ICCM2016), Berkley (CA, USA), 2016 (to hold)

° 'Coarse-graining approaches for particulate composites as micromorphic continua', 6th Int Conf on 'Computational Methods' (ICCM2015), Auckland (New Zealand), 2015

° 'Nineteenth century molecular models with a glance at modern discrete-continuum theories', Ann Meet 'Gesell Angew Math Mech' (GAMM2015), Lecce, 2015

° 'Discrete to scale-dependent continua for complex materials. A generalized Voigt approach using the principle of Virtual Power', Euromech Coll 557, Stuttgart (Germany), 2015

° 'A generalized Voigt's approach to multiscale-multifield modelling of "complex" materials', IV Eur Conf on 'Computational Mechanics', Paris, 2010

- Invited Talks (selected):

° Particle random composites as micropolar continua: a statistically based multiscale procedure, ° 'Generalized Continua as Models for Materials with Multi-Scale-Effects or under Multi-Field-Actions', Magdeburg, Germany. Advanced Seminar, 2015

° 'Non-classical molecular approaches of Nineteenth century: the first step towards discrete-to-non-local field models', Congr Naz AIMETA, Genova, 2015

° 'Considerazioni sulla modellazione meccanica per la muratura storica' XX Ann CISTeC, School of Engn, 2015

° 'Coarse-graining approaches for complex materials as 'non-simple' continua, Multiscale Material Mechanics in the 21st Century: Old Ideas for New Models Across Materials, Processes and Scales. Int Sym for Nobel Laureate Dan Shechtman. Cancun (Mexico), 2014

° 'Discrete-to-continuum approaches for complex materials as "non-simple" continua', Conv 'Meccanica Computazionale e Meccanica dei Materiali' (GIMC-GMA), Cassino (Italy), 2014

° 'Materials with Flaws and Inclusions: Non-Classical Discrete-Continuum Description', Int Conf on 'Material Modelling' (ICCM2), École des Mines, Paris (France), 2011

° 'Generalized continua for discontinuous complex materials. A Voigt-like approach using the principle of Virtual Works', Int Conf on 'Material Modelling' (ICCM3), Warsaw (Poland), 2009

° 'A multiscale-multifield approach to 'complex' materials: theoretical modelling and computational results, 18th Conf on 'Computer Methods in Mechanics', Zielona-Gora (Poland), 2009

° 'Elastic waves in microcracked bodies as multi-field materials', 5th European Solid Mechanics Conf', Thessaloniki (Greece), 2003

° 'Continuum micropolar modelling of discontinuous masonry-like systems', 6th Nat Congr on Mechanics, Thessaloniki (Greece), 2001

- Conferences/Lectures (selected):

° 'Verso il recupero di un'etica "tettonica" in architettura: la dimensione tecnologica e la dimensione matematica. Nervi e Musmeci due concezioni strutturali a confronto'. Polyt Univ Marche, School of Civil Engn & Arch, Ancona (Italy), 2015

° 'The recovery of the ethic of constructions: P. L. Nervi vs. S. Musmeci, two structural conceptions compared'. 1st Int Sym 'Form After Form: On the relentless emergence of new (architectural) forms'. School of Arch, Univ Genoa, 2014

° 'La concezione strutturale in architettura. Il recupero di un'etica "tettonica" attraverso la lezione di P.L. Nervi'. In: Workshop "Pier Luigi Nervi: l'approccio globale al progetto di architettura", Palazzetto dello Sport -

Flaminio, Rome, 2011; "P.L. Nervi - Arte e scienza del costruire", Accademia delle Scienze, Polyt Turin, 2011

° 'Notes on the on the mechanical modeling of historic masonry', Sapienza Univ Rome, Doctoral School of Engn & Arch, 2009

° 'The Structural Conception in Architecture. Reflections on the relations among the art of building, structural mechanics, mathematics and architectural design'. Univ Italy, School of Arch, 2008

TEACHING (Sapienza Univ Rome, School of Arch, 1997-present)

° BSc, MSc Courses: 'Solid and Structural Mechanics', 'Statics', 'Behaviour of Masonry Materials in Historical Structures'; Coordinator of the 'Atelier of Ecological Islands & Recycling Centres'

2. MAIORANA Carmelo

PERSONAL WEB PAGE:

<http://dicea.unipd.it/category/ruoli/personale-docente?key=483299CDC870D01BE6C302CC023FBB24>

RESEARCH GROUP WEB PAGE:

<http://www.dicea.unipd.it/ricerca/gruppi-di-ricerca/scienza-delle-costruzioni>

EMAIL: carmelo.maiorana@dicea.unipd.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

65 Publications on International Refereed Journals

H-INDEX 6 in ISI Web of Knowledge, 13 in SCOPUS, 806 SCOPUS citations, 186 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2004-present Full Professor of Structural Mechanics (SSD ICAR/08), University of Padua

2011-present Visiting Professor, Ecole Normale Supérieure de Travaux Publics (ENSTP), Yaoundé, Cameroun

PROFESSIONAL EXPERIENCE:

1998-2004 Associate Professor of Structural Mechanics, University of Padua

1983-1998 Researcher of Structural Mechanics, University of Padua

1978/79-1980/81 Recipient of a fellow grant at the Faculty of Engineering, University of Padua

EDUCATION:

1972-1978 Degree in Civil Engineering, University of Padua (23 years old).

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

2014-present Member of the Editorial Board of Periodica Polytechnica Civil Engineering (PPCE), Editor of the Civil Engineering Section.

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

2012-present Referent of the University of Padua for the collaboration agreement between the Faculty of Engineering and the ENSTP of Yaoundé, Cameroun

2005-present Member of the Academic Board of the PhD School in Civil and Environmental Engineering Sciences, University of Padua

2011-2015 Head of the Department of Civil, Environmental and Architectural Engineering (Dept. ICEA), University of Padua

2011-2015 Member of the Academic Senate as a representative of the Heads of the Department for the Macro area n. 1 of Mathematics, Physical Sciences, of Information and Communication, Engineering and Earth Sciences

2011-2012 President of the examination committee for the admission to the PhD School in Civil and Environmental Engineering Sciences, University of Padua (XXVII cycle)

2003-2009 Head of the Department of Structural and Transportation Engineering, University of Padua

2008-2010 Head of the Inter-Ateneum School of Specialisation for Teachers of Secondary School (SSIS) of Veneto Region

CURRENT FUNDINGS FOR THE RESEARCH:

Fundings from private companies.

PAST FUNDINGS FOR THE RESEARCH (selection):

2011-2013 Project CARITN: Solar thermodynamic (Trento)

2009-2011 Project INFN: SPES (Padua)

2010-2012 Project ITER, RFX (Padua)

2007-2010 Project MIUR: ELIOSLAB (Rome)

2004-2007 European project Eureka: NEWCON (London)

2003-2006 European project Growth: UPTUN (Padua)

2002-2004 European project Euratom: MAECENAS (Udine)

1995-1998 European project Brite Euram III: HITECO (Padua)

1998, 1999, 2000, 2001, 2005, 2007 Projects PRIN (ex 40%)

CONSULTING ACTIVITIES (selection):

2010-2011 ITER Project - C. Majorana, V. Salomoni, P. Sonato

2009 Feasibility study for the construction of a tramway on the "Ponte della Libertà" of Venice - C. Majorana, A. Novarin, B. Pomaro

TEACHING ACTIVITIES (selection):

- From the academic year 2013/14 is professor of Structural Mechanics (Scienza delle Costruzioni), Civil Engineering, University of Padua

- From the academic year 2012/13 is professor of Nonlinear Structural Mechanics (Teoria delle Strutture), Civil Engineering, University of Padua

- He was professor of Structural Dynamics (Dinamica delle Strutture), Civil Engineering, University of Padua

- He was professor of Strength of Materials and Fracture Mechanics (Meccanica della Frattura e dei Materiali), Civil Engineering, University of Padua

RESEARCH TOPICS (selection):

- Geometrically and material non linear problems; instability, dynamics
- Multidisciplinary analysis of thermonuclear fusion experimental machines
- Multidisciplinary analysis of very large telescopes, rotating buildings for telescopes and structural elements employed in astrophysical and aerospace engineering
- Fully coupled chemo-thermo-hydro-mechanical analysis of structures and structural elements subjected to high temperature conditions
- Non linear problems of soil mechanics and subsidence; geothermal problems
- Heat and mass coupled transport and mechanical behaviour of concrete and geomaterials
- Mechanics of unsaturated porous materials with damage effects
- Generation of finite elements used in the analysis of steel and concrete structures, integration schemes

PATENTS

- Software package entitled: "HITECOSP – High Temperature Concrete and Spalling – Codice di Calcolo", ENEA and University of Padua. Corsi F., Schrefler B., Giannuzzi G.M., Majorana C., Miliozzi A., Pesavento F. (2006)
- Software package entitled: "Software simulazione effetti d'incendio e analisi strutturale calcestruzzi (HITECOSP2)", ENEA and University of Padua. Corsi F., Giannuzzi G.M., Majorana C. (1999)

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES AND/OR SCHOOLS (selected from 2005)

- 2015 Opening Lecture, "Computational issues in multifield, multiscale, 3D structural engineering", CC2015
- 2015 Invited Review Lecture, "Mechanical modelling of concrete and concrete structures", CC2015
- 2011 Keynote Lecture, "Coupled thermomechanical analysis of steel welding processes", COUPLED PROBLEMS 2011
- 2011 Invited Lecture, "Concrete as a multiphase material in biological shields against nuclear radiation", CC2011
- 2010 Keynote Paper, "Computational and experimental analysis of spalling process in heated concrete", Plasticity 2010
- 2010 Invited Paper, "Numerical vs. experimental approach in steel welding processes", Plasticity 2010
- 2010 Keynote Paper, "Contact behaviour of elastoplastic damaged shells undergoing finite displacements and rotations", ICCES 2010
- 2009 Keynote Paper, "Analysis of concrete spalling process as a finite strain problem", 1st International Workshop on Concrete Spalling due to Fire Exposure
- 2009 Keynote Lecture, "Upgrading Safety in Tunnels Against Fire Hazard, 4th Int. Conf. on Protection of Structures against Hazards
- 2009 Invited Paper, "Nonlinear analysis of concrete as an heterogeneous material", Plasticity 2009
- 2008 Keynote Lecture, "Finite strain modelling of concrete at high temperatures", European Seminar on Coupled Problems, Institute of Thermomechanics of the Academy of Science of Czech Republic
- 2008 Keynote Lecture, "Analysis of thermally-induced vibrations in a pipe component of parabolic-trough solar concentrators, by a nonlinear dynamics approach", TCN CAE 2008, International Conference on Simulation based Engineering and Sciences
- 2007 Invited Lecture, "Stress-strain modelling of concrete under high temperature conditions", CC2007
- 2006 Plenary Lecture, "Structural response and repair", 2nd Int. Symposium on Safe & Reliable Tunnels, Design and Equipment for Safe Tunnels
- 2006 Keynote Lecture, "Protection of Tunnels against Fire Hazard", 3rd Int. Conf. on Protection of Structures against Hazards

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection)

- 2010 Co-Chairman, Newcon International Conference, London
- 2009 Co-Chairman, Concrete Solutions, Padua
- 2008 Co-General Secretary WCCM8 – ECCOMASS, Venice, 2008.
- 2006 Chairman 3rd Int. Conf. Protection of Structures against Hazards, Univ. Padua/Venice

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (selected from 2006)

- 2014 CST2014, Naples, Italy
- 2013 CC2013, Cagliari, Sardinia, Italy
- 2013 Coupled Problems 2013, Ibiza
- 2012 CST2012 & ECT2012, Dubrovnik, Croatia
- 2012 IABMAS 2012, 6th International Conference on Bridge Maintenance, Safety and Management, Lake Maggiore, Italy
- 2011 CC2011, Chania, Greece
- 2011 Coupled Problems 2011, Kos Island, Greece
- 2011 Concrete Solutions, 4th Int. Conference on Concrete Repair, Dresden, Germany
- 2010 CST2010, Valencia, Spain
- 2009 Concrete Solutions, 3rd Int. Conf. on Concrete Repair, Padua, Italy
- 2009 Coupled Problems 2009, Ischia, Italy.
- 2009 12th International Conference on Civil, Structural and Environmental Engineering Computing, Funchal, Madeira Island.
- 2009 Concrete Spalling due to Fire Exposure, 1st Int. Workshop, Leipzig, Germany
- 2008 WCCM8, Venice Lido, Italy
- 2008 9th International Conference on Computational Structures Technology, Athens, Greece
- 2008 Concreep VIII, Ise-Shima, Japan

2007 Coupled Problems 2007, Santa Eulalia, Ibiza, Spain

2007 11th International Conference on Civil, Structural and Environmental Engineering Computing, St. Julians, Malta

2007 Fib Workshop "Fire design of concrete structures – from materials modelling to structural performance", University of Coimbra, Portugal

2006 Concrete Solutions, 2nd Int. Conf. on Concrete Repair, St-Malo, France

2006 3rd Int. Conf. on Protection of Structures against Hazards, Venice, Italy

INTERNATIONAL AWARDS AND OTHER HONORS:

2014 EMERALD HIGHLY COMMENDED PAPER 2014: "Thermo-hygro-mechanical meso-scale analysis of concrete as a viscoelastic-damaged material"

2013 EMERALD HIGHLY COMMENDED PAPER 2012: "Three-dimensional modelling of bond behaviour between concrete and FRP reinforcement"

2011 IMACS AWARD 2011 - 8th Imacs 2011 most successful papers award: "An approach for modeling concrete spalling in finite strains"

2008 EMERALD HIGHLY COMMENDED PAPER 2008: "Mechanical and durability behaviour of growing concrete structures"

3. CHIAIA Bernardino

PERSONAL WEBPAGE

<http://staff.polito.it/bernardino.chiaia/>

EMAIL

bernardino.chiaia@polito.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

75 Publications on International Refereed Journals

H-INDEX 20 in ISI Web of Knowledge, 22 in SCOPUS, 1435 SCOPUS citations, 345 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2002-present - Full Professor of Structural Mechanics (SSD ICAR/08), Politecnico di Torino

2009-present - Dean of the Faculty of Engineering, International Telematic University Uninettuno, Rome

2015-present - Vice-rector for International Affairs, Politecnico di Torino

PAST PROFESSIONAL EXPERIENCE

March-October 1995: visiting researcher at the Dept. of Civil Engineering, Technical University of Delft.

1995-1998: Assistant Professor of Structural Engineering at Politecnico di Torino.

1998-2001: Associate Professor of Structural Engineering at Politecnico di Torino.

2003-2005: Deputy Dean at the Faculty of Engineering at Politecnico di Torino.

2005-2012 Vice-rector of Politecnico di Torino, responsible for Educational Programs and Faculty Activities.

2011-2015: Member of the Board of the Italian Institute of Geophysics and Vulcanology (INGV)

EDUCATION

1985 – 1991 - Master degree in Civil Engineering, University of Bari (score 110/110 cum laude)

1992-1995 - Ph.D. in Structural Engineering, Politecnico di Torino

EDITORIAL BOARD MEMBERSHIPS (INTERNATIONAL JOURNALS WITH PEER-REVIEW)

2007 – present: member of the Editorial Board of "The Open Construction & Building Technology Journal", Bentham Science Publisher.

2010 – present: member of the Editorial Board of "International Journal of Forensic Engineering", Interscience Publisher.

2015 – present: member of the Editorial Board of "Heliyon", Elsevier.

COMMITTEES AND EVALUATOR ACTIVITY (selected)

1995-2004 Member of the RILEM Commission on Quasi-Brittle Failure (chaired by Prof. Z.P. Bazant).

2005-2011 Member of the Board of Politecnico di Torino.

2010-2015 Member of the Politecnico di Torino Evaluation Unit.

2007-2010 Coordinator of the Committee for the Creation of the Italian Technical University (UESTP) in Pakistan, sponsored by the Pakistani Government and by the Italian Ministry of Foreign Affairs.

2011-2015 Member of the Board of the Italian Institute of Geophysics and Volcanology (INGV) - <http://www.ingv.it/>

2005-present: Member of the "Expert Evaluators Panel" of the European Commission, Research Directorate – VI FP (Area NMP-NI-4 - New Construction Products and Processes for High Added Value applications).

2005-present: Member of the "Evaluator-Referee Panel" for CIVR (Italian Committee For Research Evaluation) - Panel 08 and 09 (Civil and Industrial Engineering).

2007-present : Member of the Expert Panel of CRUI for the assignement of funds in the framework of the project TRIS (Research Technicians for Southern Italy) funded by CIPE.

2011-present: Expert evaluator of the Italian Minister of University and Research (MIUR) for the Cluster, Start-up and PON projects.

2014-present: Expert evaluator for the assessment of industrial project funded by Regione Lazio, Emilia Romagna, Puglia and Sardegna.

PAST RESEARCH FUNDING (SELECTED)

2000 Coordinator of a Research Project, funded by the Italian Research Council (Agenzia 2000), on "Extreme pressure conditions at rough interfaces: role of stress singularities and effects on thermal conductance".

2003 Co-director of a Biomechanics Research Project "Lung mechanics and implications in artificial ventilation" (resp. Prof. Vito Marco Ranieri, Faculty of Medicine, University of Torino), funded by Piedmont Region, 2003. Funded Euro 30.000.

2004 Italian Responsible in the Program for Scientific Cooperation Italy-Japan (2004-2006) funded by the Italian Ministry of Foreign Affairs, on the topic: "Advanced Cement-Based Materials", partnership with Tohoku University in Sendai, Prof. H. Mihashi.

2004 – 2006 Coordinator of the Research Unit of Politecnico di Torino in the Research Program "Nanotribology" (PRIN 2004, resp. Prof. Valbusa - University of Genova). Funded Euro 100.000.

2005 Coordinator of the Internationalization Project by MIUR (2004-2006) "RICE: Research and Innovation in Civil Engineering", in partnership with Massachusetts Institute of Technology, Georgia University of Technology, Imperial College, Delft Technical University, Nagoya University e Tohoku University. Funded Euro 38.500.

2006 Coordinator of a Research Project funded by Baldassini & Tognozzi Spa on the topic of ductility of fiber-reinforced concrete. Funded Euro 14.000.

2006 Coordinator of a Research Project in collaboration with prof. Paal Bergan, head of the Research Dept. of Det Norske Veritas (Oslo, NO) on the application to civil constructions of sandwich panels from naval engineering.

