

Francesco Graziotti

Curriculum Vitae

PERSONAL INFORMATION

Name Francesco Graziotti
Place and Date of birth: Padua, Italy – 4/4/1984
Address: Pavia, Italy
Nationality: Italian
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EDUCATION AND TRAINING

September 2010 – December 2013 **Doctorate of Philosophy** in Earthquake Engineering and Engineering Seismology

Institution: IUSS – University Institute for Superior Studies, UME School, Pavia (IT)
Thesis title: Contribution towards a displacement based assessment of masonry structure
Contents: Design, execution and report of full-scale testing campaign on stone masonry spandrels. Definition of a reliable single degree of freedom model for the fast calculation of seismic demand of masonry structures. Application of the model in vulnerability studies and proposal of new displacement prediction formulations.
Supervisors: Prof. Guido Magenes
Prof. Andrea Penna
Relevant courses: Seismic Analysis of Non-structural Components (A. Filiatrault),
Engineering Seismology (A. Papageorgiou),
Earthquake Geotechnical Engineering (S. L. Kramer),
Masonry Structures (G. Magenes, M. Griffith),
Seismic Reliability Analysis of Structures (P. Pinto, P. Franchin),
Dynamic Soil-Structure Interaction (E. Kausel).
Grade: Excellent

September 2009 – September 2010 **Master of Science** in Structural Engineering

Institution: Jacobs School of Engineering, University of California San Diego (USA)
Thesis title: Seismic bridge response modification due to degradation of viscous dampers performance
Contents: Numerical investigation analyzing the variation of the seismic response of a bridge in the case of degradation of installed viscous fluid dampers. The study was conducted with nonlinear time-history analyses of a detailed three-dimensional FE model of the Vincent Thomas Bridge in Los Angeles.
Supervisors: Prof. P. B. Shing
Prof. C. M. Uang
Prof. F. Lanza di Scalea
Dr. G. Benzoni
Relevant courses: Advanced Solid Mechanics (V. A. Lubarda),
Matrix Structural Analysis (P.B. Shing),
Composite Structures (H. Kim),
Structural Dynamics (E. Luco),
Earthquake Engineering (A. Elgamal),
Displacement-based Seismic Design (J. Restrepo),

Steel Structures (C.M. Uang),
R.C. Structures (R. E. Englekirk),
Non-destructive Structural Evaluation (F. Lanza di Scalea).
Grade: 3.94/4.00

October 2006 –
December 2008

Master degree (Laurea Specialistica) in Civil Engineering

Institution: University of Pavia (IT)
Thesis title: Design of a laboratory setup for testing full-scale masonry spandrels
Contents: Complete design of a test setup used from 2010 to test full-scale specimens.
Supervisors: Prof. G. Magenes
Prof. A. Penna
Relevant courses: Bi-dimensional Structures, Finite Elements, Risk Analysis, Structural Dynamics, Earthquake Engineering, Steel Structures, Masonry Structures, Bridges, Foundations, Snow and Avalanches.
Grade: 110/110 cum laude

October 2006 –
December 2008

Bachelor degree (Laurea) in Civil Engineering

Institution: University of Pavia (IT)
Thesis title: First interpretation of full-scale cyclic tests on AAC masonry infills
Supervisors: Prof. G. Magenes
Prof. A. Penna
Relevant courses: Physics, Chemistry, Solid Mechanics, Hydraulics, Fundamentals of Steel Structures, R.C. Structures, Geotechnical Engineering, CAD, Economics.
Grade: 110/110 cum laude

September 1998 –
July 2003

High School Diploma, Liceo Scientifico (PNI)

School: Liceo Scientifico T. Taramelli, Pavia (IT)
Grade: 90/100

RESEARCH EXPERIENCE

January 2017 – Current

Assistant professor at the Civil Engineering and Architecture Department - DICAr, University of Pavia (IT).

