

Curriculum Vitae

Personal information

First name(s) / Surname(s) **Fabio Rollo**

Academic experience **Status: Research Fellow (RTD-A)**

Dates	04/04/2023 – ongoing
Occupation or position held	Research fellow (RTD-A)
Main activities and responsibilities	Research activity: Slope stability analyses – Return project PNRR PE3 Spoke VS2
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – Scientific Coordinator: Prof. Eng. Angelo Amorosi
Dates	01/08/2022 – 31/03/2023
Occupation or position held	Post-doc research fellow
Main activities and responsibilities	Research activity: “Numerical modelling of tunnelling soil structure interaction in STAND project”
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – Scientific Coordinator: Prof. Eng. Angelo Amorosi
Dates	01/10/2021 – 31/12/2021
Occupation or position held	Visiting Postdoctoral fellow
Main activities and responsibilities	Research activity: “Modelling landslide triggering and runout in natural slopes”
Name and address of employer	Dept. of Civil and Environmental Engineering – Northwestern University, Evanston IL, USA
Dates	01/08/2020 – 31/07/2022
Occupation or position held	Post-doc research fellow
Main activities and responsibilities	Research activity: “Evaluation of the seismic behaviour of earth dams”
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – Scientific Coordinator: Prof. Eng. Sebastiano Rampello
Dates	01/06/2019 – 31/05/2020
Occupation or position held	Post-doc research fellow
Main activities and responsibilities	Research activity: “Thermodynamic-based constitutive modelling of soils: from mathematical formulation to the analysis of slopes in seismic areas”
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – Scientific Coordinators: Prof. Eng. Angelo Amorosi, Sebastiano Rampello
Dates	01/06/2018 – 30/09/2018
Occupation or position held	Collaboration for research activity
Main activities and responsibilities	Research activity: “Evaluation of triggering instability in slopes characterised by cohesionless soils under seismic conditions”
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – project Reluis 2018 – Scientific Coordinator: Prof. Eng. Sebastiano Rampello
Dates	01/08/2017 – 31/12/2017
Occupation or position held	Scholarship for research activity
Main activities and responsibilities	Research activity: “Stability analyses of ideal slopes in cohesionless soils under static and dynamic conditions through an advanced constitutive model”

Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – project Reluis 2017 – Scientific Coordinator Prof. Eng. Sebastiano Rampello
Dates	01/10/2016 – 30/11/2016
Occupation or position held	Scholarship for research activity
Main activities and responsibilities	Research activity: “Analyses of the monotonic and cyclic response of an advanced constitutive model for cohesionless soils able to reproduce cyclic mobility”
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Research activity – project Reluis 2016 – Scientific Coordinator: Prof. Eng. Angelo Amorosi
Dates	01/03/2015 – 31/12/2015
Occupation or position held	Collaboration for research activity
Main activities and responsibilities	Definition of impedance matrix for foundation systems: implementation in automatic codes and validation
Name and address of employer	Department of Structural and Geotechnical Engineering – Sapienza University of Rome
Type of business or sector	Collaboration for research activity under the direction of Prof. Eng. Alberto Burghignoli

Education and training

Dates	11/2015 – 02/2019
Title of qualification awarded	Doctor of Philosophy in Structural and Geotechnical Engineering
Principal subjects/occupational skills covered	Title of the thesis: “Elastic anisotropy and elastoplastic coupling of soils: a thermodynamic approach”
Name and type of organisation providing education and training	Department of Structural and Geotechnical Engineering – Sapienza University of Rome Supervisor: Prof. Ing. Angelo Amorosi
Level in national or international classification	Doctoral degree in Structural and Geotechnical Engineering Final degree mark: Ottimo con lode – Excellent (with merit) Date of dissertation: 26/02/2019
Dates	06/10/2015
Title of qualification awarded	Professional qualification in Civil Engineering
Name and type of organisation providing education and training	Sapienza University of Rome – Faculty of Civil Engineering
Dates	11/2011 – 01/2015
Title of qualification awarded	Master’s degree in Civil Engineering (Geotechnical Engineering) Final degree mark: 110/110 cum laude - Date: 28/01/2015
Principal subjects/occupational skills covered	Title of the thesis: “Geotechnical design of shaft foundations” – Supervisor: Prof. Alberto Burghignoli Type of thesis: Theoretical/experimental
Name and type of organisation providing education and training	Sapienza University of Rome – Faculty of Civil Engineering
Dates	11/2008 – 12/2011
Title of qualification awarded	Bachelor’s degree in Civil Engineering
Principal subjects/occupational skills covered	Final degree mark: 108/110 - Date: 20/12/2011
Name and type of organisation providing education and training	Sapienza University of Rome – Faculty of Civil Engineering

Dates 2003 - 2008

Title of qualification awarded: Scientific certificate – School leaving examination mark: 98/100
 Principal subjects/occupational skills covered: Double language studies (English and French)
 Name and type of organisation providing education and training: Liceo Scientifico Statale “John Fitzgerald Kennedy”, via Nicola Fabrizi, Roma, Italy

Personal skills and competences

Mother tongue(s): **Italian**

Other language(s)

Self-assessment

European level (*)

English

French

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
B2	independent	C1	advanced	B2	independent	B2	independent	C1	advanced
B2	independent	B2	independent	B2	independent	B2	independent	B2	independent

(*) [Common European Framework of Reference for Languages](#)

Research interests

Constitutive modelling of soils and rocks in the framework of multi-surface hardening plasticity; application of thermodynamic principles to the modelling of anisotropy, breakage and elasto-plastic coupling of soils. Soil-structure interaction related problems; Finite Element analyses of geotechnical boundary value problems: seismic site effects, seismic behaviour of natural slopes, earth dams, liquefaction, seismic hazard, rock blocks stability analyses.

