

# Panagiotis Koutsogiannakis



1111 Engineering Dr., Boulder, CO 80309, USA  
Panagiotis.Koutsogiannakis@colorado.edu  
+1 3034921195  
pankouts.com

## EDUCATION

### University of Trento, Trento, Italy

- Doctoral Student at the Faculty of Civil, Environmental and Mechanical Engineering Nov 2019 – Dec 2022
  - Research subject:  
Novel micro-structured meta-materials with advanced friction properties
  - Supervisors: Prof. Davide Bigoni, Prof. Francesco Dal Corso
  - Focus: Meta-Materials, Structural Mechanics, Seismic Engineering, Mathematical Modeling.
- Marie-Curie Research Fellow

### National Technical University of Athens, Athens, Greece

- M.Sc. in Naval Architecture and Marine Engineering Dec 2013 – Feb 2019
  - Final grade: 8.34 / 10
  - Diploma thesis subject:  
Acceleration of BEM using CUDA/GPU programming with application to marine renewable energy extraction  
Supervisor: K. A. Belibassakis, Professor, Lab. of Ship and Marine Hydrodynamics, School of Naval Architecture and Marine Engineering, NTUA.

## RESEARCH EXPERIENCE

### University of Colorado Boulder, USA

- Postdoctoral Associate, WaveLab Sep 2024 – Now
  - Supervisor: Prof. Massimo Ruzzene
  - Focus: Structural mechanics, Wave propagation on solid media, mathematical modeling, numerical modeling, experimental investigation

### University of Trento, Italy

- Research Fellow, Faculty of Civil, Environmental and Mechanical Engineering Jan 2023 – Aug 2024
  - Supervisor: Prof. Francesco Dal Corso
  - Focus: Structural mechanics, Mechanics of solids, Mathematical modeling.
- Research Fellow, Faculty of Civil, Environmental and Mechanical Engineering Nov 2019 – Dec 2022
  - Project: INSPIRE, Innovative Ground Interface Concepts for Structure Protection
  - Supervisors: Prof. Davide Bigoni and Prof. Francesco Dal Corso
  - Focus: Meta-materials, Structural mechanics, Seismic engineering, Mathematical modeling.

## TEACHING EXPERIENCE

### University of Trento, Italy

- The finite element method and ALE formulations – PhD course, 8 hours Jul 2024
  - Development of course, writing of teaching material, teaching
  - Introduction to the mathematical framework of finite element methods, development of a finite element model for the inextensible rod, finite element modeling of moving boundary structural problems with an Arbitrary Lagrangian-Eulerian method.
- Master thesis supervision.

## PUBLICATIONS

### JOURNALS

- [10] P. Koutsogiannakis, K.A. Fransen, R.C. Hayward, and M. Ruzzene, “Geodesic waveguiding of Lamb waves on thin shells with designed paths,” *Preprint submitted to the Journal of the Mechanics and Physics of Solids*.
- [9] P. Koutsogiannakis, and M. Ruzzene, “Parametric excitation of rotational soft modes of the buckled discrete elastic ring,” *Submitted to the International Journal of Solids and Structures - in review*.