Studies on the risk of gas extraction induced seismicity. Laboratory and in-situ testing: design, execution and data elaboration of two full scale shaking table tests on unreinforced masonry buildings, static and dynamic test on structural components and sub assemblages, in lab and on site characterization tests. Development of simplified numerical models for fast vulnerability assessment of masonry structures (fragility functions) and studies of the seismic performance of masonry components. Collaboration with international laboratories TU Delft, TU Eindhoven, LNEC Lisbon and international firms ARUP, Shell, P&P.

October 2014 –
December 2016

Post doctoral researcher at the Civil Engineering and Architecture Department - DICAr, University of Pavia (IT).

Studies on the risk of gas extraction induced seismicity. Development of simplified numerical models for fast vulnerability assessment of masonry structures (fragility functions) and studies of the seismic performance of masonry components.

September 2013 –
October 2014

Post doctoral researcher at IUSS – University Institute for Superior Studies, Pavia (IT).

In the framework of the PRISMA project (funded by the Italian Ministry of Education, University and Research), studies on methodologies to assess the resilience of urban systems were performed. In particular, a detailed study on the vulnerability of two strategic unreinforced masonry buildings in Sicily were conducted. In-situ testing, dynamic identification, macro-element modelling, dynamic analyses, definition of local and global limit states and vulnerability functions were main topics of the research.

January 2009 – August
2009

Post graduate researcher at EUCENTRE, Pavia (IT).

Design and construction supervision of a laboratory test setup for masonry spandrels. Collaboration with the STEP project (Strategies and Tools for Early Post-Earthquake Assessment) for surveys of strategic structures after 2009 L'Aquila earthquake.

RESEARCH PROJECTS

- 2015 - current Reasearch project on the assessment of the Seismic Response of Natural Stone Masonry Buildings in Basel, Co-PI of UNIPV, subcontractor of Ecole Polytechnique Fédérale de Lausanne.
Principal Investigators: K. Beyer, G. Magenes, A. Penna
- 2014 - current NAM Project “Study of the vulnerability of masonry buildings in Groningen”
Granted by: Nederlandse Aardolie Maatschappij BV.
Principal Investigator: G. Magenes
- 2014 - current Topic C.2.1.2 – “Improvement of the seismic assessment of existing masonry buildings by improving structural analysis and assessment procedures”, EUCENTRE Executive Project 2014-16.
Principal Investigators: G. Magenes, A. Penna
- 2014 - current Masonry Structures line, RELUIS Executive Project 2014.
Principal Investigator: C. Modena, G. Magenes, S. Lagomarsino
- 2014 - current MATILDA Project “Multinational module on damage assessment and countermeasures”, CE – FP7 [2006-2008].
Principal Investigator: A. Pavese
- 2012 - 2014 PRISMA Project: “Piattaforme cloud interoperabili per smart-government”, funded by Italian Ministry of University and Research.
Principal Investigator: A. Pavese
- 2011 - 2014 REAKT Project “Strategies and tools for Real Time EArthquake RisK ReducTion”.
Principal Investigator: P. Gasparini
- 2011 - 2013 Research Project e3 “Seismic vulnerability of masonry buildings”, EUCENTRE Executive Project 2012-2014.
Principal Investigator: G. Magenes
- 2011 - 2012 Bilateral project between Italy and Slovenia “Protection of cultural heritage from earthquakes” in collaboration with the Engineering and Geodesy Faculty of the University of Ljubljana, Slovenia (funded by the Ministry of Foreign Affairs as a high relevance scientific cooperation project).
Principal Investigators: M. Dolsek, G. Magenes

