






Sidiney Bruno Montanhano

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 Currículo Lattes

Education



- 2018 – 2024  **Ph.D. in Applied Mathematics** at Universidade Estadual de Campinas.
Thesis title: *Contextuality: A Topological and Geometrical Journey*.
Advisor: Prof. Dr. Marcelo de Oliveira Terra Cunha
- 2016 – 2018  **M.Sc. in Mathematics** at Universidade Estadual de Maringá.
Thesis title: *Conformal Transformations*.
Advisor: Prof. Dr. Josiney Alves de Souza
Co-advisor: Prof. Dr. Pedro Rogerio Sergi Gomes
- 2011 – 2016  **B.Sc. in Physics** at Universidade Estadual de Maringá.
Thesis title: *Introduction to Field Theory*
Advisor: Prof. Dr. Luis Carlos Malacarne

Research Publications

Journal Articles

- 1 **Montanhano, Sidiney B.** (2025a). Differential geometry of contextuality. *Brazilian Journal of Physics*, 55(4), 157.  doi:10.1007/s13538-025-01779-w
- 2 **Montanhano, Sidiney B.** (2025b). Wigner and friends, a map is not the territory! contextuality in multi-agent paradoxes. *Foundations of Science*.  doi:10.1007/s10699-024-09971-y
- 3 Marques, C. H., Mendes, L. O., Bortotti, M. F., **Montanhano, Sidiney B.**, & Souza, J. A. (2016). Isometries in minkowski space: Generalized orthogonal group and poincare group. *BOLETIM SOCIEDADE PARANAENSE DE MATEMATICA*, 34(1), 99–128. In portuguese.




Preprints

- 1 **Montanhano, Sidiney B.** (2021a). Characterization of contextuality with semi-module ech cohomology and its relation with cohomology of effect algebras. Preprint arXiv:2104.11411v2 [math.AC].  doi:10.48550/ARXIV.2104.11411
- 2 **Montanhano, Sidiney B.** (2021b). Contextuality in the bundle approach, n-contextuality, and the role of holonomy. Preprint arXiv:2105.14132v2 [math.AC].  doi:10.48550/ARXIV.2105.14132

Others

- 1 **Montanhano, Sidiney B.** (2024). *Contextuality: A topological and geometrical journey*. Ph.D. Thesis. Online, in english: <https://www.ime.unicamp.br/pos-graduacao/matematica-aplicada/contextualidade-uma-jornada-topologica-geometrica>.
- 2 **Montanhano, Sidiney B.** (2018). *Conformal transformations*. M.Sc. Dissertation. Online, in portuguese: repositorio.uem.br:8080/jspui/handle/1/5518.
- 3 **Montanhano, Sidiney B.** (2015). *Introduction to field theory*. B.Sc. Dissertation. Online, in portuguese: site.dfi.uem.br/wp-content/uploads/2016/12/Sidiney-Montanhano-.pdf.

Membership



- 2019 – 2024  Member of the **Mathematical Foundations of Quantum Theory Group (Math-FoundQ)**, Department of Applied Mathematics, Institute of Mathematics, Statistics and Scientific Computing, Universidade Estadual de Campinas, Brazil.
-  Member of the **Brazilian National Institute for Science and Technology of Quantum Information (INCT-IQ)**, Brazil.
- 2016 – 2018  Member of the **Geometry and Topology Concentration Area**, State University of Maringá, Brazil.

Scholarships and Internships

- 2022 – 2024  **Didactic-Pedagogical Training Program for Distance Learning Courses**, Universidade Virtual do Estado de São Paulo and Universidade Estadual de Campinas.
- 2018 – 2022  **Doctoral Scholarship**, Coordination for the Improvement of Higher Education Personnel (CAPES), Universidade Estadual de Campinas.
- 2021 – 2021  **Professors Internship Program B**, Institute of Mathematics, Statistics and Scientific Computing, Universidade Estadual de Campinas. Supervisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **Professors Internship Program B**, Institute of Mathematics, Statistics and Scientific Computing, Universidade Estadual de Campinas. Supervisor: Prof. Dr. Samuel Rocha de Oliveira.
- 2020 – 2020  **Professors Internship Program B**, Institute of Mathematics, Statistics and Scientific Computing, Universidade Estadual de Campinas. Supervisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **Professors Internship Program C**, Institute of Mathematics, Statistics and Scientific Computing, Universidade Estadual de Campinas. Supervisor: Prof. Dr. Samuel Rocha de Oliveira.
- 2016 – 2018  **Master's Scholarship**, Coordination for the Improvement of Higher Education Personnel (CAPES), Universidade Estadual de Maringá.
- 2014 – 2015  **Institutional Scientific Initiation Scholarship Program**: Vector fields on surfaces, National Council for Scientific and Technological Development (CNPq). Advisor: Prof. Dr. Josiney Alves de Souza.
- 2013 – 2014  **Institutional Scientific Initiation Scholarship Program**: Lorentz Group and Algebra, National Council for Scientific and Technological Development (CNPq). Advisor: Prof. Dr. Josiney Alves de Souza.
- 2012 – 2013  **Institutional Scientific Initiation Scholarship Program**: Introduction to Lie Groups, National Council for Scientific and Technological Development (CNPq). Advisor: Prof. Dr. Josiney Alves de Souza.

