PERSONAL INFORMATION

Chiara SMERZINI

Department of Civil and Environmental Engineering - DICA, Politecnico di Milano
Piazza Leonardo da Vinci, 32 – 20133, Milan, Italy

+39 0223996283

chiara.smerzini@polimi.it – chiara.smerzini@gmail.com

Sex Female | Date of birth 02/07/1982 | Nationality Italian

WORK EXPERIENCE

Dec. 12, 2016 - present

Assistant Professor

Department of Civil and Environmental Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Role and Responsibility: education and research in Earthquake Engineering and Engineering Seismology

Apr. 1, 2016 – Oct. 31, 2016

Senior Engineer

Civil and Geotechnical Engineering Division, Betti S.p.A., Viale di Porta S. Angelo, 27 – 05100, Terni, Italy

Role and Responsibility: professional engineering activities in the civil and geotechnical engineering field.

Dec. 1, 2014 – Nov. 30, 2015

Post-Doctoral Fellow

Department of Civil Engineering, Aristotle University of Thessaloniki, P.O.B. 424, 54124, Thessaloniki, Greece.

Role and Responsibility: research activities in the framework of the European Project STREST "Harmonised approach to stress tests for critical infrastructures against natural hazards", Seventh Framework Programme EU FP7/2007-2013, grant agreement no. 603389.

Nov. 18, 2013 – Nov. 17, 2014

Senior Engineer

Geosciences Division, GeoHazard Group, D'Appolonia S.p.A., Via San Nazaro, 19 – 16145, Genova, Italy

Role and Responsibility: engineering consultancy activities for Oil and Gas companies in the field of seismic hazard assessment and geotechnical earthquake engineering

Sept. 16, 2012 – Nov. 16, 2013

Post-Doctoral Fellow

Department of Civil and Environmental Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Role and Responsibility: research activities in the framework of the 2012–2014 MRPM I Project "Numerical Approaches for Earthquake Ground Shaking Scenarios in Large Urban Areas", agreement between Politecnico di Milano and the re-insurance company Munich Re. Leader of project tasks.

Sept. 1, 2010 – Aug. 31, 2012

Post-Doctoral Fellow

Department of Structural Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Role and Responsibility: research activities in the framework of the 2010–2013 DPC-RELUIS Project "Development of displacement-basedapproaches for vulnerability assessment" (RELUIS Line 2), agreement between the Department of Civil Protection (DPC) and the Network of University Laboratories in Earthquake Engineering (RELUIS)

July 2009 – June 2010

Research Collaborator

Department of Structural Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Role and Responsibility: research activities in the framework of the 2007-2009 Seismological Project S4 "Italian Strong Ground Motion Database", agreement between the Department of Civil Protection (DPC) and the National Institute of Geophysics and Volcanology (INGV)

Sept. 2007 – Jan. 2008

Research Fellow

Department of Engineering, Universidad Nacional Autonoma de México (UNAM)

Role and Responsibility: research stage at UNAM with the aim of studying analytical solutions for the seismic response of underground cavities in the framework of doctoral studies. Invitation by Prof. F.J. Sanchez-Sesma.

Nov. 2006 – Oct. 2007

Research Fellow

Department of Structural Engineering, Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Role and Responsibility: research Fellowship n the framework of the 2005-2008 research program DPC-RELUIS (RELUIS Line 4) "Analysis of seismic wave propagation in proximity of rock tunnels and caverns", agreement between the Department of Civil Protection (DPC) and the Network of University Laboratories in Earthquake Engineering (RELUIS)

EDUCATION AND TRAINING

Sept. 2007 – Dec. 2010

PhD in Earthquake Engineering and Engineering Seismology

Istituto Universitario di Studi Superiori IUSS, Piazza della Vittoria, 15 – 27100, Pavia, Italy

Thesis: "The earthquake source in numerical modeling of seismic wave propagation in heterogeneous earth media". Advisor: Prof. R. Paolucci.

Sept. 2006 – May 2007

Postgraduate MSc degree in Engineering Seismology

MSc programme within the Erasmus Mundus program MEEES - Masters in Earthquake Engineering and Engineering Seismology, jointly awarded by Istituto Universitario di Studi Superiori IUSS di Pavia, Italy, Università degli Studi di Pavia, Italy, University of Grenoble Joseph Fourier, France, and University of Patras, Greece.