- 2010 - 2013 DRHOUSE – Development of Rapid Highly-specialized Operative Units for Structural Evaluation (EC, GA 070405/2010/565717/SUB/C3)
Principal Investigator: A. Pavese
- 2009 - 2013 RELUIS Executive Project 2009-2013, Tools for the assessment and management of seismic risk of the existing building stock. “New aspects in the assessment of existing structures and retrofit interventions and evaluation of seismic risk of the existing building stock at the regional scale. Vulnerability assessment of masonry buildings, historical centres and cultural heritage”.
Principal Investigators: C. Modena, G. Magenes, S. Lagomarsino
- 2009 Technical-scientific supporting activities for the emergency phase and the beginning of the reconstruction in the Abruzzi areas hit by the earthquake – item 12, Ordinance 15th of April 2009 of the Presidency of the Council of Ministers [EUCENTRE, 2009].
- 2008 - 2011 Research Programme e5/1 “Displacement-based methods for the seismic assessment of masonry buildings and possible implications for design”, EUCENTRE Executive Project 2008-2011.
Principal Investigator: G. Magenes
- 2006 - 2008 STEP Project “Strategies and Tools for Early Post earthquake assessment”, CE – FP7 [2006-2008].
Principal Investigator: A. Pavese
- 2005 - 2008 Line 1 “Assessment and reduction of the seismic vulnerability of masonry buildings”, of the RELUIS Executive Project 2005-2008 (Research Unit of the University of Pavia) funded by the Department of Civil Protection.
Principal Investigators: C. Modena, G. Magenes, S. Lagomarsino

FURTHER SCIENTIFIC EXPERIENCE

- 2014 - 2016 Scientific assistance to various in-situ tests on URM houses
Object: URM houses in Groningen region and in Sicily
Activity: in-situ testing
- May – June 2012 Reconnaissance mission (four weeks) in the areas hit by the seismic sequence of 2012 (main events on the 20th and 29th of May 2012, M 5.9 and 5.8 respectively), covering the most damaged centres in the provinces of Modena, Ferrara and Bologna and damage survey to masonry and historical buildings. Post-earthquake usability surveys supporting the activities of the Department of Civil Protection.
- April 2009 Mission supporting the Department of Civil Protection for post-earthquake usability surveys: starting from the 7th of April 2009, survey teams working on the assessment of strategic structures (including the S. Salvatore hospital), public structures (e.g. schools) and structures hosting relevant production activities.

TEACHING EXPERIENCE

- February 2017 – current Lecturer of “**Structural engineering**” M.Eng. course at University of Pavia, Italy.
- September 2011 – December 2016 Teaching assistant of “**Design of structures**” (A. Penna), B.Sc. course at University of Pavia, Italy.
- May 2014 Lecturer of “**Seismic performance of churches during recent Italian earthquakes**”, Short course for professional engineers, Kore University, Enna, Italy.
- June 2013 Lecturer of “**Damage reconnaissance survey and seismic vulnerability of buildings**”, Short course for professional engineers, EUCENTRE, Pavia, Italy.
- March – April 2013 Teaching assistant of “**Seismic Design and Assessment of Masonry Structures**” (G. Magenes), M.Sc. course at UME School, IUSS, Pavia, Italy.

April – June 2010 Teaching assistant of **“Design of Prestressed Concrete”** (P. B. Shing),
B.Sc. course at University of California San Diego, USA.

January – March 2010 Teaching assistant of **“Solid Mechanics”** (F. Lanza di Scalea),
B.Sc. course at University of California San Diego, USA.

October 2005 –
September 2009 Teaching assistant of **“Physics”** (A. Agnesi, G. Reali),
B.Sc. course at University of Pavia, Italy.

MASTER’S THESIS TUTORING

Co-supervisor of 12 Master’s theses (courses in Civil Engineering and Building Engineering/Architecture) in the field of masonry buildings and experimental testing at University of Pavia and of 3 M.Sc. theses in Earthquake engineering at IUSS, Pavia .

PEER REVIEW ACTIVITIES

Peer reviewer for the following scientific journals:

- Engineering structures,
- Earthquake Engineering and Engineering Vibration,
- Journal of Earthquake Engineering,
- International Journal of Structural Engineering,
- Earthquake Spectra,
- Journal of Structural Engineering.

PROFESSIONAL EXPERIENCE

June 2014 - current Sismica360
Co-Founder: Seismic structural design and assessment, consulting engineering.

August 2006 – October 2006 TECHINT Engineering and Construction S.A., Buenos Aires, (AR)
Civil engineering internship: Collaboration with the Design department (enlargement of Tenaris-Campana plant oil pipes and field engineer at Caracoles earth dam construction).

