DR GAETANO ELIA

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1. Brief Narrative Summary

Dr Gaetano Elia gained his PhD in Geotechnical Engineering from the Technical University of Bari (Italy) in 2004. He was appointed a lectureship in Geotechnical Engineering in the School of Civil Engineering and Geosciences at Newcastle University in 2009. Since 2017 he is Visiting Fellow at Newcastle University and, from 2019, he is Associate Professor at the Technical University of Bari. His current research is mainly focused on the numerical assessment of the resilience of geotechnical structures during extreme events, including the analysis of natural and engineered slopes subjected to extreme rainfalls and the performance-based design of shallow foundations, excavations and tunnels in static and dynamic conditions. Dr Elia acts as reviewer for a number of international journals and for EPSRC-UK. He is member of the Earthquake Engineering Field Investigation Team (EEFIT), the Society for Earthquake and Civil Engineering Dynamics (SECED), the British Geotechnical Association (BGA) and the Italian Geotechnical Association (AGI).

2. Career History and Education

Degree in Civil Engineering, Magna cum Laude, Technical University of Bari, Italy, 2000

Chartered Civil Engineer, Italy, 2001

Ph.D. in Geotechnical Engineering, Technical University of Bari, Italy, 2004

Research Associate, Dept. of Environmental Engineering, Technical University of Bari, Italy, 2005-2009

Honorary Research Associate, School of Engineering, Dept. of Civil Engineering, University of Birmingham, UK, 2005-2007

Lecturer in Geotechnical Engineering, School of Civil Engineering and Geosciences, Newcastle University, UK, 2009-2017

Italian National Qualification as Associate Professor in Geotechnics, from 24/11/2014 to 24/11/2023

Tenure Track Associate Professor (RTDB) in Geotechnics at the Technical University of Bari, Italy, 2017-2019

Visiting Fellow at Newcastle University, UK, 2017-present

Associate Professor in Geotechnics at the Technical University of Bari, Italy, 2019-present

3. Selected Research Grants

2005-2007: **Member of the research unit** coordinated by Prof. Amorosi (Technical Univ. of Bari) in the research project funded by the Italian Ministry of University and Scientific Research (**PRIN-MIUR 2005/07**) on the "Monitoring and stability evaluation of earth dams subjected to dynamic loading"

2005-2008: **Member of the research unit** coordinated by Prof. Amorosi (Technical Univ. of Bari) in the research project funded by the University Network of Seismic Engineering Laboratories (**RELUIS 2005/08**) on "Slope stability in seismic areas" (Research project 6, Research line 6.3)

2007-2009: **Member of the research unit** coordinated by Prof. Cotecchia (Technical Univ. of Bari) in the research project funded by the Apulia Region (**PS_119**) on "Landslide risk evaluation"

2011-2016: **Co-Investigator** in the EEFIT "Earthquake Mission Grant: Funding for Improved Response and Dissemination" (**EP/I01778X/1**)

2012-2016: **Co-Investigator** and **Working Group Leader** in the **COST Action TU1202** "Impact of Climate Change on Engineered Slopes for Infrastructure" - European Cooperation in the field of Scientific and Technical Research

2017-2019: **Member of the research unit** coordinated by Prof. Cotecchia (Technical Univ. of Bari) in the research project funded by the Italian Ministry of University and Scientific Research (**PRIN-MIUR 2015**) on the "Innovative monitoring and design strategies for sustainable landslide risk mitigation"

4. Selected Publications

Amorosi A., Elia G. (2008), *Analisi dinamica accoppiata della diga Marana Capacciotti*, **Rivista Italiana di Geotecnica**, 4, 78-96.

Federico A., Elia G., Fidelibus C. (2009), *Previsione del tempo di occorrenza di una frana*, **Giornale di Geologia Applicata**, 11, 3-13.

Federico A., Elia G., Murianni A. (2009), *The at rest earth pressure coefficient prediction using simple elasto-plastic constitutive models*, **Computers and Geotechnics**, 36(1-2), 187-198.

Amorosi A., Boldini D., Elia G. (2010), *Parametric study on seismic ground response by finite element modelling*, **Computers and Geotechnics**, 37(4), 515-528.

Elia G., Amorosi A., Chan A.H.C., Kavvadas M. (2011), *Fully coupled dynamic analysis of an earth dam*, **Géotechnique**, 61(7), 549-563.

Elia G., Amorosi A., Chan A.H.C., Kavvadas M. (2011), *Numerical prediction of the dynamic behaviour of two earth dams in Italy using a fully-coupled non-linear approach***, International Journal of Geomechanics - ASCE**, 11(6), 504-518.

Federico A., Popescu M., Elia G., Fidelibus C., Internò G., Murianni A. (2012), *Prediction of time to slope failure: a general framework*, **Environmental Earth Sciences**, 66(1), 245-256.

Elia G., Rouainia M. (2013), *Seismic performance of earth embankment using simple and advanced numerical approaches*, **Journal of Geotechnical and Geoenvironmental Engineering - ASCE**, 139(7), 1115-1129.