Thesis: "Earthquake-induced transient ground strains and rotations from dense seismic arrays". Advisor: Prof. R. Paolucci

Sept. 2004 – July 2006

MSc degree in Environmental and Land Planning Engineering

Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Thesis: "Valutazione delle deformazioni del suolo da reti sismometriche dense: il caso della Valle di Parkway, Nuova Zelanda". Advisor: Prof. R. Paolucci. Mark: 110/110 cum laude

Sept. 2001 – July 2004

BSc degree in Environmental and Land Planning Engineering

Politecnico di Milano, Piazza Leonardo da Vinci, 32 – 20133 Milano

Thesis: "Valutazione comparativa di diverse esperienze di Valutazione Ambientale Strategica (VAS)". Advisor: Prof. E. Laniado. Mark: 110/110 cum laude

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
	Replace with name of language certificate. Enter level if known.				
Spanish	A2	A2	A2	A2	A2
	Replace with name of language certificate. Enter level if known.				

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

Communication skills

Excellent communication skills gained during the experience as faculty member and lecturer at Politecnico di Milano and as member of research group in different national and international research projects

Organisational / managerial skills

Scientific responsible and coordination of research tasks within projects at Politecnico di Milano; supervision of PhD and MSc thesis works.

Computer skills

- Operating Systems (OS): Windows, Linux
- Programming languages: Matlab, Fortran
- Word Processor: MS Office, LaTeX
- Sofware for graphics: Rhinoceros, Grapher, Surfer, Adobe Photoshop
- Software for Finite/Spectral Element Numerical Analyses: CUBIT, SPEED, Midas-GTS, SeismoStruct
- Software for seismic ground response analyses: EERA, SHAKE, DEEPSOIL
- Software for Probabilistic Seismic Hazard Assessment (PSHA): CRISIS
- Software for Seismic Risk Analyses: EQRM
- Software for Signal Processing: Degtra, SeismoSignal
- Geographic Information Systems (GIS): ESRI – ArcGis
- Software development: SPEED (http://speed.mox.polimi.it/)

TEACHING ACTIVITY

Lecturer

Since A.Y. 2017/2018. Course: Structural Design. MSc in Architecture and Urban Design, School of Architecture Urban Planning Construction Engineering, Politecnico di Milano.

Since A.Y. 2017/2018. Course: Risk-Based Design. MSc in Building Architecture, School of Architecture Urban Planning Construction Engineering, Politecnico di Milano.

Since A.Y. 2011/2012. Course: Elements of Engineering Seismology. MSc course (Level II) within the program “Design of seismic sustainable structures in construction works”, Master School Fratelli Pesenti, Politecnico di Milano

Teaching Assistant

A.Y. 2012/2013 – 2009/2010. Course: Elastic Wave Propagation. PhD Program in Structural, Seismic and Geotechnical Engineering, Department of Civil and Environmental Engineering, Politecnico di Milano. Lecturer: Prof. R. Paolucci.

A.Y. 2010/2011 – 2007/2008. Course: Wave Propagation in Elastic Solids. PhD and MSc in Earthquake Engineering and Engineering Seismology, ROSE School, Pavia. Lecturers: Profs. R. Paolucci and C.G. Lai.

From A.Y. 2010/2011 to 2012/2013. Course: Earthquake Engineering. MSc in Civil, Environmental and Land Planning Engineering, Politecnico di Milano. Lecturer: Prof. R. Paolucci.

From A.Y. 2011/2012 to 2012/2013. Course: Buildings in Seismic Areas. MSc in Building and Architectural Engineering, Politecnico di Milano, Polo di Lecco. Lecturer: Prof. R. Paolucci / Prof. M. G. Mulas

From A.Y. 2008/2009 to 2009/2010. Course: Mechanics of Solids. BSc in Environmental and Land Planning Engineering, Politecnico di Milano, Polo di Cremona. Lecturer: Prof. R. Paolucci

PUBLICATIONS

Peer-reviewed Journal Papers

R. Paolucci, F. Gatti, M. Infantino, **C. Smerzini**, A.G. Özcebe, M. Stupazzini (2018). Broad-band ground motions from 3D physics-based numerical simulations using Artificial Neural Networks. Bulletin of Seismological Society of America,103(3): 1272-1286

A. G. Özcebe, **C. Smerzini**, V. Bhanu (2018). Insights into the effect of spatial variability of recorded earthquake ground motion on the response of a bridge structure. Journal of Earthquake Engineering, 1-27 (in press)

R. Paolucci and **C. Smerzini** (2018). Empirical evaluation of peak ground velocity and displacement as a function of elastic spectral ordinates. Earthquake Engineering and Structural Dynamics, 47(1): 245-255.