Academic Events


Invited Presentation

- 2025  **Topology and Complexity of Paradoxes**, V EAEPMA - Meeting of PMA-UEM Students and Alumni, Universidade Estadual de Maringá, Brazil.
- 2022  **Differential Geometry of Contextuality**, Bilkent Graduate Math Seminar. Ankara, Turkey (Online).






Academic Events (continued)

2019  **Contextuality**, II Geometry Week, Universidade Estadual de Maringá, Brazil.






Other Presentations

- 2024  **Contextuality and Joint Measurability in Qubits**, IV Encontro MFQ, Universidade Estadual de Campinas, Brazil (Online).
-  **Wigner and friends, a map is not the territory! Contextuality in multi-agent paradoxes**, The Sixteenth Biennial IQSA Conference Quantum Structures 2024. Vrije Universiteit Brussel, Brussel, Belgium.
-  **Wigner and friends, a map is not the territory! Contextuality in multi-agent paradoxes**, Foundations of Quantum Computational Advantage Workshop. Perimeter Institute for Theoretical Physics, Waterloo, Canada (Online).
- 2023  **Contextuality in multi-agent paradoxes**, XII Conference on Quantum Foundations: From Wave-Particle Duality To Quantum Technologies. Universidad CAECE, Buenos Aires, Argentina.
-  **Contextuality: An Unexpected Journey**, Mathematical Foundations of Quantum Theory Group. Universidade Estadual de Campinas, Brazil (Online).
-  **Contextuality in multi-agent paradoxes**, II Brazilian Meeting in Category Theory. University of São Paulo, Brazil.
- 2022  **Characterization of Contextuality with Semi-Module and Cohomology**, Applied Category Theory 2022. Glasgow, Scotland (Online).
-  **A Sheaf Approach to Multi-Agent Paradoxes?**, Encontro MFQ, Universidade Estadual de Campinas, Brazil (Online).
- 2021  **Category Theory: A Naive Introduction**, Mathematical Foundations of Quantum Theory Group. Universidade Estadual de Campinas, Brazil.
-  **Contextuality and Cohomology: Module and Semi-Module Approaches**, Mathematical Foundations of Quantum Theory Group. Universidade Estadual de Campinas, Brazil.
-  **Contextuality: Sheaf and Fiber Bundle Approaches**, Mathematical Foundations of Quantum Theory Group. Universidade Estadual de Campinas, Brazil.
- 2020  **Geometric Quantum Mechanics, or Quantum Mechanics Using Geometry**, Mathematical Foundations of Quantum Theory Group. Universidade Estadual de Campinas, Brazil.
- 2017  **Generalized Orthogonal Group and Conformal Group of \mathbb{R}^2** , PMA/UEM Geometry Seminars. Universidade Estadual de Maringá, Brazil.
- 2014  **Lorentz Group and Algebra**, XXIII Annual Scientific Initiation Meeting, State University of Londrina, Brazil.
- 2013  **Introduction to Lie Groups**, XXII Annual Scientific Initiation Meeting, Foz do Iguaçu, Brazil.

Posters








- 2023  **Contextuality in multi-agent paradoxes**, VIII Paraty Quantum Information Workshop. Paraty, Rio de Janeiro, Brazil.
-  **Contextuality in multi-agent paradoxes**, VIII Paraty Quantum Information School. Paraty, Rio de Janeiro, Brazil.
- 2022  **Differential Geometry of Contextuality**, Quantum Physics and Logic 2022. University of Oxford, England (accepted).
-  **Sheaf Approach to Multi-agent Paradoxes**, Quantum Physics and Logic 2022. University of Oxford, England (accepted).
-  **Differential Geometry of Contextuality**, Solstice of Foundations ETH Zurich 2022, Quantum foundations summer school. Zurich, Switzerland (Online).

