LUÃ GUEDES COSTA

lgcosta@mecanica.coppe.ufrj.br
32, Brazilian Rio de Janeiro, RJ, Brazil

PROFILE

I'm a Ph.D. in Mechanical Engineering and a Professor at the Federal University of Rio de Janeiro. My research focuses on nonlinear mechanics phenomena and computational modeling, including energy harvesting, smart materials and structures, nonlinear dynamics, multistability, chaos, and high-performance computing. I've received awards related to innovation and research activities, notably winning the Invent for the Planet 2019 (Texas A&M University), for the development of a set of devices to enhance the mobility of visually impaired individuals, and the Best Ph.D. Student Paper Awards (at DINAME 2023 and MECSOL 2024 conferences) given by the Brazilian Association of Mechanical Sciences and Engineering (ABCM).

EXPERIENCE

Professor Apr 2025 - Present
Universidade Federal do Rio de Janeiro, Brazil
Department of Mechanical Engineering.

Postdoctoral Researcher Jul 2024 - Apr 2025
Center for Nonlinear Mechanics, Universidade Federal do Rio de Janeiro, Brazil
Activities: Design and development of new nonlinear smart systems and structures.

Doctoral Researcher Mar 2020 - Jul 2024
Center for Nonlinear Mechanics, Universidade Federal do Rio de Janeiro, Brazil
Activities: Design, development and analysis of new types of nonlinear energy harvesters.

Co-Founder and Manager Mar 2020 - 2022
Tupan Acessibilidade, Brazil
Activities: Management and development of accessibility technology.

Research Assistant Mar 2018 - Jan 2020
Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ).
Activities: Analysis of bistable piezoelectric energy harvesters using reduced-order models.

Undergraduate Research Program Jun 2017 - Dec 2017
Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ).
Activities: Dynamical analysis of energy harvesting systems using finite element method.

EDUCATION

PhD in Mechanical Engineering 2020 - 2024
Universidade Federal do Rio de Janeiro (COPPE/UFRJ), Brazil.

Master's Degree in Mechanical Engineering and Materials Technology 2018 - 2020
Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil.

Degree in Mechanical Engineering 2011 - 2017
Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil.

AWARDS

ABCM Best Paper Award Oct 2024
9th International Symposium on Solid Mechanics (MECSOL 2024).

Best PhD Student Paper Award Feb 2023
XIX International Symposium on Dynamic Problems in Mechanics (DINAME 2023).

Winner of Invent for the Planet 2019 Apr 2019
Texas A&M, US.
Global contest of technology and innovation for real-world challenges.
Winning Project: Team Tupã

ADDITIONAL TRAINING

School of Advanced Sciences on Nonlinear Dynamics Aug 2019
Universidade de São Paulo, São Paulo, Brazil.

Oratory 2017
Rogéria Guida Oratory Course, Rio de Janeiro, Brazil.

Undergraduate Exchange Program in Mechanical Engineering 2015 - 2016
Technological University Dublin (Former Dublin Institute of Technology), Ireland.

PEER REVIEW

International Journal of Mechanical Sciences 2021 - 2024
Elsevier.

Nonlinear Dynamics 2023 - 2024
Springer Nature.

Journal of Vibration and Control 2020 - 2023
SAGE Journals.

Journal of Computational and Nonlinear Dynamics 2023 - 2024
ASME.

Journal of Vibration Engineering & Technologies 2024 - 2025
Springer Nature.

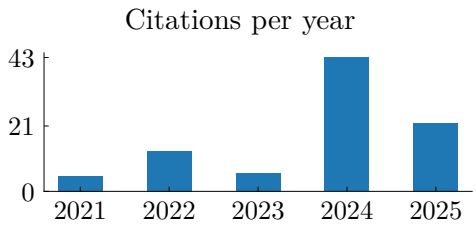
Journal of the Brazilian Society of Mechanical Sciences and Engineering 2025
Springer Nature.

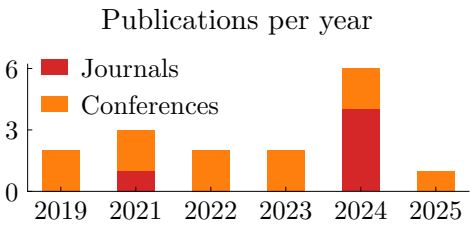
European Journal of Mechanics - A/Solids 2025
Elsevier.

