

# GIMC-GMA-GBMA 2023

## Reggio Calabria 12-14 Luglio

### Programma esteso

Versione 6 documento: del 09/07/2023

#### Martedì, 11 Luglio 2023

18:30 - 20:30	Cocktail di Benvenuto	Lido Amuri a mare Reggio Calabria
---------------	-----------------------	--------------------------------------

#### Mercoledì, 12 Luglio 2023

9:00 - 9:30	REGISTRAZIONE	Ingresso Architettura
9:30 - 10:30	APERTURA DEI LAVORI E SALUTI ISTITUZIONALI	Aula Magna Architettura Ludovico Quaroni
10:30 - 11:10	RELAZIONE GENERALE Relatore: Davide BIGONI Chair: Paolo Fuschi	Aula Magna Architettura Ludovico Quaroni
11:10 - 11:30	PAUSA CAFFÈ	Terrazza primo piano
11:30 - 13:10	SESSIONE 1A Chair: Sonia Marfia	Aula A1 piano terra
11.30	FE and IGA techniques for the analysis of the axial-symmetric masonry domes	<b>Francesca Roscini</b> , Francesca Nerilli
11.50	An efficient isogeometric formulation for geometrically exact viscoelastic beams	Giulio Ferri, <b>Diego Ignesti</b> , Enzo Marino
12.10	Mixed isogeometric collocation methods with application to cardiac electromechanics	<b>Simone Morganti</b> , Michele Torre, Alessandro Reali
12.30	Crack patterns in masonry panels coupled with the soil	<b>Vincenzo Mallardo</b> , Antonino Iannuzzo
12.50	A new invariant conforming finite element formulation based on the Kirchhoff-Love beam model	<b>Leopoldo Greco</b> , Domenico Castello, Massimo Cuomo

11:30 - 13:10	<p style="text-align: center;"><b>SESSIONE 1B</b></p> <p style="text-align: center;">Chair: Roberto Brighenti</p>	Aula A3 piano terra
11.30	Static response bounds of steel frames with uncertain semi-rigid connections	<b>Federica Genovese</b> , Alba Sofi
11.50	Study of a bi-mass chain with a band gap, and an engineering implementation based on tensegrity prisms	<b>Luca Placidi</b> , Fabio di Girolamo, Roberto Fedele
12.10	Instabilities at different scales in an innovative metamaterial	Nicola <b>Marasciuolo</b> , Francesco Trentadue, Domenico De Tommasi
12.30	Advances in frequency up-conversion of vibration energy harvesters	<b>Michele Rosso</b> , Raffaele Ardito, Alberto Corigliano
12.50	A multi-physic predictive model for corrosion in concrete	<b>Lorenzo Mingazzi</b> , Francesco Freddi
13:10 - 14:30	<b>PAUSA PRANZO</b>	Atelier terzo piano
14:30 - 15:10	<p style="text-align: center;"><b>RELAZIONE GENERALE</b></p> <p style="text-align: center;">Relatore: Paolo BISEGNA</p> <p style="text-align: center;">Chair: Anna Pandolfi</p>	Aula Magna Architettura Ludovico Quaroni
15:10 - 16:50	<p style="text-align: center;"><b>SESSIONE 2A</b></p> <p style="text-align: center;">Chair: Lorenzo Bardella</p>	Aula A1 piano terra
15.10	Self-contractile biopolymer gels: a continuum mechanics perspective	<b>Paola Nardinocchi</b>
15.30	Digital twin models for high-fidelity contact mechanics simulations	<b>Marco Paggi</b> , Jacopo Bonari
15.50	A coupled approach to predict cone-cracks in spherical indentation tests with smooth or rough indenters	<b>Maria Rosaria Marulli</b> , Jacopo Bonari, Josè Reinoso, Marco Paggi
16.10	Energetically orthogonal fracture mode partitioning of the J-integral for cohesive interfaces	<b>Paolo Sebastiano Valvo</b>
16.30	Spontaneous nonreciprocal oscillations in polyelectrolyte gel filaments	<b>Giovanni Noselli</b> , Giancarlo Cicconofri, Valentina Damioli
15:10 - 16:50	<b>SESSIONE 2B</b>	Aula A3 piano terra

