

Giulia M.B. VIGGIANI

PERSONAL DETAILS

Date of Birth

Nationality

Address

[REDACTED]

EDUCATION

- 1992 PhD in Geotechnical Engineering, City University, London, UK
Thesis: Small strain stiffness of fine grained soils
- 1989 *Laurea in Ingegneria Civile Idraulica (cum laude)*, Università degli Studi di Napoli Federico II
Thesis: *Criteri di interpretazione delle prove RC/TS* (Interpretation criteria of RC/TS tests)

ACADEMIC CAREER

- 2017 – Professor of Infrastructure Geotechnics, University of Cambridge
- 2007 – 17 *Professore Ordinario* (Full Professor) of Geotechnics, Università di Roma Tor Vergata
- 2001 – 07 *Professore Associato* (Associate Professor) of Geotechnics, Università di Roma Tor Vergata
- 1994 – 01 *Ricercatore* (Lecturer), Università di Roma Tor Vergata
- 1993 – 94 Post-doc Research Fellow, Università di Roma La Sapienza

VISITING POSITIONS

- 2015 Academic Visitor, Cambridge University Engineering Department, UK (2 months)
- 2005 MTS Visiting Professor of Geomechanics, University of Minnesota, Minneapolis, USA (6 months)
- 2000 Scientific Visitor, Max Planck Institute for Mathematics in the Sciences, Leipzig, DE (winter semester 2000/01)
- 1996 – 97 Academic Visitor, Imperial College of Science Technology and Medicine, London, UK (18 months)

INVITED PRESENTATIONS

Invited and Keynote Lectures

- 2019 Key Note Lecture Mott McDonald Geotechnical Forum, Cambridge, UK
- 2017 15th BGA Touring Lecture, Belfast, Birmingham, Southampton, UK
- 2016 13th Int. Conf. Underground Construction Prague 2016 and 3rd Eastern European Tunnelling Conference EETC 2016, Prague, Czech Republic
- 1st Int. Conf. on Natural Hazards and Infrastructure: Protection, Design, Rehabilitation, Crete, Greece
- 2015 XVI ECSMGE on Geotechnical engineering for infrastructure and development, Edinburgh, UK
Annual S. Barbara Lecture, Greek Tunnelling Society, Athens, Greece
- 2014 Joint BGA & BTS Evening Event, London, UK
- 2013 MADE Expo, Milano, Italy
- 2012 Maddmaths Incontra (with A. Garroni) Roma, Italy
Baltic Piling, Tallin, Estonia
- 2nd Int. Conf. on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy (with S. Rampello & L. Callisto)
- 2011 Tunnelling 2020, Hong Kong
- 2007 International Geotechnical Conference on: Geotechnical Challenges in Megacities, Moscow

- 2006 Aspetti geotecnici della progettazione alla luce del nuovo quadro normativo europeo, Ordine degli Ingegneri della Provincia di Palermo, Italy
IAEG2006 on Infrastructures for the city and its region, Nottingham, UK
- 2004 Dipartimento di Ingegneria Civile ed Ambientale, Università di Perugia, Italy
Commissione di Studio Progetti di Sviluppo dell'Area dello Stretto, Università di Messina, Italy
- 2002 XV EYGEC, Trinity College, Dublin, Ireland
- 1997 Dipartimento di Ingegneria Civile, Università di Firenze
- 1994 Joint Meeting of BGS and EGGs on Measurement of Static Stiffness of Soils and Rocks using Dynamic Methods, ICE, London, UK

General and Session Reports

- 2013 TC215 Int. Symp. on Coupled Phenomena in Environmental Geotechnics - Stability and settlement analysis of landfills and natural slopes, Torino, Italy
- 2011 XV ECSMGE on Geotechnics of Hard Soils – Weak Rocks, Main Session 6: Role of Geotechnics for the Protection of the Environment, Athens, Greece
- 2002 XXI Convegno Italiano di Geotecnica on Opere Geotecniche in Ambiente Urbano - Opere in Sottterraneo (with G. Barla), L'Aquila, Italy
- 2001 CIRIA Int. Conf. on Response of buildings to excavation-induced ground movements, Session 6: Effects of building stiffness, different configurations and time, London, UK

