

## PERSONAL INFORMATION

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- **Address** Department of Structural and Geotechnical Engineering  
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## EDUCATION

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- **10/2007–06/2011, University of Rome Tor Vergata**  
PhD in Structural and Geotechnical Engineering. Title of the thesis: “Shell Models for Carbon Nanotubes”. Advisor: Paolo PODIO-GUIDUGLI.
- **09/2002–10/2007, University of Rome Tor Vergata**  
MS in Civil Building Engineering. Title of the thesis: “Concentrated Loads on Elastic Unbounded Domains”. Advisor: Paolo PODIO-GUIDUGLI; mark: 110/110 cum laude.

## POSITIONS

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- **03/2016 –, Sapienza University of Rome – Department of Structural and Geotechnical Engineering**  
Assistant Professor (Ricercatore a t.d., art. 24 comma 3-b L. 240/10).
- **05/2015–03/2016, Sapienza University of Rome – Department of Structural and Geotechnical Engineering**  
Post-doctoral fellow & Adjunct Professor. Research project: Advanced mechanical models for the analysis of composite media: phenomenological, theoretical, computational aspects.
- **11/2013–04/2015, University of Trento – Department of Civil, Environmental and Mechanical Engineering**  
Post-doctoral fellow. Research project: Elasticity of graphene.
- **11/2012–10/2013, Hamburg University of Technology – Institute of Continuum Mechanics and Material Mechanics**  
Researcher with teaching duties (4 years appointment). Research project: Modeling and simulation of coupled problems.
- **02/2011–10/2012, University of Rome Tor Vergata – Civil Engineering Department**  
Post-doctoral fellow & Adjunct Professor.

## RESEARCH GRANTS

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- **2017, MIUR – Italian Ministry for the Research**  
“Finanziamento delle attività base di ricerca” (FFABR) from the Italian Research Ministry.
- **2017, Sapienza University of Rome**  
Three-years project. Title: “Shape morphing. From advanced differential geometry to applications in engineering and architecture”.
- **2016, Sapienza University of Rome**  
Three-years project. Title: “Multiscale Mechanics of 2D Materials: Modeling and Applications”.
- **2015, University of Trento**  
Strategic University Project. Title: “Mechanical and Dynamical properties of disordered materials: from colloids to polymer nanocomposites”, PI with Giulio MONACO and Alessandro PEGORETTI.
- **2014–2015, Institute of Higher Mathematics –INdAM**  
“Mathematical models for complex nano- and bio-materials”, Young Researchers Project funded by the National Group of Physics and Mathematics (GNFM).

- **2013-2014, Institute of Higher Mathematics –INdAM**  
“Models of Nanostructures and Biomaterials in Molecular Mechanics”, Young Researchers Project funded by the National Group of Physics and Mathematics (GNFM).

## PARTICIPATION TO RESEARCH PROJECTS

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- **03/ 2016-04/2016, Sapienza University of Rome – Department of Structural and Geotechnical Engineering.**  
Project PRIN “Modelli ed algoritmi per l’analisi non lineare delle strutture e la validazione di regole di progettazione a base prestazionale”.
- **11/ 2013-04/2015, University of Trento – Department of Civil, Environmental and Mechanical Engineering**
  - ERC Starting Grants “BIHSNAM: Bio-inspired Hierarchical Super Nanomaterials”. Coordinator: Nicola PUGNO.
  - ERC PoC 2013-1 “REPLICA2: Large-area replication of biological anti-adhesive nanosurfaces”. Coordinator: Nicola PUGNO.
  - ERC PoC 2013-2 “KNOTOUGH: Super-tough knotted fibres”. Coordinator: Nicola PUGNO.
- **11/2012-10/2013, Hamburg University of Technology – Institute of Continuum Mechanics and Material Mechanics.**
  - Modeling and simulation of coupled problems. Coordinator: Swantje BARGMANN.
- **2012-2013, Institute of Higher Mathematics**  
“Models of thin structures for nano- and bio-materials”, Young Researchers Project funded by the National Group of Physics and Mathematics (GNFM). Coordinator: Eric PUNTEL (University of Udine)
- **2011-2012, Institute for the Applications of the Calculus “M. Picone”**  
“Some classes of PDE and systems with applications to mechanics and biology”, a bilateral research Project IAC-CNR and Tbilisi State University. Coordinators: Roberto NATALINI (Italy), George JAIANI (Georgia).