2006 – 2008 Coordinator of the Research Unit of Politecnico di Torino in the Research Program "Optimization of structural performances and of technological methodologies of concrete tunnel linings" (PRIN 2006). Funded Euro 80.000.

2007 Coordinator of a Research Project funded by BUZZI-UNICAL Spa and by Cassa di Risparmio di Alessandria on the topic of self-compacting concrete for structural applications. Funded Euro 30.000.

2008 Coordinator of a Research Project funded by Fondazione CRT (Cassa di Risparmio di Torino) in the framework of "Progetto Alfieri" on the topic of snow avalanche effects and ice collapses in high mountain regions. Funded Euro 40.000.

2010 Coordinator, for the Politecnico di Torino, of the research project INNOVANCE, funded by the Economic Development Ministry (Industry Notice 2015 - Energetic Efficiency), in collaboration with the National Association of House-Builders (ANCE). Funded Euro 950.000.

2011 Coordinator of the Research Unit of Politecnico di Torino in the Research Program "Building Information Modelling for Cultural Heritage" (PRIN 2011). Funded Euro 100.000.

2013 Coordinator of a Research Project funded by Ecotyre Consortium on the use of end-of-life tyre rubber into structural concrete. Funded Euro 70.000.

CURRENT RESEARCH FUNDING

2014 Coordinator of a Research Project funded by Regione Valle d'Aosta on rock fall effects on structures. Funded Euro 100.000.

2015 Coordinator of a Research Project funded by Fondazione CRT (Cassa di Risparmio di Torino) on the Interoperability Management of Seismic Vulnerability at the Urban Scale. Funded Euro 30.000.

2015 Coordinator of a Research Project funded by RFI on rock fall effects on structural monitoring of railway bridges. Funded Euro 90.000.

RESEARCH TOPICS

Author of more than 140 scientific publications on subjects of Structural Engineering, Materials Engineering and Fracture Mechanics. In particular, 45 papers have been published on the most important Journals of the field. The principal topics investigated are:

- a) damage and fracture of structural materials and rocks;
- b) influence of concrete microstructure on its mechanical properties;
- c) assessment of strength, ductility and robustness of structures;
- d) mechanics of structures: size effects, safety and collapse of large engineering structures;
- e) contact mechanics, tribology, adhesion and friction between rough surfaces;
- f) penetration mechanics in civil and oil applications;
- g) demolition of civil and industrial buildings, cutting of stones and masonry;
- g) biomechanics (soft tissues, skin elasticity and lung mechanics);
- h) snow avalanche mechanics and protection.

TEACHING ACTIVITY

Full professor at the Faculty of Engineering of Politecnico di Torino. He currently teaches the Corse "Structural mechanics" for the Master Degree of Civil Engineering and the Course "Advanced Structural Mechanics" for the Master Degree of Environmental Engineering. Since 2007 he teaches the Corse "Advanced Structures" in the Faculty of Architecture.

He has supervised more than 50 Master theses in the Faculty of Engineering, also collaborating at the Faculty of Architecture. Author of the video-course "Materials and Structural Mechanics" for Consorzio Nettuno, Roma (Italy).

Within the frame of his research interests, supervises Master and PhD Theses in collaboration with primary foreign Institutions and Industries, such as DNV in Oslo (NO) NTU in Trondheim (NO), TU in Delft (NL), Imperial College in London (UK) and MIT in Cambridge (USA).

CONSULTING ACTIVITIES

In 2003 he was one of the founders of the consultancy firm ARCOS Engineering in Torino (Italy). Consulting activity includes:

- 1) analysis, design and validation of special structures (e.g. anti-seismic)
- 2) nonlinear and dynamic analysis of structures (vibration analyses)
- 3) fibre-reinforced concrete structures (e.g. tunnel linings)
- 4) safety, damage and progressive collapse of structures
- 5) demolition of structures
- 6) monitoring and rehabilitation of structures
- 7) land engineering, protection structures (e.g. dams, snow avalanche protection)
- 8) forensic engineering - consultancy for Courts of Justice
- 9) due-diligence and special certifications
- 10) advanced numerical modelling (complex systems and chaotic nonlinear systems).

In 2006 he was appointed as Certicator of structures and infrastructures by the Italian Railway Company (RFI). From 2010 he is member of the Arbitrator Register of the Chamber of Arbitration for Public Works

INTERNATIONAL AWARDS AND OTHER HONORS

1991 - Winner of the prize "Ing. Vito Sardone", for the best Master thesis in Civil Engineering by the University of Bari

2004 - 2014 Curriculum published on "Who is who in Science and Engineering"

2012 - Awarded of the prize "ACI Wason Medal for Material Research" by the American Concrete Institute (ACI)

2014 - Nominated "Honorary Professor" at the Henan Univ. of Technology di Zhengzhou, China.

4. FEO Luciano

CURRICULUM VITAE OF LUCIANO FEO

PERSONAL WEBSITE: <http://www.unisa.it/docenti/lucianofeo/en/index>

RESEARCH GROUP WEBSITE:

http://www.unisa.it/dipartimenti/diciv/gruppi_di_ricerca/ingegneriastrutturale/en/index

EMAIL: l.feo@unisa.it

PUBLICATIONS ON INTERNATIONAL JOURNALS: 56

H-INDEX ON SCOPUS: 19

H-INDEX ON ISI Web of Knowledge: 19

ACADEMIC POSITIONS

2002-present: Associate Professor of Structural Mechanics at the Department of Civil Engineering of the University of Salerno.

2001-2002: Assistant Professor of Structural Mechanics at the Department of Civil Engineering of the University of Salerno.

EDUCATION

1994-1997: Ph.D., Structural Engineering, University of Naples "Federico II".

1984-1990: Master of Science (M.S.), Civil and Environmental Engineering, University of Salerno.

EDITOR OF PEER-REVIEW INTERNATIONAL JOURNALS

2010-present: European Editor of Composites Part B: Engineering.

2013-present: Editor-In-Chief of Section Board for "Advanced Composites" of the International Journal Materials.

GUEST EDITOR OF PEER-REVIEW INTERNATIONAL JOURNALS

2015-present: Guest Co-Editor of the Special Issue of the International Journal Technologies, Nanotechnology in Construction.

2015-present: Guest Co-Editor of the Special Issue of the International Journal Technologies, Bolted and Bonded Joints in Fibre Reinforced Polymer Constructions.

2013-present: Guest Co-Editor of the Special Issue of the International Journal Composites Part B: Engineering (Vol. 65 (2014)).

2010-present: Guest Editor of the Special Issue of the International Journal Materials, Innovative Materials in Civil Constructions.

2010-present: Guest Co-Editor of the Special Issue of the International Journal Materials, Green Materials and Construction.

EDITORIAL BOARD MEMBERSHIP OF PEER-REVIEW INTERNATIONAL JOURNALS

2014-present: Curved and Layered Structures.

2012-present: Journal Technologies.

2012-present: Progettazione Sismica.

2010-present: Materials.

2010-present: Current Nanoscience.

2010-present: International Journal of Nanoelectronics and Materials.

2002-present Composites Part B: Engineering.

2002-present: Composites Theory and Practice.

2002-present: World Journal of Engineering.

ADMINISTRATIVE POSITIONS AND SCIENTIFIC COMMITTEES

2015-present: Director of the Structural Engineering Test Hall of the Department of Civil Engineering, University of Salerno.

2011-present: Vice Director of the Department of Civil Engineering, University of Salerno.

2004-present: Secretary of the Italian Research Council Group for the development of the Technical Document for the Design and Construction of Externally Bonded FRP Systems for Strengthening Existing Structures.

2000-present: Member of the following Research Center:

- International Institute for FRP in Construction, IIFC Administrative Centre.
- International Community for Composites Engineering.
- ACI Italy Chapter.
- European Mechanics Society.

RESEACH PROJECTS

2014-2016: Research Project ReLUIS-DPC 2014-2016 (Civil Defense Department of the Italian Prime Minister's Office), "Impiego di profili FRP per la realizzazione di strutture a carattere provvisoria per applicazioni di interesse della Protezione Civile".

2010-2013: Research Project ReLUIS-DPC 2010-2013 (Civil Defense Department of the Italian Prime Minister's Office), "Giunti bullonati ed incollati".

2010-2012: Italian National Relevant Research Project PRIN 2008, "Giunti bullonati in strutture civili di materiale composito fibrorinforzato".

2005-2008: Italian National Relevant Research Project PRIN 2005, "Analisi del comportamento delle connessioni in strutture di materiale composito fibrorinforzato".

2003-2005: Italian National Relevant Research Project PRIN 2003, "Comportamento viscoso di strutture intelaiate realizzate con materiali compositi fibrorinforzati".

SCIENTIFIC CONSULTING

1990-present: "Validation of FEM codes for Structural Analysis", Softing S.r.l. Rome.

TEACHING

Structural Mechanics.

Theory of Structures.

Experimental Behavior and Testing of Civil Structures.

RESEARCH SUBJECTS

Mechanical behavior of thin-walled elastic beams of open cross-section.

Structural bearings.

Experimental analysis of materials and structures.

Stability and post-critical behavior of elastic composite structures.

Structural strengthening of existing structures with composite materials.

Numerical and experimental analysis of FRP composites bonded and bolted joints for civil engineering constructions.

INVITED LECTURES

On the creep behaviour of reinforced concrete structures strengthened with FRP, International Conference on Composites/Nano Engineering (ICCE/11), Hilton Head Island, South Carolina (USA), 2004 – Distinguished Lecture.

Advanced composites as strengthening materials for civil constructions: state of the art and modern code developments in Italy, International Conference on Composites/Nano Engineering (ICCE/14), Boulder, Colorado (USA), 2006 – Keynote Lecture.

The influence of Bolt Diameter on the Bearing Failure Load of Glass Fibre/Epoxy Bolted Laminates: an Experimental Investigation, International Conference on Composites/Nano Engineering (ICCE/17), Honolulu, Hawaii (USA), 2009 – Invited Lecture.

Mechanical Properties of Recycled PET Fiber Reinforced Concrete, International Conference on Composites/Nano Engineering (ICCE/17), Honolulu, Hawaii (USA), 2009 – Invited Lecture.

Stress Analysis of Bolted Joints between FRP Pultruded Profiles, International Conference on Composites/Nano Engineering (ICCE/17), Honolulu, Hawaii (USA), 2009 – Invited Lecture.

A numerical analysis on the effects of washer size on the pin-bearing failure load of glass fibre polymer laminates, International Conference on Composites/Nano Engineering (ICCE/18), Anchorage, Alaska (USA), 2010 – Invited Lecture.

On the Shear Forces Distribution in Double Lap Bolted FRP Joints: Numerical and Experimental Investigations, International Conference on Composites/Nano Engineering (ICCE/19), Shanghai, Cina, 2011 – Distinguished Lecture.

An Experimental Investigation on the Behavior of Web-Flange Junctions of GRP Pultruded Profiles, International Conference on Composites/Nano Engineering (ICCE/20), Beijing, Cina, 2012 – Invited Lecture.

An experimental and numerical evaluation on the strength and the stiffness of web-flange junctions of pultruded composites profiles. International Conference on Composites/Nano Engineering (ICCE/21), Tenerife (Spain), 2013 – Invited Lecture.

On the axial and rotational flexibility of web-flange junctions of PFRP E-glass/polyester profiles, International Conference on Composites/Nano Engineering (ICCE/22), Saint Julian's Malta, 2014 – Invited Lecture.

Correlation between mechanical properties and composite materials structure, Bucarest, Romania, 2014,

Invited Lecture.

A First Step Toward a Eurocode for the Design and Verification of Whole FRP Composite Structures: a Scientific and Technical Report by CEN/TC250, International Conference on Composites/Nano Engineering (ICCE/23), Chengdu, Cina, 2015 – Invited Lecture.

Improvement of Axial Flexibility and Strength of Web-Flange Junctions of GFRP Pultruded I-Beams Subjected to Concentrated Loads. International Conference on Composites/Nano Engineering (ICCE/23), Chengdu, Cina, 2015 – Distinguished Lecture.

Nonlocal Effects in Composites, 18th International Conference on Composite Structures (ICCS/18), University of Lisbona, 2015 - Plenary Lecture

MEMBER OF ORGANIZING COMMITTEE OF INTERNATIONAL CONFERENCES (since 2006)

ICCE/14, Boulder(USA), 2006.

ICCE/15, Hainan (Cina), 2007.

ICCE/16, Kunming (Cina), 2008.

ICCE/17, Isole Hawaii (USA), 2009.

ICCE/18, Anchorage (USA), 2010.

ICCE/19, Shanghai, (Cina), 2011.

ICCE/20, Pechino, (Cina), 2012.

ICCE/21, Tenerife, (Spagna), 2013.

ICCE/22, Malta, (Spagna), 2014.

ICCE/23, Chengdu, (Cina), 2015.

MEMBER OF SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (since 2006)

IECC/06 (6th International Engineering and Construction Conference "Advances in Affordable Housing & Green Construction"), Cairo (Egitto), 2010.

15th European Conference on Composites Materials (ECCM15), Venezia, 2012.

Elsevier Editor's Conference "Partnering in Publishing – Sharing Experience, Tools and Insights, Amsterdam, 17/18 2012.

7th International Engineering and Construction Conference, Brisbane, Australia, 2012.

1st International Conference on Mechanics of Nano, Micro and Macro Composite Structures, Torino, 2012.

15th European Conference on Composites Materials, Venezia, Italia, 2012.

7th International Engineering and Construction Conference, Brisbane, Australia, 2012.

1st International Conference on Mechanics of Nano, Micro and Macro Composite Structures, Torino, Italy, 2012.

17th International Conference on Composite Structures (ICCS17), University of Porto, 2013.

International Workshop "Multi-Scale Modeling and Characterization of Innovative Materials and Structures", Cetara (SA), 2013.

18th International Conference on Composite Structures (ICCS18), University of Lisbona, 2015.

10th International Conference on Composite Science and Technology (ICCST10), University of Porto, 2015.

INTERNATIONAL HONORS AND AWARDS

"Most Cited Paper Award" from Elsevier for papers published on Composites Part B: Engineering since 2010, for the paper "Bond-Slip Relations for PBO-FRCM Materials Externally Bonded to Concrete"

"Most Cited Paper Award" from Elsevier for papers published on Composites Part B: Engineering since 2010, for the paper "Experimental analysis on bond between PBO-FRCM strengthening materials and concrete".

"Highly Cited Paper Award" from ISI WEB OF KNOWLEDGE for the paper "Experimental analysis on bond between PBO-FRCM strengthening materials and concrete".

5. REGA Giuseppe

WEB-PAGE: https://www.researchgate.net/profile/Giuseppe_Rega/stats

EMAIL: giuseppe.rega@uniroma1.it

NUMBER OF PUBLICATIONS

128 Papers in 47 different Archival Journals (+5 submitted)

63 Book and Edited Volume Chapters

94 Refereed Conference Proceedings Papers

92 Conference Abstracts/Extended Abstracts

3 Edited Volumes (Springer)

7 Edited Special Issues in Archival Journals (Nonlinear Dynamics, Meccanica, Chaos Solitons & Fractals, Philosophical Transactions of Royal Society, Chaos).

H-INDEX/CITATIONS

Scopus: h-i:28 Citations: 2120 Average Citations/Item: 13,09

ISI Web of Knowledge: h-i:25 Citations: 1634 Average Citations/Item: 11,84

Google Scholar: h-i:33 Citations: 3192

CURRENT ACADEMIC AFFILIATION

1995- Professor of Solid and Structural Mechanics (SSD ICAR/08), Sapienza University of Rome

MAJOR ACADEMIC AND PROFESSIONAL SERVICES

1987-1992 Head, Department of Structures, Water and Soil Engineering, University of L'Aquila

1992 Chairman, Board of Department Heads, University of L'Aquila

1992-2002 Member and Chairman, National Secretariat, Professors of Solid and Structural Mechanics
1998-2008 Chairman, Division of Structural Mechanics at Faculty of Architecture, Department of Structural and Geotechnical Engineering, University of Rome La Sapienza
1998-2012 Member, National Committee for Air and Land Cableways, Ministry of Infrastructures and Transportation
2003-2011 Chairman, Master Course in Architecture (Structural Design and Rehabilitation)
2003-2013 Chairman, Ph.D. Program in Structural Engineering, University of Rome La Sapienza
2006-2009 President, AIMETA (Italian Association of Theoretical and Applied Mechanics)
2009-2013 Director, Doctoral School Civil Engineering and Architecture, Sapienza University of Rome

EDUCATION

1970 Laurea, Civil Engineering, University of Rome

EVALUATION COMMITTEES

2007-2015 Reviewer/Expert for CISM, USA-Israel Binational Science Foundation, PRIN, VQR, Polish Academy of Science, Khalifa University Research Program, ETH Zurich, UCD Ireland

EDITORIAL SERVICES

Editor-in-Chief

1998-2004 Meccanica

Associate Editor

1996-2009 Chaos Solitons & Fractals

2003-2015 Mathematical Problems in Engineering

2005-2011 ASME Journal of Computational and Nonlinear Dynamics

2014-2016 Journal of Vibration and Control

Editorial/Advisory Boards Memberships

1990-1997, 2004-2012 Meccanica

1991-1995 Chaos Solitons & Fractals

1994- Nonlinear Dynamics

1995-2013 Journal of Vibration and Control

2000-2012 International Journal of Nonlinear Sciences and Numerical Simulation

2013- International Journal of Dynamics and Control

2013- Prikladnaya Matematika i Mekhanika (PMM)-Journal of Applied Mathematics and Mechanics

AWARDS/HONORS

2006 11th Conference on Nonlinear Vibrations, Stability, and Dynamics of Structures, In honor of Giuseppe Rega on the occasion of his 60th Birthday, Virginia Tech

2007 Nonlinear Dynamics, No. 1-3, 2007, Special Issue on "Recent Advances in Nonlinear Dynamics of Mechanical Systems". In honor of 60th birthday of Giuseppe Rega

SCIENTIFIC ACTIVITY IN INTERNATIONAL SOCIETIES

1992-2002, 2009-2013 Member ENOCC (European Nonlinear Oscillations Conference Committee), EUROMECH

2003- Advisory Board Member, Centre for Applied Dynamics Research, University of Aberdeen, U.K.