C. Smerzini and K. Pitilakis (2018). Seismic risk assessment at urban scale from 3D physics-based numerical modeling: the case of Thessaloniki. Bull Earthquake Eng, 16(7): 2609-2631

L. Evangelista, S. del Gaudio, **C. Smerzini**, A. d´Onofrio, G. Festa, I. Iervolino, L. Landolfi, R.

Paolucci, A. Santo, and F. Silvestri (2017). Physics-based seismic input for engineering applications: a case study in the Aterno River valley, Central Italy. Bulletin of Earthquake Engineering, 15(7):2645–2671.

C. Smerzini, K. Pitilakis, and K. Hashemi (2017). Evaluation of earthquake ground motion and site effects in the Thessaloniki urban area by 3D finite-fault numerical simulations. Bulletin of Earthquake Engineering, 15(3):787–812.

J. R. Abraham, **C. Smerzini**, R. Paolucci, and C. G. Lai (2016). Numerical study on basin-edge effects in the seismic response of the Gubbio valley, Central Italy. Bulletin of Earthquake Engineering, 14(6):1437–1459.

R. Paolucci, I. Mazzieri, and **C. Smerzini** (2015). Anatomy of strong ground motion: near-source records and three-dimensional physics-based numerical simulations of the MW 6.0 2012 May 29 Po Plain earthquake, Italy. Geophysical Journal International, 203(3): 2001–2020.

C. Smerzini, C. Galasso, I. Iervolino, and R. Paolucci (2014). Ground motion record selection based on broadband spectral compatibility. Earthquake Spectra, 30(4):1427–1448

Mazzieri, M. Stupazzini, R. Guidotti, and **C. Smerzini** (2013). SPEED: SPectral Elements in Elastodynamics with Discontinuous Galerkin: a non-conforming approach for 3D multi-scale problems. International Journal for Numerical Methods in Engineering, 95(12):991–1010

C. Smerzini and M. Villani (2012). Broadband numerical simulations in complex near-field geological configurations: the case of the 2009 MW 6.3 L'Aquila earthquake. Bulletin of the Seismological Society of America, 102(6):2436–2451

R. Guidotti, M. Stupazzini, **C. Smerzini**, R. Paolucci, and P. Ramieri (2011). Numerical study on the role of basin geometry and kinematic seismic source in 3D ground motion simulation of the 22 February 2011 MW 6.2 Christchurch earthquake. Seismological Research Letters, 82(6):767–782.

C. Smerzini, R. Paolucci, and M. Stupazzini (2011). Comparison of 3D, 2D and 1D numerical approaches to predict long period earthquake ground motion in the Gubbio plain, Central Italy. Bulletin of Earthquake Engineering, 9(6):2007–2029.

F. Pacor, G. Ameri, D. Bindi, L. Luzi, M. Massa, R. Paolucci, and **C. Smerzini** (2011). Characteristics of strong ground motions from the L'Aquila (MW = 6.3) earthquake and its strongest aftershocks. Bollettino di Geofisica Teorica ed Applicata, 52(3):471–490

C. Smerzini, R. Paolucci, and M. Stupazzini (2009). Experimental and numerical results on earthquake-induced rotational ground motions. Journal of Earthquake Engineering, 13(S1):66–82.

C. Smerzini, J. Avilés, R. Paolucci, and F. J. Sánchez-Sesma (2009) Effect of underground cavities on surface earthquake ground motion under SH wave propagation. Earthquake Engineering and Structural Dynamics, 38(12):1441–1460.

G. Ameri, M. Massa, D. Bindi, E. D'Alema, A. Gorini, L. Luzi, S. Marzorati, F. Pacor, R. Paolucci, R. Puglia, and **C. Smerzini** (2009). The 6 April 2009 MW 6.3 L'Aquila (Central Italy) earthquake: strong-motion observations. Seismological Research Letters, 80(6):951–966.

L. Godinho, P. Amado Mendes, A. Tadeu, A. Cadena-Isaza, **C. Smerzini**, F. J. S´anchez-Sesma, R. Madec, and D. Komatitsch (2009). Numerical simulation of ground rotations along 2D topographical profiles under the incidence of elastic plane waves. Bulletin of the Seismological Society of America, 99(2B):1147–1161.

