1. Academic Studies

- 1.1. B.Sc. in Mechanical Engineering, 1994 1998
 Federal University of Rio de Janeiro UFRJ (Brazil)
 Thesis: Reduced Order Models for Laminar Flows in Irregular Ducts
- 1.2. M.Sc. in Mechanical Engineering, 1998 2000
 Federal University of Rio de Janeiro COPPE/UFRJ (Brazil)
 Thesis: Linear Stability Analysis and Direct Numerical Simulations of Natural Convection in Porous Media
- 1.3. M.Sc. in Mechanical and Aerospace Engineering, 2000 2002
 University of California in Los Angeles UCLA (USA)
 Thesis: Linear Stability Analysis of Natural Convection Drive by Surface-Tension Gradients
- 1.4. Ph.D. in Mechanical and Aerospace Engineering, 2002 2005
 University of California in Los Angeles UCLA (USA)
 Thesis: Linear Stability Analysis and Direct Numerical Simulations of Shear-Layer Instabilities in Jets in Cross Flow

2. Professional Work

- 2.1. Military Institute of Engineering IME (Brazil)
 Professor of the Department of Mechanical Engineering and Material Sciences, 2007 2012
 Vice-Head of the Graduate Program in Defense Engineering, 2010 2012
- 2.2. Fluminense Federal University UFF (Brazil)
 Professor of the Department of Mechanical Engineering, 2012 Today
 Vice-Head of the Graduate Program in Mechanical Engineering, 2019 2021
 Head of the Graduate Program in Mechanical Engineering, 2021 2023
- 2.3. Brazilian Association of Mechanical Sciences and Engineering ABCM (Brazil) Aerospace Engineering Committee Secretary, 2013 – 2015 Treasury Director, 2013 – 2017 Secretary Director, 2017 – 2021

3. Visiting Positions

- 3.1. University of Lille UoL (France)
 Institute of Mathematics, 1 month/2010, 1 month/2011, 1 month/2012 & 1 month/2015
 School of Engineering, 1 month/2018
 Research: Linear Stability Analysis and Numerical Simulations of Visco-Elastic Flows
- 3.2. University of Bologne UniBo (Italy) Department of Industrial Engineering, 1 week/2012, 1 month/2013 & 2 weeks/2018 Research: Linear Stability Analysis and Numerical Simulations Induced by Viscous Dissipation
- 3.3. University of California at Los Angeles UCLA (USA) Mechanical and Aerospace Engineering Department, 3 months/2019 & 3 months/2020 Research: Linear Stability Analysis and Reduced Order Models for Free and Transvers Jets

4. Teaching Experience

- 4.1. Undergraduate Thermodynamics, Heat transfer, Fluid mechanical, Numerical analysis & Spectral methods
- 4.2. Graduate Stability analysis, numerical methods

5. Recent Awards (2017-Today)

- 5.1. Scientist of the State, FAPERJ Brazil, 2020
- 5.2. Productivity Fellow, CNPq Brazil, 2020

6. Students Advised (2017-Today)

- 6.1. Undergraduate Projects
 - Davi Saadi de Almeida Lettieri, 2021
 Thesis: Reduced Order Models for Jet Diffusion Flames Using Machine Learning
 - Rodrigo Tavares Veloso, 2019
 Thesis: Comparative Analysis of Steady-State Generation Methods
 - Mateus Sanglard Schuabb Nunes, 2018
 Thesis: Convective and Absolute Stability Analysis 2 and 3D Flows in Porous Media with Inclined Temperature Gradients as well as Vertical and Horizontal Through Flow
 - Rafael Pimenta Torre de Flot, 2018
 Thesis: Direct Numerical Simulation of Overheating in Supercritical Fluids
 - Matheus de Souza Santos Macedo, 2018
 Thesis: Linear Stability Analysis of Rarefied Hypersonic Flows
 - João Carlos Andrade de Deus & Luisa Jorge Souza, 2017
 Thesis: Application of Panel Methods for the Flow Around Airfoils
 - Thales Garcia Rangel, 2017
 Thesis: Thermodynamic Analysis of the Heat Transfer in Cavities Containing Supercritical Fluids Subject to Internal and External Heating
 - Bernardo Pereira Brener, 2017
 Thesis: Multi-Stage Minimal Gain Marching Schemes for Steady-Stage Generation
 - Pedro Perroni Rezende Machado, 2017
 Thesis: Lumped Models for the Unsteady Heat Transfer in Supercritical Fluids
- 6.2. Master Dissertations
 - Mateus Sanglard Schuabb Nunes, 2021
 Thesis: Generation of Stationary and Marginally Unstable Steady-States Using the Fluids
 Displacement Procedure
 - Eduardo Villela Machado dos Reis, 2019
 Thesis: Marangoni Instability Induced by Viscous Dissipation
 - Pedro Vayssièri Brandão, 2018
 Thesis: Linear and Nonlinear Stability of Mixed Convection in Porous Media Under the Influence of Viscous Dissipation