- [8] J.H. Porter, M. Chetana, D. Barnes, G. Vijayakumar, R.E. Murray, P. Bortolotti, P. Koutsogiannakis, N.H. Patino, and M. Ruzzene, “Novel Comparison of Structural Damping in Composites Across Resin Systems and Scales,” *Submitted to Composite Structure - in review*.
- [7] P. Koutsogiannakis, D. Misseroni, and F. Dal Corso, “Multiple modal self-tuning stabilization by means of sliding sleeve vibration - A semi-analytical solution for a rod constrained by an oscillating sliding sleeve,” *Under preparation*.
- [6] G. Migliaccio, F. D’Annibale, P. Koutsogiannakis, and F. Dal Corso, “Viscous damping stabilization and destabilization of resonant self-tuning variable-length structures,” *European Journal of Mechanics - A/Solids*, Nov 2025, doi:10.1016/j.euromechsol.2025.105727.
- [5] P. Koutsogiannakis, T. Papathanasiou, and F. Dal Corso, “A simple yet effective ALE-FE method for the nonlinear planar dynamics of variable-length flexible rods,” *Applied Mathematical Modelling*, Apr 2025, doi:10.1016/j.apm.2024.115863.
- [4] P. Koutsogiannakis, D. Misseroni, D. Bigoni, and F. Dal Corso, “Stabilization against gravity and self-tuning of an elastic variable-length rod through an oscillating sliding sleeve,” *Journal of the Mechanics and Physics of Solids*, Oct 2023, doi:10.1016/j.jmps.2023.105452.
- [3] P. Koutsogiannakis, D. Bigoni, and F. Dal Corso, “Double restabilization and design of force-displacement response of the extensible elastica with movable constraints,” *European Journal of Mechanics - A/Solids*, Jul 2022, doi:10.1016/j.euromechsol.2022.104745.
- [2] P. Koutsogiannakis, E.S. Filippas, and K.A. Belibassakis, “A Study of Multi-Component Oscillating-Foil Hydrokinetic Turbines with a GPU-Accelerated Boundary Element Method,” *Journal of Marine Science and Engineering*, Nov 2019, doi:10.3390/jmse7120424.
- [1] G.A. Athanassoulis, C.P. Mavroeidis, P. Koutsogiannakis and Ch.E. Papoutsellis, “A numerical study of the run-up and the force exerted on a vertical wall by a solitary wave propagating over two tandem trenches,” *Journal of Ocean Engineering and Marine Energy*, Nov 2019, doi:10.1007/s40722-019-00148-5.

#### CONFERENCES

- [9] P. Koutsogiannakis, and M. Ruzzene, “Geometric analysis of high frequency wave behavior in smoothly graded flat periodic plates,” in *SIAM Nonlinear Waves and Coherent Structures 2026*, Montreal, Canada, May 2026.
- [8] P. Koutsogiannakis, and M. Ruzzene, “Parametric excitation of rotating modes,” in *Proceedings of the 12th European Solid Mechanics Conference*, Lyon, France, Jul 2025.
- [7] P. Koutsogiannakis, F. Dal Corso, and D. Bigoni, “Dynamics and instability of flexible structures with sliding constraints,” in *INSPIRE Final Conference*, Athens, Greece, May 2023.
- [6] P. Koutsogiannakis, F. Dal Corso, and D. Bigoni, “Bifurcation of the extensible elastica constrained by a curved profile,” in *Proceedings of the 13th HSTAM International Congress on Mechanics*, Patras, Greece, Aug 2022.
- [5] P. Koutsogiannakis, F. Dal Corso, and D. Bigoni, “Bifurcation analysis of a soft rod constrained by a curved profile,” in *Proceedings of the 11th European Solid Mechanics Conference*, Galway, Ireland, Jul 2022.
- [4] P. Koutsogiannakis, F. Dal Corso, and D. Bigoni, “A novel bifurcating force-limiting elastic structure,” in *Proceedings of the 25th International Congress of Theoretical and Applied Mechanics*, Milan, Italy, Aug 2021.
- [3] F. Dal Corso, P. Koutsogiannakis, D. Misseroni, T. Papathanasiou, and D. Bigoni, “Oscillating configurational constraints and nonlinear dynamics of extremely deformable structures,” in *Proceedings of the 25th International Congress of Theoretical and Applied Mechanics*, Milan, Italy, Aug 2021.
- [2] F. Dal Corso, P. Koutsogiannakis, D. Misseroni, T. Papathanasiou, and D. Bigoni, “Elastica and oscillatory configurational forces,” in *APM2021 - XLIX International Conference “Advanced Problems in Mechanics”*, Saint Petersburg, Russia, Jun 2021.
- [1] P. Koutsogiannakis, E.S. Filippas, and K.A. Belibassakis, “A GPU-accelerated method for the hydrodynamic analysis of a biomimetic flapping-foil device for marine energy extraction,” in *Proceedings of the 13th European Wave and Tidal Energy Conference*, Napoli, Italy, Sep 2019.