2007-2014 Member, Nonlinear Sciences Commission of Lublin Branch of Polish Academy of Sciences

2010- Italian Representative, IUTAM General Assembly

2010-2013 International Advisory Board Member, Centre of Excellence for Modern Composites Applied in Aerospace and Surface Transport Infrastructures, Lublin University of Technology, Poland

2013-2018 Chairman ENOCC (European Nonlinear Oscillations Conference Committee), EUROMECH

2014- Member (AIMETA Representative), Scientific Council of CISM, Udine, Italy

CONFERENCES/MINISYMPOSIA/COURSES ORGANIZED/CHAired

1992 International Workshop Bifurcation and Chaos in Mechanical Systems, L'Aquila, Italy

1994 EUROMECH Colloquium 325 Bifurcation and Chaos in Solid and Structural Dynamics, L'Aquila, Italy (with F. Pfeiffer)

1999 Sessions on Nonlinear Mechanics and Phenomena, Symposium on Nonlinear Vibrations and Perturbation Methods, ASME Mechanics and Materials Conference, Blacksburg, VA (with B. Balachandran)

2000 Minisymposium on Nonlinear Dynamics, 4th European Solid Mechanics Conference, Metz, France

2001 Minisymposium on Nonlinear Dynamics of Civil Engineering Systems, Euromech Colloquium 425 on Nonlinear Dynamics, Control and Condition Monitoring, Aberdeen, U.K.

2003 IUTAM Symposium on Chaotic Dynamics and Control of Systems and Processes in Mechanics, Rome, Italy (with F. Vestroni)

2003 Minisymposium on Control of Nonlinear and Chaotic Systems, IMA Conference on Bifurcations: The Use and Control of Chaos, Southampton, U.K.

2004 Prenominated Session on Chaos in Fluid and Solid Mechanics, XXIth International Congress of Theoretical and Applied Mechanics, Warsaw, Poland (with I. Mezic)

2005 Symposium on Nonlinear Vibrations and Control of Structures, 20th ASME Biennial Conference on Vibration and Noise, Long Beach, CA (with W. Lacarbonara and H. Yabuno)

2006 Discussion Sessions, 2nd Int. Conf. on Nonlinear Normal Modes and Localization in Vibrating Systems, Samos, Greece (with E. Dowell)

2008 Symposium on System Engineering and Nonlinear Dynamics, Italian-Israeli Forum on Science and Technology, Tel Aviv, Israel

2009 EUROMECH Colloquium 503 Nonlinear Normal Modes, Dimension Reduction and Localization in Vibrating

Systems, Frascati, Italy (with A. Vakakis)

2010 Minisymposium on Instability Phenomena in Materials and Structures, PACAM XI (11th Pan-American Congress of Applied Mechanics), Iguacu Falls, Brazil (with R. Rosas e Silva, P.B. Goncalves, C.E.N. Mazzilli, G.H. Paulino)

2010 IUTAM Symposium on Nonlinear Dynamics for Advanced Technologies and Engineering Design, Aberdeen, U.K. (co-chairman, with M. Wiercigroch)

2011 7th EUROMECH Nonlinear Dynamics Conference (ENOC 2011), Rome, Italy

2012 4th International Conference on Localization, Energy Transfer and Nonlinear Normal Modes in Mechanics and Physics, Haifa, Israel (co-chairman, with O. Gendelman)

2014 Symposium on Dynamics, 3rd International Conference on Recent Advances in Nonlinear Mechanics, Harbin, China (with C. Liu)

2016 CISM-AIMETA Advanced School on Global Nonlinear Dynamics for Engineering Design and System Safety, Udine, Italy (with S. Lenci)

2016 Minisymposium Nonlinear Dynamics in Engineering Systems, XXIVth International Congress of Theoretical and Applied Mechanics, Montréal, Canada (with D. van Campen)

CONFERENCE SCIENTIFIC/STEERING BOARD/COMMITTEE MEMBERSHIP: nearly 50 Conferences

PLENARY/KEYNOTE LECTURES

1996 2nd European Nonlinear Oscillations Conference, Prague, Czech Republic

1999 5th Conference on Dynamical Systems Theory and Applications, Lodz, Poland

2000 3rd International Conference on Nonlinear Dynamics, Chaos, Control and their Applications to Engineering Sciences, Campos do Jordao, Brazil

2001 XXIII Yugoslav Congress of Theoretical and Applied Mechanics, Belgrade, Yugoslavia

2003 6th International Symposium on Nonlinear Mechanics "Nonlinear Sciences and Applications", Nis, Serbia-Montenegro

2004 Minisymposium on Integrity of Dynamical Systems, 4th World Congress of Nonlinear Analysts, Orlando, FL

2005 Symposium on Dynamics, IMA Conference Recent Advances in Nonlinear Mechanics, Aberdeen, U.K.

2006 Symposium on Integrity of Dynamical Systems, 16th European Conference of Fracture, Alexandroupolis, Greece

2007 5th International Conference on Nonlinear Mechanics (ICNM-V), Shanghai, China

2009 International Conference Chaotic Modeling and Simulation, Chania, Crete, Greece

2009 2nd International Conference on Recent Advances in Nonlinear Mechanics, Kuala Lumpur, Malaysia

2010 APM 2010 Advanced Problems in Mechanics, International Summer School-Conference, St. Petersburg, Russia

2011 4th International Conference on Experimental Vibration Analysis for Civil Engineering Structures, Varenna, Italy

2012 XXIII International Congress of Theoretical and Applied Mechanics, Beijing, China

2013 Nonlinear Dynamics in Engineering: Modeling, Analysis and Applications, Aberdeen, Scotland, UK

2013 11th Biennial International Conference on Vibration Problems, Lisbon, Portugal

2014 International Conference on Structural Nonlinear Dynamics and Diagnosis, Agadir, Morocco

2015 International Conference on Shells, Plates and Beams, Bologna, Italy

2015 12th Biennial International Conference on Vibration Problems, Guwahati, India

VISITING PROFESSOR

2000 University of Illinois at Urbana-Champaign, USA

2007-13 (several months) Lublin University of Technology, Poland

LECTURES/SEMINARS: at nearly 30 universities/institutions

LECTURES AT SHORT COURSES

1998 Mathematisches Forschungsinstitut Oberwolfach

2002, 2004 Summer School Advanced Problems in Mechanics, St. Petersburg

2008-09 Marie Curie-SICON TC2, TC4, CF, at TU Vienna, ENTPE Lyon, Sapienza

2016 Int. School-Conference Nonlinear Dynamics of Machines, Russian Academy of Sciences, Moscow

2016 CISM-AIMETA Advanced School Global Nonlinear Dynamics for Engineering Design and System Safety, Udine, Italy

INTERNATIONAL RESEARCH PROJECTS (a recent selection)

2005-2009 Marie Curie Host Fellowships for Transfer of Knowledge, Lublin University of Technology, Head of Sapienza Partner Team

2010-2013 Centre of Excellence for Modern Composites Applied in Aerospace and Surface Transport Infrastructures, Lublin University of Technology 7th FP, Head of Sapienza Partner Team

CURRENT RESEARCH INTERESTS

Cable dynamics; Nonlinear oscillations in applied mechanics and structural dynamics; Bifurcation and chaos in nonlinear dynamics; Control of oscillations and chaos; Reduced-order modeling in solid and structural mechanics; Dynamic integrity; Wave propagation; Smart materials; Micro- and nano-mechanics; Structural architecture; Thermomechanical problems.

6. FALSONE Giovanni

PERSONAL WEB PAGE:

https://www.researchgate.net/profile/G_Falsone

RESEARCH GROUP WEB PAGE:

<http://www.unime.it/dipartimenti/ingegneria>

EMAIL: gfalsone@unime.it.

NUMBER OF PUBLICATIONS AND DISSEMINATION:

53 Publications on International Refereed Journals

H-INDEX 12 in ISI Web of Knowledge and 12 in SCOPUS.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2003-present Full Professor of Structural Mechanics (SSD ICAR/08), University of Messina.

PROFESSIONAL EXPERIENCE:

1998-2003 Associate Professor of Structural Mechanics, University of Messina.

1995-1998 Researcher of Structural Mechanics, University of Catania.

EDUCATION:

1993-1995 Research Post-Doctorate, University of Napoli.

1989-1992 Research Doctorate (Ph.D.) in Structural Engineering, University of Napoli.

1981-1987 Degree in Civil Engineering cum laude, University of Palermo.

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

2015-present Member of the Editorial Board of Mathematical Problems in Engineering (Hindawi PC)

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

2013-present Member of the Academic Board of the PhD School Engineering and Chemistry of Materials and of Constructions, University of Messina.

2009-2012 Head of the Department of Civil Engineering, University of Messina.

2001-2009 Head (for the Technological Address) of the Sicilian School of Specialization for Teachers of Secondary School of Sicilian Region (SISSIS).

2005-2007 Head of the Committee of the SD 08 Area, University of Messina.

2002-2004 Head of the Council of Civil Engineering Degree Course, University of Messina.

PAST FUNDINGS FOR THE RESEARCH (selection):

2008-2009 Local Scientific Referent for PRIN "Stochastic dynamics of slender structure under the wind action".

2004-2005 Local Scientific Referent for PRIN "Stochastic characterization of masonry structures and their analysis".

CONSULTING ACTIVITIES (selection):

2002-present Scientific Referent of numerous consulting researches for public and private companies principally devoted to the seismic reliability of structures.

TEACHING ACTIVITIES (selection):

- Structural Mechanics (Scienza delle Costruzioni), Civil Engineering Degree.
- Structural Mechanics (Scienza delle Costruzioni), Industrial Engineering Degree.
- Construction Reliability (Sicurezza e Affidabilità delle Costruzioni), Civil Engineering post-Degree.
- Computational Structure Mechanics (Meccanica Computazionale delle Strutture), Civil Engineering post-Degree.

RESEARCH TOPICS (selection):

- Stochastic dynamics of linear and nonlinear systems.
- Seismic reliability of structures.
- Stochastic homogenization of composite materials.
- Response stochastic characterization of uncertain structures.
- Finite Element approaches not-thin structures.

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection)

2004 Minisymposium on "Stochastic Structural Dynamics", ASEM'04, Seoul.

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (selected)

2005 Member of the Technical Committee of ICOSSAR'05, Roma.

7. CARPINTERI Andrea

CURRICULUM VITAE of Andrea Carpinteri (DECEMBER 2015)

PERSONAL WEB PAGE:

<http://www.unipr.it/arpa/dipcivil/CARPINTERI>

EMAIL: andrea.carpinteri@unipr.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

114 Publications on International Refereed Journals

H-INDEX 20 in ISI Web of Knowledge, 23 in SCOPUS, 1.685 SCOPUS citations, 155 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2000–present Full Professor of Structural Mechanics (SSD ICAR/08), University of Parma

PROFESSIONAL EXPERIENCE:

1994-2000 Associate Professor of Structural Mechanics, University of Parma

1988-1994 Associate Professor of Structural Mechanics, University of Padua

EDUCATION:

1975-1980 Degree (magna cum Laude, 110/110 cum Laude) in Civil Engineering, University of Bologna.

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

2015-present Member of the Editorial Board of Theoretical and Applied Fracture Mechanics

2013-present Member of the Editorial Board of Structural Engineering and Mechanics - An International Journal

2011-present Member of the Editorial Board of Journal of Testing and Evaluation (American Society of Testing and Materials)

2009-present Member of the Editorial Board of Frattura ed Integrità Strutturale

2011-present Member of the Editorial Board of Scientific Technical Review

2005-present Member of the Editorial Board of Strength of Materials

From 1997 to 2001 and 2007-present Member of the Editorial Board of International Journal of Fatigue

From 1996 to 2002 - Member of the Editorial Board of Fatigue and Fracture of Engineering Materials and Structures

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

2000-present Chairman of TC3 (Technical Committee No.3 'Fatigue of Engineering Materials and Structures') of ESIS (European Structural Integrity Society).

2013-present Coordinator of the Research Doctorate on 'Civil Engineering and Architecture' (University of Parma).

From 2010 to 2012 Member of the Board of a Research Doctorate on 'Civil Engineering' (University of Parma).

From 1991 to 2010 Member of the Board of a Research Doctorate on 'Structural Mechanics' (Central Department at the University of Bologna).

From 2007 to 2012 Director of the Laboratory 'Materials and Structures Testing' of the University of Parma.

CURRENT FUNDINGS FOR THE RESEARCH:

Fundings from private companies.

PAST FUNDINGS FOR THE RESEARCH (selection):

2011-2012 Spinner Research Programme "Progetti di Idee imprenditoriali innovative e/o ad alto contenuto di conoscenza tecnologica" (Call published on 6th May 2011 on Bollettino Ufficiale della Regione Emilia Romagna n. 70 - Part II) on "Development of a scientific methodology to compute flexible road pavements reinforced with synthetic interlayers".

2004-2005 Research Grant on "Methods for fatigue resistance evaluation of notched structural components under multiaxial loading", Italian Ministry for University and Technological and Scientific Research (MIUR), Cofin-Prin 2004-2005.

2003-2004 National Research Grant for Antarctica, "Fracture and fatigue behavior of metallic structural components under cyclic loads at low temperature", Italian Ministry for University and Technological and Scientific Research (MIUR), Antarctica 2003-2004.

1994-1997 Chairman of the Numerical Methods Group for the Research Project COPERNICUS "Influence of local stress and strain concentrators on the reliability and safety of structures", funded from the European Community.

1985-1988 Member of a CNR (National Research Council) Committee for a preliminary analysis on a Research Project (Progetto Finalizzato) "Materials for Civil Engineering" (Committee Chairman: Professor Elio Giangreco, University of Naples).

CONSULTING ACTIVITIES (selection):

1985 Participation, as an expert of "Structural safety of buildings", in a Rescue Mission to Mexico after the earthquake in September 1985, on behalf of the Italian Ministry of Foreign Affairs (Ministero degli Affari Esteri).

TEACHING ACTIVITIES (selection):

- 1994-present Scienza delle Costruzioni (Structural Mechanics), for students of the Degree Course in Civil and Environmental Engineering, University of Parma

- 1992-1994 Mechanics of Materials and Fracture, for students of the Degree Course in Civil Engineering, University of Padua

- 1987-1992 Complementi di Scienza delle Costruzioni (Advanced Structural Mechanics), for students of the Degree Course in Civil Engineering, University of Padua

RESEARCH TOPICS (selection):

- Fracture Mechanics
- Mechanics of Fatigue-Fracture

- Criteria on fatigue resistance
- Size effect
- Fatigue behaviour of fiber-reinforced concrete beams

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection)

2016 Co-Chairman of the 11th International Conference on "Multiaxial Fatigue and Fracture (ICMFF 11)", Seville, Spain, 1-3 June, 2016
2015 Co-Chairman of the 5th International Conference on "Crack Paths", Ferrara, Italy, 16-18 September, 2015
2013 Co-Chairman of the 10th International Conference on "Multiaxial Fatigue and Fracture (ICMFF 10)", Kyoto, Japan, 3-6 June 2013
2012 Co-Chairman of the 4th International Conference on "Crack Paths (CP 2012)", Gaeta, Italy, 19-21 September, 2012
2010 Co-Chairman of the 9th International Conference on "Multiaxial Fatigue and Fracture (ICMFF 9)", Parma, Italy, 7-9 June, 2010
2009 Co-Chairman of the 3rd International Conference on "Crack Paths (CP 2009)", Vicenza, Italy, 23-25 September, 2009
2006 Co-Chairman of the 2nd International Conference on "Crack Paths (CP 2006)", Parma, Italy, 14-16 September, 2006
2005 Co-Chairman of the Mini-Symposium on "Numerical Approaches to Fatigue" at the "11th International Conference on Fracture", Turin, Italy, 20-25 March, 2005
2003 Co-Chairman of the 1st International Conference on "Fatigue Crack Paths (FCP2003)", Parma, Italy, 18-20 September, 2003

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES

Member of International Scientific Advisory Committees of several International Conferences

INTERNATIONAL AWARDS AND OTHER HONORS:

2012 Elected "ESIS Fellow" by the Fellows Committee of ESIS (European Structural Integrity Society) "for outstanding contributions to the field of Structural Integrity", June
2011 Winner (together with Dr Nicola Delmonte and Dr Sabrina Vantadori) of the International Prize on "Innovative Projects related to renewable energy sources for Italian small isles and protected areas", Edition 2011, awarded by Marevivo, ENEA, GSE, Ministry for Cultural Heritage and Activities, Ministry for Environment Protection, and Citera (University of Rome - La Sapienza)

2003 Editor (together with Professor Manuel de Freitas, Lisbon University, and Professor Andrea Spagnoli, University of Parma) of the book "Biaxial/Multiaxial Fatigue and Fracture", Special Technical Publication of ESIS (European Structural Integrity Society), Elsevier Science Ltd, Oxford, U.K., 504 pages, 2003
1994 Editor of the book "Handbook of Fatigue Crack Propagation in Metallic Structures", Elsevier Science Publishers B.V., Amsterdam (The Netherlands), 1765 pages, 1994
1989 Editor of the book "Materiali per l'Ingegneria Civile" (in Italian), Consiglio Nazionale delle Ricerche (CNR), Rome (Italy), 221 pages, 1989

2014 Guest Editor of a Special Issue of the International Journal 'Theoretical and Applied Fracture Mechanics', "Current models in multiaxial fatigue and fracture – In memory of Professor Ewald Macha", Vol.73, 1-170, 2014 (together with Professor Ewald Macha, University of Opole)

2014 Guest Editor of a Special Issue of the International Journal 'International Journal of Fatigue', "Multiaxial Fatigue 2013", Vol.67, 1-228, 2014 (together with Professors Takamoto Itoh, Ritsumeikan University, Thierry Palin-Luc, Arts et Métiers Paris Tech, Masao Sakane, Ritsumeikan University, and Luca Susmel, University of Sheffield)

2014 Guest Editor of a Special Issue of the International Journal 'International Journal of Fatigue', "Fatigue Crack Paths 2012", Vol.58, 1-224, 2014

2013 Guest Editor of a Special Issue of the International Journal 'Engineering Fracture Mechanics', "Crack Paths 2012", Vol.108, 1-316, 2013

2013 Guest Editor of a Special Issue of the International Journal 'Fatigue and Fracture of Engineering Materials and Structures', "Characterisation of Crack Tip Stress Fields", Vol.36, No. 1, 1-84, 2013

2011 Guest Editor of a Special Issue of the International Journal 'Engineering Fracture Mechanics', "Multiaxial Fracture", Vol.78, No. 8, 1515-1826, 2011

2011 Guest Editor of a Special Issue of the International Journal 'International Journal of Fatigue', "Multiaxial Fatigue Models", Vol.33, No. 8, 929-1157, 2011

2010 Guest Editor of a Special Issue of the International Journal 'Engineering Fracture Mechanics', "Crack Paths 2009", Vol.77, No. 11, 1617-2212, 2010