International Nonlinear Dynamics Conference (NODYCON) 2025
Springer Nature.

RESEARCH METRICS

Total citations	89
Journal publications	5
Conference publications	11
h-index	4
i10-index	2





Google Scholar metrics (from 06/06/2025)

JOURNAL PUBLICATIONS

2024

Costa, L. G; Savi, M. A. "Complex nonlinear dynamics of a multidirectional energy harvester with hybrid transduction". *Smart Materials and Structures*, v. 33, p. 115007, 2024.

Costa, L. G; Savi, M. A. "Pendulum-based hybrid system for multidirectional energy harvesting". *Nonlinear Dynamics*, v. 112, n. 21, p. 18665-18684, 2024.

Costa, L. G; Monteiro, L. L. S.; Savi, M. A. "Multistability investigation for improved performance in a compact nonlinear energy harvester". *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, v. 46, n. 4, p. 212, 2024.

Costa, L. G; Savi, M. A. "Nonlinear dynamics of a compact and multistable mechanical energy harvester". *International Journal of Mechanical Sciences*, v. 262, p. 108731, 2024.

2021

Costa, L. G; Monteiro, L. L. S.; Pacheco P. M. C. L.; Savi, M. A. "A parametric analysis of the nonlinear dynamics of bistable vibration-based piezoelectric energy harvesters". *Journal of Intelligent Material Systems and Structures*, v. 32, n. 7, p. 699-723, 2021.

CONFERENCE PUBLICATIONS

2025

Costa, L. G; Savi, M. A. "Nonlinear dynamics perspective framework employed to the analysis of energy harvesters". *Proceedings of the XX International Symposium on Dynamic Problems of Mechanics*, 2025.

2024

Costa, L. G; Savi, M. A. "Mechanical energy multi-harvesting: on the performance enhancement of mechanical energy harvesters". *Proceedings of the 9th International Symposium on Solid Mechanics*, 2024.

Costa, L. G; Savi, M. A. "Analysis of a multidirectional hybrid energy harvester.". *Anais do Congresso Nacional de Engenharia Mecânica*, 2024.

2023

Costa, L. G; Savi, M. A. "Analysis of mechanical energy harvesters using a nonlinear dynamics perspective.". *Proceedings of the XIX International Symposium on Dynamic Problems of Mechanics*, 2023.

Costa, L. G; Savi, M. A. "A prototype for hybrid and multidirectional energy harvesting using pendulum structures.". *Proceedings of the 27th International Congress of Mechanical Engineering*, 2023.

2022

Costa, L. G; Caetano, V. J.; Savi, M. A. "Nonlinear dynamics of an oscillator-pendulum energy harvester.". *Anais do Congresso Nacional de Engenharia Mecânica*, 2022.

Costa, L. G; Monteiro, L. L. S.; Savi, M. A. "Vibration energy harvesting using a two-degree of freedom duffing-type structure.". *Proceedings of the 8th International Symposium on Solid Mechanics*, 2022.

2021

Costa, L. G; Monteiro, L. L. S.; Savi, M. A. "Chaos and hyperchaos in a two-degree of freedom duffing oscillator". *Proceedings of the 26th International Congress of Mechanical Engineering*, 2021.

Costa, L. G; Reis, E. V. M.; Savi, M. A. "Energy Harvesting from Chaotic Vibration". *Proceedings of the 26th International Congress of Mechanical Engineering*, 2021.

2019

Borges, G. X. G.; **Costa, L. G**; Adeodato, A.; Duarte B. T.; Monteiro, L. L. S.; Pacheco, P. M. C. L.; Savi, M. A. "Nonlinear effects on experimental piezomagnetoelastic energy harvesting". *Proceedings of the 25th International Congress of Mechanical Engineering*, 2019.

Costa, L. G; Monteiro, L. L. S.; Savi, M. A. "A parametric analysis of the nonlinear dynamics of a duffing oscillator". *Proceedings of the 25th International Congress of Mechanical Engineering*, 2019.