



# Anderson Luiz Dias

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## Objective

Before held my Bachelor degree in Mechanical Engineering I developed a solid background in automotive area experiencing each important sector of this field as technical assistance in dealerships, heavy duty vehicle maintenance, quality control in automotive manufacturing and, finally, academic research of automotive brake noise. During this period I observed the transformation of the automotive architecture, that moving to hybrid and full electric drive train. The potential of these new automobiles and the way they efficiently extract power from fuel and battery provides a new and wide range of performance. This new automotive DNA gets my attention and passionate to study and help to develop racing cars that are fast, powerfull, efficient and capable to interpret driver's requirements.

## Education

- 2022–Now **Scholarship**, *Formula One Scholarship Awarded*
- 2021–Now **Master**, *Università di Modena e Reggio Emilia*, Modena, Master's of Science  
Racing Car Design
- 2015–2020 **Bachelor**, *Universidade Federal do Ceará*, Fortaleza, *Bachelor's of Science*  
in Mechanical Engineer
- 2007–2009 **Technical**, *Instituto Federal do Ceará*, Fortaleza, *Technical*  
Automotive Maintenance
- 2008–2009 **Technical**, *SENAI*, Fortaleza, *Apprenticeship*  
Automotive Mechanic

## Undergraduate thesis

- title *Brake squeal analysis in the main drum brake systems using the finite element method and complex eigenvalues and eigenvectors analysis.*
- supervisors Rômulo do Nascimento Rodrigues

description The advent of the brake system has proven an important achievement for automotive production. Since the 1920s, researchers have studied the secondary response of this system, namely its noise emission, identifying several causes. In addition, many kinds of noises, including their respective frequency range and characteristics, were detected. Among these, the squeal is the noise that most concerns the automotive industry due to high warranty costs and environmental impact. The squeal noise occurs as a result of three mechanisms: the stick-slip; the sprag-slip; and the modal coupling. These are connected to material parameters of the brake components. This work proposes a correlation between material and stability parameters for all kinds of drum brakes to indicate the influence of this on brake squeal. The results suggest that the friction coefficient is the most influential parameter and limiting it makes it possible to maintain the squeal level under emission standards.

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## Experience

### Academic

2019–2020 **Internship**, *Laboratory of Vibrations - LabVib*, Fortaleza

I was awarded a scholarship in LabVib and conducted the research about brake squeal. In the LabVib team I engaged the study about squeal issues in automotive drum brakes.

Detailed achievements:

- Paper title Light duty automotive duplex drum brake squeal analysis using the finite element method accepted for publication on Proceeding of the Institute of Mechanical Engineers, Part C: Journal of Mechanical Engineering Sciences journal[3].
- Development of five papers about brake squeal occurrence in drum brake systems and its correlation with brake material parameters[3, 6, 4, 2, 5].
- Modeling of three drum brake by Ansys Design Modeler that afterwards were used for static structural and modal analysis.
- Lecturer about Squeal Simulation given at 2020 Academic Meeting of UFC.
- Designing and building of the stick-slip experimental test bench for brake materials analysis through Catia V5 software.

2018–2019 **Internship**, *Internal Combustion Engine Laboratory - LMCI*, Fortaleza

I held a internship position in LMCI and worked on engine bench test and combustion simulations.

### Professional

2019 **Trainee engineer**, *Porsche Cup Brazil*, São Paulo

Trainee of racing engineer during the São Paulo 500 Km Endurance race. This activity was part of The Motorsport Engineering, The Data Acquisition and Tire Specialization courses by Jorge Segers.

2011–2014 **Internship**, *Ford Motor Company Brazil Ltda - Troller Division*, Horizonte

As Incoming quality internship I support every car part supplier of the plant reporting quality issues. During this period I became a Six Sigma Green Belt verified and took the battery failure project.

Detailed achievements:

- Global 8D;
- Statistical Process Control with Minitab, with sub-achievements:
- Six Sigma Green Belt.

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## Languages

English Skill level

TOEFL IBT 74 - B2

Italian Skill level

Italian Language Course - Level B1

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## Computer skills

Simulation Ansys

Design Catia V5

Design Ansys Design Modeler

Motor sports Pi Toolbox

Data Analysis

Mathematics Matlab

Document Editor  
Latex

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## References

### Academic

Rômulo do Nascimento Rodrigues  
Professor at Federal University of Ceará

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Roberto de Araújo Bezerra  
Professor at Federal University of Ceará

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## Publications

- [1] Thiago Barrocas, Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, Pierre Lamary, and Matheus Henrique Pires Miranda. *Densenvolvimento de Sistema Especialista para o Ensino de Projeto de Engrenagens Cilíndricas de Dentes Retos em Cursos de Engenharia Mecânica*. Revista de Ensino de Engenharia, 2021 - Under Review.
- [2] Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, and Pierre Lamary. *Heavy and Light duty automotive drum brake squeal analysis using the finite element method*. International Journal of Vehicle Design, 2021 - Under Review.
- [3] Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, Pierre Lamary, and Matheus Henrique Pires Miranda. *Light duty automotive duplex drum brake squeal analysis using the finite element method*. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 2021.
- [4] Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, Pierre Lamary, and Matheus Henrique Pires Miranda. *Automotive Simplex and*

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*Duplex Drum Brake Squeal Analysis Using The Finite Element Method.* Noise Vibration Worldwide, 2021 - Under Review.

- [5] Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, Pierre Lamary, and Matheus Henrique Pires Miranda. *Heavy duty automotive drum brake squeal analysis using the finite element method.* Archive of Applied Mechanics, 2021 - Under Review.
- [6] Anderson Luiz Dias, Rômulo do Nascimento Rodrigues, Roberto de Araújo Bezerra, Pierre Lamary, and Matheus Henrique Pires Miranda. *Light duty automotive drum brake squeal analysis using the finite element method.* Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Material Engineering Science, 2021 - Under Review.

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