Computer skills and competences

Microsoft Office (Excel, Word, PowerPoint)
 Languages Matlab, Fortran
 FEM codes: Plaxis 2D-3D, Geo-studio package, SAP2000, Abaqus
 CAD instruments (Autocad)
 Grapher, Surfer

Publications in international journals

Rollo, F., & Rampello, S. (2023). Influence of the Displacement Predictive Relationships on the Probabilistic Seismic Analysis of Slopes. *Journal of Geotechnical and Geoenvironmental Engineering*, 149(6), 04023033 <https://doi.org/10.1061/JGGEFK.GTENG-11162>

Rollo, F., & Amorosi, A. (2022). Isotropic and anisotropic elasto-plastic coupling in clays: a thermodynamic approach. *International Journal of Solids and Structures*, 111668. <https://doi.org/10.1016/j.ijsolstr.2022.111668>

Rollo F., Rampello S. (2021). Probabilistic assessment of seismic-induced slope displacements: an application in Italy. *Bull Earthquake Eng.* 19, 4261-4288. <https://doi.org/10.1007/s10518-021-01138-5>.

Amorosi, A., Rollo, F., & Dafalias, Y. F. (2021). Relating elastic and plastic fabric anisotropy of clays. *Géotechnique*, 71(7), 583-593. <https://doi.org/10.1680/jgeot.19.P.134>

Rollo F., Amorosi A. (2020). SANICLAY-T: Simple thermodynamic-based anisotropic plasticity model for clays. *Computers and Geotechnics*, 127, 103770. <https://doi.org/10.1016/j.compgeo.2020.103770>.

Dafalias, Y. F., Taiebat, M., Rollo, F., & Amorosi, A. (2020). Convergence of rotational hardening with bounds in clay plasticity. *Géotechnique Letters*, 10(1), 16-19. <https://doi.org/10.1680/jgele.19.00012>.

Amorosi, A., Rollo, F. & Houlsby, G.T. (2020). A nonlinear anisotropic hyperelastic formulation for granular materials: comparison with existing models and validation. *Acta Geotech.* 15, 179-196. <https://doi.org/10.1007/s11440-019-00827-5>.

Houlsby, G. T., Amorosi, A., & Rollo, F. (2019). Non-linear anisotropic hyperelasticity for granular materials. *Computers and Geotechnics*, 115, 103167. <https://doi.org/10.1016/j.compgeo.2019.103167>

Publications in conference proceedings

Rollo, F., Rampello, S. (2022). Probabilistic Seismic Hazard Curves and Maps for Italian Slopes. In: Wang, L., Zhang, JM., Wang, R. (eds) Proceedings of the 4th International Conference on Performance Based Design in Earthquake Geotechnical Engineering (Beijing 2022). PBD-IV 2022. Geotechnical, Geological and Earthquake Engineering, vol 52. Springer, Cham. https://doi.org/10.1007/978-3-031-11898-2_116

Amorosi A., Rollo F., Dafalias Y.F. (2021) Evolving Elastic and Plastic Fabric Anisotropy in Granular Materials: Theoretical and Applied Implications. In: Barla M., Di Donna A., Sterpi D. (eds) Challenges and Innovations in Geomechanics. IACMAG 2021. Lecture Notes in Civil Engineering, vol 125. Springer, Cham. https://doi.org/10.1007/978-3-030-64514-4_72.

Rollo F., Amorosi A. (2021) Elasto-Plastic Coupling in Soils: A Thermodynamic-Based Approach. In: Barla M., Di Donna A., Sterpi D. (eds) Challenges and Innovations in Geomechanics. IACMAG 2021. Lecture Notes in Civil Engineering, vol 125. Springer, Cham. https://doi.org/10.1007/978-3-030-64514-4_56.

Amorosi A., Rollo F., Gagliardini L. (2020). The Analysis of Weak Rock Block Behaviour by an Advanced Constitutive Model. In: *Geotechnical Research for Land Protection and Development*. CNRIG 2019. Lecture Notes in Civil Engineering, vol 40, pp. 611-620. Springer, Cham. https://doi.org/10.1007/978-3-030-21359-6_65.

Amorosi A., Rollo F., Lilliu E., (2019) Seismic induced landslides in sand: a numerical approach, in: Silvestri & Moraci (Eds) *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions – Vol. 4*, pp. 1114 - 1121 (7th ICEGE) ISBN: 978-0-367-14328-2.