#### INVITED TALKS

- [1] P. Koutsogiannakis, D. Misseroni, D. Bigoni, and F. Dal Corso, “Dynamics of elastic rod constrained by an oscillating sliding sleeve,” in *School of Applied Mathematics and Physical Sciences, National Technical University of Athens, Athens, Greece, May 2023*.

|                                  |                                                                                                                                                                                                                                                                                                                                                   |                     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                                  | <b>PEER REVIEW</b>                                                                                                                                                                                                                                                                                                                                |                     |
|                                  | ▪ Mechanics research communications                                                                                                                                                                                                                                                                                                               | 2023 – Now          |
|                                  | ▪ Applied physics letters                                                                                                                                                                                                                                                                                                                         | 2025 – Now          |
|                                  | ▪ International Journal of Non-linear Mechanics                                                                                                                                                                                                                                                                                                   | 2026 – Now          |
| <b>AWARDS &amp; SCHOLARSHIPS</b> | ▪ Acta Mechanica                                                                                                                                                                                                                                                                                                                                  | 2026 – Now          |
|                                  | ▪ Best Video in the Gallery of Nonlinear Dynamics at the IUTAM Symposium on Nonlinear dynamics for design of mechanical systems across different length/time scales, July 31 - August 4, 2023, Tsukuba, Japan.                                                                                                                                    | Aug 2023            |
|                                  | ▪ Marie Skłodowska-Curie Actions, Research Fellowship, University of Trento                                                                                                                                                                                                                                                                       | 2019 – 2022         |
| <b>CAMPUS ACTIVITIES</b>         | <b>Postdoctoral Association of Colorado</b> , University of Colorado Boulder, USA                                                                                                                                                                                                                                                                 |                     |
|                                  | ▪ Secretary                                                                                                                                                                                                                                                                                                                                       | Jul 2025 – Jun 2026 |
|                                  | <b>Oceanos NTUA</b> , National Technical University of Athens                                                                                                                                                                                                                                                                                     |                     |
|                                  | ▪ Responsible for the propulsion system design <ul style="list-style-type: none"> <li>• Design of electric boat propulsion system</li> <li>• Optimization of the propulsion system</li> <li>• Production of propeller with additive manufacturing techniques</li> <li>• Participation in Monaco Solar &amp; Energy Boat Challenge 2019</li> </ul> | Sep 2018 – Oct 2019 |
| <b>OTHER WORK EXPERIENCE</b>     | <b>DNV-GL</b> , Piraeus, Greece                                                                                                                                                                                                                                                                                                                   |                     |
|                                  | ▪ Intern, Department of Research and Development, Research & Development Division                                                                                                                                                                                                                                                                 | Jun 2018 – Aug 2018 |
|                                  | <ul style="list-style-type: none"> <li>• Prediction of fuel consumption of ships using machine learning techniques.</li> <li>• Interfacing of simulation packages using the FMI standard.</li> </ul>                                                                                                                                              |                     |
| <b>LANGUAGES</b>                 | ▪ Greek: Native language.                                                                                                                                                                                                                                                                                                                         |                     |
|                                  | ▪ English: Proficient (TOEFL 110/120).                                                                                                                                                                                                                                                                                                            |                     |
|                                  | ▪ French: Intermediate (Delf B2).                                                                                                                                                                                                                                                                                                                 |                     |
|                                  | ▪ Italian: Basic.                                                                                                                                                                                                                                                                                                                                 |                     |
| <b>SKILLS</b>                    | <b>Scientific topics:</b> Structural mechanics, Mechanics and physics of solids, Computational mechanics, Finite element methods, Boundary element methods, Fluid mechanics, Wave propagation, Lifting flows, Marine engineering.                                                                                                                 |                     |
|                                  | <b>Programming Languages:</b> MATLAB, C/C++, CUDA, C#, Fortran, Python, R, Java.                                                                                                                                                                                                                                                                  |                     |
|                                  | <b>Typesetting Languages:</b> Latex, Markdown, Html.                                                                                                                                                                                                                                                                                              |                     |

*Panagiotis Koutsogiannakis, 04–08–2026*