2008 Guest Editor of a Special Issue of the International Journal 'Engineering Fracture Mechanics', "Crack Paths", Vol.75, No.3-4, 297-900, 2008

2006 Guest Editor of a Special Issue of the International Journal 'International Journal of Fatigue', "Biaxial/Multiaxial Fatigue and Fracture", Vol.28, No. 5-6, 449-674, 2006

2005 Guest Editor of a Special Issue of the International Journal 'Fatigue and Fracture of Engineering Materials and Structures', "Fatigue Crack Paths", Vol.28, No.1/2, 1-265, 2005

1997 Guest Editor of a Special Issue of the International Journal 'Fatigue and Fracture of Engineering Materials and Structures', "Italian Special Issue", Vol.20, No. 8, 1083-1234, 1997

8. TALIERCIO Alberto

PERSONAL WEB PAGE:

<http://intranet.dica.polimi.it/people/taliercio-alberto/>

RESEARCH GROUP WEB PAGE:

<http://www.dica.polimi.it/ricerca/prodris/>

EMAIL : alberto.taliercio@polimi.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

43 Publications on International Refereed Journals

H-INDEX 12 in ISI Web of Knowledge, 14 in SCOPUS, 494 SCOPUS citations, 68 citations for the most cited paper

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2001-present Full Professor of Structural Mechanics (SSD ICAR/08), Politecnico di Milano, Dept. of Civil and Environmental Engineering

PROFESSIONAL EXPERIENCE:

1998-2001 Professeur chargé de cours, Ecole Polytechnique, Paris (F)

1994-2001 Associate Professor of Structural Mechanics, Politecnico di Milano

1992-1994 Associate Professor of Structural Mechanics,, University of Parma

1990-1992 Assistant Professor of Structural Mechanics, Politecnico di Milano

EDUCATION:

1985-1988 PhD course in Structural Engineering, Politecnico di Milano

1978-1984 Degree in Civil Engineering, Politecnico di Milano

INSTITUTIONAL APPOINTMENTS:

2011-present Coordinator of the Degree Program in Civil Engineering, Politecnico di Milano

2009-2010 Vice-Dean of the School of Civil, Environmental and Land Management Engineering, Politecnico di Milano

2001-2005 Member of the Directory Board (Giunta) of the School of Civil, Environmental and Land Management Engineering, Politecnico di Milano

1996-1999, 2002-2005 and 2009-2012 Member of the Directory Board (Giunta) of the Dept. of Structural Engineering, Politecnico di Milano

PAST FUNDINGS FOR THE RESEARCH (selection):

2004-2006 PRIN Project, coordinator of Milan research unit

TEACHING ACTIVITIES (selection):

- Since 1992: professor of Structural Mechanics (Scienza delle Costruzioni), degree programs in Civil, Management, Mechanical and Building Engineering, Politecnico di Milano
- Since 2011: professor of Solid Mechanics (Meccanica dei solidi), degree program in Energy Engineering, Politecnico di Milano
- 2003 and 2005: Mechanics of Composite Materials, PhD course in Structural Engineering, Politecnico di Milano
- 2001-2006: Computational Mechanics and Inelastic Structural Analysis, MSc in Civil Engineering, Politecnico di Milano, Lecco campus
- 1992-1994: Computer-aided Structural Analysis (Calcolo automatico delle strutture), degree program in Civil Engineering, University of Parma

RESEARCH TOPICS (selection):

- Constitutive modelling of heterogeneous media (Fiber-Reinforced Composites, Masonry)
- Structural Optimization

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES (selected, since 2005)

2007 Invited Lecture, STREMAH 2007, Prague

2009 Invited Lecture, STREMAH 2009, Tallinn

9. GUSELLA Vittorio

PERSONAL WEB PAGE:

<http://www.unipg.it/pagina-personale?n=vittorio.gusella>

RESEARCH GROUP WEB PAGE:

<http://www.ing1.unipg.it/ricerca/gruppi-di-ricerca/scienza-delle-costruzioni>

EMAIL: vittorio.gusella@unipg.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

47 Publications on International Refereed Journals

H-INDEX 10 in ISI Web of Knowledge, 11 in SCOPUS, 383 SCOPUS citations, 53 citations for the most cited paper

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2004-present Full Professor of Structural Mechanics (SSD ICAR/08), University of Perugia

PROFESSIONAL EXPERIENCE:

1992-2004 Associate Professor of Structural Mechanics, University of Perugia

1989-1992 Technician at Department of Civil and Environmental Engineering, University of Florence

EDUCATION:

1976-1982 Degree in Civil Engineering, University of Florence.

1983-1986 PhD degree in Structural Engineering (12-12-1987)

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

2012-present President of the Civil Engineering Board of the Department of Civil and Environmental Engineering of the University of Perugia,

2007-present President of the Italian Association of Wind Engineering - ANIV (2007-2015) and member of the Steering Committee,

1992-present Member of the Scientific Council and Management Committee of the Intra – Universities Research Center in Construction Aerodynamic and Wind Engineering (CRIACIV) (associated Italian universities: Firenze, Sapienza Università di Roma, Perugia, Trento, Chieti-Pescara, IUAV Venezia.

2013-present Member of the Scientific Committee of the AID Monuments series (ARCNE - Editor),

2006-present member of the Working Group on the "Wind Actions" of Standard Code Commission of the National Research Council (CNR).

2011- 2013 Director of the master "Management of the urban requalification: restoration activities, administration and development".

Further activities:

Adviser of the "Centro Studi Mastrodicasa" di Perugia (Study centre for the diagnosis and therapy of structural damage of historic buildings).

Member of the Board of Teachers of several PhD School:

- Civil Engineering and Innovative Materials of the Univ. of Perugia,

- International PhD Course in "Mitigation of Risk due to natural Hazards on Structures and Infrastructures" (associated Italian universities: Firenze, Roma "La Sapienza", Perugia, IUAV Venezia, Trieste, Chieti-Pescara "G.D'Annunzio" - partner: Technische Universität Carolo-Wilhelmina di Braunschweig, Germany),

- International in Civil and Environmental Engineering (associated Italian universities: Firenze, Perugia, Pisa - partner: Technische Universität Carolo-Wilhelmina di Braunschweig, Germany).

PAST FUNDINGS FOR THE RESEARCH (selection):

1995 - "Wind, structures and environment: design, control and codes" – Project PRIN 95,

1997 - "Research and experimental activity on building aerodynamics and wind engineering" (RESACIV)" – Project PRIN 97,

1999 - "Analysis, control and wind hazard mitigation on buildings and urban environment (ACME CUE)" – Project PRIN 99,

2001 - "Wind and Infrastructures: Dominating Eolian Risk For Utilities and Lifelines" (Winderful)" – Project PRIN 2001

2003 - "Life-cycle Performance, Innovation and Design Criteria for Structures and Infrastructures Facing Aeolian and Other Natural Hazards (PERBACCO)" – Project 2003

2007 - "Wind effects on slender structures: Performance-based Optimal Design (Wi-POD)" – Project PRIN 2007.

Research project (coordinator) :

2002 - "Monitoring system and analysis of the Ponte delle Torri in Spoleto", Comune di Spoleto,

2003 - "Wind speed data and structural response, analysis of experimental testing" , Comune di Spoleto,

2006 - "Anchorage devices for steel and composite tie-beam in historic and monumental building restoration", Fondazione Cassa di Risparmio Perugia,

2007 - "Identification and analysis of the actual damage in the Ponte delle Torri in Spoleto" Società SACEN s.r.l. of Napoli e M&G Engineering Spoleto,

2010 - "Development of technologies for the construction of ventilated walls and for the increase of the ductility of the supporting panel", FBM s.p.a. of Marsciano.

Further activities:

2001 - "Advanced techniques for building and camouflage of mobile phone antennas", CAEL of Massa Martana (PG),

2004 - "Movable broadcasting systems: design under wind loading. Production and management innovative processes" CAEL of Massa Martana (PG),

2006 - "Identification , modelling and analysis of prefabricated support systems for broadcasting apparatus" CAEL of Massa Martana (PG).

TEACHING ACTIVITIES (selection):

• From the academic year 2014/15 is professor of Structural Mechanics (Scienza delle Costruzioni), Civil Engineering, University of Perugia

• From the academic year 2014/15 is professor of Nonlinear Structural Mechanics, Civil Engineering, University of Perugia

- He was professor of Structural Dynamics, Civil Engineering, University of Perugia
- He was professor of Computational Structural Mechanics, Civil Engineering, University of Perugia
- He was professor of Structural Mechanics, Building Engineering and Architecture, University of Perugia
- He was professor of Fundamentals of Mechanics, Mechanical Engineering, University of Perugia
- He was professor of Advances in Mechanics, Mechanical Engineering, University of Perugia

RESEARCH TOPICS (selection):

- Wind Engineering (Micrometeorological model of wind speed, Numerical analysis of the structural response, Simulation of correlated wind field, Wind response of antennas and cooling towers, Non-Gaussian pressure field and structural response, Aeroelastic behaviour of bridge, Damage Accumulation in Glass Plates, Active control, Cable dynamics),
- Structural Reliability (Estimation of extreme winds, Seismic vulnerability, Safety Estimation with Cumulative Damage),
- Steel structures (Eccentrically X-bracing, Reinforcement of masonry walls by steel X-Bracing),
- Historic buildings and structural monitoring (Monitoring system on "Brunelleschi Dome" in Florence, Monitoring and structural analysis of the "Ponte delle Torre" in Spoleto),
- Structural Identification (Hilbert Transform, Innovative experimental system: laser vibrometer, Microwave Techniques),
- Experimental analysis (Broadcasting antennas, dynamic behaviour of a drilling derrick, guyed mast and antennas for mobile phone networks),
- Homogenization (Homogenization of non-periodic masonry, RVE and probabilistic analysis of the texture, Strength surface, SEPUC).

ORGANIZATION OF CONFERENCES (selection):

1990-present - Organizing Committee of Italian Congress on Wind Engineering, IN-VENTO (every two years)
2001-2004-2008 - Workshop on "Vibration problems on civil structures and mechanical constructions", 1/2001, 2/2004 e 3/2008, Perugia
2008 - "Stochastic Mechanics" (AIMETA), Cefalù (PA),

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (selection):

1996 - Third European Conference on Structural Dynamics, 5-8 June, Firenze,
2009 - 5th European & African Conference on Wind Engineering - Firenze.
2012 - International Congress "AID MONUMENTS", 1st edition, Perugia
2015 - UNCECOMP - 1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering, 25 - 27 May, Crete Island, Greece
2015 - International Congress "AID MONUMENTS", 2nd edition, Perugia

10. BRUNO Domenico

PERSONAL WEB PAGE:

http://www.ingegneriacivile.unical.it/persona/docenti/ordinari/?wpapl_id=54

RESEARCH GROUP WEB PAGE:

<http://www.ingegneriacivile.unical.it/>

EMAIL: domenico.bruno@unical.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

37 Publications on International Refereed Journals;
H-INDEX 12 in SCOPUS, 410 SCOPUS citations by 289 documents, Scopus profile:
<http://www.scopus.com/authid/detail.url?authorId=7006353748>.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

1990-present Full Professor of Structural Mechanics at the Department of Civil Engineering of the University of Calabria.

EDUCATION:

Degree in Civil Engineering, University of Naples "Federico II".

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

Presently, is member of the editorial board of the INTERNATIONAL JOURNAL OF STRUCTURES and of the INTERNATIONAL JOURNAL OF BRIDGE ENGINEERING.

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

Currently, he is the President of the University Evaluation Unit for the University of Calabria;
1992 -1998, 2006 - 2011 Head of the Department of Structural Engineering, University of Calabria;
Member of the Academic Board of the PhD Course in "Materials and structures engineering", University of Calabria;
Member of the Academic Board of the PhD Course "SIACE", University of Calabria;
He is peer reviewer for the evaluation of the Italian research system achievements in the time period 2004-2010 (VQR 2004-2010) promoted by the Italian Research and University Evaluation Agency (ANVUR), within the Civil Engineering and Architecture area for the disciplinary field of mechanics of materials and

structures. (GEV08).

INTERNATIONAL JOURNAL REFEREE ACTIVITIES:

He is reviewer for several international journals, such as: International Journal of Solids and Structures, AIAA Journal, Thin Solid Films, Engineering Structures, Structural Engineering Mechanics, Annals of Solid and Structural Mechanics, Journal of Zhejiang University-SCIENCE A, Mechanics of Advanced Materials and Structures, International Journal of Mechanical Sciences, Composites Science and Technology, Engineering Computations, European Journal of Mechanics A/Solids.

PAST FUNDINGS FOR THE RESEARCH (selection):

He was responsible of several research projects, like that funded by the European Community entitled "Materials for Innovative industrial Applications- Composite Materials and their use for structural rehabilitation", the national research project of the Italian Research Council (CNR) "Innovative materials in structural engineering and their use in constructions", PRIN research projects entitled "High performance concrete structures and their application in civil Engineering", "Deformability in long span bridges under moving loads".

TEACHING ACTIVITIES (selection):

His teaching activity includes undergraduate courses of Strength of Materials, Dynamics of Structures, Theory of Structures, Bridges, Statics.

RESEARCH TOPICS (selection):

Long span bridges: static and dynamic analysis with moving loads;
Composite materials: interface models for delamination, debonding in FRP-strengthened beams, interlaminar and intralaminar damage, laminated composite plates;
Homogenization: Macroscopic properties of composite materials with evolving micro-structure due to contact and fracture initiation and propagation; interactions between micro and macro-instabilities in solids with heterogeneous microstructure.

11. ROSATI Luciano

PERSONAL WEB PAGE:

www.docenti.unina.it/luciano.rosati

RESEARCH GROUP WEB PAGE:

EMAIL:

rosati@unina.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

40 Publications on International Refereed Journals

H-INDEX

11 in ISI Web of Knowledge, 13 in SCOPUS, 427 SCOPUS citations, 48 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2004-present Full Professor of Structural Mechanics (SSD ICAR/08), University of Naples

2005-2011 - Member of the National Secretary of the SSD ICAR/08 Association

PROFESSIONAL EXPERIENCE:

1998-2004 Associate Professor of Structural Mechanics, University of Naples

1990-1998 Researcher of Structural Mechanics, University of Naples

1997 - Recipient of a two-months NATO-CNR fellow grant at the Dept. of Aeronautics, Imperial College in London

1986-1989 PhD in Structural Mechanics, University of Naples

EDUCATION:

1976-1982 Degree in Civil Engineering, University of Naples (24 years old).

1982-1984 Degree in Civil Transportation Engineering, University of Naples (26 years old).

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

2010-present - Coordinator of the PhD School in Structural, Geotechnical and Seismic Risk Engineering , University of Naples

2015 Member of the examination committee for the admission to the PhD School in Seismic, Geotechnical and Seismic Risk Engineering, University of Naples (XXXI cycle)

2011 President of the examination committee for the admission to the PhD School in Construction Engineering, University of Naples (XXVIII cycle)

2009 Member of the examination committee for the final discussion of the PhD School in Construction Engineering, University of Cosenza (XXIII cycle)

2005 Member of the examination committee for the admission to the PhD School in Construction Engineering, Polytechnic of Turin (XXII cycle)

2015 - President of the examination committee for a competition of Associate Professor in Structural Mechanics (SSD ICAR/08), University of Naples
2014 - President of the examination committee for a competition of Associate Professor in Structural Mechanics (SSD ICAR/08), University of Naples
2014 - Member of the examination committee for a competition of Associate Professor in Structural Mechanics (SSD ICAR/08), University of Bologna
2010 - Member of the examination committee for a competition of Associate Professor in Structural Mechanics (SSD ICAR/08), University of Reggio Calabria
2006 - Member of the examination committee for a competition of Associate Professor in Structural Mechanics (SSD ICAR/08), Polytechnic of Milan
2013 - President of the examination committee for a competition of Researcher in Structural Mechanics (SSD ICAR/08), University of Naples

CURRENT FUNDINGS FOR THE RESEARCH:

Fundings from private companies

NEMA: Expanded Multifunctional Nanocomposite for Aeronautical Seats – PON Campania 2012-2015

PAST FUNDINGS FOR THE RESEARCH (selection):

2002, 2007, 2010/2011 PRIN Projects (ex 40%)

CONSULTING ACTIVITIES (selection):

2010-present - Member of the Technical-Administrative Committee of the Department of Public Works for Campania and Molise

2011-present - Member of the Technical-Administrative Committee of the Department of Public Works for Lazio, Abruzzo e Sardegna

TEACHING ACTIVITIES (selection):

- Since the academic year 2000/01 is professor of Structural Mechanics, Mechanical Engineering, Bachelor Degree, University of Naples
- Since the academic year 2000/01 is professor of Structural Mechanics, Science and Material Engineering, Bachelor Degree, University of Naples
- Since the academic year 2005/06 is professor of Nonlinear Structural Mechanics, Master Degree in Civil and Geotechnical Engineering, University of Naples
- Since the academic year 2005/06 is professor of Finite Elements in Structural Analysis, Master Degree in Civil and Geotechnical Engineering, University of Naples
- He has been professor of Mechanics of Solids, Mechanical Engineering, Bachelor Degree, University of Naples
- He has been professor of Structural Plasticity, Mechanical Engineering, Bachelor Degree, University of Naples

RESEARCH TOPICS (selection):

- Integration schemes and finite element formulations in plasticity
- Ultimate limit state analysis or reinforced concrete cross sections
- Nonlinear analysis of reinforced concrete framed and shear walled structures
- Nonlinear analysis of steel framed structures
- Design and analysis of irregular structures against earthquakes
- Dynamic analysis of impact tests including geometrical and mechanical nonlinearities
- Finite strain analysis of saturated porous materials
- Implementation of finite elements with geometrical and mechanical nonlinearities
- Analytical solutions for elastic isotropic half-spaces subject to thermal, vertical and/or horizontal loads
- Modeling of transversely isotropic materials
- Modeling of magneto-electro-elastic materials
- Potential theory
- Form finding analysis by the Force Density Method and Thrust Network Analysis

PATENTS

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES AND/OR SCHOOLS (selected from 2005)

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection)

2013 Chairman, AIMETA Conference, Bologna, Italy

2012 Chairman, AIMETA Conference of Computational Mechanics, Rosarno, Italy

1999 Chairman, AIMETA Conference of Computational Mechanics, Napoli, Italy

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (selected from 2006)

2013 AIMETA Conference, Bologna, Italy

2012 AIMETA Conference of Computational Mechanics, Rosarno, Italy

1999 AIMETA Conference of Computational Mechanics, Napoli, Italy

INTERNATIONAL AWARDS AND OTHER HONORS:

Recent Publications (not included in the official list)

1. Sessa, S., Marmo, F., Rosati, L., Effective use of seismic response envelopes for reinforced concrete structures, *Earthquake Engineering & Structural Dynamics*, 44, 2401-2423, 2015, doi: 10.1002/eqe.2587.
2. Marmo, F., Rosati, L., A general approach to the solution of Boussinesq's problem for polynomial pressures acting over polygonal domains, *Journal of Elasticity*, 2015, doi: 10.1007/s10659-015-9534-5.
3. Marmo, F., Sessa, S., Rosati, L., Analytical solution of the Cerruti problem under linearly distributed horizontal loads over polygonal domains, *Journal of Elasticity*, 2015, doi: 10.1007/s10659-015-9560-3.