Panels and Presentations at Workshops and Conferences

- 2019 Engineering Resilient Infrastructure, pre-Rankine Seminars, Imperial College, London
- 2017 Living with Earthquakes: Towards a model for Amandola and the Marche Region: the geotechnical context, Jesus College, Cambridge, UK
- 2016 XXIV CGT on Design, Construction & Control of Soil Improvement Systems, Torino, Italy
- 2015 ALERT Geomaterials Workshop on How Should We Teach Geomechanics? Aussois, France
4th Int. Workshop on Dynamic interaction of soil and structure, DISS 2015, Roma, Italy
- 2012 ALERT Geomaterials Workshop on Geomechanics of underground structures, Aussois, France
- 2009 XXII CGT on Reduction and Control of Surface Settlement Induced by Shallow and Deep Excavations (with R.J. Mair & Menkiti C.O.), Torino, Italy
- 2007 XXIII Convegno Italiano di Geotecnica, Previsione e controllo del comportamento delle opere, Abano Terme, Italy
XIV ECSMGE on Geotechnical Engineering in urban environments, Madrid, Spain
- 2006 2nd Int. Workshop on Characterisation and Engineering Properties of Natural Soils, Singapore
- 2005 5th IS on Geotechnical Aspects of Underground Construction in Soft Ground, Amsterdam, The Netherlands
- 2004 XXII Convegno Italiano di Geotecnica on Sicurezza ed adeguamento delle Opere Esistenti, Palermo, Italy
- 2003 Int. Workshop on Constitutive Modelling & Analysis of Boundary Value Problems in Geotechnical Engineering (with M. Cecconi, A. De Simone, & C. Tamagnini), Napoli, Italy
ALERT Geomaterials Workshop on Geomechanics for Transportation Engineering, Aussois, France
Workshop on Characterisation and Engineering Properties of Natural Soils, Napoli, Italy
- 1999 2nd Int. Symp. on Pre-Failure Deformation Characteristics of Geomaterials (with Rampello S.), Torino, Italy
- 1998 2nd Int. Symp. on Hard Soils – Soft Rocks (with Stallebrass S.E. & Rampello S.), Napoli, Italy
- 1994 Workshop on Stiffness at Small Strain of Geomaterials and its Measurement, Tokyo, Japan
- 1991 Int. Workshop on Experimental Characterisation and Modelling of Soils and Soft Rocks, Napoli, Italy

Seminars and Colloquia

- 1992 Building Research Establishment, Garston, UK
- 1994 Cambridge University Soil Mechanics Colloquia, Cambridge, UK
- 1995 Department of Civil Engineering, Northwestern University, Evanston, Illinois, USA

- 1996 Laboratoire 3-S, Université Joseph Fourier, Grenoble, France
Geotechnical Engineering Research Centre, City University, London, UK
- 1997 Soil Mechanics Section Colloquia, Imperial College, London, UK
Meetings of the Belgian Geotechnical Society, University of Louvain la Neuve, Belgique
Université Laval, Quebec, Canada
- 2005 Warren Lecture Series, Department of Civil Engineering, Minneapolis, USA
Università della Calabria, Cosenza, Italy
- 2012 Università di Perugia, Italy
- 2014 MOMA Seminar, School of Mathematics, Roma, Italy
- 2018 Oxford University Civil Engineering Seminars, Oxford, UK

RESEARCH THEMES

Equipment development
 Experimental procedures and interpretation of laboratory and *in situ* tests
 Mechanical behaviour of soils and soft rocks at small strain
 Geotechnical characterisation and mechanical properties of natural deposits
 Particle breakage in granular material
 Underground construction
 Remedial and mitigation measures (compensation grouting, barriers)
 Artificial Ground Freezing
 Soil-structure interaction
 Performance based design of geotechnical structures under seismic actions