Academic Events (continued)









- 2021  **Contextuality in the Fibration Approach and the Role of Holonomy**, X Conference on Quantum Foundations. Buenos Aires, Argentina (Online).
-  **Contextuality in the Fibration Approach and the Role of Holonomy**, VQF Vienna Quantum Foundations Conference 2020. Vienna, Austria (Online).
-  **Contextuality and Semi-Module Cohomology**, 18th International Conference on Quantum Physics and Logic. Gdask, Poland (Online).
- 2020  **Quantum Theory and Contextuality**, Mathematics Meeting 20 Years of PMA-UEM. Universidade Estadual de Maringá, Brazil.
- 2014  **Application of Lie Theory to Special Relativity**, XXIII Brazilian Algebra Meeting. Universidade Estadual de Maringá, Brazil.

Several other events as attendee.








Teaching Assistantship

- 2021  **MS650/A - Methods of Applied Mathematics II**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **MS550/A - Methods of Applied Mathematics I**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **F520/A - Mathematical Methods of Physics I**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
- 2020  **MS650/A - Methods of Applied Mathematics II**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **F620/A - Mathematical Methods of Physics II**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **MS550/A - Methods of Applied Mathematics I**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.
-  **F520/A - Mathematical Methods of Physics I**, Universidade Estadual de Campinas. Advisor: Prof. Dr. Samuel Rocha de Oliveira.









Learning Facilitator

- 2024  **COM120 - Algorithms and Computer Programming II**, Universidade Virtual do Estado de São Paulo.
-  **COM110 - Algorithms and Computer Programming I**, Universidade Virtual do Estado de São Paulo.
-  **COM330 - Human-Computer Interface**, Universidade Virtual do Estado de São Paulo.
-  **COM300 - Database**, Universidade Virtual do Estado de São Paulo.
- 2023  **MGE001 - Spatial Geometry**, Universidade Virtual do Estado de São Paulo.
-  **COM200 - Professional Training in Computing**, Universidade Virtual do Estado de São Paulo.
-  **COM130 - Internet and Web Fundamentals**, Universidade Virtual do Estado de São Paulo.
- 2022  **MMBoo2 - Basic Mathematics**, Universidade Virtual do Estado de São Paulo.

Other Activities

- 2023  **Evaluator for the Mathematics Olympiad of Unicamp 2023 - second phase**, Universidade Estadual de Campinas. Campinas, Brazil (Online).
-  **Evaluator for the Mathematics Olympiad of Unicamp 2023 - first phase**, Universidade Estadual de Campinas. Campinas, Brazil (Online).
- 2022  **Evaluator for the Mathematics Olympiad of Unicamp 2022 - second phase**, Universidade Estadual de Campinas. Campinas, Brazil (Online).
-  **Evaluator for the Mathematics Olympiad of Unicamp 2022 - first phase**, Universidade Estadual de Campinas. Campinas, Brazil (Online).
- 2015 – 2016  **Telemarketing Attendant**, Vivo (Telefônica Brasil). Maringá, Brazil.
- 2015  **Restaurant Attendant**, Good Food - Comercio De Alimentos S/A. Maringá, Brazil.
- 2006 – 2012  **Administrative Assistant**, Brulan Transportes e Turismo. Paçandu, Brazil.

Certificates

- 2024  **Postgraduate in Didactic-pedagogical processes for distance learning courses**, Universidade Virtual do Estado de São Paulo.
- 2022  **Applied Machine Learning in Python**, Coursera by University of Michigan.
-  **Applied Plotting, Charting and Data Representation in Python**, Coursera by University of Michigan.
-  **Introduction to Data Science in Python**, Coursera by University of Michigan.
-  **Critical Thinking, Logic, and Argumentation**, Coursera by Universidade Estadual de Campinas.
- 2010 – 2014  **English Course**, Wizard Idiomas. Paçandu, Brazil.
- 2010  **Learn to Invest in the Stock Market**, XP Educação. Maringá, Brazil.
- 2008  **Assembly and maintenance of computers**, Sergio Yamada Computação. Maringá, Brazil.