12. MAROTTI DE SCIARRA Francesco

PERSONAL WEB PAGE: <https://www.docenti.unina.it/francesco.marotti%20de%20sciarr>

EMAIL : marotti@unina.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

51 Publications on International Refereed Journals

H-INDEX 12 in SCOPUS, 342 SCOPUS citations, 23 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2001- present - Confirmed Associated Professor of Structural Engineering (SSD ICAR/08), Department of Structures for Engineering and Architecture, University of Naples Federico II

PROFESSIONAL EXPERIENCE:

1988-2001 - Associated Professor of Structural Engineering, Department of Structures for Engineering and Architecture, University of Naples Federico II

1988-2001 - Researcher at Engineering Faculty of University of Reggio Calabria

EDUCATION:

1997 - Winner of a C.N.R. scholarship for researches at the West Virginia University (USA) in the field of innovative and composite materials.

1997 - Winner of a Fulbright scholarship in the category professors/researchers for a research period at the West Virginia University (USA): "Interface bound strength and integrity under combined static-dynamic loading of composite".

1994 - PhD degree in "Ingegneria delle Strutture" at the University of Naples Federico II. Thesis title: A unitary approach to elastoplasticity models with internal variables.

1994 - Winner of the national prize "Fondazione Adriano Galli" research in the field of structural mechanics.

1989 - Professional qualification as engineering with the voting 120/120.

1988 - Full degree in Civil Engineering at the University of Naples Federico II with the voting of 110/110 cum laude.

1981 - First Certificate in English of Cambridge University (UK).

MEMBER OF THE BOARD OF JOURNALS WITH INTERNATIONAL PEER REVIEW:

2005-2014 Board of The Open Numerical Methods Journal of Bentham Science Publishers

COMMISSIONS

2014 - Member of the Joint Commission Teachers-Students of Science degree in Architecture, University of Naples Federico II.

2014 - Member of the Management Committee CIRAM (Interdepartmental Centre for Environmental Research).

2013 - Member of the board of the Department of Structures for Engineering and Architecture

2011 - Component of the committee for giving the PhD title in "Sistemi Strutturali Civili e Meccanici", University of Trento.

2010-2013 - Member of the Board of the PhD in Construction Engineering at the Faculty of Engineering, University of Naples Federico II.

2005-2013 - Member of the Education Committee of the Corso di Laurea Magistrale in Architecture of the Faculty of Architecture.

2005 - Component of the committee for giving the PhD title in "Ingegneria delle Costruzioni e Ingegneria delle Strutture".

2005-2010 - Member of the Academic Board of the PhD in Structural Engineering of the University of Naples Federico II.

1999-2003 - Member of the Committee on Cultural Policy and Research of the Faculty of Architecture of the University of Naples Federico II.

2000 - Proponent of the new Corso di Laurea Magistrale in Architecture of the Faculty of Architecture of the University of Naples Federico II.

FUNDING FOR RESEARCHES

2012-2014 - P.I. Project F.A.R.O. entitled "Approaches not local to the multiscale analysis of structures reinforced with nanotubes." Funded by University of Naples Federico II, Pole of Sciences and Technologies and San Paolo Foundation.

2007-2008 - Scientific local coordinator PRIN "Localization of deformation, formation and propagation of fractures: theoretical and computational modeling in high strength concrete".

2007 - P.I. of the project: "A nonlocal damage model for the analysis of structures in high strength concrete," Scientific Research Projects - Region Campania - years 2007 - LR n. 5 of 28/03/2002.

2011-2014 - Component of the project PON technologies for seismic protection and enhancement of cultural complexes Interest (TRY). Funding: Ministry of Education.

2015 - Component Project Industry 2015 - Innovance: Innovations product / process and integration of the supply chain of construction for energy efficiency and sustainable development.

2010-2013 - Component units of the national research project Department of Civil Protection - Consortium RELUIS.

Component of C.N.R. Research teams:

- 1994 - Principles and computational methods in elastic-visco-plasticity;
- 1995 - Modeling inelastic phenomena in fiber-reinforced composites;
- 1997 - Modeling and calculation algorithms in phase inelastic for composite laminates;
- 1999 - Modeling and finite element analysis of laminated composite plates and shells.

Component of M.U.R.S.T. Research teams:

- 1996 - Patterns of damage to composite materials;
- 1998 - Modeling and structural analysis of masonry panels established by composite laminates;
- 2000 - Modeling and analysis of concrete structures, high-performance;
- 2001 - PRIN "High performance concretes: mechanical modeling and structural design,
- 2003 - PRIN "Theoretical modeling and experimental investigation of phenomena of damage in ordinary concrete and fiber-reinforced".

CONSULTATIONS

2010-2012 - Responsible for technical and scientific research contract "Study of non-bearing plasterboard systems in the seismic domain and development of new earthquake-resistant systems". Funding: Lafarge Gypsum International.

2011 - Responsible for technical and scientific research contract "UHPC Beam-Column Connections under cyclic loading." Funding: Lafarge International.

TEACHING

Fundamentals of Structural Engineering – corso di laurea in Architettura 5UE

Structural Engineering – corso di laurea in Architettura 5UE

Teory of Structures – corso di laurea in Scienze dell'Architettura

Static – corso di laurea in Architettura

Environment-Structure Interaction – corso di laurea in Architettura

RESEARCH TOPICS

Thin-walled beams; structural mechanics with convex constraints; Linear and nonlinear analysis of structures; finite deformations; constitutive models, formulations and variational approximation methods in elasticity, visco-plasticity and damage to internal variables; materials are not resistant to traction; principles of limitation; finite element; mixed methods and enhanced type; nonlocal models in elasticity, damage and plasticity; nanostructures and small-scale effects.

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (SELECTED)

2015 - Member of the Scientific Committee of the VI International Conference on Computational Methods for Coupled Problems in Science and Engineering, Venice, Italy.

2013 - Member of the Scientific Committee of the 5th International Conference on Computational Methods for Coupled Problems in Science and Engineering, Spain.

2011 - Member of the Scientific Committee IV International Conference on Computational Methods for Coupled Problems in Science and Engineering, Kos, Grecia.

INVITED PRESENTATIONS AT INTERNTIONAL CONFERENCES (selected)

2011 - Chairman and organizer of the session Plasticity and Damage: Experimental and Numerical Simulations, IV International Conference on Computational Methods for Coupled Problems in Science and Engineering.

2010 - Chair of the session Computational Plasticity I, 16th International Symposium on Plasticity and its Current Applications, St. Kitts, USA.

2009 - Chair of the session Polycrystal Plasticity and Viscoplasticity, 15th International Symposium on Plasticity and its Current Applications, St. Thomas, USA.

2008 - Chair of the session "Finite Plasticity & Viscoplasticity", 14th International Symposium on Plasticity and its Current Applications, USA.

2008 - Chair of the session S2, 3rd Canadian Conference on Nonlinear Solid Mechanics, Toronto, Canada.

13. CECCHI Antonella

PERSONAL WEB SITE: <http://www.iuav.it/Ateneo1/docenti/architetu/docenti-st/Antonella-2/index.htm>

RESEARCH GROUP WEB SITE: <https://sites.google.com/a/iuav.it/iuav-sdc/>

EMAIL : cecchi@iuav.it

NUMBER OF PUBLICATIONS AND DISTRIBUTION:

35 Publications in International Journals

H-INDEX: 11 according to ISI Web of Knowledge, according to 11 SCOPUS

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

from 2011 to now: Full Professor in Strength of Materials, Department of Architecture Construction Conservation, Università IUAV di Venezia

PROFESSIONAL EXPERIENCE:

from 2006 to 2011: Associate Professor in Strength of Materials, Faculty of Architecture, Università IUAV di Venezia

from 2000 to 2006: Research fellow, Università IUAV di Venezia

EDUCATION:

from 1994 to 1997: Ph.D

from 1986 to 1992: Degree in Architecture, Università IUAV di Venezia, Italy

COMMITTEES AND PROFESSIONAL ACTIVITIES (SELECTED):

from 2015 to now: Director of the Department of Architecture Construction Conservation, Università IUAV di Venezia

from 2014 to 2015: Rector's delegate to teaching activities

from 2014 to 2015: Deputy Director of the IUAV Ph.D. School

from 2013 to now: Scientific Responsible of the curriculum "Innovation for Building and Cultural Heritage" for the Ph.D. in "Architecture, City and Design", at IUAV Ph.D. School

from 2012 to 2014: Deputy Director of the Department of Architecture Construction Conservation

CURRENT RESEARCH FUNDS:

PRIN 2010-2011: "Models and algorithms for the nonlinear analysis of structures and the validation of performance-based design rules".

TEACHING ACTIVITIES (SELECTED):

- Structural Mechanics 1 and 2, Degree in Architecture, Università IUAV di Venezia
- Finite Elements Methods, course for the Ph.D. in "Architettura, Città e Design", at IUAV Ph.D School, curriculum in "Innovazione per il costruire e per il patrimonio culturale"
- Fundamentals of Homogenization Theory, course for the Ph.D. in "Architettura, Città e Design", at IUAV Ph.D School, curriculum in "Innovazione per il costruire e per il patrimonio culturale"

RESEARCH TOPICS (SELECTED):

- Homogenization: in-plane and out-of-plane behavior of masonry walls
- Identification between 3D discrete models and continuous models: Cauchy and Cosserat continuous models
- Failure analysis of masonry structures
- Fiber reinforced materials
- Multi-scale analysis
- Viscous-elastic models: discrete element models DEM and equivalent continua for materials with periodic micro-structure
- Dynamic analysis of periodic structures: equivalent standard and micropolar continuous models and DEM models.
- Mixed finite and discrete element models FEM/DEM.

14. ZAVARISE Giorgio

PERSONAL WEB PAGE:

<https://www.unisalento.it/people/giorgio.zavarise>

EMAIL:

giorgio.zavarise@unisalento.it

NUMBER OF PUBLICATIONS AND DISSEMINATION (International):

54 Publications on Refereed Journals

3 Monographs

4 Book chapters

7 Book referred contributions

65 International Conference contributions

SCIENTIFIC PROFILE:

Scopus: H-index=22; Documents=56; Citations=1058; Co-authors=46

ISI Web of Knowledge: H-index=20; Documents=51; Citations=874

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2006-present Full Professor of Structural Mechanics (SSD ICAR/08), Università del Salento - Lecce

PROFESSIONAL EXPERIENCE:

1998-2006 Associate Professor of Structural Mechanics, Politecnico di Torino

1993-1998 Assistant professor of Structural Mechanics, Università di Padova

1992-1993 Post-doc at the Faculty of Engineering, Università di Padova

EDUCATION:

1990 PhD in Structural Mechanics, Università di Padova

1986 Degree in Civil Engineering, Università di Padova

COMMITTEE MEMBER OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

Member of the Editorial Board of "Computational Mechanics"

REVIEWER ACTIVITY:

International journals:

- Archive of Applied Mechanics
- ASME Journal of Applied Mechanics
- ASME Journal of Tribology
- Computational Mechanics
- Computer Methods in Applied Mechanics and Engineering
- Communications in Numerical Methods in Engineering
- Computers & Structures
- Engineering Computation
- European Journal of Mechanics A/Solids
- Engineering Computations: International Journal for Computer-Aided Engineering and Software
- International Journal of Mechanical Sciences
- International Journal of Solids and Structures
- International Journal for Numerical Methods in Engineering
- Journal of Computational Physics
- Journal of Engineering Mathematics
- Meccanica
- Mechanics of Advanced Materials and Structures
- Mechanics Research Communications
- Tribology International
- Wear

Research project evaluation:

- Miur (Italian Ministry)
- Puglia Region
- Deutsche Forschungsgemeinschaft (German Research Foundation)
- Swiss National Science Foundation
- Università di Padova
- Fonds National de la Recherche Luxembourg
- Austrian Science Fund (FWF)
- Shota Rustaveli National Science Foundation (SRNSF) – Georgia

COMMITTEES AND PROFESSIONAL ACTIVITIES:

- PhD Committee – Structural Engineering - Politecnico di Torino (1998-2007)
- PhD Committee – Mechanical and Industrial Engineering - Università del Salento (2007-2011)
- PhD Committee – Engineering of Complex Systems – Università del Salento (2013-)
- PhD evaluation Committee - Universidad Pontificia Comillas – Madrid
- PhD evaluation Committee - University of Hannover
- Associazione Italiana di meccanica Teorica e Applicata (AIMETA);
- Gruppo Italiano Frattura (IGF);
- Gruppo Italiano di Meccanica Computazionale (GIMC);
- Chairman of the "Gruppo Italiano di Meccanica Computazionale" (GIMC) since 10/2013;
- International Association of Computational Mechanics (IACM) General Council since 2013;
- European Community on Computational Methods in Applied Sciences (ECCOMAS) since 2013;
- Excellence Center "Scienza ed applicazioni di paradigmi computazionali avanzati" – Advanced Computing Group, Università di Padova.

CURRENT FUNDINGS FOR THE RESEARCH:

- Fundings from private companies.
- 2011-2015: Collaboration to ERC-2011-StG – Proposal n. 279439 INTERFACES, Coordinator prof. L. De Lorenzis
- 2012-2015: Collaboration to FIRB "Modelli di meccanica strutturale per applicazioni in ambito di energie rinnovabili" (codice RBFR107AKG), Coordinator ing. Marco Paggi, Politecnico di Torino

PAST FUNDINGS FOR THE RESEARCH:

- 2009-2012: Scientific coordinator of the Lecce unit "PRIN - 2008"; Applicazioni avanzate di Meccanica della Frattura allo studio dell'integrità e durabilità di materiali e strutture"
- 2009-2011: Scientific consulting for STAR2 (Simulation Technology Aeronautic Research) – POR Puglia 2007/2013 – Asse I

- 2007-2008: Scientific consulting for STAR (Simulation Technology Aeronautic Research) – POR Puglia 2000/2006 – PIT n. 7
- 2006-2009 Consulting for the European Project "Leonardo; Innovative Learning and Training On Fracture
- 2007-2007 Scientific coordinator of the Turin unit "PRIN - 2005"; Meccanica del contatto e meccanica della frattura: sinergie, interazioni e applicazioni
- 2003-2006: National coordinator of the European Project "Leonardo; Numerical Medium-Level Training on Industrial Friction Problems"
- 2003-2005: Scientific coordinator of the Turin unit "PRIN - 2003"; Aspetti fisici e computazionali nella meccanica del contatto fra solidi
- 2001-2002: National coordinator of "PRIN - 2000"; La meccanica del contatto: legami costitutivi dei fenomeni di interfaccia e tecniche di discretizzazione
- 2000-2002: Collaboration to the European Project GROWTH GRD1-10330, G1RD-CT2000-00161-"CUTTER" – Enhanced design and production of wear resistant rock cutting tools for construction machinery

CONSULTING ACTIVITIES:

2011-2015: Consulting activity for ILVA Taranto

2015: Participation to the Committee for preservation of the marble floor of the St. John Cathedral, Malta

2008- Static and Administrative asseveration for Università del Salento

2000-2015 Consulting activity on numerical modeling for EnginSoft

TEACHING ACTIVITIES:

Università del Salento:

- From the academic year 2006/2007: Courses of Structural Mechanics (Scienza delle Costruzioni), for Civil and Industrial Engineering students

- From the academic year 2008/2009: Courses of Computational Mechanics, Civil Engineering students Politecnico di Torino:

- From the academic year 1998/1999 to 2005/2006: Courses of Structural Mechanics (Scienza delle Costruzioni), Civil and Mechanical Engineering students

RESEARCH TOPICS:

- Computational Contact Mechanics

- o Contact constitutive laws

- o Thermomechanical coupling

- o Contact algorithms

- Structural problems in High Tech fields:

- o Sub-atomic particles detectors

- o Nuclear fusion technologies

- o Telescopes

- Thermomechanical problems in large concrete castings

CHAIRMAN OF INTERNATIONAL CONFERENCES:

- ICCCM 2009 – International Conference on Computational Contact Mechanics (Lecce, 2009).

- ICCCM 2011 – International Conference on Computational Contact Mechanics (Hannover, 2011).

- TCCM 2011 – Trends & Challenges in Computational Mechanics (Padova, 2011).

- ICCCM 2013 – International Conference on Computational Contact Mechanics (Lecce, 2013).

- GAMM 2015 Annual Meeting of the International Association of Applied Mathematics and Mechanics (Lecce, 2015).

- ICCCM 2015 – International Conference on Computational Contact Mechanics (Hannover, 2015).

- ICCCM 2017 – International Conference on Computational Contact Mechanics (Lecce, 2017).

SCIENTIFIC/ORGANIZING COMMITTEE OF INTERNATIONAL CONFERENCES:

- GAMM2003 Annual Meeting of the International Association of Applied Mathematics and Mechanics (Abano Terme, 2003).

- ICF11 – 11th International Conference on Fracture (Torino, 2005).

- CMIS2005 – 4th Contact Mechanics International Symposium (Hannover, 2005).

- FRAMCOS-6 – 6th International Conference on Fracture Mechanics of Concrete and Concrete Structures (Catania, 2007).

- WCCM8 – 8th World Congress on Computational Mechanics (Venice, 2008).

- TCN-CAE 2008 – International Conference on CAE and Computational Technologies for Industry (Venezia, 2008).

- CMIS09 – 5th Contact Mechanics International Symposium (Chania, Greece, 2009).

- ECCM2010 – European Conference on Computational Mechanics (Parigi, 2010).

- Euromech 514: New Trends in Contact Mechanics (Cargese, Corsica, 2012).

- XX National Conference of the Italian Group of Computational Mechanics (Cassino, 2014).

