

Ilaria Monetto

Researcher

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Education and training

1997

Ph.D. in Structural Engineering

Fracture evolution of multi-cracked plates (in Italian)

Politecnico di Torino (Technical University) - Turin - IT

1993

Master Degree in Civil Engineering (curriculum Structures)

Limit analysis of dry-block masonry walls (in Italian) - Magna cum Laude

University of Genoa - Genoa - IT

Academic experience

2001 - ONGOING

Assistant Professor of Structural Mechanics

University of Genoa - Genoa - IT

1998 - 2001

Short-term Assistant Professor

University of Genoa - Genoa - IT

Research on 'Methods for the evaluation of the strength of masonry structures'

Work experience

1998

Structural analysis expert

FIAT ENGINEERING - Turin - IT

Support for structural analysis in the programme 'Methodologies and technologies for the management and execution of building retrofitting in old towns'

Language skills

Italian

Mother tongue

English

Independent

French

Basic

Teaching activity

TEACHING SUPPORT

- “Politecnico di Torino” - Turin - IT

1995 – 1997

Structural Mechanics, Mechanical Engineering Master's course (5 years)

1996 – 1997

Structural Mechanics, Aeronautical Engineering Master's course (5 years)

1996 – 1997

Structural Mechanics, Environmental Engineering Master's course (5 years)

- University of Genoa - Genoa - IT

1993 – 1994

Advanced Structural Mechanics, Civil Engineering Master's course (5 years)

1996 – 2000

Advanced Structural Mechanics, Civil Engineering Master's course (5 years)

1997 – 2000

Computational Mechanics of Structures, Civil Engineering Master's course (5 years)

LECTURES ABOUT EXERCISES

- University of Genoa - Genoa - IT

2001 – 2003

Structural Mechanics 2, Civil and Environmental Engineering Bachelor's course

2002 – 2005

Solid Mechanics, Structural Engineering Master's course (2 years) and Environmental and Geotechnical Engineering Master's course (2 years)

CO-TEACHER

- University of Genoa - Genoa - IT

1999

Fundamentals of Statics, Technical School in Diagnostic of Existing Buildings (IFTS)

2001 – 2002

Advanced Structural Mechanics, Civil Engineering Master's course (5 years)

Computational Mechanics of Structures, Civil Engineering Master's course (5 years)

2009 - 2010

Solid Mechanics, Structural Engineering Master's course (2 years) and Environmental and Geotechnical Engineering Master's course (2 years)

2012 – 2016

Structural Mechanics II, Construction Engineering and Architecture Master's course (5 years)

TEACHER

- University of Genoa - Genoa - IT

2003 – 2010

Structural Mechanics 2, Civil and Environmental Engineering Bachelor's course

2007 – 2009

Solid Mechanics, Bioengineering Master's course (2 years)

2011 – ongoing

Advanced Structural Mechanics, Naval Engineering Master's course (2 years)

2016 – ongoing

Structural Mechanics, Chemical Engineering Bachelor's course

STUDENT SUPERVISION

- University of Genoa - Genoa - IT

2001 - 2006

Supervisor of 2 undergraduate students in the Civil Engineering Master's course (5 years)

2003 - 2014

Supervisor of 13 undergraduate students in the Civil and Environmental Engineering Bachelor's course

2011 - ongoing

Supervisor of 1 undergraduate students in the Naval Engineering Master's course (2 years)

HONORS, AWARDS AND FELLOWSHIPS

1995 - 1997

“Politecnico di Torino” Fellowships for teaching support, Turin - IT

Postgraduate research and teaching activity

Supervision of PhD students, residents and post-doctoral fellows

Co-supervisor:

Dr Francesca Campi (PhD XXII cycle - PhD thesis year 2011)

PhD committees membership

2007 - 2012

Member of the Board of the PhD course on 'Structural Engineering and Geotechnics', University of Genoa - Genoa - IT

Research interests

My research activity is mostly theoretical and deals with different problems of interest in the framework of the Mechanics of Materials and Structures, Fracture and Damage Mechanics, Analytical and Computational Mechanics.