M. Stupazzini, J. de la Puente, **C. Smerzini**, M. Käser, H. Igel, and A. Castellani (2009). Study of rotational ground motion in the near-field region. Bulletin of the Seismological Society of America, 99(2B):1271–1286.

R. Paolucci and **C. Smerzini** (2008). Earthquake-induced transient ground strains from dense seismic networks. Earthquake Spectra, 24(2):453–470.

Conference Proceedings

C. Smerzini (2018). Spatial variability of earthquake ground motion from 3D physics-based numerical simulations. 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018.

C. Smerzini, F. Cavalieri, S. Argyroudis,K. Pitilakis (2018) 3D physics-based numerical modeling as a tool for seismic risk assessment of urban infrastructural systems: the case of Thessaloniki, Greece. 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018.

M. Infantino, R. Paolucci, **C. Smerzini** and M. Stupazzini (2018). Study of the Spatial Correlation of Earthquake Ground Motion By Means of Physics-Based Numerical Scenarios. 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018

V. Bhanu, A.G. Özcebe, **C. Smerzini** (2018) A study on vertical component of earthquake ground motion and its effect on a bridge. 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018

K. Hashemi, **C.Smerzini** (2018). Comparison of 1D vs 2D vs 3D numerical approaches for prediction of seismic ground motion and site effects in Thessaloniki urban area. 16th European Conference on Earthquake Engineering, Thessaloniki, 18-21 June 2018

R. Paolucci, I. Mazzieri, A.G. Özcebe, **C. Smerzini**, M. Stupazzini, and M. Infantino (2017). 3D physics-based earthquake scenarios in Istanbul for seismic risk assessment. In Proceedings of the 16th World Conference on Earthquake Engineering (16WCEE), number Paper N. 1478, Santiago, Chile, January 9–13 2017

M. Stupazzini, M. Infantino, A. Allmann, M. K¨aser, R. Paolucci, I. Mazzieri, and **C. Smerzini** (2017) PSHAe (Probabilistic Seismic Hazard Assessment enhanced): the case of Istanbul. In Proceedings of the 16th World Conference on Earthquake Engineering (16WCEE), number Paper N. 1631, Santiago, Chile, January 9–13 2017

M. Stupazzini, M. Infantino, A. Allmann, M. Käser, I. Mazzieri, A.G. Özcebe, R. Paolucci, and **C. Smerzini**. (2016) Near-fault earthquake ground-motion simulation in the Istanbul area. In Proceedings of the 5th IASPEIIAEE International Symposium: Effects of Surface Geology on Seismic Motion (ESG5), Taipei, Taiwan, August 15–17 2016

C. Smerzini, K. Pitilakis, and K. Hashemi (2016) 3D numerical modelling of the seismic response of the Thessaloniki urban area: the case of the 1978 Volvi earthquake. In Bulletin of the Geological Society of Greece – Proceedings of the 14th International Conference of the Geological Society of Greece (EGE2016), Thessaloniki, Greece, May 25-27 2016

O. Zanoli, **C. Smerzini**, and E.J. Parker (2016) Vertical input for seismic analysis of offshore structures. In Proceedings of the 2016 Offshore Technology Conference (OTC 2016), number OTC-27140-MS, Houston, Texas, USA, May 2-5 2016

K. Hashemi, I. Mazzieri, R. Paolucci, and **C. Smerzini** (2015) Spatial variability of near-source seismic ground motion with respect to different distance metrics, with special emphasis on May 29 2012 Po Plain Earthquake, Italy. In Proceedings of the 7th International Conference on Seismology and Earthquake Engineering (SEE7), Tehran, Iran, May 18-21 2015

M. Stupazzini, A. Allmann, M. Käser, I. Mazzieri, A.G. Özcebe, R. Paolucci, and **C. Smerzini** (2015) PSHAe (Probabilistic Seismic Hazard Analysis enhanced): the case of Istanbul. In Proceeding of the 10th Pacific Conference on Earthquake Engineering (10PCEE), Syndney, Australia, November 6-8 2015

C. Smerzini, I. Mazzieri, and R. Paolucci (2015) 3D physics-based numerical simulations of the MW6 May 29 2012 Emilia earthquake. In Proceedings of the Workshop on Best Practices in Physics-based Fault Rupture Models for Seismic Hazard Assessment of Nuclear Installations (BestPSHANI), Vienna, Austria, November 18-20 2015

M. G. Mulas, R. Pantalena, **C. Smerzini**, and D. Coronelli (2014). The assessment of an existing RC framed structure: a case study on a collapsed building. In Proceedings of the IX International Conference on Structural Dynamics, EURODYN 2014, Porto, Portugal, June 30 - July 2 2014