- EUROMECH Colloquium 575 – Contact Mechanics and Coupled Problems in Surface Phenomena (Lucca, 2015).

- CMIS 2016 – Contact Mechanics International Symposium (Warsaw, Poland, 2016).

INTERNATIONAL SCIENTIFIC COOPERATIONS AND STAGES:

- 1989-1990 University of Hannover (Germania), Prof. E. Stein, Prof. P. Wriggers (4 months)

- 1990-1997 University of di Darmstadt (Germania), Prof. P. Wriggers (1 month per year)

- 1996 University of California at Berkeley Prof. R.L. Taylor (6 months)

- 1998- Several visits at University of Hannover (Germania), Prof. P. Wriggers.

15. RIZZI Nicola Luigi

Born in Canosa di Puglia (Bari), october, 26, 1950.

EMAIL : nicolaluigi.rizzi@uniroma3.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

23 Papers published on International Journals

7 Contributions in volumes (English)

1 Contribution in volume (French)

1 Book (english)

ISI Web of Knowledge: h-index 9, citations 135

SCOPUS: h-index 9, citations 191

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

Full Professor, of Structural Mechanics, Faculty of Architecture, University Roma Tre, Roma, from november, 1, 1992.

PROFESSIONAL EXPERIENCE:

Full Professor, of Structural Mechanics, Faculty of Architecture, University La Sapienza, Roma, from november, 1, 1990 to october, 31, 1992.

Associate Professor of Structural Mechanics, Faculty of Engineering, University La Sapienza, Roma, from april, 22, 1988 to october, 31, 1990.

Research Fellow, University La Sapienza, Roma, from august, 1, 1981 to april, 21 1988.

EDUCATION:

Graduated cum laude in Civil Engineering at the University La Sapienza, Roma, october, 15, 1974.

COMMITTEES AND PROFESSIONAL ACTIVITIES (selected):

Head of the Department of Civil Engineering Sciences, from november, 1, 1998 to december, 31, 2002.

Head of the Department of Structures, from january, 1, 2003 to october, 30, 2009.

President of the Department's Heads Council november, 1, 1999, march, 31, 2001.

Member of the Academic Senate (three mandates)

Former Member of PhD council in Theoretical and Applied Mechanics University La Sapienza, Roma, then Civil Engineering Sciences, University Roma Tre.

Member of the of PhD council in Architecture, Innovation, Heritage, University Roma Tre.

CURRENT FUNDINGS FOR THE RESEARCH:

PRIN 2010

PAST FUNDINGS FOR THE RESEARCH (selection):

PRIN 1998

PRIN 2003

Masterplan of the town of Costantina (Algeria) (founded with 500.000 euro from the Italian Ministry of Foreign Affairs (2003--2006)

TEACHING ACTIVITIES (selection):

Strength of materials: Engineering, Architecture

Foundations of structural mechanics: Architecture

RESEARCH TOPICS (selection):

Nonlinear mechanics;

Critical and postcritical behaviour of elastic structures;

Nonstandard continua (microstructured, higher gradient);

Symbolic manipulation;

Continuous models for truss beams;

One dimensional modelling of Thin Walled Beams;

Continuous modelling of masonry.

Homogenization methods.

Continuous modelling of Carbon Nano Sheets and Tubes

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES AND/OR SCHOOLS (selected from 2005):

2015 Invited Lecture, CC2015 (Prague)

ORGANIZATION OF INTERNATIONAL CONFERENCES (selection):

2014 CST2014 (Naples) Minisymposium on: 'Nonlinear beam and plate models with a view to applications'

2013 CC2013 (Cagliari) Structural and material instabilities: new achievements in theoretical and computational modelling

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES (selected from 2006)

CST2012 (Crete)

CC2013 (Cagliari)

CST2014 (Naples)

CC2015 (Prague)

ICASS2015 (Lisbon)

INTERNATIONAL AWARDS AND OTHER HONORS:

2009 Guest Editor for Advances in Engineering Software, vol. 89, novembre 2015

16. CADDEMI Salvatore

CURRICULUM VITAE: SALVATORE CADDEMI

PERSONAL WEB PAGE: <http://www.dicar.unict.it/Personale/Docenti/Docenti/Caddemi.html>

EMAIL : scaddemi@dica.unict.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

43 Publications on International Refereed Journals

81 Publications on Proceedings of National and International Conferences

3 Publications on Book Chapters

2 Research Reports

1 Ph.D. Thesis

H-INDEX: 14 ISI Web of Knowledge, 15 SCOPUS, 559 SCOPUS citations, 60 citations for the most cited paper

CURRENT ACCADEMIC POSITION AND AFFILIATIONS:

2001-present Full Professor of Structural Mechanics (SSD ICAR/08), Department of Civil and Architectural Engineering, University of Catania, Italy

PROFESSIONAL EXPERIENCE:

1998-2001 Associate Professor of Structural Mechanics (SSD ICAR/08), University of Catania, Italy

1996-1997 Visiting Researcher at "Department of Structural Engineering and Materials" of Technical University of Denmark, Lyngby, Denmark

1991-1998 Researcher of Structural Mechanics (SSD ICAR/08), University of Palermo, Italy

1990-1991 Post Doctoral Research Fellow at "FRD/UCT Centre for Research in Computational and Applied Mechanics", University of Cape Town, South Africa

1988-1989 Research Officer at "FRD/UCT Centre for Research in Computational and Applied Mechanics", University of Cape Town, South Africa

EDUCATION:

1987-1990 Ph.D. in Structural Engineering

1978-1984 Master Degree in Civil Engineering cum laude (23 years old) , University of Palermo, Italy

COMMITTEE OF INTERNATIONAL JOURNALS WITH PEER-REVIEW:

2013-present Member of the Editorial Board of Mathematical Problems in Engineering

PAST FUNDINGS FOR THE RESEARCH:

2008-2009 Funding from "Department of Civil Protection" (Region of Sicily) for the study of "Seismic isolation of existing buildings and application to a case study"

2003-2005 Procedures for identification of geometrical and physical parameters of structural systems.

Coordinator of Catania Research Unit, PRIN 2003 (National Coordinator Prof. Antonino Morassi)

TEACHING ACTIVITIES (selection):

- 2012-2015 Professor of "Structural Mechanics" in Architectural Engineering, University of Catania
- 2010-2011 Professor of "Inelastic Analysis of Structures" in Civil and Geotechnical Engineering, University of Catania
- 2005-2010 Professor of "Structural Mechanics" in Architectural and Environmental Engineering, University of Catania
- 2003-2010 Professor of "Strength of Materials" in Building Restoration and Environmental Engineering, University of Catania
- 2001-2003 Professor of "Structural Mechanics" in Civil and Environmental Engineering, University of Enna
- 1998-2003 Professor of "Structural Mechanics" in Electric and Electronic Engineering, University of Catania
- 1995-1998 Professor of "Reliability of Structures" in Civil Engineering, University of Messina
- 1995-1998 Professor of "Structural Mechanics" in Mechanical, Aeronautical and Chemical Engineering, University of Palermo

RESEARCH TOPICS (selected):

- Constitutive modeling of elastic-plastic and no-tension materials
- Dynamic and stochastic analysis
- Structural and damage identification
- Analysis of structures with singularities: static, dynamic and stability
- Dynamic stability under conservative and non conservative forces
- Tensile instability
- Masonry structures modeling and seismic vulnerability assessment

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES

2015 Invited Lecture on "The role of shear deformation in the tensile instability of beam-columns", ISVCS10 10th International Symposium on Vibrations of Continuous Systems, Stanley Hotel, Estes Park, Colorado, USA, 2015.

2008 Invited Lecture on "Generalised Functions for Modelling Singularities: Direct and Inverse Problems", IUTAM2008 Symposium on Theoretical, Computational and Modelling Aspects of Inelastic Media, Cape Town, South Africa, 2008.

SCIENTIFIC COMMITTEE OF INTERNATIONAL CONFERENCES

2007 SEMC2007 The Third International Conference on Structural Engineering, Mechanics and Computations, 10-12 September 2007, Cape Town, South Africa.

17. UBERTINI Francesco

PERSONAL WEB PAGE: www.unibo.it/sitoweb/francesco.ubertini/en

RESEARCH GROUP WEB PAGE: www.dicam.unibo.it/it/Ricerca/Progetti-e-attivita/Strutture/index.html

EMAIL: rettore@unibo.it; francesco.ubertini@unibo.it

NUMBER OF PUBLICATIONS AND DISSEMINATION:

73 Publications on International Journals

H-INDEX 13 in ISI Web of Knowledge, 15 in SCOPUS, 619 SCOPUS citations.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2015 – present: Rector Magnificus, Alma Mater Studiorum - University of Bologna.

2007 – present: Full Professor, Mechanics of Solids and Structures (ICAR/08, 08/B2), University of Bologna.

PROFESSIONAL EXPERIENCE:

2001 – 2007: Associate Professor, Mechanics of Solids and Structures (ICAR/08, 08/B2), University of Bologna.

2000 – 2001: Assistant Professor, Mechanics of Solids and Structures (ICAR/08, 08/B2), University of Bologna.

1999 – 2000: Contract researcher, DISTART, University of Bologna.

1998 – 1999: Post-doctoral fellowship, University of Bologna.

EDUCATION:

1994 – 1998: PhD in Structural Mechanics, University of Bologna.

1994: Bachelor degree in Civil Engineering cum laude, University of Bologna.

COMMITTEES AND PROFESSIONAL ACTIVITIES (selection of):

2012 – 2015: Member of the Academic Senate, University of Bologna.

2010 – 2015: Head of the Department of Civil, Chemical, Environmental and Materials Engineering (DICAM), University of Bologna (www.dicam.unibo.it).

2010 – 2014: Member of the Technical Committee on Computational Solid and Structural Mechanics, European Community on Computational Methods in Applied Sciences (www.eccomas.org).

2008 – 2010: Director of the 2nd level Master in Engineering management of risk induced by natural hazards, University of Bologna.

2008 – present: Tutor of Collegio Superiore, University of Bologna (www.collegio.unibo.it).

2007 – 2010: Head of Department of Structural, Transport, Hydraulic, Survey and Territory Engineering (DISTART), University of Bologna.

2006 – 2013: Member of the Executive Council of the Italian Group of Computational Mechanics (GIMC), AIMETA (www.aimeta.it).

2003 – 2007: Head of the Laboratory of Computational Mechanics (LAMC), DISTART, University of Bologna.

2002 – present: Faculty member of the PhD Program in Civil, Chemical, Environmental and Materials Engineering, University of Bologna.

CURRENT FUNDINGS FOR THE RESEARCH:

2013 – 2016: Models and algorithms for nonlinear structural analysis and validation of performance-based design rules, coordinator UniBO, national grant PRIN 2010-11.

2014 – 2016: RIGERS – Rigenerazione della città: edifici e reti intelligenti, participant, national grant Smart Cities and Communities.

2014 – 2016: Smart Manufacturing 2020, national grant CTNFI – Cluster Tecnologico Nazionale Fabbrica Intelligente (www.fabbricaintelligente.it).

PAST FUNDINGS FOR THE RESEARCH (selection of):

2013 – 2015: KISADAMA – Kinetics of salt crystallization and mechanical damage in historic masonry, participant, JPI-Joint Heritage European Initiative (www.kisadama.eu).

2011 – 2015: SARISTU – Smart intelligent aircraft structures, participant, FP7 European Research Project AAT.2011 (www.saristu.eu).

2010 – 2014: 3ENCULT – Efficient energy for EU cultural heritage, coordinator UniBO, FP7 European Research Project, ENV.2010 (www.3encult.eu).

2008 – 2011: SMooHS – Smart monitoring of historic structures, coordinator UniBO, FP7 European Research Project, ENV.2007 (www.smoohs.eu).

2010 – 2014: ITALICI – Innovation and tradition for the technological advancement of bricks and the internationalization of the Italian heritage, participant, national grant Industria 2015.

2012 – 2013: Robotraining, coordinator, national grant MI.S.E.-ICE-CRUI.

2008 – 2010: Verification in computational structural mechanics, coordinator UniBO, national grant PRIN 2007.

2006 – 2008: From survey to structural analysis of Roman constructions in the Vesuvio area, coordinator UniBO, national grant PRIN 2005.

2004 – 2006: Cultural heritage: modelling and stochastic identification of damage and risk, participant, national grant PRIN 2004.

2003 – 2005: Parameter estimation of fibre reinforced composite materials using Bayesian sensitivity analysis and optimization techniques, participant, national grant PRIN 2003.

2001 – 2004: Modelling and analysis in the vibration control of structural continua, coordinator UniBO, national grant PRIN 2001.

CONSULTING ACTIVITIES (selection of):

2013: Analysis of the structural behavior of cold-formed beams, funded by LINDAB S.A.

2012: Evaluation of the structural safety of Ferrari plant ex production line for auto vehicles, funded by Ferrari spa.

2011: On the influence of geometric nonlinearities, warping and cross-section distortion in the structural analysis of cold-formed beams, funded by LINDAB S.A.

MEMBER OF THE EDITORIAL BOARD OF INTERNATIONAL JOURNALS:

Mathematical Problems in Engineering

Curved and Layered Structures

Current Advances in Civil Engineering

Open Journal of Civil Engineering

Journal of Civil Engineering and Construction Technology

JP Journal of Solids and Structures

TEACHING ACTIVITIES (selection of):

Mechanics of Solids and Structures, Bachelor of Science in Civil Engineering.

Advanced Structural Mechanics, International Master Course in Civil Engineering.

Fracture Mechanics and Fatigue, 2nd level Master Course in Design of Oil&Gas plant.

RESEARCH TOPICS (selection of):

- Numerical modeling and structural analysis
- Environmental aging and structural decay
- Historical and archeological structures
- Structural monitoring and diagnostic
- Smart structures and innovative materials
- Fluid-structure interaction

ORGANIZATION OF NATIONAL AND INTERNATIONAL CONFERENCES (selection of):

2014: co-chairman of the International Seminar on Mechanics of Masonry Structures – MURICO 4 (Ravenna, September 9-11, 2014, www.murico4.dicam.unibo.it/).

2011: chairman of the Local Organizing Committee of XX Congress of the Italian Association of Theoretical and Applied Mechanics – AIMETA 2011 (Bologna, September 12-15, 2011).

2009: member of the Organizing Committee of XIII Congress of Italian National Association of Earthquake Engineering – ANIDIS 2009 (Bologna, June 28-July 2, 2009).

2008: member of the Local Organizing Committee of 8th World Congress on Computational Mechanics – WCCM8 and 5th European Congress on Computational Methods in Applied Sciences and Engineering – ECCOMAS 2008 (Venezia, June 30 – July 5, 2008).

2006: chairman of XVI Italian Congress of Computational Mechanics – GIMC 2006 (Bologna, June 26–28, 2006).

SCIENTIFIC COMMITTEE OF NATIONAL AND INTERNATIONAL CONFERENCES (selection of):

2014: member of the Scientific Committee of 11th World Congress on Computational Mechanics – WCCM XI, 5th European Conference on Computational Methods – ECCM V and 6th European Conference on Computational Fluid Dynamics – ECFD VI (Barcellona, July 20-25, 2014, www.wccm-eccm-ecfd2014.org/).

2012: member of the Scientific Committee of XIX Italian Congress of Computational Mechanics – GIMC 2012 (Rossano, June 25–27, 2012).

2010: member of the Scientific Committee of XVIII Italian Congress of Computational Mechanics – GIMC 2010 (Siracusa, September 22–24, 2010).

2009: member of the Scientific Committee of 3° National Congress of MEchanics of Masonry Structures Strengthened with Composite Materials – MuRiCo 3 (Venezia, April 1-3, 2009)

2008: member of the Scientific Committee of XVII Italian Congress of Computational Mechanics – GIMC 2008 (Alghero, September 10–12, 2008).

18. TARANTINO Angelo Marcello

CURRICULUM VITAE

Prof. Angelo Marcello TARANTINO

PERSONAL WEB PAGE:

<http://personale.unimore.it/rubrica/insegnamenti/tarant.>

RESEARCH GROUP WEB PAGE:

<http://www.criect.unimore.it>

Director of the Research interdepartmental center for constructions and environment, Criect-Unimore,

EMAIL: angelomarcello.tarantino@unimore.it

NUMBER OF PUBBLICATIONS AND DISSEMINATION:

56 Publications on International Refereed Journals

H-INDEX 10 in ISI Web of Knowledge, 10 in SCOPUS, 428 SCOPUS citations, 54 citations for the most cited paper.

CURRENT ACADEMIC POSITION AND AFFILIATIONS:

2004-present Full Professor of "Scienza delle Costruzioni" (SSD ICAR/08), University of Modena and Reggio Emilia;

2007-present Director of the School of Civil Engineering at the University of the San Marino Republic.

A. GENERAL

Born on April 25, 1960 in Palermo (Italy).

November 2, 1985, he was graduated in civil engineering from the University of Ancona, Italy.

March 1987, he was admitted to the PhD in Structural Engineering at the University of Florence, Italy, and supports the final examination on October 17, 1990, with a thesis entitled "Applications of the theory of fracture propagation of seismic waves," with tutors Professors Giovanni Menditto and Piero Villaggio.

He was selected in a competition for PhDs of the European community for a Research Fellowship in the program: Human capital and mobility - Commission of the European Communities, HCM n. ERB CHBG CT 920 061, october 1994 - march 1995, Besancon, France.

November 22, 1995, he is assistant professor at the Faculty of Engineering, University of Ancona.

With italian D.M. August 6, 1998, he was proclaimed the winner, with a unanimous judgment, of the national competition for associate professor, and on November 1998 he took the service at the Faculty of Engineering of the University of Modena and Reggio Emilia.

With Rector's Decree no. 447 of 18 May 2001, he was proclaimed the winner of the competition for full professor at the Faculty of Engineering of the University of Modena and Reggio Emilia.

Since 2004 he is referent of the degree courses in Civil Engineering and Building Engineering at the Military Academy of Modena.

Since 2007 he is the Director of the School in Civil Engineering at the University of the San Marino Republic.

On November 29, 2008, he was elected President of the Degree Course in Civil Engineering at the University of Modena and Reggio Emilia.

B. TEACHING

In the period 1985-1988, Prof. Tarantino has taught at the Institute of Science and Technology of Construction at the Ancona University, collaborating mainly to the course of "Scienza delle costruzioni".