My early days of research were devoted first to micromechanics-based constitutive modeling of dry-block masonry (Master thesis), then to numerically modeling of crack growth and coalescence to simulate fracture evolution of multi-cracked plates (Doctoral thesis), finally to proposing an equilibrium bifurcation approach to the compressive failure of microcracked solids undergoing damage (Post-doctoral activity).

Since then other topics have been raising my interest.

During my one-year long stay in the USA I started working on micromechanics-based nonlocal modeling of random composites. Since then I have been generalizing a previous nonlocal constitutive equation proposed by professors Willis and Drugan for isotropic composites containing a random distribution of spheres to wider classes of random materials (e.g. containing randomly oriented or aligned spheroids, heterogeneous inclusions etc).

Meanwhile, I investigated and simulated damage evolution and failure of interfaces and adhesive joints, derived analytical solutions of two- and three-layered beams with interlayer slip and step-wise linear interface law and analyzed the effects of an inhomogeneous interphase zone on the bulk modulus of particulate composites containing spherical inclusions.

Currently I am starting investigating the employment of analytical and numerical methods and solution techniques known and developed in the framework of Structural Engineering to problems of practical interest in other frameworks (see e.g. Geotechnics).

Beyond my professional activity of research, I have been taking - when possible - other keen scientific interests in software development and algorithm implementation (in Basic, Fortran and C++ in the past; in Mathematica and Matlab nowadays) and in educational robotics (Mblock).

I have sustained active research collaborations with different scientists and institutions, not only as a member of research teams but also as leading investigator. Collaborations resulting in scientific publications are the following:

1993 – 1997, G.Alpa, University of Genoa - Genoa - IT

1994 - 1999, A.Carpinteri, 'Politecnico di Torino' - Turin - IT

1997 - 2002, L.Gambarotta, University of Genoa - Genoa - IT

2000 - ongoing, W.J.Drugan, University of Wisconsin - Madison (WI) - USA

2015 - 2016, R.Sburlati, University of Genoa - Genoa - IT

I have presented my results at numerous Italian congresses (AIMETA, SIMAI, GIMC), international conferences and symposia (EUROMECH, ECF, STRUMAS, EM, MMC, IUTAM, ICF, THERMEC, ESMC, ECCM, ECCOMAS, ICTAM) and invited lectures in Italy, USA and France.

HONORS, AWARDS AND FELLOWSHIPS

1996

“Politecnico di Torino” Fellowships for collaborative research on 'Ductile-brittle collapse of cracked materials subjected to compression', Turin - IT

1999

University of Genoa Fellowships for collaborative research abroad, Genoa - IT

2000

University of Genoa Fellowships for collaborative research abroad, Genoa - IT

2004

“Riccardo Baldacci” Prize for the best young researcher in Structural Mechanics and Engineering, University of Genoa - Genoa - IT

Grants

2001

Finanziamento a progetti di singoli e/o giovani ricercatori 2000 (Autonomous programs of young researchers)

Italian MIUR and University of Genoa - IT

Principal investigator

Micromechanics-based nonlocal modeling of random composite materials

2001 - 2002

Progetti di ricerca di ateneo 2001

University of Genoa - IT

Participant

Strength of traditional and advanced composite materials

2002

Finanziamento a progetti di singoli e/o giovani ricercatori 2001 (Autonomous programs of young researchers)

Italian MIUR and University of Genoa - IT

Principal investigator

Micromechanics-based nonlocal modeling of transversely-isotropic elastic composites

2003 - 2004

Progetti di ricerca di ateneo 2002

University of Genoa - IT

Participant

Mathematical modeling in mechanics of materials

2003 - 2005

PRIN 2003

Italian MIUR - IT

Participant

Interfacial damage failure in structural systems: applications to civil engineering and emerging research fields