## TEACHING

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- **2017-2018, Sapienza University of Rome**  
Course: “Structural Mechanics” (in Italian).
- **2017, April, 3-8. Okinawa Institute of Science and Technology, Japan.**  
Tutor – Course: “Hierarchical multiscale methods using the Andersen-Parrinello-Rahman formulation of molecular dynamics”.
- **2016-2017, Sapienza University of Rome**  
Course: “Structural Mechanics” (in Italian).
- **2015-2016, Sapienza University of Rome**
  - Adjunct Professor (Professore a contratto) – Course: “Structural Mechanics” (in Italian).
  - “Fundamental solutions in elasticity” (for PhD students in Structural and Geotechnical Engineering).
- **2014-2015, University of Trento**  
Teaching assistant – Course: “Structural Mechanics” (Scienza delle Costruzioni) (in Italian).
- **2013-2014, University of Trento**  
Teaching assistant – Course: “Statics” (in Italian).
- **10/2013, Stuttgart University**  
Invited lecturer for the COMMAS Summer School 2013, within the Computational Mechanics of Materials and Structures Master Program. Course: “Thin Structures: General Theory and Applications in Nanomechanics” (in English).
- **2012-2013, Hamburg University of Technology**  
Appointed lecturer – Course: “Continuum Mechanics” (for Ph.D. students, in English).



- **2011-2012, University of Rome Tor Vergata**  
Adjunct Professor (Professore a contratto) – Course: “Mechanics of Solids” (in Italian).
- **2011-2012, University of Rome Tor Vergata**  
Teaching Assistant – Course: “Mechanics of Materials and Structures” (in English).
- **2010-2011, University of Rome Tor Vergata**  
Adjunct Professor (Professore a contratto) – Course: “Mechanics of Solids” (in Italian).

## CONFERENCE PRESENTATIONS

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- **07/2018. Mathematics & Mechanics: Natural Philosophy in the 21st Century. Oxford – UK.**  
Title of the talk: *Atomistic and Continuum Modeling of the Bending Behavior of Graphene.*
- **03/2018. 16th European Mechanics of Materials Conference. Nantes – France.**  
Title of the talk: *Variational homogenization for modeling the bending behavior of graphene.*
- **09/2017. XXIII Conference of Aimeta (Italian Association of Theoretical and Applied Mechanics), Salerno – Italy.**  
Title of the talk: *The Bending Behavior of Graphene: from Lattice to Continuum Modeling.*
- **05/2017. Workshop INDAM-CNR “Innovative Mathematical Models and Methods for Industrial Applications” – Rome – Italy.**  
Title of the talk: *The Bending Behavior of Graphene: a Continuum Model Inferred from Molecular Dynamics Potentials.*
- **10/2016. International Workshop on Multiscale Innovative Materials and Structures – Salerno – Italy.**  
Title of the talk (selected lecture): *A lattice model for carbon nanotubes and graphene.*
- **06/2016. European Congress on Computational Methods in Applied Sciences and Engineering – Crete Island – Greece.**  
Title of the talk: *Multiscale modeling of thermo-elastic properties of microcracked materials.*
- **07/2015. 9th European Solid Mechanics Conference – Madrid – Spain.**  
Title of the talk: *Unexpected softening effects in graphene: a mechanical model based on MD potentials.*
- **10/2014. 52nd Meeting of the Society for Natural Philosophy – Rio de Janeiro, Brasil.**  
Title of the talk: *On Atomistic and Continuum Modeling of Carbon Allotropes.*
- **09/2013. XXI Conference of Aimeta (Italian Association of Theoretical and Applied Mechanics), Torino – Italy.**  
Title of the talk: *On modeling pulsed-laser heating in crystalline media.*
- **09/2013. 3rd International Conference on Material Modelling, Warsaw – Poland.**  
Title of the talk: *Continuum mechanical modeling of laser-pulsed heating in polycrystals: a multi-physics problem of coupling diffusion, mechanics, and thermal waves.*
- **07/2012. 8th European Solid Mechanics Conference Mini-symposium “Refined Theories of Plates and Shells”, Graz – Austria.**  
Title of the talk: *A Shell Theory for Chiral Carbon Nanotubes.*
- **08/2011. EUROMECH Colloquium 527 “Shell-like Structures – Non-classical Theories and Applications”, Lutherstadt Wittenberg Germany.**  
Title of the talk: *What Shell Theory fits Carbon Nanotubes?*