R. Paolucci, M. Stupazzini, P. F. Antonietti, R. Guidotti, I. Mazzieri, **C. Smerzini**, and M. Beretta (2013). Deterministic seismic scenarios from 3D numerical simulations. In C. Adam, R. Heuer, W. Lenhardt, and C. Schranz, editors, Proceedings of the Vienna Congress on Recent Advances in Earthquake Engineering and Structural Dynamics 2013 (VEESD 2013), number 255, Vienna, Austria, August 28-30 2013

R. Guidotti, M. Stupazzini, **C. Smerzini**, and R. Paolucci (2012). The 22 February 2011 MW 6.3 Christchurch earthquake: 3D numerical simulations of strong ground motion. In Proceedings of the 2nd International Conference on Performance Based Design in Earthquake Engineering (IIPBD), Taormina, Italy, May 28-30 2012

C. Smerzini, M. Villani, E. Faccioli, and R. Paolucci (2012). 3D numerical simulations in complex near-field geological configurations during the MW 6.3 L'Aquila earthquake. In Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE), number 2362, Lisbon, Portugal, September 24-28 2012

C. Smerzini, R. Paolucci, C. Galasso, and I. Iervolino (2012). Engineering ground motion selection based on displacement-spectrum compatibility. In Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE), number 2354, Lisbon, Portugal, September 24-28 2012

J. R. Abraham and **C. Smerzini** (2012). Observed and simulated ground motions in the Gubbio basin, Central Italy during the MW 5.7 1984 earthquake. In Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE), number 3684, Lisbon, Portugal, September 24-28 2012

C. Cauzzi, D. F¨ah, V. Pessina, E. Faccioli, and **C. Smerzini** (2012). Topographic amplification from recorded earthquake data and numerical simulations. In Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE), number 2341, Lisbon, Portugal, September 24-28 2012

R. Paolucci and **C. Smerzini** (2011). 3D numerical simulations of earthquake ground motion in sedimentary basins: the cases of Gubbio and L'Aquila, Central Italy. In Proceedings of the 4th IASPEI–IAEE International Symposium on the Effects of Surface Geology on Seismic Motion, Santa Barbara, USA, August 23-26 2011

I. Mazzieri, **C. Smerzini**, Paola F. Antonietti, F. Rapetti, M. Stupazzini, R. Paolucci, and A. Quarteroni

(2011). Non-conforming spectral approximations for the elastic wave equation in heterogeneous media. In M. Papadrakakis, N.D. Lagaros, and M. Fragiadakis, editors, ECCOMAS Thematic Conference: 3rd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2011), Corfù, Greece, May 26-28 2011

C. Smerzini, M. Stupazzini, and R. Paolucci (2011). Numerical simulation of seismic response at Gubbio basin, Central Italy. In Proceedings of the 5th International Conference on Earthquake Geotechnical Engineering (5ICEGE), Santiago, Chile, January 10-13 2011

R. Paolucci and **C. Smerzini**. (2010) Strong ground motion in the epicentral region of the MW 6.3 Apr 6 2009, L'Aquila earthquake, Italy. In Proceedings of the 5th International Conference on Recent advances in Geotechnical Earthquake Engineering and Soil Dynamics, number EQ4, San Diego, California, USA, May 24-29 2010

E. Faccioli, M. Vanini, M. Villani, C. Cauzzi, and **C. Smerzini** (2010). Mapping seismic hazard to account for basin amplification effects. In Proceedings of the 9th International Workshop on Seismic Microzoning Risk Reduction, Cuernavaca, México, February 21-24 2010

C. Smerzini, J. Avilés, F. J. Sánchez-Sesma, and R. Paolucci (2008). Analytical solutions for the seismic response of underground structures under SH wave propagation. In Proceedings of the 2008 Seismic Engineering International Conference commemorating the 1908 Messina and Reggio Calabria Earthquake (MERCEA 2008), volume I, pages 674–683, Reggio Calabria, Italy, July 8-11 2008

L. Scandella, **C. Smerzini**, and R. Paolucci (2008). Experimental and numerical study on earthquake-induced ground strains. In Proceedings of the 14th World Conference on Earthquake Engineering, number 06-0009, Beijing, China, October 12-17 2008