RESEARCH FUNDING

National Research Agencies

- 1992 – 94 MURST ex 40%: *Comportamento meccanico dei terreni argillosi nei riguardi della stabilità dei pendii* (Mechanical behaviour of clayey soils for the stability of slopes)
- 1995 – 96 Progetto Coordinato di Ricerca CNR: *Osservazione e modellazione del comportamento di argille consistenti a piccole e medie deformazioni* (Experimental observation and modelling of the behaviour of stiff clays at small strain)
- 1995 – 97 MURST ex 40%: *Modellazione dei pendii per la progettazione degli interventi di stabilizzazione* (Slope modelling for the design of stabilisation measures)
- 1998 – 99 PRIN1997 – 9708266704_005: *Modelli per le verifiche di sicurezza dei pendii* (Models for the stability analysis of slopes)
- 2002 – 03 PRIN2001 - 2001087728_005: *Analisi e modellazione dei caratteri cinematici dei pendii in materiali piroclastici* (Analysis and modelling of the kinematics of pyroclastic slopes)
- 2002 – 03 Research Contract with S.T.A.: *Studio tecnico-scientifico dei problemi di interazione tra le opere di linea e l'ambito monumentale circostante lungo la tratta S. Giovanni - Piazza Venezia della Linea C della Metropolitana di Roma* (Technical and scientific study of the interaction between Line C of Roma Underground and the monumental environment in the S. Giovanni – Piazza Venezia stretch)
- 2008 – 10 PRIN2007 – 2007MFC3XT_002: *Effetto delle azioni sismiche sulla stabilità dei pendii e sul comportamento di scavi e gallerie* (Effects of seismic actions on the stability of slope and on the behaviour of urban open excavations and tunnels)
- 2005 – 08 Progetto di Ricerca DPC – ReLUIS. Linea di ricerca 6: *Metodi innovativi per il progetto di opere geotecniche e la valutazione della stabilità dei pendii* (Innovative methods for the seismic design of geotechnical structures and the assessment of slope stability)
- 2010 – 13 Progetto di Ricerca DPC – ReLUIS. Macrotema MT3: *Opere di sostegno* (Retaining Structures)
- 2014 – 15 Progetto di Ricerca DPC - ReLUIS. Macro Tema: *Gallerie in Ambito Urbano* (Urban Tunnels)
- 2015 – 17 Progetto di Ricerca Regione Lazio - FILAS-RU-2014-1180: *FROZEN - Indagine sperimentale del comportamento meccanico di terreni artificialmente congelati* (Experimental investigation of the behaviour of artificially frozen ground)

European Research Agencies

- 1995 – 98 British-Italian Partnership Programme for Research and Higher Education in co-operation with City University, London, and Napoli Federico II
- 2011 – 12 7th Framework Programme - Capacities Specific Programme Research Infrastructures Project no: 227887- Project: PROPWALL: Centrifuge study of the seismic performance of propped flexible retaining walls embedded in saturated sand
- 2012 – 17 7th Framework Programme - Theme NMP.2011.4.0-2. Collaborative Project: NeTTUN New Technologies for Tunnelling and Underground Works. Grant agreement no: 280712

EDITORIAL

Author or co-author of **30** Journal Papers, **70** Peer Reviewed Conference Papers, **30** Short Papers and Communications, **5** Book Chapters, and **19** Technical Reports, and has translated into the Italian Language **3** Technical Books (see separate List of Publications)

- 2019 Editor of the Proceedings of the 2nd International Conference on Smart Infrastructure and Construction, ICSIC2019, held in Cambridge, UK, 8–10 July 2019
- 2018 – Member of the Editorial Board of Gallerie e Grandi Opere Sotterranee
- 2017 – Member of the Geotechnique Advisory Panel
- 2016 – Member of the Editorial Board of Rivista Italiana di Geotecnica (RIG)
- 2013 – Member of the Editorial Board of Journal of Geo-Engineering Sciences
- 2011 Editor of the Proceedings of the 7th International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground, held in Roma, Italy, 17–19 May 2011
- 1999 – 01 Director (with A. De Simone) of the Book Series “Fonti”, Hevelius, Benevento
- 1992 Editor of Written Report of Discussion Session 1a: Laboratory Testing, X ECSMFE, Florence