Amorosi A., Rollo F., Houlsby G.T., (2018) A nonlinear hyperelastic anisotropic model for soils, in: *Micro to MACRO Mathematical Modelling in Soil Mechanics, Trends in Mathematics –* pp. 11 - 22 ISBN: 978-3-319-99473-4

Awards and institutional service

Awarded a Special Mention for the “PhD theses award 2020” for the years 2017 – 2020. Sapienza University of Rome, 19 April 2022.

2022 – Reviewer for the “International Journal of Solid and Structures”

2022 – Reviewer for the “International Journal for Numerical and Analytical Methods in Geomechanics”

2021 – Reviewer for the Rivista Italiana di Geotecnica (RIG)

2021 – Reviewer for the international journal “Bulletin of Earthquake Engineering”

2019-2021 – Reviewer for the international journal “Géotechnique Letters”

Awarded as “Laureato Eccellente” for the faculty of Civil and Industrial Engineering for the academic year 2013-2014. Sapienza University of Rome, 23 April 2015.

Invited talk and international workshop

IACMAG 2022 – 16th International Conference for Comp. Methods and Advances in Geomechanics – Torino, Italy 31 August – 2 September 2022

Title: Elasto-plastic coupling in soils: a thermodynamic-based approach

IACMAG 2022 – 16th International Conference for Comp. Methods and Advances in Geomechanics – Torino, Italy 31 August – 2 September 2022

Title: Evolving elastic and plastic fabric anisotropy in granular materials: theoretical and applied implications

IV PBD – Conference on Performance based design in earthquake geotechnical engineering – Beijing, China 15-17 July 2022 – online

Title: Probabilistic seismic hazard curves and maps for Italian slopes

Invited seminar at Northwestern University, Evanston, IL (USA) – 17 November 2021

Title: Modelling anisotropy and elasto-plastic coupling of clays: a thermodynamic perspective

Invited seminar at University of Tor Vergata, Roma, Italy – 22 July 2021

Title: Anisotropia e accoppiamento elasto-plastico dei terreni: aspetti fenomenologici e modellazione su

base termodinamica

Invited seminar at Politecnico di Milano, Milano, Italy – 24 June 2019

Title: Elastic anisotropy and elasto-plastic coupling of soils: a thermodynamic approach

7ICEGE – 7th International Conference on Earthquake Geotechnical Engineering – Rome, Italy. 17-20 June 2019

Title: Seismic-induced landslides in sand: a numerical approach

NUMGE 2018 – the 9th European Conference on Numerical Methods in Geotechnical Engineering – University of Porto, 25 to 27 June 2018.

Title: A modified bounding surface plasticity model for sand

Funded research projects

Project title: Modelling landslide triggering and runout in natural slopes

Role: PI

Sponsor: Sapienza University of Rome

Award amount: 3.411,00€

Award period: 2022

Project title: ReLUIS Working Package 16: Geotechnical Engineering Task Group 2: Slope stability

Role: Component

Sponsor: Italian Department of Civil Protection

Award period: 2019 - 2023

Project title: Evaluation of the seismic behaviour of earth dams through advanced constitutive models

Role: PI

Sponsor: Sapienza University of Rome

Award amount: 3.300,00€

Award period: 2021

Project title: Constitutive modelling of the anisotropic behavior of soils

Role: PI

Sponsor: Sapienza University of Rome

Award amount: 1.000,00€

Award period: 2017

Project title: Modification of a constitutive model for the study of the seismic response of cohesionless soils

Role: PI

Sponsor: Sapienza University of Rome

Award amount: 1.000,00€

Award period: 2016

Teaching activities

Dates	March 2021 - ongoing
Main activities and responsibilities	Adjunct Professor for the course “Geotechnical Studies of Territories” for the Faculty of Architecture
Name and address of employer	Sapienza University of Rome
Dates	March 2017 - ongoing
Main activities and responsibilities	Teaching assistantship for the course “Slope stability” for the Faculty of Engineering
Name and address of employer	Sapienza University of Rome
Dates	07/10/2015 – 09/10/2015
Main activities and responsibilities	Course on “Soil – structure interaction
Name and address of employer	CISM – International Centre of Mechanical Science – Palazzo del Torso, Piazza Garibaldi 18 – 33100 Udine (Italy)
	Rollo Fabio

Student supervision

Federico Pacetta, Sapienza University of Rome, M. S. in Civil Engineering (graduated in 2021)
Research topic: Coupled dynamic analyses of transversal behaviour of tunnels in liquefiable soils

Erica Lilliu, Sapienza University of Rome, M. S. in Civil Engineering (graduated in 2019)
Research topic: Numerical analyses of seismic-induced landslides in cohesionless soils

Letizia Gagliardini, Sapienza University of Rome, M. S. in Civil Engineering (graduated in 2019)
Research topic: Finite element stability analyses of tuff cliffs

Ludovica Citterio, Sapienza University of Rome, M. S. in Civil Engineering (graduated in 2019)
Research topic: Numerical analyses of two Italian landslides

Roma, 09/04/2023