Chair: Lorenza Petrini

15.10	A coupled Lattice-Boltzmann and Langevin-dynamics method for simulating transport of nanoscale vesicles in microchannels	<b>Simona Signorile</b> , Dario De Marinis, Alberto Mantegazza, Marco Donato de Tullio
15.30	Analysis of the distribution and orientation of oxygenated and non-oxygenated blood in a Double Outlet Right Ventricle	<b>Dario Collia</b> , Gianni Pedrizzetti
15.50	Modeling and experimental analysis of the relationship between mechanical response and microstructure in arterial tissues	<b>Michela Astore</b> , Emanuele Gasparotti, Emanuele Vignali, Simona Celi, Michele Marino
16.10	A predictive model of epi-off UVA-riboflavin crosslinking treatment on porcine corneas	<b>Alessandra Bonfanti</b> , Anna Pandolfi
16.30	Silicone oil tamponade flow dynamics following everyday movements	<b>Pier Giuseppe Ledda</b> , Federico Angius, Maria Grazia Badas, Tommaso Rossi, Giorgio Querzoli
16:50 - 17:10	PAUSA CAFFÈ	Terrazza primo piano
17:10 - 19:10	SESSIONE 3A Chair: Giovanni Garcea	Aula A1 piano terra
17.10	Advanced computational modeling of the failure behaviour of FRCM composites	Rossana Dimitri, <b>Martina Rinaldi</b> , Marco Trullo, Francesco Tornabene, Caterina Fai
17.30	Formulation of inelastic laws in hemivariational and thermodynamic frameworks	<b>Luca Placidi</b> , Francesco D'Annibale
17.50	Multifield hierarchical metadevices with filtering functionalities	<b>Francesca Fantoni</b> , Emanuela Bosco, Andrea Bacigalupo
18.10	Linear mechanics of rectangular box-girder bridges	<b>Francesca Pancella</b> , Daniele Zulli, Angelo Luongo
18.30	Multi-objective optimisation of variable angle tow composite bridge structures using a multimodal Koiter algorithm	<b>Francesco Salvatore Liguori</b> , Giovanni Zucco, Antonio Madeo
18.50	Onde armoniche piane in miscele sature di terreni	<b>Vincenzo Giacobbe</b>

17:10 - 19:10	SESSIONE 3B Chair: Paola Nardinocchi	Aula A3 piano terra
17.10	Shape morphing in constrained swelling of hydrogels	<b>Roberto Brighenti</b> , Mattia Pancrazio Cosma
17.30	A phase-field model for fibrous materials exhibiting an emerging anisotropy with plastic memory effects	<b>Andrea Rodella</b> , Antonino Favata, Stefano Vidoli
17.50	Electrochemo-poromechanics of ionic polymer metal composites: Theory and Numerics	<b>Lorenzo Bardella</b> , Andrea Panteghini
18.10	Rate-Independent Elastoplastic Ferroelectric Solids	Mawafag. F. Alhasadi, Qiao Sun, Alfio Grillo, <b>Salvatore Federico</b>
18.30	Electro-thermo-chemo-mechanical model and numerical investigations of solid state lithium-ion batteries: theoretical framework	<b>Mattia Serpelloni</b> , Alberto Salvadori, Luigi Cabras
18.50	Solid state lithium battery, thermo–electro–chemo–mechanical numerical modeling	<b>Luigi Cabras</b> , Mattia Serpelloni, Alberto Salvadori
19:10 - 20:00	RIUNIONE GRUPPI  GIMC GMA GBMA	Aula A1 piano terra Aula A2 piano terra Aula A3 piano terra

## Giovedì, 13 Luglio 2023

9:00 - 9:40	RELAZIONE GENERALE Relatore: Umberto PEREGO Chair: Stefano Lenci	Aula Magna Architettura Ludovico Quaroni
9:40 - 11:20	SESSIONE 4A Chair: Ferdinando Auricchio	Aula A1 piano terra
9.40	Modelling of extrusion-based bioprinting via Floating Isogeometric Analysis (FLIGA)	<b>Elisabetta Monaldo</b> , Helge Christopher Hille, Laura De Lorenzis
10.00	3D printed PEEK crystallinity prediction: a finite element based numerical workflow	<b>Francesca Rotini</b> , Gianluca Alaimo, Stefania Marconi
10.20	A Particle Finite Element Method for the Simulation of 3D Concrete Printing	Giacomo Rizzieri, Liberato Ferrara, <b>Massimiliano Cremonesi</b>