August 2004 –
September 2004 Richard Fleischman Architects, Inc., Cleveland, Ohio (USA)
CAD drawer

LANGUAGES

Mother tongue Italian

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
Spanish	C1	C1	B2	B2	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

ACTIVE PARTICIPATION TO CONFERENCES

2017	13 th Canadian Masonry Symposium: 13th CMS June 4 th – 7 th , Halifax, Canada
2017	16 th WCEE – World Conference on Earthquake Engineering January 9 th – 13 th , Santiago, Chile
2016	16 th International Brick and Block Masonry Conference: IBMAC June 26 th – 30 th , Padua, Italy
2015	16 th ANIDIS – Associazione Nazionale di Ingegneria Sismica September 13 th – 17 th , L'Aquila, Italy
2014	9 th IMC – International Masonry Conference July 7 th – 9 th , Guimarães, Portugal
2013	Vienna Congress on Recent Advances in Earthquake Eng. and Structural Dyn.: VEESD2013 August 28 th – 30 th , Vienna, Austria
2013	15 th ANIDIS – Associazione Nazionale di Ingegneria Sismica June 30 th – July 4 th , Padua, Italy
2012	15 th WCEE – World Conference on Earthquake Engineering September 24 th – 28 th , Lisbon, Portugal
2011	14 th ANIDIS – Associazione Nazionale di Ingegneria Sismica September 18 th – 22 th , Bari, Italy

PUBLICATIONS

- **Journal Papers**

Di Ludovico, M., Digrisolo, A., **Graziotti, F.**, Moroni, C., Belleri, A., Caprili, S., Carocci, C., Dall'asta, A., De Martino, G., De Santis, S., Ferracuti, B., Ferretti, D., Fiorentino, G., Mannella, A., Marini, A., Mazzotti, C., Sandoli, A., Santoro, A., Silvestri, S., Sorrentino, L., Magenes, G., Masi, A., Prota, A., Dolce, M., Manfredi, G., (2017) The contribution of ReLUIs to the usability assessment of school buildings following the 2016 central Italy earthquake, *Bollettino di Geofisica Teorica ed Applicata*, Vol. 58, n. 1, DOI 10.4430/bgta0192

Graziotti, F., Tomassetti, U., Kallioras, S., Penna, A., Magenes, G., (2017) Shaking Table Test on a Full Scale URM Cavity Wall Building, *Bulletin of Earthquake Engineering*, (in press, DOI:10.1007/s10518-017-0185-8)

Guerrini, G., **Graziotti, F.**, Penna, A., Magenes, G., (2017) Improved evaluation of inelastic displacement demands for short-period masonry structures, *Earthquake Engineering and Structural Dynamics*, 46(9), pp. 1411-1430, DOI:10.1002/eqe.2862.

Graziotti, F., Tomassetti, U., Penna, A., Magenes, G., (2016) Out-of-plane shaking table tests on URM single leaf and cavity walls, *Engineering structures*, Vol. 125, pp. 455-470.

Graziotti, F., Penna, A., Magenes, G., (2016) A nonlinear SDOF model for the simplified evaluation of the displacement demand of low-rise URM buildings, *Bulletin of Earthquake Engineering*, Vol. 14-6. pp. 1589-1612.

Mouyiannou, A., Penna, A., Rota, M., **Graziotti, F.**, Magenes, G. (2014) Implications of cumulated seismic damage on the seismic performance of unreinforced masonry buildings, *Bulletin of the NZ Society for Earthquake Engineering* Vol. 47, No. 2, pp. 157-170.

Bracchi, S., da Porto, F., Galasco, A., **Graziotti, F.**, Liberatore, D. et al. (2012) Comportamento degli edifici in muratura nella sequenza sismica del 2012 in Emilia, *Progettazione sismica*, Vol. 3. pp. 141-161.

- **Book Chapters**

Graziotti, F., Penna, A., Magenes, G., (2016) Experimental campaign on double-leaf stone masonry specimens at the University of Pavia and Eucentre. In Augenti, N., **Graziotti, F.**, Magenes, G., Parisi, F. (Eds.) *Experimental Researches on the Seismic Behaviour of Masonry Spandrels: An International Perspective*, (pp. 5-50), EUCENTRE Press, Pavia, ISBN: 978-88-6198-124-9.