## INVITED TALKS

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- **09/2018. Invited lecturer. “Fifth Workshop on Thin Structures”. Napoli, Italy.**  
Title of the talk: *Graphene Thin Films: Atomistic and Continuum Modeling.*
- **10/2016. Invited lecturer. Workshop “Recent Advances in the mechanics of materials”. Alghero, Italy.**  
Title of the talk: *Graphene and Carbon Nanotubes under Large Deformations.*

- **10/2013.** Invited lecturer. COMMAS Summer School 2013, “Computational Mechanics of Materials and Structures” Master Program. Stuttgart University, Germany  
Title of the talk: *Thin Structures: General Theory and Applications in Nanomechanics.*
- **09/2013.** 3rd International Conference on Material Modelling, Warsaw – Poland.  
Title of the talk: *A thermo-elastic beam theory via Principle of Virtual Powers.*
- **04/2013.** University of Trento – Italy  
Title of the talk: *Carbon NanoTubes in a NutsHELL.*
- **07/2012.** Helmholtz-Zentrum Geesthacht, Centre for Materials and Coastal Research, Germany.  
Title of the talk: *Coupling heat conduction with mechanical vibrations and laser-induced defect dynamics in crystalline media.*
- **05/2012.** 7th European Conference on Elliptic and Parabolic Problems, Mini-symposium “Partial differential equations in materials science”, Gaeta – Italy.  
Title of the talk: *Concentrated Loads on Elastic Unbounded Domains.*
- **10/2010.** 3d International workshop of young researchers in the mechanics of materials and structures, Salerno – Italy.  
Title of the talk: *On a Scale-Bridging Mechanical Model of Carbon Nanotubes.*

## MEMBERSHIPS

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- **2017-**  
SISCO — Società Italiana di Scienza delle Costruzioni.
- **2017-**  
AIMETA Materials Group.
- **2014-**  
Society for Natural Philosophy.
- **2013-**  
AIMETA (Associazione Italiana di Meccanica Teorica e Applicata – Italian Association of Theoretical and Applied Mechanics).
- **2011-2012**  
IAC (Institute for the Applications of the Calculus) “Mauro Picone”.
- **2008-**  
National Group for Mathematical Physics (GNFM).

## CONFERENCE AND SYMPOSIA ORGANIZATION

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- **June 2020**  
Member of the organizing committee of the LVI Meeting of the Society for Natural Philosophy.
- **September 2019**  
Member of the organizing committee of the XXIV Conference AIMETA (The Italian Association of Theoretical and Applied Mechanics), Rome, 15-19 September 2019.
- **November 2017**  
Member of the organizing committee of the international workshop “Recent Advances in Mechanics and Mathematics of Materials. A young researchers’ meeting”, Rome, 22-24 November 2017.
- **September 2017**  
Member of the organizing committee of mini-symposium “Innovative lattice materials and structures”, within the XXIII Conference AIMETA (The Italian Association of Theoretical and Applied Mechanics), Salerno, 4-7 September 2017.
- **January 2016**  
Member of the organizing committee of the international conference “Physics and Mathematics of Materials: current insights”, Gran Sasso Science Institute, L’Aquila, January 20-22, 2016.