10.40	Optimizing structure of 3D printed flexible Insoles through homogenization and finite element analysis	<b>Daniele Bianchi</b> , Lorenzo Zoboli, Cristina Falcinelli, Alessio Gizzi
11.00	Mechanical modelling of polymers for tissue bioprinting applications	<b>Lorenzo Zoboli</b>
9:40 - 11:20	<b>SESSIONE 4B</b> Chair: Marco Paggi	Aula A3 piano terra
9.40	Electrically-tunable active metamaterials for damped elastic wave propagation control	Giacomo Elefante, Maria <b>Laura De Bellis</b> , Andrea Bacigalupo
10.00	A metamaterial made of a lattice shell of two orthogonal logarithmic spiral families of fibers	<b>Ivan Giorgio</b> , Alessandro Ciallella, Francesco D'Annibale
10.20	Corotational force-based beam finite element with rigid joint offsets for the analysis of geometrically nonlinear lattice systems	Daniela Addessi, <b>Paolo Di Re</b> , Cristina Gatta, Luca Parente, Elio Sacco
10.40	Discrete homogenization in large deformations for plane beams lattices	Massimo Cuomo, <b>Carmelo Pannitteri</b> , Claude Boutin
11.00	Micromechanical analysis of soft lattice metamaterials accounting for randomly distributed imperfections	Daniela Addessi, Paolo Di Re, Cristina Gatta, <b>Luca Parente</b> , Elio Sacco
11:20 - 11:40	<b>PAUSA CAFFÈ</b>	Terrazza primo piano
11:40 - 13:20	<b>SESSIONE 5A</b> Chair: Daniela Addessi	Aula A1 piano terra
11.40	An optimal-transport finite-particle method for mass diffusion	<b>Anna Pandolfi</b> , Laurent Staineir, Michael Ortiz
12.00	Variational and Topological Methods for Nonlocal Problems	<b>Giovanni Molica Bisci</b>
12.20	Virtual element method for the analysis of cohesive crack propagation	<b>Sonia Marfia</b> , Elisabetta Monaldo
12.40	A continuum approach inspired by a block-based model for the analysis of masonry structures	<b>Gregorio Bertani</b> , Luca Patruno, Antonio Maria D'Altri, Giovanni Castellazzi, Stefano de Miranda
13.00	Enhanced Virtual Element formulation for large displacement analysis	Daniela Addessi, Elena Benvenuti, Cristina Gatta, <b>Marco Nale</b> , Elio Sacco

11:40 - 13:20	<b>SESSIONE 5B</b> Chair: Marco Donato De Tullio	Aula A3 piano terra
11.40	A new advanced fully mechanical tool for manual mini-invasive surgery	<b>Vincenzo Parenti-Castelli</b> , Lorenzo Dellabartola, Giulia Avallone, Marco Fava, Michele Conconi, Nicola Sancisi
12.00	Durotaxis of tensegrity cell units incorporating asymmetry	<b>Elena Benvenuti</b> , Gino Antonio Reho, Stefania Palumbo, Massimiliano Fraldi
12.20	Actin based motility unveiled: how chemical energy is converted into motion	<b>Alberto Salvadori</b> , Claudia Bonanno, Mattia Serpelloni, Matteo Arricca, Robert McMeeking
12.40	A computational model of cell motility in biodegradable hydrogel scaffolds for tissue engineering applications	<b>Pierfrancesco Gaziano</b> , Michele Marino
13.00	An in-silico approach for process design in extrusion-based bioprinting	<b>Francesco Chirianni</b> , Giuseppe Vairo, Michele Marino
13:20 - 14:40	<b>PAUSA PRANZO</b>	Atelier terzo piano
14:40 - 16:40	<b>SESSIONE 6A</b> Chair: Stefano De Miranda	Aula A1 piano terra
14.40	Extension of the novel Line Element-less Method for plates shaped with re-entrant angles	<b>Antonina Pirrotta</b> , Carsten Proppe
15.00	A generalized fiber model for the elastoplastic analysis of steel beams including normal stress-shear stresses interaction	<b>Giovanni Garcea</b> , Leonardo Leonetti, Domenico Magisano
15.20	Higher order theories for the structural analysis of anisotropic shells of arbitrary shape with general boundary conditions	Francesco Tornabene, <b>Matteo Viscoti</b> , Rossana Dimitri
15.40	A self-equilibrated assumed stress solid-shell finite element for large deformations problems	Francesco Salvatore Liguori, Giovanni Zucco, <b>Antonio Madeo</b>
16.00	Shear deformable plate with substructuring approach in the SGBEM: displacement method	<b>Terravecchia Silvio Salvatore</b> , Zito Marianna
16.20	Large deformation Kirchhoff-Love shell model hierarchically enhanced with zigzag effects and its spline-based discretization	<b>Domenico Magisano</b> , Antonella Corrado, Leonardo Leonetti, Josef Kiendl, Giovanni Garcea