Since 1988 he is teacher of 'Scienza delle Costruzioni' (9 credits) and Theory of Elasticity (9 credits) for undergraduate and master degree in Civil Engineering at the University of Modena and Reggio Emilia. Since 2007 Prof. Tarantino holds the same teachings at the University of Repubblica of San Marino. He has conducted research and study abroad (Northwestern University, Evanston, USA 1986; Besançon, Université de Franche-Comté, France 1995; University College Dublin, Ireland in 1997 and 1999, Université Lyon, France in 1998, etc.).

C. RESEARCH

The entire research carried out by Prof. Tarantino can be subdivided into the following topics: viscoelasticity; fracture mechanics and dynamic propagation of cracks; bifurcation theory, nonlinear dynamics and chaos; piezoelectricity and magnetoelasticity; contact problems; equilibrium, bifurcation and stability in finite elasticity; fiber-reinforced concrete and earthquake engineering.

He is author of about 85 scientific works, including 60 international journals, written mainly at a single name, and of four textbooks and two international patents.

He was reviewer of scientific papers for several international journals, including:

- Quarterly Journal of Mechanics and Applied Mathematics;
- International Journal of Solids and Structures;
- International Journal for Numerical Methods in Engineering;
- ACI Journal;
- Structural Engineering and Mechanics;
- Journal of Elasticity;
- ASCE Journal;
- International Journal of Engineering Science;
- International Journal of Non-Linear Mechanics;
- IMA Journal of Applied Mathematics;
- Engineering Fracture Mechanics;
- Mathematical Reviews;
- International Journal of Damage Mechanics;
- Advances in Mathematical Physics;
- Mathematics and Mechanics of Solids;
- Journal of Engineering Mechanics, ASCE.

He was reviewer of the research projects on behalf of the Italian Ministry of Education (Prin, FIRB, in Future Research) and the Ministry of Economic Development (Fit).

Patents

He is inventor of the patent no. BO2500774 filed on 28/11/2005, relating to polypropylene fibers for fiber-reinforced structural concrete. Next international patent no. 06124764.9-2303.

Research Projects and Conventions

- Research projects funded by Miur ex 60%.
- Workshop Emilia - Laborator Rubes on networks of expertise in mechanics - funded by POR 2000-2006, ESF Ob. 3 of the Emilia-Romagna Region.
- Cofin 2004 Mathematical models for the dynamics of DNA.
- Research Project 2005. Project of industrial fibers for concrete, Industrial Partner Wires & Shapes.
- Research Contract July 2006. Polymeric fibers innovative for the construction of fiber-reinforced concrete. Wires & Shapes.
- Research contract in September 2007. Covering modular columns of stone. Kerbell.
- Contract Research November 2007. Mortars and grouts and microstructured fiber reinforced for structural and earthquake-resistant. Three-year research program. Saint Gobain Weber.
- Contract Research December 2007 (RSM). Technology solutions for applications of fiber-reinforced concrete. Wires & Shapes.
- Research contract in February 2008. Automatic analysis of the interaction between grout and structures. Aztec Informatica.
- PRRIITT Measure 3.1 Action A Industrial research projects and pre-competitive development specified in the notice of 7:07:08 DGR n.1043 / 2008. Project No. 193, determines executive n.5064 of June 9, 2009. Project: Mixtures cold semifreddo for fiber-reinforced asphalt, Cesare Turchi Ltd.
- PRRIITT Measure 3.1 Action A Industrial research projects and pre-competitive development specified in the notice of 7:07:08 DGR n.1043 / 2008. Project: Polymer fibers intended for reinforcing gallery, Wires & Forms Ltd.
- Research contract in February 2010. Research and tests on a pavement in fiber-reinforced concrete for tunnels of the Quadrilateral Umbria-Marche. Grandi Lavori Fincosit.
- Research contract in May 2010. In the field of seismic risk reduction in the Modena area. City of Modena.
- Research contract in July 2010. Seismic nursing home 'Villa Green' of Reggio Emilia.
- Research contract in September 2011. In the field of seismic risk reduction in the Modena - continuation. City of Modena.
- Contract Research October 2012. Mechanical characterization of an aggregate composed of quartz sands and

epoxy resins. Biodesign LTD.

- Research contract in September 2012. In the field of seismic risk reduction in the Modena - continuation. City of Modena.
- Research contract in February 2012. Evaluation of the seismic vulnerability of the building located in Street Fonteraso 15 - Modena, STB tributaries Po river. Region ER.
- Research contract in September 2013. In the field of seismic risk reduction in the Modena - continuation. City of Modena.
- Contract Research October 2013. Evaluation of the seismic vulnerability of the building in Street Santo Stefano 25 - Reggio Emilia, STB tributaries Po river. Region ER.
- Research contract in December 2014. Assessment of seismic vulnerability of the building in Street Santa Franca 38 - Piacenza, STB tributaries Po river. Region ER.

3 – Principal scientific publications of PI

1. Ala G, Di Paola M, Francomano E, Li Y, Pinnola F P (2014). Electrical analogous in viscoelasticity. COMMUNICATIONS IN NONLINEAR SCIENCE & NUMERICAL SIMULATION, vol. 19, p. 2513-2527, ISSN: 1007-5704, doi: 10.1016/j.cnsns.2013.11.007 - **Articolo in rivista**
2. Di Matteo A, Di Paola M, Pirrotta A (2014). Probabilistic characterization of nonlinear systems under Poisson white noise via complex fractional moments . NONLINEAR DYNAMICS, ISSN: 0924-090X, doi: DOI 10.1007/s11071-014-1333-1 - **Articolo in rivista**
3. Di Matteo A, Kougoumtzoglou IA, Pirrotta A, Spanos PD, Di Paola M (2014). Stochastic response determination of nonlinear oscillators with fractional Derivatives Elements via the wiener path integral. PROBABILISTIC ENGINEERING MECHANICS, vol. 39, ISSN: 0266-8920, doi: DOI: 10.1016/j.pro bengmech.2014.07.001 - **Articolo in rivista**
4. Di Paola M, Fiore V, Pinnola FP, Valenza A (2014). On the influence of the initial ramp for a correct definition of the parameters of fractional viscoelastic materials. MECHANICS OF MATERIALS, vol. 69, p. 63-70, ISSN: 0167-6636, doi: http://dx.doi.org/10.1016/j.mechmat.2013.09.017 - **Articolo in rivista**
5. Di Paola M, Heuer R, Pirrotta A (2013). Fractional Visco-Elastic Euler-Bernoulli Beam. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 50, p. 3505-3510, ISSN: 0020-7683, doi: 10.1016/j.ijsolstr.2013.06.010 - **Articolo in rivista**
6. Di Paola M, Pinnola FP, Zingales M (2013). A discrete mechanical model of fractional hereditary materials. MECCANICA, vol. 48, p. 1573-1586, ISSN: 0025-6455, doi: 10.1007/s11012-012-9685-4 - **Articolo in rivista**
7. Di PaolaM, Pinnola FP, ZingalesM (2013). Fractional differential equations and related exact mechanical models. COMPUTERS & MATHEMATICS WITH APPLICATIONS, vol. 66, p. 608-620, ISSN: 0898-1221, doi: http://dx.doi.org/10.1016/j.camwa.2013.03.012 - **Articolo in rivista**
8. Di Paola M, Failla G, Pirrotta A (2012). Stationary and non-stationary stochastic response of linear fractional viscoelastic systems. PROBABILISTIC ENGINEERING MECHANICS, vol. 28, p. 85-90, ISSN: 0266-8920, doi: doi:10.1016/j.pro bengmech.2011.08.017 - **Articolo in rivista**
9. Di Paola M, Zingales M (2012). Exact Mechanical Models of Fractional Hereditary Materials (FHM). JOURNAL OF RHEOLOGY, vol. 56, p. 983-1004, ISSN: 0148-6055, doi: 10.1122/1.4717492 - **Articolo in rivista**
10. Di Paola M, Pirrotta A, Valenza A (2011). Visco-elastic behavior through fractional calculus: an easier method for best fitting experimental results. MECHANICS OF MATERIALS, vol. 43, p. 799-806, ISSN: 0167-6636, doi: doi:10.1016/j.mechmat.2011.08.016 - **Articolo in rivista**
11. Di Paola M., Failla G., Sofi A., Zingales M. (2011). A mechanically based approach to non-local beam theories. INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES, vol. 53, p. 676-687, ISSN: 0020-7403, doi: 10.1016/j.ijmecsci.2011.04.005 - **Articolo in rivista**
12. Di PaolaM, FaillaG, ZINGALES M (2010). The mechanically-based approach to 3D non-local linear elasticity theory: Long-range central interactions. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 47, p. 2347-2358, ISSN: 0020-7683, doi: 10.1016/j.ijsolstr.2010.02.022 - **Articolo in rivista**
13. Di PaolaM, PirrottaA, ZingalesM (2010). Mechanically-based approach to non-local elasticity: Variational principles. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 47, p. 539-548, ISSN: 0020-7683, doi: 10.1016/j.ijsolstr.2009.09.029 - **Articolo in rivista**
14. Cottone G, Di Paola M, Zingales M (2009). Elastic waves propagation in 1D fractional non-local continuum. PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES, vol. 2009, ISSN: 1386-9477, doi: 10.1016/j.physe.2009.09.006 - **Articolo in rivista**
15. Di Paola M, Failla G, Zingales M (2009). Physically-Based Approach to the Mechanics of Strong Non-Local Linear Elasticity Theory. JOURNAL OF ELASTICITY, vol. 97, p. 103-130, ISSN: 0374-3535, doi: 10.1007/s10659-009-9211-7 - **Articolo in rivista**
16. Di Paola M, Santoro R (2009). Path integral solution handled by fast Gauss transform. PROBABILISTIC ENGINEERING MECHANICS, vol. 24, p. 300-311, ISSN: 0266-8920 - **Articolo in rivista**
17. DI PAOLA M, PIRROTTA A, SANTORO R (2008). Line element-less method (LEM) for beam torsion solution (truly no-mesh method). ACTA MECHANICA, vol. 195, p. 349-364, ISSN: 0001-5970, doi: 10.1007/s00707-007-0557-2 - **Articolo in rivista**

18. BILELLO C., DI PAOLA M (2004). An Integral Equation for Damage Identification of Euler-Bernulli Beams under Static Loads. JOURNAL OF ENGINEERING MECHANICS, vol. 130, p. 225-234, ISSN: 0733-9399 - **Articolo in rivista**
19. DI PAOLA M (2004). Probabilistic Analysis of Truss Structures with Uncertain Parameters (Virtual Distortion Method Approach). PROBABILISTIC ENGINEERING MECHANICS, vol. 19, p. 41-51, ISSN: 0266-8920 - **Articolo in rivista**
20. DI PAOLA M, SOFI A. (2002). Approximate Solutions of the Fokker-Planck-Kolmogorov Equation. PROBABILISTIC ENGINEERING MECHANICS, vol. 17, p. 369-384, ISSN: 0266-8920 - **Articolo in rivista**

4 - Principal scientific publications of associated investigators

1. TROVALUSCI Patrizia

1. Favata Antonino, Trovalusci Patrizia, Masiani Renato (in stampa). A multiphysics and multiscale approach for modeling microcracked thermo-elastic materials. COMPUTATIONAL MATERIALS SCIENCE, ISSN: 0927-0256, doi: 10.1016/j.commatsci.2015.10.033 - **Articolo in rivista**
2. P. Trovalusci, M. De Bellis, M. Ostoja-Starzewski, A. Murrall (2014). Particulate random composites homogenized as micropolar materials. MECCANICA, vol. 49, p. 2719-2727, ISSN: 1572-9648, doi: 10.1007/s11012-014-0031-x - **Articolo in rivista**
3. P. Trovalusci, M. Ostoja-Starzewski, M. De Bellis, A. Murrall (2014). Scale-dependent homogenization of random composites as micropolar continua. EUROPEAN JOURNAL OF MECHANICS. A, SOLIDS, vol. 49, p. 396-407, ISSN: 0997-7538, doi: 10.1016/j.euromechsol.2014.08.010 - **Articolo in rivista**
4. Patrizia Trovalusci, Annamaria Pau (2014). Derivation of microstructured continua from lattice systems via principle of virtual works: the case of masonry-like materials as micropolar, second gradient and classical continua. ACTA MECHANICA, p. 157-177, ISSN: 0001-5970, doi: 10.1007/s00707-013-0936-9 - **Articolo in rivista**
5. A. PAU, P. TROVALUSCI (2012). Block masonry as equivalent continua: the role of relative rotations. ACTA MECHANICA, vol. 223 (7), p. 1455-1471, ISSN: 0001-5970, doi: 10.1007/s00707-012-0662-8 - **Articolo in rivista**
6. Danilo Capecchi, Giuseppe Ruta, Patrizia Trovalusci (2011). Voigt and Poincaré's mechanistic-energetic approaches to linear elasticity and suggestions for multiscale modelling. ARCHIVE OF APPLIED MECHANICS, vol. 81, p. 1573-1584, ISSN: 0939-1533, doi: 10.1007/s00419-010-0502-z - **Articolo in rivista**
7. Patrizia Trovalusci, Valerio Varano (2011). MULTIFIELD CONTINUUM SIMULATIONS FOR DAMAGED MATERIALS: A BAR WITH VOIDS. INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING, vol. 9, p. 599-608, ISSN: 1543-1649, doi: 10.1615/intjmultcompeng.2011002761 - **Articolo in rivista**
8. D. CAPECCHI, G. RUTA, P. TROVALUSCI (2010). From classical to Voigt's molecular models in elasticity. ARCHIVE FOR HISTORY OF EXACT SCIENCES, vol. 64, p. 525-559, ISSN: 0003-9519, doi: 10.1007/s00407-010-0065-y - **Articolo in rivista**
9. P. TROVALUSCI, V. VARANO, G. REGA (2010). A generalized continuum formulation for composite microcracked materials and wave propagation in a bar. JOURNAL OF APPLIED MECHANICS, vol. 77(6), p. 061002/1-11, ISSN: 0021-8936, doi: 10.1115/1.4001639 - **Articolo in rivista**
10. P. TROVALUSCI, D. CAPECCHI, G. RUTA (2009). Genesis of the multiscale approach for materials with microstructure. ARCHIVE OF APPLIED MECHANICS, vol. 79, p. 981-997, ISSN: 0939-1533, doi: 10.1007/s00419-008-0269-7 - **Articolo in rivista**
11. V. SANSALONE, P. TROVALUSCI (2007). A numerical investigation of structure-property relations in fibre composite materials.. INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING, vol. 5(2), p. 141-152, ISSN: 1543-1649, doi: 10.1615/IntJMultCompEng.v5.i2.70 - **Articolo in rivista**
12. V. SANSALONE, P. TROVALUSCI, F. CLERI (2006). Multiscale modelling of materials by a multifield approach: microscopic stress and strain distribution in fiber-matrix composites. ACTA MATERIALIA, vol. 54, p. 3485-3492, ISSN: 1359-6454, doi: 10.1016/j.actamat.2006.03.041 - **Articolo in rivista**
13. Patrizia Trovalusci, Renato Masiani (2005). A multifield model for blocky materials based on multiscale description. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 42, p. 5778-5794, ISSN: 0020-7683, doi: 10.1016/j.ijsolstr.2005.03.027 - **Articolo in rivista**
14. V. SANSALONE, P. TROVALUSCI, F. CLERI (2005). Multiscale modelling of composite materials by a multifield finite element finite element method. INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING, vol. 3(4), p. 463-480, ISSN: 1543-1649, doi: 10.1615/IntJMultCompEng.v3.i4.50 - **Articolo in rivista**
15. P. TROVALUSCI, R. MASIANI (2003). Non-linear micropolar and classical continua for anisotropic discontinuous materials. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 40 (5), p. 1281-1297, ISSN: 0020-7683 - **Articolo in rivista**
16. C. BAGGIO, P. TROVALUSCI (2000). Collapse behaviour of three-dimensional brick-block systems using non linear programming. STRUCTURAL ENGINEERING AND MECHANICS, vol. 10, p. 181-195, ISSN: 1225-4568 - **Articolo in rivista**
17. P. M. MARIANO, P. TROVALUSCI (1999). Constitutive relations for elastic microcracked bodies:

from a lattice model to a multifield continuum description. INTERNATIONAL JOURNAL OF DAMAGE MECHANICS, vol. 8, p. 153-173, ISSN: 1056-7895, doi: 10.1177/105678959900800204 -

Articolo in rivista

18. P. TROVALUSCI, R. MASIANI (1999). Material symmetries of micropolar continua equivalent to lattices. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 36, p. 2091-2108, ISSN: 0020-7683, doi: 10.1016/S0020-7683(98)00073-0 - **Articolo in rivista**
19. P. TROVALUSCI, G. AUGUSTI (1998). A continuum model with microstructure for materials with flaws and inclusions. JOURNAL DE PHYSIQUE IV, vol. 8 (Pr.8), p. 383-390, ISSN: 1155-4339 - **Articolo in rivista**
20. R. MASIANI, P. TROVALUSCI (1996). Cosserat and Cauchy materials as continuum models of brick masonry. MECCANICA, vol. 31(4), p. 421-432, ISSN: 0025-6455, doi: 10.1007/BF00429930 - **Articolo in rivista**

2. MAIORANA Carmelo

1. G. Mazzucco, V.A. Salomoni, C.E. Majorana (2015). Numerical Simulation of Polypropylene Fibres in Concrete Materials Under Fire Conditions. COMPUTERS & STRUCTURES, vol. 154, p. 17-28, ISSN: 0045-7949 - **Articolo in rivista**
2. G. Xotta, G. Mazzucco, V.A. Salomoni, C.E. Majorana, K.J. Willam (2015). Composite behaviour of concrete materials under high temperatures. INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol. 64-65, p. 86-99, ISSN: 0020-7683 - **Articolo in rivista**
3. V.A. Salomoni, C.E. Majorana, B. Pomaro, G. Xotta, F. Gramegna (2014). Macroscale and mesoscale analysis of concrete as a multiphase material for biological shields against nuclear radiation. INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS, vol. 38, p. 518-535, ISSN: 1096-9853, doi: 10.1002/nag.2222 - **Articolo in rivista**
4. G. Xotta, V.A. Salomoni, C.E. Majorana (2013). Thermo-hygro-mechanical meso-scale analysis of concrete as a viscoelastic-damaged material. ENGINEERING COMPUTATIONS, vol. 30, p. 728-750, ISSN: 0264-4401, doi: 10.1108/EC-08-2013-0097 - **Articolo in rivista**
5. C. Mazzucco, V. Salomoni, C. Majorana (2012). Three-dimensional contact-damage coupled modeling of FRP reinforcements - Simulation of delamination and long-term processes. COMPUTERS & STRUCTURES, ISSN: 0045-7949, doi: 10.1016/j.compstruc.2012.06.001 - **Articolo in rivista**
6. MAJORANA C.E., MAZZUCCO G, PELLEGRINO C, MAJORANA C.E (2011). Three-dimensional modeling of bond behaviour between concrete and FRP reinforcement. ENGINEERING COMPUTATIONS, vol. 28, p. 5-29, ISSN: 0264-4401 - **Articolo in rivista**
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5 – Main staff involved, highlighting the time commitment expected