Reviewer for many international journals of soil mechanics and geotechnical engineering, including: ASCE, Canadian Geotechnical Journal, Engineering Geology, Géotechnique, Géotechnique Letters, Geotechnical Engineering, ASTM Geotechnical Testing Journal, RIG, Rock Mechanics and Rock Engineering, Soils & Foundations, Soil Dynamics & Earthquake Engineering, and Acta Geotechnica

HONOURS AND AWARDS

- 2012 ICE TK Hsieh Award for a paper published in Géotechnique in 2012
- 2005 Prize for best presented paper at the 5th IS on Geotechnical Aspects of Underground Construction in Soft Ground, Amsterdam
- 2004 AGI prize for best presented paper at the XXII Convegno Italiano di Geotecnica, Palermo
- 2000 Max-Planck-Gesellschaft Bursary for winter semester 2000/01
- 1995 EC bursary to participate to ISRM Colloquium Mundanum on Chalk and Shales, Brussels
- 1989 SERC-CASE award in co-operation between City University, London and Building Research Establishment, Garston

ORGANISATION OF CONFERENCES AND SYMPOSIA

- 2020 TC204 IS-Cambridge2020 on 'Geotechnical Aspects of Underground Construction in Soft Ground', Cambridge, UK
- 2019 Second International Conference on Smart Infrastructure and Construction, ICSIC2019, 8-10 July 2019, Churchill College, Cambridge, UK
- 2019 Second International Conference on the Material Point Method for Modelling Soil–Water–Structure Interaction, MPM2019, 8 – 10 January 2019, University of Cambridge, UK
- 2016 13th Int. Conf. Underground Construction Prague 2016 and 3rd Eastern European Tunnelling Conference EETC 2016, Prague, Czech Republic

- 2016 3XV Int. Workshop on Tunnelling and Underground structures, Napoli, Italy
- 2016 IV International Workshop on Modern Trends in GeoMechanics, Assisi, Italy
- 2015 ISRM International Workshop on Volcanic Rocks & Soils, Ischia, Italy
- 2011 TC28 IS-Roma2011 on 'Geotechnical Aspects of Underground Construction in Soft Ground, Roma, Italy
- 1996 ISRM International Symposium Eurock-96 on Prediction and Performance in Rock Mechanics and Rock Engineering, Torino, Italy

SERVICE

- 2007 – Head of the Board of Studies in Civil and Environmental Engineering, Roma Tor Vergata
- 2000 – Erasmus Coordinator For Civil Engineering, Roma Tor Vergata
- 2011 – Member of the Board of the Dipartimento di Ingegneria Civile e Ingegneria Informatica, Roma Tor Vergata
- 2014 – 15 Referee FWO Research Foundation - Flanders
- 2007 – 11 Head of the Board of Studies in Civil Engineering, Roma Tor Vergata
- 2011 – 12 Member of the Examining Committee of the International Master in Méchanique, Energétique et Ingégneries, Université Joseph Fourier Grenoble, France
- 2007 – 08 Member of the Examining Committee of the International Master in Méchanique, Energétique et Ingégneries, Université Joseph Fourier Grenoble, France
- 2000 – External Examiner for PhD at Roma La Sapienza, Napoli Federico II, University of Cambridge, University College Dublin

TEACHING

Tutorials

- 1996 – 97 Laboratory tutorials for the Master in Geotechnical Engineering, Imperial College
- 1992 – 94 Tutorials for *Geotecnica* (Geotechnical Engineering), Roma La Sapienza
- 1989 – 92 Laboratory tutorials for Soil Mechanics and Geotechnical Engineering, City University

MEng Courses, Università di Roma Tor Vergata

- 2003 – Scavi e Opere di Sostegno (Earth Pressures and Earth Retaining Structures)
- 2010 – 13 *Fondazioni* (Foundation Engineering)
- 2006 – 11 *Geotecnica Sismica* (Geotechnical Earthquake Engineering)
- 2000 – 06 *Indagini e Misure Geotecniche* (Geotechnical Monitoring and Site Investigation)
- 1997 – 00 *Stabilità dei Pendii* (Slope Stability)