C. Smerzini, E. Faccioli, R. Paolucci, L. Scandella, and W.R Stephenson (2006). Surface ground strains evaluated from weak motion records of dense seismograph arrays: the case of Parkway Valley, New Zealand. In Proceeding of the 1st European Conference on Earthquake Engineering and Seismology (1ECEES), number 879, Geneve, Switzerland, September 3-8 2006

Books' Chapters

R. Paolucci, M. Infantino, I. Mazzieri, A.G. Özcebe, **C. Smerzini**, M. Stupazzini (2018). 3D physics-based numerical simulations: advantages and current limitations of a new frontier to earthquake ground motion prediction. The Istanbul case study. In: Pitilakis K. (eds) Recent Advances in Earthquake Engineering in Europe. ECEE 2018. Geotechnical, Geological and Earthquake Engineering, vol 46. Springer

R. Paolucci, I. Mazzieri, **C. Smerzini**, and M. Stupazzini (2014). Physics-based earthquake ground shaking scenarios in large urban areas. In A. Ansal, editor, Perspectives on European Earthquake Engineering and Seismology, Geotechnical, Geological and Earthquake Engineering, volume 34. Springer.

CONFERENCE TALKS AND SEMINARS

Invited Seminars

"3D physics-based numerical simulations of earthquake ground motion in the Thessaloniki urban area: application to seismic hazard and risk analyses". Department of Civil Engineering, Aristotle University of Thessaloniki AUTH, Thessaloniki, Greece, Dec. 17, 2015. Invited seminar by Prof. K. Pitilakis.

"SPEED: a high-performance spectral element code for multi-scale earthquake ground shaking scenarios". Department of Civil Engineering, Aristotle University of Thessaloniki (AUTH), Thessaloniki, Greece, Mar. 6, 2015. Invited seminar by Prof. K. Pitilakis

"SPEED-Spectral Elements in Elastodynamics: a Non-Conforming Approach for Engineering Seismologyand Earthquake Engineering Applications". HP14 Research Seminar Structural Mechanics, Department of Civil Engineering of KU Leuven, Belgium, Jan. 17, 2014. Invited seminar by Prof. G. Degrande.

"Vertical Input Spectra for Structural Analyses of Offshore Structures". Invited lecture given at the company D'Appolonia S.p.A., Geosciences Division, Genova, Italy. Nov. 13, 2014. Invited lecture by E. J. Parker.

"Broadband Numerical Simulations in Complex Near-Field Geological Configurations: the Case of the Mw 6.3 L'Aquila Earthquake". Charles University of Prague, Department of Geophysics, Faculty of Mathematics, Nov. 9, 2012. Invited seminar by Dr. Frantisek Gallovic.

Invited Conference Talks

"Physics-based Numerical Simulation of Earthquake Ground Motion through a High-Performance Spectral Element Code: the case of Thessaloniki, Northern Greece", IV ECCOMAS Young Investigator Conference - YIC 2017, Milano, Italy, September 13–15 2017

"On the comparison between physics-based numerical simulations and observations from real earthquakes". European Geosciences Union General Assembly 2016 (EGU 2016), Vienna, Austria, April 17-22, 2016.

Contributed Conference Talks

"3D physics-based numerical simulations off the MW 6.0 May 29 2012 Emilia Earthquake". International Workshop on Best Practices in Physics-based Fault Rupture Models for Seismic Hazard Assessment of Nuclear Installations (BestPSHANI), Vienna, Austria, Nov. 19, 2014. Paper

"3D ground motion simulation of the MW 6.2 Christchurch earthquake". 2nd International Conference on Performance-Based Design in Earthquake Engineering (IIPBD), Taormina, Italy, May 30, 2012.

"Spatial variability of earthquake ground motion from dense-array observations and 3D numerical simulations".6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering – COMPDYN, Rhodes Island, Greece, June 15 – 17, 2017.

"Deterministic seismic scenarios from 3D numerical simulations". Vienna Congress on Recent Advances in Earthquake Engineering and Structural Dynamics (VEESD2013), Vienna, Austria, Aug. 28 – 30, 2013.

"3D numerical simulations in complex near-field configurations during the MW 6.3 L'Aquila earthquake". 15th World Conference on Earthquake Engineering (15WCEE), Lisbon, Portugal, Sept. 24 – 28, 2012.

"3D ground motion simulation of the MW 6.2 Christchurch earthquake". 2nd International Conference on Performance-Based Design in Earthquake Engineering (IIPBD), Taormina, Italy, May 28 – 30, 2012.

