ROBERTO PAOLUCCI – SHORT CV – 2019

Roberto Paolucci is full Professor of Earthquake Engineering at the Civil and Environmental Engineering School of Politecnico di Milano, Italy.

Research activities

He has an experience of about 30 years of participation in different national and international research projects, mainly dealing with seismic hazard studies, geotechnical earthquake engineering, dynamic soil-structure interaction, high-performance computing in elastodynamics.
Among the most recent activities, he has recently coordinated different research projects and consultant activities for major international companies, such as:
- Project S4 “Italian strong motion database”, funded by the Italian Department of Civil Protection (2008-2011);
- Project SIGMA (Reducing uncertainties in the probabilistic seismic hazard analysis for critical facilities), funded by Electricité de France, Comité pour l’Energie Atomique, AREVA, ENEL (2012-2015);
- “Guidelines for seismic design of a pipeline in Central Italy”, funded by SNAM Rete Gas (2013-2014);
- “High-performance computing tools to produce physics-based earthquake ground shaking scenarios in large urban areas”, funded by MunichRe (2012-in progress);
- Project RS2 “Near-source effects on earthquake ground motion”, funded by the Italian Department of Civil Protection (2014-2018);
- Project SIGMA2, with funding from Swissnuclear (2017-2021);
- “Earthquake ground motion modelling from induced seismicity in the Groningen gas field”, funded by the Dutch Ministry of Economic Affairs and Climate Policy (2019).

International Research Awards

He received in 2000 the *Shamsher Prakash Award*, from the University of Missouri-Rolla, for young (under 40) researchers in earthquake geotechnical engineering, and, in 2006, the *Outstanding Paper Award* by the Earthquake Engineering Research Institute, California, for the paper “Displacement Specta for Long Periods”, co-authored by E. Faccioli and J. Rey, published in Earthquake Spectra, 2004.

Keynote/invited presentations

He has been keynote/invited speaker at several national and international conferences and workshops, where the most relevant subjects of his research activity were presented, including, in the last 5 years:
– “*Introducing Dynamic Nonlinear Soil-Foundation-Structure Interaction Effects in Displacement-Based Seismic Design*”, at the Int. Workshop “Design, Analysis and research related to highly non-linear soil-structure interaction”, Oakland, June 2013.
– “*High-Performance 3D Numerical Simulations for Seismic Scenarios: an Engineering Perspective*”, at the SIAM Conference on Mathematical and Computational Issues in the Geosciences. Padova, June 2013.
– “*Physics-based earthquake ground shaking scenarios in large urban areas*”, at the 2nd European Conference on Earthquake Engineering and Seismology, Istanbul, August 2014.
– “The 3D Numerical Simulation of Near-Source Ground Motion during the Marsica Earthquake, Central Italy, 100 years later”, at the 6th Int. Conference on Earthquake Geotechnical Engineering, Christchurch, November 2015.
- “3D physics-based numerical simulations: advantages and current limitations of a new frontier to earthquake ground motion prediction. The Istanbul case study”, at the 16th Europ. Conf. on Earthquake Engineering, Thessaloniki, Greece, 18-21 June 2018.

Present relevant memberships

He is a member of the Italian “Commissione Grandi Rischi”, the scientific-technical consulting committee of the Italian Department of Civil Protection, with the appointment of coordination of the task group on Seismic Risk.
He has been a member of the Project Team SC8.T1 (2016-2018), in charge of the revision and update of the Part 1 of Eurocode 8 (EN1998-1).

Selected recent publications

He is author or co-author of about 150 scientific papers, mostly published in international peer-reviewed journals. Among the most recent ones:

Pecker A., Paolucci R., Chatzigogos C., Correia A., and R. Figini (2014). The role of non-linear dynamic soil-foundation interaction on the seismic response of structures. *Bulletin of Earthquake Engineering*, 12: 1157-1176.

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

Paolucci R., Mazzieri I., Smerzini C. (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. Geophys. J. Int., 203: 2001–2020.

Faccioli E., Paolucci R., Vanini M. (2015). Evaluation of Probabilistic Site-Specific Seismic-Hazard Methods and Associated Uncertainties, with Applications in the Po Plain, Northern Italy. Bulletin of the Seismological Society of America, 105(5): 2787–2807..

Figini, R., Paolucci R. (2016) Integrated foundation–structure seismic assessment through non-linear dynamic analyses. Earthquake Engineering and Structural Dynamics, DOI: 10.1002/eqe.2790

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

Paolucci R., Gatti F., Infantino M., Smerzini C., Özcebe A.O., Stupazzini M. Broadband Ground Motions from 3D Physics-Based Numerical Simulations Using Artificial Neural Networks. Bulletin of the Seismological Society of America, 108 (3A): 1272-1286, 2018

Professional consultant activities

He directed, for several consulting companies in geotechnical engineering, seismic hazard assessment studies aimed at definition of seismic input for major industrial plants in different parts of the world, including analyses of site amplification, slope stability, liquefaction.
After the Italian earthquakes of 2009 and 2012, he was appointed by the Italian Legal Authority in the team of experts to investigate the reasons of collapse of several residential and industrial buildings.