Sidiney Bruno Montanhano

🌐 sidineybm.github.io   🔗 sidiney-montanhano   🆔 0000-0002-6844-579X

✉ sidineybmt@gmail.com   📞 +55 44 988550458

🐦 @SidineyBM   🎓 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.** (2025). Wigner and friends, a map is not the territory! contextuality in multi-agent paradoxes. *Foundations of Science.* 🔗 doi:`10.1007/s10699-024-09971-y`

2. 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. **Sidiney B. Montanhano**. (2022). Differential geometry of contextuality. Preprint arXiv:2202.08719 [quant-ph]. 🔗 doi:`10.48550/ARXIV.2202.08719`

2. **Sidiney B. Montanhano**. (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`

3. **Sidiney B. Montanhano**. (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 Maringa, 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

2022	▉ **Differential Geometry of Contextuality**, Bilkent Graduate Math Seminar. Ankara, Turkey (Online).
2019	▉ **Contextuality**, II Geometry Week, Universidade Estadual de Maringá, Brazil.

Other Presentations

2024 — **Contextuality and Joint Measurability in Qubits**, IV Encontrinho 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 ech Cohomology**, Applied Category Theory 2022. Glasgow, Scotland (Online).

A Sheaf Approach to Multi-Agent Paradoxes?, Encontrinho 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).

2021 — **Contextuality in the Fibration Approach and the Role of Holonomy**, X Conference on Quantum Foundations. Buenos Aires, Argentina (Online).

Academic Events (continued)

- **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
- **MMB002 - 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).

Other Activities (continued)

	▉ **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. Paiçandu, 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. Paiçandu, Brazil.
2010	▉ **Learn to Invest in the Stock Market**, XP Educação. Maringá, Brazil.
2008	▉ **Assembly and maintenance of computers**, Sergio Yamada Computação. Maringá, Brazil.

References

Dr. Marcelo de Oliveira Terra Cunha
Full Professor
Department of Applied Mathematics
Institute of Mathematics, Statistics and Scientific Computing
Universidade Estadual de Campinas
☎ +55 19 35215978
✉ tcunha@unicamp.br

Dr. Josiney Alves de Souza
Associate Professor
Department of Mathematics
Exact Sciences Center
Universidade Estadual de Maringá
☎ +55 44 32614933
✉ jasouza3@uem.br

Dr. Samuel Rocha de Oliveira
Associate Professor
Department of Applied Mathematics
Institute of Mathematics, Statistics and Scientific Computing
Universidade Estadual de Campinas
☎ +55 19 35215956
✉ samrocha@unicamp.br

Dr. Rafael Luiz da Silva Rabelo
Assistant Professor
Department of Condensed Matter Physics
"Gleb Wataghin" Institute of Physics
Universidade Estadual de Campinas
☎ +55 19 35215312
✉ rabelo@ifi.unicamp.br