Elia G., Rouainia M. (2014), *Performance evaluation of a shallow foundation built on structured clays under seismic loading*, **Bulletin of Earthquake Engineering**, 12(4), 1537-1561.

Rossetto T. *et al*. (2014), *The value of multiple earthquake missions - the EEFIT L'Aquila Earthquake experience*, **Bulletin of Earthquake Engineering**, 12(1), 277-305.

Elia G. (2015), *Site Response for Seismic Hazard Assessment*, In: **Encyclopedia of Earthquake Engineering - Springer** (DOI: 10.1007/978-3-642-36197-5_241-1).

Lollino P., Cotecchia F., Elia G., Mitaritonna G., Santaloia F. (2016), *Interpretation of landslide mechanisms based on numerical modelling: two case-histories*, **European Journal of Environmental and Civil Engineering**, 20(9), 1032-1053.

Elia G., Rouainia M. (2016), *Investigating the cyclic behaviour of clays using a kinematic hardening soil model*, **Soil Dynamics and Earthquake Engineering**, 88, 399-411.

Rouainia M., Elia G., Panayides S., Scott P. (2017), *Non-linear finite element prediction of the performance of a deep excavation in Boston Blue Clay*, **Journal of Geotechnical and Geoenvironmental Engineering - ASCE**, 143(5) (doi: 10.1061/(ASCE)GT.1943-5606.0001650).

Elia G. *et al*. (2017), *Numerical modelling of slope-vegetation-atmosphere interaction: an overview*, **Quarterly Journal of Engineering Geology and Hydrogeology**, 50, 249-270.

Elia G., Rouainia M., Karofyllakis D., Guzel Y. (2017), *Modelling the non-linear site response at the LSST downhole accelerometer array in Lotung*, **Soil Dynamics and Earthquake Engineering**, 102, 1-14.

Cabangon L.T., Elia G., Rouainia M. (2018), *Modelling the transverse behaviour of circular tunnels in structured clayey soils during earthquakes*, **Acta Geotechnica** (doi:10.1007/s11440-018-0650-9).

5. Invited Seminars

2012: **Panel Lecture** on "Recent advances in site response analysis" at the Imperial College London, UK - SECED (The Society for Earthquake and Civil Engineering Dynamics) Meeting

2012: **Invited Lecture** on "Seismic performance-based analysis of geotechnical structures" - NGG (Northern Geotechnical Group) Meeting, Newcastle, UK

2012: **Invited Lecture** on "Advanced simulations of one- and two-dimensional dynamic geotechnical problems" - Dundee University, UK

2013: **Panel Lecture** on "EEFIT Return Mission to the L'Aquila Earthquake of 2009" at the Institution of Structural Engineers, London - Joint EEFIT/SECED/IStructE Meeting, London, UK

2013: **Invited Lecture** on "Recent advances in site response analysis" - BGS Edinburgh, UK

2015: **Invited Lecture** on "Seismic ground response at Lotung (Taiwan)" - University College London, UK

2016: **Invited Lecture** on "Investigating clay cyclic behaviour using a kinematic hardening soil model" - Cambridge University, UK

2016: **Panel Lecture** on "Numerical modelling of slope-vegetation-atmosphere interaction: an overview" - ENPC, Paris, France

2018: **Invited Lecture** on "Fundamentals of modelling clay macro-behaviour" - 10th ALERT Olek Zienkiewicz Winterschool 2018, Technical University of Bari, Italy

2019: **Invited Lecture** on "Advanced dynamic analyses in geotechnical earthquake engineering: opportunities and challenges" - Hellenic Society for Soil Mechanics and Geotechnical Engineering (HSSMGE), Athens, Greece.

6. Professional Bodies and Responsibilities

2006: **Organising Committee Member** of the 5th Italian Conference of Researchers in Geotechnical Engineering (V CNRIG) "Fondazioni Superficiali e Profonde", 15-16 September 2006, Bari, Italy

2013: **Organising Committee Member** of the SECED Young Engineers Conference, 4 July 2013, Newcastle, UK

2013 – 2017: Northern Geotechnical Group (NGG - UK) **Committee Member**

2014 – 2017: Earthquake Engineering Field Investigation Team (EEFIT) **Committee Member**

2015: **Scientific Committee Member** and **Convener** of the session on "Numerical modelling in Geotechnical Earthquake Engineering" in the SECED Conference on "Earthquake Risk and Engineering towards a Resilient World", 9-10 July 2015, Cambridge, UK

2017: **Technical Advisory Panel Member** of the 1st International Conference on Seismic Design of Structures and Foundations, SeismiCON 2017, 10-12 December 2017, London, UK

2019: **Scientific Committee Member** and **Invited Speaker** of the 2nd International Conference on Seismic Design of Structures and Foundations, SeismiCON 2019, 24-25 June 2019, London, UK

from 2019: **Editorial Panel Member** of the **Proceedings of the Institution of Civil Engineers - Geotechnical Engineering** (ISSN 1353-2618 | E-ISSN 1751-8563)