Interface response in structural systems: applications to laminate composites and contact mechanics

2005 - 2007

PRIN 2004

Italian MIUR - IT

Participant

Microstructural problems and models: applications in structural and civil engineering
Heterogeneous materials and structures: elastic and inelastic multi-scale modeling

2006 - 2008

PRIN 2005

Italian MIUR - IT

Participant

Interfacial resistance and failure in materials and structural systems
Models for interfacial problems in multi-layer structures

2008 - 2009

Progetti di ricerca di ateneo 2007

University of Genoa - IT

Principal investigator

Damage resistance of multilayered systems

2008 - 2010

PRIN 2007

Italian MIUR - IT

Participant

Multi-scale problems with complex interactions in structural engineering
Multiscale mechanical interactions in multilayered materials

2009 - 2010

Progetti di ricerca di ateneo 2008

University of Genoa - IT

Principal investigator

Nonlocal modeling of composite materials

2011 - 2014

PRIN 2009

Italian MIUR - IT

Participant

Multi-scale modelling of materials and structures
Multi-scale modelling of multilayered materials with elasto-damaging interfaces

2014 - 2015

Progetti di ricerca di Ateneo - PRA 2014

University of Genoa - IT

Participant

Composite structures having heterogeneous elements

2016 - ONGOING

PRIN 2015

Italian MIUR - IT

Participant

Multi-scale mechanical models for the design and optimization of micro-structured smart materials and metamaterials

2016

Fondi per progetti di ricerca di Ateneo - FRA 2015

University of Genoa - IT

Principal investigator

2017

Fondi per progetti di ricerca di Ateneo - FRA 2016

University of Genoa - IT

Principal investigator

2018

Fondi per progetti di ricerca di Ateneo - FRA 2017

University of Genoa - IT

Principal investigator

Editorial activity

REVIEWER

- of scientific papers for the following international journals:

Journal of the Mechanics and Physics of Solids, International Journal of Solids and Structures, European Journal of Mechanics – A/Solids, Engineering Structures, Mechanics of Materials, Meccanica, Mathematical Methods in the Applied Sciences, International Journal of Non-linear Mechanics, International Journal of Multiscale Computational Engineering, Steel and Composite Structures - An International Journal

- of Research Programs of National Interest (PRIN) for the Italian MIUR, 2003

- of a scientific paper for IUTAM Symposium on “Asymptotics, singularities and homogenisation in problems of mechanics” (Ed. A. Movchan), Liverpool - United Kingdom, 2003

ORGANIZING COMMITTEES

2004

XV Italian Conference of Computational Mechanics – GIMC, June 21-23, Genoa - IT

2015

XXII National Congress AIMETA, September 14-17, Genoa - IT

Assignments abroad

2000 - 2001

Visiting Scholar

Department of Engineering Physics, University of Wisconsin - Madison (WI) - USA

Research activity in collaboration with professor W.J. Drugan

Other professional activities

UNIVERSITY SERVICES

- University of Genoa - Genoa - IT

2002 - 2006

Coordinator for Scientific Publications of the Department of Structural and Geotechnical Engineering

2003 - 2007

Member of the Faculty Website Committee (COSIT) of the Faculty of Engineering

2004, 2005, 2008, 2010, 2012, 2014

Member of the Examination Committees for short-term Assistant Professor positions in Structural Mechanics, Faculty of Engineering

2012

Member of the Examination Committee for professional practice examination (for engineering license), Faculty of Engineering

- other Italian universities

2006

Member of the Examination Committee for a tenure-track Assistant Professor position in Structural Mechanics, Faculty of Engineering – University of Ferrara - Ferrara IT

2007

Member of the Examination Committee for a tenure-track Assistant Professor position in Structural Mechanics, Faculty of Engineering – “Politecnico di Torino” - Turin - IT

2008

Member of the Examination Committee for a tenure-track Assistant Professor position in Structural Mechanics, Faculty of Engineering – University of Pisa - Pisa - IT