Series of Lectures within MEng Courses outside Roma Tor Vergata

- 2004 Geotechnical Engineering, Politecnico di Bari
- 2003 – 05 Foundation Engineering, Napoli Federico II
- 2003 Geotechnics for Land Management, Perugia

Series of Lectures within Master Universitari II Livello (MU)

- 2019 Subsidence phenomena induced by excavation, interaction with existing structures/infrastructure, MU in Tunnel Engineering, Politecnico di Milano
- 2017 Subsidence phenomena induced by excavation, interaction with existing structures/infrastructure, MU in Tunnel Engineering, Politecnico di Milano
- 2014 Tunnel Design, MU in Geotechnical Design, Roma La Sapienza
- 2011 Open excavations, MU in *Direzione dei lavori e del cantiere di restauro architettonico e archeologico*, Università di Roma Tor Vergata
- 2005 Tunnel Design, MU in Geotechnical Design, Roma La Sapienza

PhD Courses

- 2007 Deep excavations and tunnelling, PhD in Geotechnical Engineering, Roma La Sapienza
- 2005 Constitutive Modelling in Geotechnics, PhD in Building Engineering, Napoli Federico II

Continuing Education Courses

- 1997 CISM-DESEG Course on Geotechnical Engineering Problems in the Urban Environment, Udine
- 1998 Ordine degli Ingegneri Provincia Potenza
- 2010 Scuola Alta Specializzazione e Centro Studi Manutenzione e Conservazione Centri Storici in Territori Instabili, Spoleto
- 2012 ITACET Training Course Mechanised Tunnelling in Urban Areas, Roma La Sapienza

SUPERVISION OF RESEARCH

PhD Students

- 2020 – D. Constable. Numerical analyses of geothermal structures
- 2019 – A. Alagha. Physical and numerical modelling of the interaction between mechanised tunnelling and deep foundations in clay
- 2018 – Z. Katsanevaky. Physical and numerical modelling of deep foundations for wind turbines
- 2018 – A. Fusco. On the behaviour of anchored sheet pile walls under seismic actions
- 2015 – 19 A. Guidi. Advanced numerical modelling of mechanised tunnelling
M. Morigi. Soil structure interaction under seismic actions in saturated soils
G. Guida. DEM modelling of coarse grained materials with crushable grains
- 2009 – 13 E. Tudisco. Full-field characterization of localized deformation and damage in soft granular rock
- 2006 – 10 R. Conti. Physical and numerical modelling of flexible retaining structures under seismic actions
- 1999 – 01 M. Cecconi. Structural features and mechanical behaviour of a pyroclastic soft rock

MEng Students

- 2019 E. Wong. Interactions between Thames Tideway tunnel and existing bridge and tunnel infrastructure
D. Constable. Numerical analyses of geothermal piles
- 2018 Z. Katsanevaky. Numerical modelling of piled foundations under combined loading
- 2015 A. Guidi.
M. Morigi. On the filtering effect induced by embedded foundations
M. Bartoli. Development and set up of a stress path triaxial system for large diameter samples
G. Guida. DEM modelling of granular materials
- 2014 V. Mastronardi. Centrifuge modelling of gravity retaining walls under seismic actions
G. Rebutini. FEM modelling of mechanised tunnelling with Arbitrary Lagrangian Eulerian approach
- 2013 A. Savioli. Physical modelling of the seismic behaviour of flexible retaining walls in saturated sand
C. Albori. Numerical analysis of the behaviour of a single pile in sand under combined vertical and horizontal loading
G. Zulian. Numerical analysis of the behaviour of a single pile in clay under combined vertical and horizontal loading
M.P. Riggio. Pseudo-static analysis of the critical failure mechanisms of gravity retaining walls
F. Perugini. Physical and numerical modelling of tunnels under seismic actions
F. Costanzo & S. Santilocchi. Numerical analysis of the interaction between soil, pile, and raft in cohesive soils
Y. Grossi. On the filtering effect induced by piled foundations
- 2012 S. Mariotti. Numerical modelling of tunnels under seismic actions
S. Cavallo. Numerical and analytical modelling of the displacements of gravity retaining walls under seismic actions
L. Pettirossi. Design of the foundations of the new Fire Station in Imola
- 2011 B. Aluisi. Numerical analysis of the installation effects of diaphragm walls: the example of Fori Imperiali station
F. Burali d'Arezzo. Numerical modelling of flexible retaining structures under seismic actions
- 2010 A. Martucci. Geotechnical design of excavations in the urban environment: the example of the Alfiere Towers in Roma
G. Macaro. Displacements induced by deep open excavations: a numerical study