- **Theses**

Graziotti, F. (2013) Contributions towards a Displacement-Based Seismic Assessment of Masonry Structures. *Ph.D. Thesis, UME School - IUSS, Pavia, IT.*

Graziotti, F. (2010) Seismic bridge response modification due to degradation of viscous dampers performance. *M.Sc. Thesis, University of California, San Diego, La Jolla, USA.*

Graziotti, F. (2008) Sperimentazione su elementi di fascia muraria. *Master's Thesis, University of Pavia, Italy.*

Graziotti, F. (2006) Prime interpretazioni di prove sperimentali su telai in C.A. tamponati in calcestruzzo cellulare. *Bachelor Thesis, University of Pavia, Italy.*

- **Conference Papers**

Graziotti, F., Tomassetti, Rossi, A., Kallioras, S., Mandirola, M., Penna, A., Magenes, G., (2017) Full Scale Shaking Table Test on a URM Cavity Wall Terraced House Building, *Proc. WCEE 2017, Santiago, Chile.*

Graziotti, F., Rossi, A., Mandirola, M., Penna, A., Magenes, G., (2016) Experimental Characterization of Calcium-Silicate Brick Masonry for Seismic Assessment, *Proc. 16th IBMAC 26-30/6, pp. 1619- 1627, Padua, IT.*

Tomassetti, U., **Graziotti, F.**, Penna, A., Magenes, G., (2016) Out-of-plane shaking table tests on URM cavity walls, *Proc. IBMAC 26-30/6, pp. 1939-1947, Padua, IT.*

Rossi, A., **Graziotti, F.**, Penna, A., Magenes, G., (2015) A Proposal for the Interpretation of the In-Situ Shear Strength Index Test for Brick Masonry, *Proc. Anidis, 13-17/9, L'Aquila, IT.*

Tomassetti, U., **Graziotti, F.**, Penna, A., Magenes, G., (2015) A Single Degree of Freedom Model for the Simulation of the Out-of-Plane Response of Unreinforced Masonry Walls, *Proc. Anidis, 13-17/9, L'Aquila, IT.*

Graziotti, F., Magenes, G., Penna, A., (2014) A direct method to compute the inelastic displacement demand of masonry structures, *European conference on earthquake engineering and seismology, Istanbul, TR.*

Graziotti, F., Penna, A., Bossi, E., Magenes, G. (2014) Evaluation of displacement demand for unreinforced masonry buildings by equivalent SDOF systems, *EURODYN 2014, Porto, PT.*

Graziotti, F., Penna, A., Magenes, G. (2014) Influence of timber lintels on the cyclic behaviour of stone masonry spandrels, *International Masonry Conference 2014, Guimarães, PT.*

Graziotti, F., Magenes, G., Penna, A., Galasco, A. (2013) Modello numerico semplificato ad un grado di libertà per l'interpretazione del comportamento dinamico di strutture in muratura *Anidis 2013, Padova, IT.* (in Italian).

Graziotti, F., Penna, A., Magenes, G. (2013) Use of equivalent SDOF systems for the evaluation of displacement demand for masonry buildings , *VEESD2013, Vienna, AT.*

Graziotti, F., Magenes, G., Penna, A. (2012) Experimental cyclic behaviour of stone masonry spandrels, *Proc. of the 15th World Conference on Earthquake Engineering, Lisboa, PT.*

Graziotti, F., Magenes, G., Penna, A., Galasco, A. (2011) Comportamento ciclico sperimentale nel piano di fasce in muratura di pietra, *Proc. Anidis, Bari, IT.* (in Italian).

- **Edited Books**

Augenti, N., **Graziotti, F.**, Magenes, G., Parisi, F. (Eds.) (2016) *Experimental Researches on the Seismic Behaviour of Masonry Spandrels: An International Perspective*, EUCENTRE Press, Pavia, ISBN: 978-88-6198-124-9.

In compliance with the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff and I confirm to be informed of my rights in accordance to art. 7 of the above mentioned decree.