"Numerical simulations of seismic response at Gubbio basin, Central Italy". 5th International Conference on Earthquake Geotechnical Engineering (5ICEGE), Jan. 10 – 13 2011, Santiago, Chile.

"The earthquake source in numerical modeling of seismic wave propagation in heterogeneous Earth media". 11th International ROSE School Seminar, May 19 – 20, 2011, Pavia, Italy.

"1D, 2D and 3D numerical modeling of seismic site response: the case of Gubbio basin". Final Meeting of the Seismological Projects, 2007-2009 DPC-INGV agreement, June 30 - July 2, 2010, Rome, Italy.

"Experimental and numerical study on earthquake-induced ground strains". 14th World Conference on Earthquake Engineering (14WCEE), Oct 12 - 17 2008, Beijing, China.

"Analytical solutions for the seismic response of underground structures under SH wave propagation". International Conference on Earthquake Engineering commemorating the 1908 Messina and Reggio Calabria Earthquake (MERCEA08), July 8 - 11 2008, Reggio Calabria, Italy.

"Earthquake-induced transient ground strains and rotations from dense seismic networks". 8th International ROSE School Seminar, May 22 – 23, 2008, Pavia, Italy

PROJECTS

Principal Investigator

EU Project "Seismic site effects in sedimentary basins from 3D physics-based numerical modeling (SITE3D)". Funded by the European Commission within the Project SERA - Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe, Call H2020-INFRAIA-2016-1. Role: Principal Investigator (Research Units: Politecnico di Milano, Italy; University of Pavia, Italy). Grant: access to EUROSEISTEST facility.

FFABR 2017 Funding "Annual individual funding of research activity base". Funded by the Ministry of Education, University and Research (MIUR) of Italy. Grant: 3'000 Euro

ISCRA C Project EQK-NOR " 3D physics-based numerical simulations of earthquake ground motion in Norcia basin during the October 2016 seismic sequence in Central Italy. Funded by CINECA, Italy. Period: Nov 2017 – Aug 2018. Role: Principal Investigator. Grant: 4'500 Euro
ISCRA B Project URBSHAKE "Enhanced seismic hazard assessment at URBan scale based on physics-based high-performance broadband ground SHAKing scEnarios". Funded by CINECA, Italy. Period: July 2016 – July 2017. Role: Principal Investigator. Grant: 19'000 Euro

LISA Project PBS-CHI "broadband Physics-Based earthquake Scenarios for enhanced probabilistic seismic hazard analysis at urban scale: application to the areas of Santiago, CHIle, and Beijing, CHIna". Funded by CINECA, Italy. Period: July 2016 – July 2017. Role: Principal Investigator. Grant: 2'500 Euro

Task Leader

EU Project URBASIS "New Challenges for Urban Engineering Seismology". Funded by the European Commission within the Marie Slodowska-Curie Actions, Innovative Training Networks (ITN), Call: H2020-MSCA-ITN-2018. Role: supervision of one doctoral thesis and responsible of a short integrated course. Grant: 4'066'113.60 Euro. Starting date: Nov 2018.

MRPM II "Integrating Physics-Based Scenarios into PSHA in Large Urban Areas – Probabilistic Seismic Hazard enhanced". Role: task leader. Funded by Munich Re, Germany. Period: Apr. 2015 – Mar. 2017. Grant: 150'000 Euro.

MRPM I "Numerical Approaches for Earthquake Ground Shaking Scenarios in Large Urban Areas".

Role: Task Leader. Funded by Munich Re, Germany. Period: Jan. 2012 – Dec. 2013. Grant: 150’000 Euro

Participant

POLIMI-swissnuclear Project “Development of advanced physics-based numerical approaches for earthquake ground motion prediction” within the SIGMA 2 “Seismic Ground Motion Assessment” research programme. Role: investigator. Funded by swissnuclear. Period: 2017 – 2021. Grant: 250'000 Euro.

DPC-RELUIS Special Project RS2 “Simulations of earthquakes: near-source effects”. Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2014–2018 DPC-RELUIS agreement. Period: 2014 – 2017.

STREST “Harmonised approach to stress tests for critical infrastructures against natural hazards”. Role: investigator. Funded by the European Union under the Seventh Framework Programme EU FP7/2007-2013, grant agreement no. 603389. Period: Oct. 2013 – Sept. 2016.

Seismological Project S2 “Constraining Observations into Seismic Hazard”. Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2012 DPC-INGV agreement. Period: 2012 – 2013.