List of the Research Units

Unit 1 - DI PAOLA Mario

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3.	COTTONE Giulio	Ricercatore a t.d. - t.pieno (art. 24 c.3-a L. 240/10)	Università degli Studi di PALERMO	giulio.cottone@tum.de (adesione completata il 02/12/2015)	3,0
4.	FAILLA Giuseppe	Professore Associato (L. 240/10)	Università degli Studi "Mediterranea" di REGGIO CALABRIA	giuseppe.failla@unirc.it (adesione completata il 10/12/2015)	0,1
5.	TESORIERE Giovanni	Professore Ordinario	UKE - Università Kore di ENNA	giovanni.tesoriere@unikore.it (adesione completata il 05/01/2016)	0,1
6.	DI LORENZO Salvatore	Dottorando	Università degli Studi di PALERMO	salvatore.dilorenzo@unipa.it (adesione completata il 12/01/2016)	16,0

Possible sub-unit

Surname	Name	Category	E-mail address	Months/person expected
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Unit 3 - MAIORANA Carmelo**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	MAIORANA Carmelo	Professore Ordinario	Università degli Studi di PADOVA	carmelo.maiorana@dicea.unipd.it (adesione completata il 09/12/2015)	0,5
2.	SALOMONI Valentina	Ricercatore confermato	Università degli Studi di PADOVA	valentina.salomoni@unipd.it (adesione completata il 07/01/2016)	0,5
3.	PESAVENTO Francesco	Professore Associato confermato	Università degli Studi di PADOVA	francesco.pesavento@dicea.unipd.it (adesione completata il 05/01/2016)	0,3
4.	POMARO Beatrice	Assegnista	Università degli Studi di PADOVA	beatrice.pomaro@dicea.unipd.it (adesione completata il 09/01/2016)	11,0
5.	XOTTA Giovanna	Assegnista	Università degli Studi di PADOVA	giovanna.xotta@dicea.unipd.it (adesione completata il 11/01/2016)	3,0
6.	BOSO Daniela	Professore Associato confermato	Università degli Studi di PADOVA	daniela.boso@unipd.it (adesione completata il 11/01/2016)	0,3

Unit 4 - CHIAIA Bernardino**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	CHIAIA Bernardino	Professore Ordinario	Politecnico di TORINO	bernardino.chiaia@polito.it (adesione completata il 13/12/2015)	0,5
2.	FANTILLI Alessandro Pasquale	Professore Associato (L. 240/10)	Politecnico di TORINO	alessandro.fantilli@polito.it (adesione completata il 05/01/2016)	0,6
3.	GORINO Andrea	Dottorando	Politecnico di TORINO	andrea.gorino@polito.it (adesione completata il 11/01/2016)	6,0
4.	VENTURA Antonio	Dottorando	Politecnico di TORINO	antonio.ventura@polito.it (adesione completata il 10/01/2016)	12,0

Unit 5 - FEO Luciano**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	FEO Luciano	Professore Associato confermato	Università degli Studi di SALERNO	l.feo@unisa.it (adesione completata il 10/12/2015)	0,6
2.	ASCIONE Francesco	Ricercatore confermato	Università degli Studi di SALERNO	fascione@unisa.it (adesione completata il 05/01/2016)	0,4
3.	BERARDI Valentino Paolo	Ricercatore confermato	Università degli Studi di SALERNO	berardi@unisa.it (adesione completata il 04/01/2016)	0,4
4.	MANCUSI Geminiano	Ricercatore confermato	Università degli Studi di SALERNO	g.mancusi@unisa.it (adesione completata il 05/01/2016)	0,4
5.	REALFONZO Roberto	Professore Associato confermato	Università degli Studi di SALERNO	rrealfonzo@unisa.it (adesione completata il 07/01/2016)	0,5
6.	PENNA Rosa	Assegnista	Università degli Studi di SALERNO	rpenna@unisa.it (adesione completata il 11/01/2016)	6,0

Unit 6 - REGA Giuseppe**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	REGA Giuseppe	Professore Ordinario	Università degli Studi di ROMA "La Sapienza"	giuseppe.rega@uniroma1.it (adesione completata il 08/01/2016)	0,5
2.	CAPECCHI Danilo	Professore Ordinario	Università degli Studi di ROMA "La Sapienza"	danilo.capecchi@uniroma1.it (adesione completata il 08/01/2016)	0,3
3.	BERNARDINI Davide	Professore Associato (L. 240/10)	Università degli Studi di ROMA "La Sapienza"	davide.bernardini@uniroma1.it (adesione completata il 08/01/2016)	0,7
4.	SAETTA Eduardo	Assegnista	Università degli Studi di ROMA "La Sapienza"	e.saetta@virgilio.it (adesione completata il 09/01/2016)	4,0
5.	SETTIMI	Assegnista	Università degli Studi di ROMA	valeria.settimi@uniroma1.it	8,0

Valeria	"La Sapienza"	(adesione completata il 08/01/2016)
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Unit 7 - FALSONE Giovanni**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	FALSONE Giovanni	Professore Ordinario	Università degli Studi di MESSINA	gfalsone@ingegneria.unime.it (adesione completata il 11/12/2015)	1,2
2.	SANTORO Roberta	Ricercatore a t.d. (art. 24 c.3-b L. 240/10)	Università degli Studi di MESSINA	roberta.santoro@unime.it (adesione completata il 02/01/2016)	6,0
3.	FALLIANO Devid	Dottorando	Università degli Studi di MESSINA	devidfalliano@gmail.com (adesione completata il 11/01/2016)	12,0

Unit 8 - CARPINTERI Andrea**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	CARPINTERI Andrea	Professore Ordinario	Università degli Studi di PARMA	andrea.carpinteri@unipr.it (adesione completata il 14/12/2015)	0,5
2.	VANTADORI Sabrina	Professore Associato (L. 240/10)	Università degli Studi di PARMA	sabrina.vantadori@unipr.it (adesione completata il 04/01/2016)	1,0
3.	FORTESE Giovanni	Dottorando	Università degli Studi di PARMA	giovanni.fortese@studenti.unipr.it (adesione completata il 05/01/2016)	18,0

Unit 9 - TALIERCIO Alberto**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	TALIERCIO Alberto	Professore Ordinario	Politecnico di MILANO	alberto.taliercio@polimi.it (adesione completata il 11/12/2015)	0,3
2.	NOVATI Giorgio	Professore Ordinario	Politecnico di MILANO	giorgio.novati@polimi.it (adesione completata il 04/01/2016)	0,4
3.	BRUGGI Matteo	Ricercatore confermato	Politecnico di MILANO	matteo.bruggi@polimi.it (adesione completata il 04/01/2016)	1,0

Unit 10 - GUSELLA Vittorio**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
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1.	GUSELLA Vittorio	Professore Ordinario	Università degli Studi di PERUGIA	vittorio.gusella@unipg.it (adesione completata il 15/12/2015)	0,8
2.	CLUNI Federico	Ricercatore confermato	Università degli Studi di PERUGIA	federico.cluni@unipg.it (adesione completata il 05/01/2016)	0,5
3.	SEVERINI Laura	Dottorando	Università degli Studi di PERUGIA	lauraseverini@strutture.unipg.it (adesione completata il 11/01/2016)	6,0
4.	SIMONI Luciano	Professore Associato confermato	Università degli Studi di PADOVA	luciano.simoni@dicea.unipd.it (adesione completata il 12/01/2016)	0,1

Unit 11 - BRUNO Domenico

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	BRUNO Domenico	Professore Ordinario	Università della CALABRIA	d.bruno@unical.it (adesione completata il 11/12/2015)	0,2
2.	GRECO Fabrizio	Professore Associato confermato	Università della CALABRIA	f.greco@unical.it (adesione completata il 05/01/2016)	0,4
3.	LONETTI Paolo	Professore Associato (L. 240/10)	Università della CALABRIA	lonetti@unical.it (adesione completata il 05/01/2016)	0,5
4.	NEVONE BLASI Paolo	Ricercatore confermato	Università della CALABRIA	paolo.nevoneblasi@unical.it (adesione completata il 04/01/2016)	0,5

Unit 12 - ROSATI Luciano

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	ROSATI Luciano	Professore Ordinario	Università degli Studi di NAPOLI "Federico II"	rosati@unina.it (adesione completata il 15/12/2015)	0,4
2.	ZUCCARO Giulio	Professore Associato confermato	Università degli Studi di NAPOLI "Federico II"	zuccaro@unina.it (adesione completata il 05/01/2016)	0,4
3.	DE ANGELIS Fabio	Ricercatore confermato	Università degli Studi di NAPOLI "Federico II"	fabio.deangelis@unina.it (adesione completata il 06/01/2016)	0,5
4.	MARMO Francesco	Ricercatore a t.d. - t.pieno (art. 24 c.3-a L. 240/10)	Università degli Studi di NAPOLI "Federico II"	f.marmo@unina.it (adesione completata il 05/01/2016)	6,0

Unit 13 - MAROTTI DE SCIARRA Francesco

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	MAROTTI DE SCIARRA Francesco	Professore Associato confermato	Università degli Studi di NAPOLI "Federico II"	marotti@unina.it (adesione completata il 12/12/2015)	0,7

2.	DIACO Marina	Ricercatore confermato	Università degli Studi di NAPOLI "Federico II"	diaco@unina.it (adesione completata il 07/01/2016)	0,4
3.	GESUALDO Antonio	Ricercatore confermato	Università degli Studi di NAPOLI "Federico II"	gesualdo@unina.it (adesione completata il 08/01/2016)	0,3
4.	MODANO Mariano	Ricercatore confermato	Università degli Studi di NAPOLI "Federico II"	modano@unina.it (adesione completata il 08/01/2016)	0,3
5.	FRADDOSIO Aguinardo	Ricercatore confermato	Politecnico di BARI	a.fraddosio@poliba.it (adesione completata il 12/01/2016)	0,1
6.	FOTI Pilade	Ricercatore confermato	Politecnico di BARI	p.foti@poliba.it (adesione completata il 12/01/2016)	0,1

Unit 14 - CECCHI Antonella

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	CECCHI Antonella	Professore Ordinario	Università IUAV di VENEZIA	cecchi@iuav.it (adesione completata il 09/12/2015)	0,8
2.	TREVISANI Sebastiano	Ricercatore confermato	Università IUAV di VENEZIA	streviani@iuav.it (adesione completata il 05/01/2016)	0,8
3.	BARALDI Daniele	Ricercatore a t.d. - t.pieno (art. 24 c.3-a L. 240/10)	Università IUAV di VENEZIA	daniele.baraldi@iuav.it (adesione completata il 08/01/2016)	4,0
4.	PAVLOVIC Milorad	Dottorando	Università IUAV di VENEZIA	m.pavlovic@stud.iuav.it (adesione completata il 10/01/2016)	4,0
5.	DE NARDI Cristina	Dottorando	Università IUAV di VENEZIA	cristinadenardi@iuav.it (adesione completata il 10/01/2016)	14,0
6.	DE CARVALHO Claudia	Dottorando	Università IUAV di VENEZIA	decarvalho@iuav.it (adesione completata il 09/01/2016)	14,0

Unit 15 - ZAVARISE Giorgio

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	ZAVARISE Giorgio	Professore Ordinario	Università del SALENTO	giorgio.zavarise@unisalento.it (adesione completata il 15/12/2015)	0,9
2.	ALESSANDRI Claudio	Professore Ordinario	Università degli Studi di FERRARA	claudio.alessandri@unife.it (adesione completata il 10/01/2016)	0,1
3.	MALLARDO Vincenzo	Ricercatore confermato	Università degli Studi di FERRARA	mlv@unife.it (adesione completata il 10/01/2016)	0,1
4.	PEPE Marco	Assegnista	Università del SALENTO	m.pepe@unisalento.it (adesione completata il 08/01/2016)	4,0
5.	VERGALLO Roberto	Assegnista	Università del SALENTO	roberto.vergallo@unisalento.it (adesione completata il 11/01/2016)	6,0
6.	GIANGRECO Marcello	Assegnista	Università del SALENTO	mgiangreco@libero.it (adesione completata il 11/01/2016)	6,0

Unit 16 - RIZZI Nicola Luigi**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	RIZZI Nicola Luigi	Professore Ordinario	Università degli Studi ROMA TRE	nlr@uniroma3.it (adesione completata il 13/12/2015)	0,3
2.	SALERNO Ginevra	Professore Associato confermato	Università degli Studi ROMA TRE	ginevra.salerno@uniroma3.it (adesione completata il 05/01/2016)	0,3
3.	FORMICA Giovanni	Professore Associato (L. 240/10)	Università degli Studi ROMA TRE	formica@uniroma3.it (adesione completata il 05/01/2016)	0,4
4.	GABRIELE Stefano	Ricercatore confermato	Università degli Studi ROMA TRE	stefano.gabriele@uniroma3.it (adesione completata il 07/01/2016)	0,2
5.	GARCEA Giovanni	Professore Associato confermato	Università della CALABRIA	giovanni.garcea@unical.it (adesione completata il 04/01/2016)	0,1
6.	LEONETTI Leonardo	Ricercatore confermato	Università della CALABRIA	leonardo.leonetti@unical.it (adesione completata il 04/01/2016)	0,2

Unit 17 - CADDEMI Salvatore**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	CADDEMI Salvatore	Professore Ordinario	Università degli Studi di CATANIA	scaddemi@dica.unict.it (adesione completata il 14/12/2015)	0,3
2.	CALIO' Ivo Domenico	Professore Associato confermato	Università degli Studi di CATANIA	icalio@dica.unict.it (adesione completata il 03/01/2016)	0,3
3.	CASCIATI Sara	Professore Associato (L. 240/10)	Università degli Studi di CATANIA	saracasciati@msn.com (adesione completata il 02/01/2016)	0,3
4.	GRECO Annalisa Maria	Professore Associato confermato	Università degli Studi di CATANIA	agrec@dica.unict.it (adesione completata il 04/01/2016)	0,3
5.	IMPOLLONIA Nicola	Professore Associato confermato	Università degli Studi di CATANIA	nimpo@unict.it (adesione completata il 02/01/2016)	0,3
6.	CANNIZZARO Francesco	Assegnista	Università degli Studi di CATANIA	francesco.cannizzaro@dica.unict.it (adesione completata il 08/01/2016)	6,0

Unit 18 - UBERTINI Francesco**Personnel of the research unit**

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	UBERTINI Francesco	Professore Ordinario	Università degli Studi di BOLOGNA	francesco.ubertini@unibo.it (adesione completata il	0,8

				15/12/2015)	
2.	DE MIRANDA Stefano	Professore Associato (L. 240/10)	Università degli Studi di BOLOGNA	stefano.demiranda@unibo.it (adesione completata il 04/01/2016)	0,2
3.	CARLONI Christian	Professore Associato (L. 240/10)	Università degli Studi di BOLOGNA	christian.carloni@unibo.it (adesione completata il 08/01/2016)	0,2
4.	GENTILINI Cristina	Ricercatore confermato	Università degli Studi di BOLOGNA	cristina.gentilini@unibo.it (adesione completata il 04/01/2016)	0,2
5.	MOLARI Luisa	Ricercatore confermato	Università degli Studi di BOLOGNA	luisa.molari@unibo.it (adesione completata il 08/01/2016)	0,2
6.	D'ALTRI Antonio Maria	Dottorando	Università degli Studi di BOLOGNA	antoniomaria.daltri2@unibo.it (adesione completata il 08/01/2016)	24,0

Unit 19 - TARANTINO Angelo Marcello

Personnel of the research unit

n°	Surname Name	Category	University/Research Institution	E-mail address	Months/person expected
1.	TARANTINO Angelo Marcello	Professore Ordinario	Università degli Studi di MODENA e REGGIO EMILIA	angelomarcello.tarantino@unimore.it (adesione completata il 13/12/2015)	0,5
2.	RADI Enrico	Professore Ordinario	Università degli Studi di MODENA e REGGIO EMILIA	eradi@unimore.it (adesione completata il 05/01/2016)	0,5
3.	ROYER CARFAGNI Gianni Furio Mario	Professore Ordinario	Università degli Studi di PARMA	gianni.royer@unipr.it (adesione completata il 07/01/2016)	0,1
4.	DE TOMMASI Domenico	Professore Ordinario	Politecnico di BARI	domenico.detommasi@poliba.it (adesione completata il 07/01/2016)	0,1
5.	NOBILI Andrea	Ricercatore confermato	Università degli Studi di MODENA e REGGIO EMILIA	andrea.nobili@unimore.it (adesione completata il 05/01/2016)	0,1

6 - Major new contracts for staff specifically to recruit

n°	Associated or principal investigator	Number of contracts RTD expected	Number of research grants expected	Number of PhD expected	Predictable overall time commitment (months)
1.	DI PAOLA Mario	0	2	0	8
2.	TROVALUSCI Patrizia	0	2	0	12
3.	MAIORANA Carmelo	0	1	0	8
4.	CHIAIA Bernardino	0	1	0	6
5.	FEO Luciano	0	1	0	6
6.	REGA Giuseppe	0	1	0	12
7.	FALSONE Giovanni	0	1	0	7
8.	CARPINTERI Andrea	0	2	0	12
9.	TALIERCIO Alberto	0	1	0	12
10.	GUSELLA Vittorio	0	1	0	12
11.	BRUNO Domenico	0	1	0	6

12.	ROSATI Luciano	0	2	0	14
13.	MAROTTI DE SCIARRA Francesco	0	1	0	3
14.	CECCHI Antonella	0	1	0	12
15.	ZAVARISE Giorgio	0	1	0	9
16.	RIZZI Nicola Luigi	0	1	0	5
17.	CADDEMI Salvatore	0	1	0	7
18.	UBERTINI Francesco	0	1	0	12
19.	TARANTINO Angelo Marcello	0	2	0	10
	Total	0	24	0	173

7 - Declaration Upload

- [DI PAOLA2.pdf](#)

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Date 14/01/2016 ore 23:33