## SERVICE

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- **2017-**  
Member of the PhD School in *Science and Technology for Complex Systems*, Faculty of Civil and Industrial Engineering.
- **2014-**  
Reviewer Editor of *Frontiers in Materials – Mechanics of Materials*.
- **2010-**  
Referee for the following international journals: *Advances in Condensed Matter Physics*, *Applied Mathematical Modelling*, *Archive of Applied Mechanics*, *Archives of Mechanics*, *Computer Methods in Applied Mechanics and Engineering*, *European Journal of Computational Mechanics*, *European Journal of Mechanics A/Solids*, *Europhysics Letters*, *International Journal of Solids and Structures*, *Journal of Applied Physics*, *Journal of Engineering Mechanics*, *Journal of Theoretical and Applied Physics*, *Journal of Mechanics Materials and Structures*, *Journal of Elasticity*, *Journal of Applied Mathematics and Mechanics (ZAMM)*, *Materials & Design*, *Mechanical Systems and Signal Processing*, *Meccanica*, *Mechanics Research Communications*.

## LANGUAGES

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- Italian · English · French

## AWARDS AND RECOGNITIONS

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- **2017**  
Italian National Qualification (Abilitazione Scientifica Nazionale) for the position of Associate Professor.
- **2014**  
French National Qualification for the position of “Maître de Conférences” (Associate Professor) – habilitation section 60 - Mécanique, génie mécanique, génie civil, n. 14260263079, Ministère d’enseignement supérieur et de la recherche.
- **2008**  
“Sebastiano and Rita Raeli” Master Degree Prize, University of Rome Tor Vergata.

## PUBLICATIONS

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### International Journals

25. C. Davini, A. Favata, R. Paroni (2018), A REBO-potential-based model for graphene bending by  $\Gamma$ -convergence, *Archive for Rational Mechanics and Analysis*, 229, 3, 1153–1195.
24. A. Amendola, A. Favata, A. Micheletti (2018), On the mechanical modeling of tensegrity columns subject to impact loading, *Front. Mater.* 5:22.
23. J. Ciambella, A. Favata, G. Tomassetti (2018), A nonlinear theory for fibre-reinforced magneto-elastic rods, *Proceedings of the Royal Society of London A*, 427:20170703.
22. D. Capecchi, A. Favata, G. Ruta (2018), On the complementary energy in elasticity and its history. The Italian school of 19th century, *Meccanica*, 53, 1-2, 77–93.
21. C. Davini, A. Favata, A. Micheletti, R. Paroni (2017), A 2D microstructure with auxetic out-of-plane behavior and non-auxetic in-plane behavior, *Smart Materials and Structures*, 26, 125007.
20. C. Davini, A. Favata, R. Paroni (2017), A new material property of graphene: the bending Poisson coefficient, *Europhysics Letters*, 118, 26001.
19. C. Davini, A. Favata, R. Paroni (2017), The Gaussian Stiffness of Graphene deduced from a Continuum Model based on Molecular Dynamics Potentials, *Journal of the Mechanics and Physics of Solids*, 104, 96–114.
18. R. Alessi, A. Favata, A. Micheletti (2017), Pressurized CNTs under Tension: a Finite-Deformation Lattice Model, *Composites Part B: Engineering*, 115, 223–235.