SIGMA “Seismic Ground Motion Assessment” with application to the Italian context. Role: investigator. Funded by ENEL, Italy. Period: 2012 – 2013.

DPC-RELUIS “Development of displacement-based approaches for vulnerability assessment” (RELUIS Line 2). Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2010–2013 DPC-RELUIS agreement. Period: 2010 – 2013.

Seismological Project S4 “Italian Strong Ground Motion Database”. Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2007–2009 DPC-INGV agreement. Period: 2008 – 2010.

Seismological Project S2 “Development of a dynamical model for seismic hazard assessment at national scale”. Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2007–2009 DPC-INGV agreement. Period: 2008 – 2010.

PRIN07 “Prediction of strong motion and generation of shaking maps in the near-fault region of an earthquake”. Role: investigator. Funded by the Ministry of Education, University and Research (MIUR) of Italy. Period: 2008 – 2010.

DPC-RELUIS “Development of displacement-based approaches for design and vulnerability assessment – Shallow and deep foundations” (RELUIS Line 4), Research Project no. 6, sub-project “Underground structures: rock tunnels and caverns”. Role: investigator. Funded by the Department of Civil Protection (DPC) under the 2005–2008 DPC-RELUIS agreement. Period: 2005 – 2008.

LESSLOSS “Risk Mitigation for Earthquakes and Landslides”, sub-project 11 “Earthquakes disaster scenario predictions and loss modelling for infrastructures”. Role: investigator. Funded by the European Union under the Sixth Framework Programme. Period: Sept. 2004 – Aug. 2007

ISCRA B Project PBES4HAS “Physics-based earthquake scenarios for hazard assessment in densely urbanized areas”. Role: investigator. Funded by CINECA, Italy. Period: May 2015 – May 2016.Grant: 74’000 Euro.

PRACE A HPC Project DNS4RISC “Deterministic Numerical ground motion Simulations for Risk hazard in Santiago de Chile”. Role: investigator. Funded by PRACE “Partnership for Advanced Computing in Europe”. Period: Sept. 2013 – Sept. 2014. Grant: 400’000 Euro.

LISA Project SISMA-URB “Ground shaking scenarios for advanced seismic hazard assessment analyses in urban areas by a high-performance computational code”. Role: investigator. Funded by CINECA and regione Lombardia, Italy, under the 2012–2014 LISA Initiative. Period: May 2013 – Apr. 2014. Grant: 10’000 Euro.

ISCRA C HPC project MAGNITUD “Massively pArallel Numerical sImulaTions of mUlti-scale seismic events”. Role: investigator. Funded by CINECA, Italy. Period: 2012 – 2013. Grant: 4000 Euro.

ADDITIONAL INFORMATION

Professional Affiliations

National Professional Qualification as Civil and Environmental Engineer

Referee Activity

- Bulletin of Earthquake Engineering
- Journal of Earthquake Engineering
- Soil Dynamics and Earthquake Engineering
- Bulletin of the Seismological Society of America
- Encyclopedia of Earthquake Engineering
- Geophysical Journal International
- Journal of Seismology
- Pure and Applied Geophysics
- Annals of Geophysics
- KSCE Journal of Civil Engineering
- Proceedings of 16th International Conference of Earthquake Engineering

Honors/Awards

- 2015: Best paper prize for the article entitled “Spatial variability of near-source seismic ground motion with respect to different distance metrics, with special emphasis on May 29 2012 Po Plain Earthquake, Italy”, by K. Hashemi, I. Mazzieri, R. Paolucci, and C. Smerzini ([C6]), awarded at the 7th International Conference on Seismology and Earthquake Engineering, Tehran, Iran, 2015.
- 2006: Carlo Maddalena Onlus prize for the best thesis in Civil, Environmental and Land Planning Engineering at Politecnico di Milano during the academic year 2005–2006.

Bibliometric Indices

- Scopus (last accessed Apr. 2018)
  H-index: 10
  Total number of documents: 23
  Total number of citations: 312
- Google Scholar (last accessed Apr. 2018)
  H-index: 11
  Total number of citations: 502
  Link: https://scholar.google.com/citations?user=W5K6o6IAAAAJ&hl=it

Main Research Interests

- Seismic hazard and risk assessment
- Numerical methods in elastodynamics
- Physics-based numerical scenarios of earthquake ground shaking
- Earthquake ground motion: characterization, selection and scaling
- Seismic actions for design
- Spatial variability of earthquake ground motion
- Seismic response of underground and bridge structures

Milano, June 2018