14:40 - 16:40	<b>SESSIONE 6B</b> Chair: Michele Marino	Aula A3 piano terra
14.40	A computed tomography-based limit analysis approach to investigate the mechanical behaviour of the human femur prone to fracture	<b>Cristina Falcinelli</b> , Aurora Angela Pisano, Marcello Vasta, Paolo Fuschi
15.00	Numerical simulation of crack propagation using interphases and a FEM-VEM environment.	Giuseppe Giambanco, Marianna Puccia, Elio Sacco, <b>Antonino Spada</b>
15.20	Fatigue life prediction of Ni-Ti peripheral stents using a fracture mechanics approach: a proof of concept	<b>Lorenza Petrini</b> , Alma Brambilla, Francesca Berti, Luca Patriarca
15.40	Experiments and fracture mechanics-based modeling on the puncturing of soft bulk solids and membranes	Matteo Montanari, <b>Andrea Spagnoli</b>
16.00	Geometric control by active mechanics of epithelial gap closure dynamics	<b>Giulia Pozzi</b> , Pasquale Ciarletta
16.20	A preliminary assessment of a new surgical procedure for the treatment of primary bladder neck obstruction through a numerical biomechanical model	Michele Serpilli, <b>Stefano Lenci</b> , Gianluca Zitti, Marco Dellabella, Daniele Castellani, Micaela Morettini, Laura Burattini
16:40 - 17:00	<b>PAUSA CAFFÈ</b>	Terrazza primo piano
17:00 - 19:00	<b>SESSIONE 7A</b> Chair: Elena Benvenuti	Aula A1 piano terra
17.00	Isogeometric analysis: advances and applications with a special focus on dynamic problems	<b>Alessandro Reali</b>
17.20	An improved isogeometric collocation method for the explicit dynamics of geometrically exact beams	<b>Giulio Ferri</b> , Enzo Marino
17.40	An event-driven approach for the nonlinear time-history analysis of multi-block masonry structures under seismic excitation	<b>Nicola A. Nodargi</b> , Paolo Bisegna
18.00	A detailed study of high-order phase-field modeling for brittle fracture	<b>Luigi Greco</b> , Alessia Patton, Alessandro Marengo, Matteo Negri, Umberto Perego, Alessandro Reali
18.20	Integrating Neural Networks into the Parallel Rheological Framework for Improved Constitutive Modeling of Elastomers	<b>Federico Califano</b> , Jacopo Ciambella

18.40	Nonperiodic masonry pattern generation and numerical analysis of cultural heritage structures	<b>Antonio Maria D'Altri</b> , Mauricio Pereira, Stefano de Miranda, Branko Glisic
17:00 - 19:00	<b>SESSIONE 7B</b> Chair: Giuseppe Tomassetti	Aula A3 piano terra
17.00	A sustainable Portland pozzolana cement with recycled volcanic ash	<b>Loredana Contrafatto</b> , Salvatore Gazzo, Daniele Calderoni
17.20	Mechanical behaviour and strain concentration in lattice material evaluated by means of discrete homogenization	<b>Salvatore Gazzo</b> , Loredana Contrafatto, Massimo Cuomo
17.40	A linear theory for granular materials with rotating grains	<b>Pasquale Giovine</b>
18.00	An affine viscoelastic fully anisotropic model for composite materials with distributed fibres	Jacopo Ciambella, <b>Giulio Lucci</b> , Paola Nardinocchi
18.20	Mechanical-electrical failure correlation in metal nanowire electrodes	<b>Davide Grazioli</b> , Lucia Nicola, Angelo Simone
18.40	Distal and non-symmetrical crack nucleation in reduced order peridynamic plate theory	<b>Riccardo Cavuoto</b> , Arsenio Cutolo, Luca Deseri, Massimiliano Fraldi
20:45	<b>CENA SOCIALE</b>	Villa Le Ginestre Villa San Giovanni

## Venerdì, 14 Luglio 2023

9:00 - 9:40	<b>RELAZIONE GENERALE</b> Relatore: Elio SACCO Chair: Luciano Rosati	Aula Magna Architettura Ludovico Quaroni
9:40 - 11:00	<b>SESSIONE VINCITORI PREMI Tesi PhD</b> Chair: Patrizia Trovalusci	Aula Magna Architettura Ludovico Quaroni
9.40	Multiscale modeling of vascular adaptation	<b>Anna Corti</b>
10.00	Model order reduction of nonlinear vibratory systems through direct parametrisation of invariant manifolds	<b>Andrea Opreni</b>
10.20	Coupling mechanics with species diffusion in engineering modelling	<b>Alessandro Leronna</b> , Norman Fleck, Lorenzo Bardella
11:00 - 11:20	<b>PAUSA CAFFÈ</b>	Terrazza primo piano