17. A. Favata, A. Micheletti, P. Podio-Guidugli, N. Pugno (2017). How graphene flexes and stretches under concomitant bending couples and tractions, *Meccanica*, 52(7), 1601-1624
16. A. Favata, A. Micheletti, S. Ryu, N. Pugno (2016), An analytical benchmark and a *Mathematica* program for MD codes: testing LAMMPS on the 2nd generation Brenner potential, *Computer Physics Communications*, 207, 426-431.
15. A. Favata, A. Micheletti, P. Podio-Guidugli, N. Pugno (2016), Geometry and Self-Stress of Single-Wall Carbon Nanotubes via a Discrete Model Based on a 2nd-Generation REBO Potential, *Journal of Elasticity*, 125, 1, 1-37.
14. A. Favata (2016), A Beam Theory Consistent with Three-Dimensional Thermo-Elasticity, *Mathematics and Mechanics of Solids*, 21, 4, 426-443.
13. A. Favata, P. Trovalusci, R. Masiani (2016), A multiphysics and multiscale approach for modeling microcracked thermo-elastic materials, *Computational Materials Science*, 116, 22-31.
12. A. Favata, P. Podio-Guidugli (2015), A Shell Theory for CNTs of Arbitrary Chirality, *Advanced Structured Materials*, 45, 155-167.
11. S. Bargmann, A. Favata (2014), Continuum Mechanical Modeling of Laser-pulsed Heating in Polycrystals: a Multi-physics Problem of Coupling Diffusion, Mechanics and Thermal Waves, *ZAMM - Journal of Applied Mathematics and Mechanics*, 94, 6, 487-498.
10. A. Favata, P. Podio-Guidugli (2014), A Shell Theory for Chiral Single-Wall Carbon Nanotubes, *European Journal of Mechanics A/Solids*, 45, 198-210.
9. A. Favata, A. Micheletti, P. Podio-Guidugli (2014), A Nonlinear Theory of Prestressed Elastic Stick-and-Spring Structures, *International Journal of Engineering Science*, 80, 4-20.
8. S. Bargmann, A. Favata, P. Podio-Guidugli (2014), A Revised Exposition of the Green-Naghdi Theory of Heat Propagation, *Journal of Elasticity*, 114, 2, 143-154.
7. C. Bajaj, A. Favata, P. Podio-Guidugli (2013), On a Nanoscopically-Informed Shell Theory of Single-Wall Carbon Nanotubes, *European Journal of Mechanics A/Solids*, 42, 137-157.
6. S. Bargmann, A. Favata, P. Podio-Guidugli (2013), On Energy and Entropy Influxes in the Green-Naghdi Type III Theory of Heat Conduction, *Proceedings of the Royal Society London A*, vol. 469, no. 2152, 20120705.
5. A. Favata (2012), On the Kelvin Problem, *Journal of Elasticity*, 109, 2, 189-204.
4. A. Favata, P. Podio-Guidugli (2012), A New CNT-Oriented Shell Theory, *European Journal of Mechanics A/Solids*, vol. 35, 75-96.
3. A. Favata, P. Podio-Guidugli (2011), What Shell Theory fits Carbon Nanotubes?, *Advanced Structured Materials*, 15, 561-570.
2. A. Favata, P. Podio-Guidugli, G. Tomassetti (2010), Energy Splitting Theorems for Material with Memory, *Journal of Elasticity*, 101, 1, 59-67.
1. A. Favata, A. Micheletti, P. Podio-Guidugli (2010), On shear and torsion factors in the theory of linearly elastic rods, *Journal of Elasticity*, 99, 2, 203-210.

### Monographs

- P. Podio-Guidugli, A. Favata (2014), *Elasticity for Geotechnicians*, Springer Monograph, series Solid Mechanics and its Applications, vol. 204, XVI, ISBN 978-3-319-01257-5.

### Conference papers

2. A. Amendola, A. Favata, A. Micheletti, F. Fraternali, C. Daraio (2017), Experimental and numerical study of wave dynamics in tensegrity columns. 6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (Rhodes Island, Greece).
1. A. Favata, P. Trovalusci, R. Masiani (2016), Multiscale modeling of thermo-elastic properties of microcracked materials. ECCOMAS Congress 2016 – Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering (Crete, Greece).

## Others

2. A. Favata (2009), Il terremoto di Messina e lo sviluppo delle teorie di calcolo del cemento armato: il ruolo di Arturo Danusso, in O. Fiandaca, R. Lione Ed.s, *Il Sisma. Ricordare, prevenire, progettare*, Messina, Alinea Editrice, ISBN: 88-6055-460-8.
1. A. Favata (2008), Gustavo Colonnetti: dalla teoria alla tecnica del precompresso, in *L'attività di ricerca nel dottorato. Problematiche e metodi*, TCP, Pavia, ISBN 978-88-86719-65-0.

Rome, September 19, 2018

Antonino Favata