



# LUÃ GUEDES COSTA

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📍 32, Brazilian 📍 Rio de Janeiro, RJ, Brazil



## ABOUT ME 👤

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 ABCM-Springer Award for the best Ph.D. dissertation given by the Brazilian Association of Mechanical Sciences and Engineering (ABCM).

## EXPERIENCE 🏢

<b>Assistant Professor</b> Universidade Federal do Rio de Janeiro, Brazil Department of Mechanical Engineering	Apr 2024 - Present
<b>Postdoctoral Researcher</b> Center for Nonlinear Mechanics, Universidade Federal do Rio de Janeiro, Brazil Activities: Design and development of new nonlinear smart systems and structures.	Jul 2024 - Apr 2025
<b>Doctoral Researcher</b> Center for Nonlinear Mechanics, Universidade Federal do Rio de Janeiro, Brazil Activities: Design, development and analysis of new types of nonlinear energy harvesters.	Mar 2020 - Jul 2024
<b>Co-founder and Manager</b> Tupan Accessibility, Brazil Activities: Management and development of new accessibility technology.	Mar 2020 - Oct 2022
<b>Research Assistant</b> Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil Activities: Analysis of bistable piezoelectric energy harvesters using reduced-order models.	Mar 2018 - Jan 2020
<b>Undergraduate Research Program</b> Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil Activities: Dynamical analysis of energy harvesting systems using finite element method.	Jun 2017 - Dec 2017

## EDUCATION 🎓

<b>Ph.D. in Mechanical Engineering</b> Universidade Federal do Rio de Janeiro (COPPE/UFRJ), Brazil	2020 - 2024
<b>Master's Degree in Mechanical Engineering and Materials Technology</b> Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil	2018 - 2020
<b>Bachelor's Degree in Mechanical Engineering</b> Centro Federal de Educação Tecnológica Celso Suckow da Fonseca (CEFET/RJ), Brazil	2011 - 2017

## HONORS AND AWARDS 🏆

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<b>ABCM-Springer Award</b> Best Ph.D. thesis in Mechanical Engineering, 2024.	Nov 2025
<b>ABCM Best Paper Award</b> 9th International Symposium on Solid Mechanics (MECSOL 2024)	Oct 2024
<b>Best Ph.D. Student Paper Award</b> XIX International Symposium on Dynamic Problems in Mechanics (DINAME 2023)	Feb 2023
<b>Winner of Invent for the Planet 2019</b> Texas A&M, US Global contest of technology and innovation for real-world challenges. Winning Project: Team Tupã	Apr 2019

## ADDITIONAL TRAINING 🌟

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<b>School of Advanced Sciences on Nonlinear Dynamics</b> Universidade de São Paulo (USP), São Paulo, Brazil	Aug 2019
<b>Oratory</b> Rogéria Guida Oratory Course, Rio de Janeiro, Brazil.	2017
<b>Undergraduate Exchange Program in Mechanical Engineering</b> Dublin Institute of Technology, Ireland	2015 - 2016

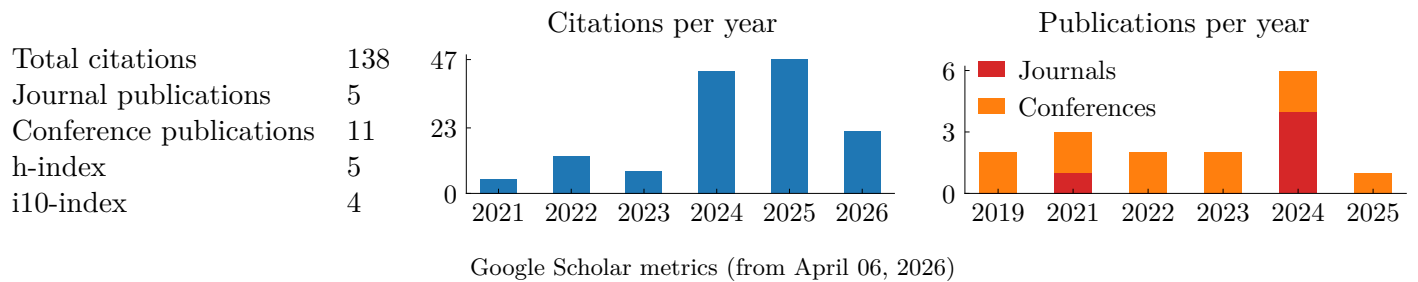
## PEER REVIEW 🖋️

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<b>International Journal of Mechanical Sciences</b> Elsevier	2021 - 2024
<b>Nonlinear Dynamics</b> Springer Nature	2023 - 2024
<b>Journal of Vibration and Control</b> SAGE Journals	2020 - 2023
<b>Journal of Computational and Nonlinear Dynamics</b> ASME	2023 - 2024
<b>Journal of Vibration Engineering &amp; Technologies</b> Springer Nature	2024 - 2025
<b>Journal of the Brazilian Society of Mechanical Sciences and Engineering</b> Springer Nature	2025
<b>European Journal of Mechanics - A/Solids</b> Elsevier	2025
<b>International Journal of Non-Linear Mechanics</b> Elsevier	2026
<b>International Nonlinear Dynamics Conference (NODYCON)</b> Springer Nature	2025

## RESEARCH METRICS

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## JOURNAL PUBLICATIONS

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### 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](#)". *Non-linear 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 COMMUNICATIONS

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### 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.