- 2009 E. Tudisco. On the use of ultrasonic and X-ray tomography in the experimental investigation of localised deformations
- 2008 F.L. Restaino. Characterising strain localisation in sandstone by full field measurements
- 2007 G. Zoppo. Experimental observation of the mechanical behaviour of artificially frozen pyroclastic soils
- F. Buono. Pseudostatic analysis of flexible retaining structures under seismic actions
- G. Santinelli. Numerical modelling of mechanised tunnelling
- 2006 R. Conti. 3D numerical modelling of the installation of diaphragm walls in coarse grained soils
- D. De Santis. Experimental observations and numerical analysis excavation under Artificial Ground Freezing: the example of the platform tunnels of Piazza Garibaldi station
- 2005 R. Roberto. Numerical modelling of the interaction between the Metro C tunnels and the Acquedotto Felice at Piazza Lodi
- M. Lepri. 3D numerical modelling of the Amba Aradam station of Line C of Roma Underground
- S. Castellani. 3D numerical modelling of the excavation of Piazza Garibaldi station and comparison with observed behaviour
- 2003 C. Venturi. FD numerical modelling of mechanised tunnelling
- S. Guidi. 2D numerical analysis of shallow tunnelling
- M. Moscato. 3D numerical modelling of installation effects of diaphragm walls
- V. Schembri. Assessment of the effects of Metro C tunnelling on the Aurelian walls
- C. Gagliardi. Experimental investigation of the mechanical behaviour of an artificial material with crushable grains
- M. Ricci. 3D numerical modelling of the interaction between the Metro C tunnels and the Aurelian walls at Porta Metronia
- M. Ticconi. Numerical modelling of the interaction between the Metro C tunnels and Porta Asinaria
- 2001 G. Spellucci. Experimental investigation of the mechanical behaviour of a pyroclastic rock
- S. Sacconi. Design and set up of a hydraulic stress path triaxial apparatus
- 1999 M. Cecconi. Swelling behaviour of clays
- L. Fazi. Numerical analysis of tunnelling induced displacements
- M. Oliva. Centrifuge modelling of soil structure interaction in tunnelling
- F. Carloni. Physical and numerical modelling of block toppling

BEng Students

- 2009 A. Agliocchi. A field trial of compensation grouting in Roma: interpretation
- 2006 F.L. Restaino. Numerical back analysis of the results of a field trial of artificial ground freezing
- E. De Angelis. Mechanical characterisation of pyroclastic deposits of the Colli Albani: the Conglomerato Giallo
- F. Gentili. Mechanical characterisation of pyroclastic deposits of the Colli Albani: the Pozzolana Superiore
- 2005 F. Italia. Performance of pre-stressed anchors in pyroclastic soils
- 2003 G. Zoppo. The design of piles as settlement reducers: an application to the foundations of two reservoirs in Napoli

MEMBERSHIPS

- 2014 – ISSMGE Technical Oversight Committee, supervising and coordinating the activities of the Technical Committees of the ISSMGE
Liaison member with ISSMGE Innovation and Development Committee (IDC) chaired by D. Zekkos
- 1996 – 14 ISSMGE TC204 'Underground Construction in Soft Ground'
Chairman of TC204 WG on Guidelines for Comparing Field or Physical Modelling with Numerical Simulations
- 2011 – Technical Committee for the Public Works of Lazio, Abruzzi and Sardinia

- 2000 – *Ordine degli Ingegneri* (Italian Institution of Civil Engineers) - Albo degli Ingegneri della Provincia di Napoli n. 13998
- 1989 – Chartered Civil Engineer
- 1989 – Member of Italian Geotechnical Association (AGI) and ISSMGE

January 2019

Griggianni