- Helio Ricardo de Aguiar Quintanilha Jr, 2017
 Thesis: On the Existence of Multiple Self-Excitation Frequencies in the Absolute Instability of Interacting Planar Mixing-Layers and Wakes
- Gabriela Guerreiro Ferreira, 2017 Thesis: Linear Stability Analysis of Flows in Higroscopic Porous Media
- 6.3. Doctorate Theses
 - Davi Bernhard de Souza, 2021
 Thesis: Viscous, Round and Coaxial Jet Analogy to Estimate the Linear Stability of Constant and Variable Density Jets in Crossflow
 - Ricardo Dias dos Santos, 2020
 Thesis: A Study of Runge-Kutta Schemes with Strong Linear and Nonlinear Stability
 - Rômulo Bessi Freitas, 2019
 Thesis: A Study of Different Tools for the Linear and Modal Stability Analysis of Incompressible and Compressible Flows
 - Jakler Nichele, 2018
 Thesis: Calculation of Thermodynamic and Transport Fluid Properties of Supercritical Fluids Using Molecular Dynamics
 - Klédson Flávio Silveira Santiago, 2017
 Thesis: Conservative and Non-Conservative Schemes for Diffusive Schemes with Strong
 Variable Properties

7. Research Projects (2017-Today)

- 7.1. Title: Novel Concepts for Transition Delay in Hypersonic Boundary Layers and Their Optimization, 2021 2022 Amount: U\$ 22,650.00 (UFF & NASA Langley) from ISEP/AFOSR – USA Team: UFF & NASA Langley
- 7.2. Title: Transition to Absolute Instability in Transverse Jets, 2021 2022
 Amount: U\$ 15,000.00 from ISEP/SOARD/AFOSR USA
 Team: UFF in Collaboration with UCLA
- 7.3. Title: Absolute Instability of Interacting Planar Mixing Layers and Wakes, 2020 2022 Amount: U\$ 25,000.00/50,000.00 (UFF/CalTech) from SOARD/AFOSR – USA Team: UFF & Caltech
- 7.4. Title: Accurate Steady-States for Laminar-Turbulent Transition Studies in Boundary-Layers, 2020 – 2024

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Amount: R$ 48,000.00 from CNPq – Brazil & R$ 108,000.00 from FAPERJ – Brazil
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- 7.5. Title: Instability Free Three-Dimensional Hypersonic Laminar Boundary-Layer Steady-States for Linear and Nonlinear Stability Analyses, 2019 – 2022
 Amount: U\$ 125,689.01 from SOARD/AFOSR – USA
 Team: UFF in Collaboration with NASA Langley (USA) and University of Liverpool (England)
- 7.6. Title: Analysis of the Compressibility Induced in a Fluid by its Proximity to its Thermodynamic Critical Point, 2016 – 2021 Amount: R\$ 42,000.00 from CNPq – Brazil Team: UFF, in collaboration with IME (Brazil)