11:20 - 13:20	<b>SESSIONE 8A</b> Chair: Leonardo Leonetti	Aula A1 piano terra
11.20	Non-smooth dynamics of tapping mode AFM	Pierpaolo Belardinelli, <b>Stefano Lenci</b>
11.40	Parameter identification strategies for new classes of phenomenological hysteretic models	<b>Salvatore Sessa</b> , Nicolò Vaiana, Davide Pellicchia
12.00	Improved pseudo-force method for time domain analysis of fractional oscillators under stochastic excitation	<b>Giuseppe Muscolino</b> , Alba Sofi
12.20	Dynamic identification of slender structures by means of stochastic subspace identification method	Massimo Cuomo, <b>Simone Scalisi</b>
12.40	Energy Approach both for Fatigue Limit and Life Expectation of Rod Lift Systems	<b>Matteo Tommaso Di Tullio</b>
13.00	A validated biaxial test specimen design for simplifying results interpretation	<b>Gennaro Vitucci</b>
11:20 - 13:20	<b>SESSIONE 8B</b> Chair: Massimiliano Fraldi	Aula A3 piano terra
11.20	A fluid structure interaction problem of the vibration frequencies of the eye bulb	<b>Giuseppe Tomassetti</b> , Nicoletta Tambroni, Rodolfo Repetto
11.40	Active dynamics of self-contracting polymer gels subject to different chemo-mechanical environments	<b>Filippo Recrosi</b>
12.00	Swimming of active filaments emerging from mechanical instabilities	<b>Ariel S. Boiardi</b> , Giovanni Noselli
12.20	Phase field modeling and FEM simulation of bone fracture occurring in human vertebra after screws fixation procedure	<b>Pietro Lenarda</b> , Deison Preve, Daniel Bianchi, Alessio Gizzi
12.40	Investigating the influence of chemo-mechanical coupling in the remodelling of lipid membranes	<b>Chiara Bernard</b> , Angelo Rosario Carotenuto, Mario Argenziano, Massimiliano Zingales, Massimiliano Fraldi, Luca Deseri
13.00	Graded damage VS phase-field for modeling quasi-brittle fracture	<b>Nunziante Valoroso</b>
13:20 - 14:40	<b>PAUSA PRANZO</b>	Atelier terzo piano

14:40 - 16:20	<p style="text-align: center;"><b>SESSIONE 9A</b></p> <p style="text-align: center;">Chair: Maria Laura De Bellis</p>	Aula A1 piano terra
14.40	A simple method to compute a closed-form spectral decomposition of a symmetric second order tensor	<b>Andrea Panteghini</b>
15.00	Form Finding of Membrane Shells with Isogeometric Analysis	<b>Claudia Chianese</b> , Francesco Marmo, Luciano Rosati
15.20	Material point method and isogeometric analysis	<b>Leonardo Leonetti</b>
15.40	Multiscale strategy for identification of elastic and fracture properties of polymer-based nanocomposites	<b>Greta Ongaro</b> , Marco Pingaro, Patrizia Trovalusci, Roberta Bertani
16.00	Modeling of polycrystalline composites coupling virtual elements and nonlinear interface finite elements	<b>Cristina Gatta</b> , Marco Pingaro, Daniela Addressi, Patrizia Trovalusci
14:40 - 16:40	<p style="text-align: center;"><b>SESSIONE 9B</b></p> <p style="text-align: center;">Chair: Loredana Contrafatto</p>	Aula A3 piano terra
14.40	Artificial Neural Networks for evaluation of cracks in masonry arches	<b>Eugenio Ruocco</b> , Vincenzo Musone, Antonino Iannuzzo
15.00	Analysis of fracture propagation by the Hybrid Equilibrium Element formulation	<b>Francesco Parrinello</b>
15.20	Validating the EUCLID Approach for Unsupervised Discovery of Hyperelastic Constitutive Laws Using Experimental Data	<b>Maurizio Ricci</b> , Pietro Carrara, Moritz Flaschel, Siddhant Kumar, Sonia Marfia, Laura De Lorenzis
15.40	Crack propagation procedure for designing hollowed structures	<b>Simone Palladino</b> , Luca Esposito, Renato Zona, Vincenzo Minutolo, Elio Sacco
16.00	Pre-stressed wire breakage detection using Back Propagation Neural Networks with experimental and numerical datasets	<b>Sasan Farhadi</b> , Mauro Corrado, Giulio Ventura
16.20	Limit Analysis through Residual dislocation based Finite Elements and nonlinear compatibility domain secant approximation with penalty factor	<b>Renato Zona</b> , Luca Esposito, Simone Palladino, Vincenzo Minutolo
16:40 - 17:30	<b>CHIUSURA LAVORI</b>	Aula A1 piano terra