

CARLO GIOVANNI LAI

Curriculum vitae

Full Professor of Geotechnical Engineering · University of Pavia · Department of Civil Engineering and Architecture
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EDUCATION

1998 **Ph.D. in Civil Engineering**, Georgia Institute of Technology. 1997 **M.Sc. in Engineering Science and Mechanics**, Georgia Institute of Technology. 1995 **M.Sc. in Civil Engineering**, Georgia Institute of Technology. 1988 **Five-year Laurea degree in Civil Engineering**, Politecnico di Torino.

ACADEMIC CAREER

Full Professor of Geotechnical Engineering at the University of Pavia since 2016 (**Associate Professor** 2010–2016). **Researcher** at the European Centre for Training and Research in Earthquake Engineering (Eucentre), Pavia (2003–2010); previously **scientific consultant** at Studio Geotecnico Italiano, Milan (1998–2003). Since 2024, **adjunct faculty** at the Indian Institute of Technology Madras. Research visits abroad as **Erskine Visiting Fellow** at the University of Canterbury (2016) and as **visiting scholar** at the Georgia Institute of Technology (2011), the University of Waterloo (2007) and the Weierstrass Institute for Applied Analysis and Stochastics (2002).

Pre-academic experience: international cooperation in Ethiopia (1990–1993) and professional practice (1988–1990).

RESEARCH INTERESTS

My main research interests lie in **geotechnical earthquake engineering** and **engineering seismology**, with particular emphasis on the theoretical modelling of mechanical wave propagation in geomaterials, the dynamic characterisation of soils through surface waves, the definition of the design earthquake at critical construction sites, the reliability-based analysis of local seismic site response, dynamic soil-structure interaction, and the multi-scale zonation of a territory for earthquake-induced soil liquefaction hazard.

SCIENTIFIC OUTPUT AND BIBLIOMETRIC INDICATORS

Author or co-author of over **250 scientific publications**, including two monographs and a software code for the geotechnical characterisation of soil deposits through Rayleigh wave analysis. Scopus: **h-index 28**, 2693 citations. Google Scholar: **h-index 35**, 5422 citations.

MAIN AWARDS AND HONOURS

Corresponding Member of the Accademia delle Scienze di Torino, Class of Physical, Mathematical and Natural Sciences, Section III – Engineering Sciences, 2026; **Erskine Visiting Fellowship** 2016, University of Canterbury; **Bishop Medal** 2003, Institution of Civil Engineers; **Outstanding Ph.D. Graduate Award** 1998, Georgia Institute of Technology; **Domenica Rea D'Onofrio Fellowship** 1994, Georgia Institute of Technology.

MAIN FUNDED RESEARCH PROJECTS (COORDINATION)

Scientific coordinator for the University of Pavia of the Italian national research project PRIN 2020 **GIANO** (2022–2025) «Assessment and mitigation of geo-hazard risk for the protection of cultural heritage». Principal investigator for the University of Pavia of the Italian national research project **DPC-RELUIS** (2019–2026) funded by the Italian Department of Civil Protection through the RELUIS Consortium, in the work packages «Local seismic site response analysis» and «Code contributions to the definition of seismic action». Principal investigator of the European H2020 project **LIQUEFACT** (2016–2019) «Assessment and mitigation of liquefaction potential in Europe». Scientific coordinator for Eucentre of the European FP7 project **REAKT** (2011–2014) «Strategies and tools for real-time earthquake risk reduction».

INSTITUTIONAL AND SCIENTIFIC APPOINTMENTS

Advisor of the Risk Scenarios Department of the Eucentre Foundation, Pavia (since 2018); member of the **PIANC Working Group 225** «Seismic design guidelines for port structures» (2020–2026); of the **INGV working group** for the revision of the seismic hazard map of the Italian territory (2015–2020); of the ministerial committee for the revision of the explanatory Circular to the **Italian Building Code** (2014–2017); of the ministerial committee for the revision of the **Italian Building Code** (2010–2012); of the faculty board of the **international doctoral programme** «Understanding and Managing the Extremes» at IUSS Pavia (since 2011); of the executive committee of **TC 202** «Transportation Geotechnics» of the ISSMGE (2010–2017).

Member of the editorial boards of the **Rivista Italiana di Geotecnica** (since 2016), of the **Progettazione Sismica** series of the Eucentre Foundation (since 2008) and of the international journal **Transportation Geotechnics** (Elsevier, 2013–2018). Member of the International Society for Interaction of Mechanics and Mathematics (**ISIMM**) since 2003 and member of ISIMM executive committee since 2026, of the Italian Geotechnical Association (**AGI**) since 2003 and of the Geotechnical Extreme Events Reconnaissance Association (**GEER**) since 2011.

INVITED LECTURES AT INTERNATIONAL CONFERENCES

Keynote or invited speaker, among others, at the **Cubrinovski International Symposium** on Geotechnical Earthquake Engineering, University of Canterbury, Christchurch, New Zealand (2026); at the **7th International Working Group on Rotational Seismology Meeting**, Opole University of Technology, Poland (2025); at the 9th Conference of the Croatian Geotechnical Society – **SISAK 2023**, Sisak, Croatia (2023); at the International Symposium on Geotechnical Aspects of Heritage Structures – **ISGHS-2019**, Chennai, India (2019); at the XXV International Conference of Geotechnics of Torino – **CGT 2018** (2018); at the 6th International Conference on Earthquake Geotechnical Engineering – **6ICEGE**, Christchurch, New Zealand (2015); at the **Rapid-Fire Conference**, Massachusetts Institute of Technology, Boston, USA (2015); at the 2nd International Conference on Continuous Media with Microstructure – **CMwM2015**, Łagów, Poland (2015); at the **ALERT-Geomaterials Workshop** on Soil-Structure Interaction, Aussois, France (2013).

PARTICIPATION IN POST-EARTHQUAKE RECONNAISSANCE MISSIONS

Member of the team of experts for the post-earthquake reconnaissance in the **Blenheim** region (New Zealand) following the Kāikōura earthquake of 14 November 2016; member of the mission of the Italian Department of Civil Protection and of the Ministry for Cultural Heritage for the post-earthquake reconnaissance at the archaeological site of **Bam** (Iran), struck by the earthquake of 26 December 2003 (February 2004).

TEACHING ACTIVITY

Lecturer in charge at the University of Pavia of the courses «Geotechnical Engineering» (Bachelor's degree), «Geotechnical Earthquake Engineering» and «Propagation of Mechanical Waves in Deformable Solids» (Master's and Ph.D. degrees). **Supervisor** of 15 Ph.D. dissertations and over 50 Master's theses. **Lecturer** in international courses and schools at the University of Canterbury, IIT Madras, Georgia Tech and other European universities. **Coordinator of post-graduate advanced schools** «Propagation of Mechanical Waves in Deformable Solids and Meta-Materials» (University of Pavia, September 2022) and «Surface Waves in Geomechanics: Direct and Inverse Modeling for Soils and Rocks» (International Centre for Mechanical Sciences – CISM, Udine, September–October 2004, with K. Wilmanski).