8. Journal Publications (2017-Today)

- 8.1. RB Freitas, PV Brandão, LS de B Alves, M Celli and A Barletta, *The effect of local thermal non-equilibrium on the onset of thermal instability for a metallic foam*, **Physics of Fluids**, v. 34, no 034105, 2022.
- 8.2. RD Santos and LS de B Alves, A comparative analysis of explicit, IMEX and implicit strong stability preserving Runge-Kutta schemes, **Applied Numerical Mathematics**, v. 159, pp. 204-220, 2021.
- 8.3. EVM Reis and LS de B Alves, *Convective and absolute instabilities induced by viscous dissipation in the thermocapillary convection with through-flow*, **Journal of Heat Transfer**, v. 143, no. 052601, 2021.
- 8.4. DB de Souza, RB Freitas and LS de B Alves, *Criterion for the linear convective to absolute instability transition of a jet in crossflow: The countercurrent viscous and round mixing-layer analogy*, **Physical Review Fluids**, v. 6, no. L041901, 2021.
- 8.5. LS de B Alves, RD Santos and CEG Falcão, *Low Mach preconditioned density-based methods with implicit Runge-Kutta schemes in physical-time*, **Journal of the Brazilian Society of Mechanical Sciences and Engineering**, v. 43, p. 341, 2021.
- 8.6. PV Brandão, A Barletta, M Celli, LS de B Alves and DSA Rees, On the stability of the isoflux Darcy-Bénard problem with a generalised basic state, International Journal of Heat and Mass Transfer, v. 177, no. 121538, 2021.
- 8.7. MSS Nunes, LS de B Alves and S da C Hirata, *Two and Three-Dimensional Absolute Instabilities in a Porous Medium with Inclined Temperature Gradient and Vertical Throughflow*, **Transport in Porous Media**, v. 132, pp. 135-155, 2020.
- 8.8. IF Pinheiro, RD Santos, LA Sphaier and LS de B Alves, *Improving the precision of discrete numerical solutions using the generalized integral transform technique*, **Journal of the Brazilian Society of Mechanical Sciences and Engineering**, v. 42, p. 329, 2020.
- 8.9. HH de Barros and LS de B Alves, Soft wall resistance as a necessary condition to validate numerical simulations in thermoacoustic heat transfer within closed cavities, International Journal of Thermal Sciences, v. 135, pp. 580-588, 2019.
- 8.10. LS de B Alves, S da C Hirata, MSS Nunes and A Barletta, Identifying linear absolute instabilities from differential eigenvalue problems using sensitivity analysis, Journal of Fluid Mechanics, v. 870, pp. 941-969, 2019.
- 8.11. MP Avanci, D Rodriguéz and LS de B Alves, A geometrical criterion for absolute instability in separated boundary layers, **Physics of Fluids**, v. 31, no. 014103, 2019.
- 8.12. A Barletta, M Celli, PV Brandão and LS de B Alves, *Wavepacket instability in a rectangular porous channel uniformly heated from below*, **International Journal of Heat and Mass Transfer**, v. 147, no. 118993, 2019.
- 8.13. PV Brandão, M Celli, A Barletta and LS de B Alves, *Convection in a Horizontal Porous Layer with Vertical Pressure Gradient Saturated by a Power-Law Fluid*, **Transport in Porous Media**, v. 130, pp. 613-625, 2019.
- 8.14. MC Reis, LA Sphaier, LS de B Alves and RM Cotta, Approximate analytical methodology for calculating friction factors in flow through polygonal cross section ducts, Journal of the Brazilian Society of Mechanical Sciences and Engineering, v. 40, pp. 1-11, 2018.
- 8.15. IF Pinheiro, LA Sphaier and LS de B Alves, Integral transform solution of integro-differential equations in conduction-radiation problems, Numerical Heat Transfer Part A Applications, v. 73, pp. 93-114, 2018.

- 8.16. J Nichele, CRA Abreu, LS de B Alves and I Borges Jr, Accurate non-asymptotic thermodynamic properties of near-critical N₂ and O₂ computed from molecular dynamics simulations, Journal of Supercritical Fluids, v. 135, pp. 225-233, 2018.
- 8.17. EVM Reis, LA Sphaier, LCS Nunes and LS de B Alves, *Dynamic response of free span pipelines via linear and nonlinear stability analyses*, **Ocean Engineering**, v. 163, pp. 533-543, 2018.
- 8.18. A Barletta and LS de B Alves, Absolute instability: A toy model and an application to the Rayleigh-Bénard problem with horizontal flow in porous media, International Journal of Heat and Mass Transfer, v. 104, pp. 438-455, 2017.
- 8.19. KFS Santiago and LS de B Alves, *Conservative and nondispersive schemes for diffusion terms with strong property variations*, **Numerical Heat Transfer Part B – Fundamentals**, v. 70, pp. 1-13, 2017.
- 8.20. NR Braga, PV Brandão, LS de B Alves and A Barletta, *Convective instability induced by internal and external heating in a fluid saturated porous medium*, **International Journal of Heat and Mass Transfer**, v. 108, pp. 2393-2402, 2017.
- 8.21. R de S Teixeira and LS de B Alves, *Minimal gain marching schemes: searching for unstable steady-states with unsteady solver*, **Theoretical and Computational Fluid Dynamics**, v. 31, pp. 1-15, 2017.
- 8.22. J Nichele, AB de Oliveira, LS de B Alves and I Borges Jr, Accurate calculation of near-critical heat capacities C_P and C_V of argon using molecular dynamics, Journal of Molecular Liquids, v. 237, pp. 65-70, 2017.