

Education

- **The Ohio State University - OSU** Columbus, OH, USA
Ph.D. Candidate, Mathematics 2018—present (expected 2024)
 - Dissertation: *The geometry and structure of compact rank-one ECS manifolds.*
 - M.Sc. awarded via candidacy exam, 2021.
 - Advisor: Andrzej Derdzinski.
- **University of São Paulo - USP** São Paulo, SP, Brazil
M.Sc., Mathematics 2016—2018
 - Dissertation¹: *Characterizations of Marginally Trapped Submanifolds in Space-Forms.*
 - Advisor: Alexandre Lymberopoulos.
- **University of São Paulo - USP** São Paulo, SP, Brazil
B.Sc., Mathematics 2013—2016
 - Undergraduate Research Project: Lorentzian Differential Geometry.
 - Supervisor: Alexandre Lymberopoulos.

Awards, Grants & Honours

Special Graduate Assignment – Department Fellowship (OSU)	2024
Graduate Associate Teaching Award ² (OSU)	2023
Special Graduate Assignment – Department Fellowship (OSU)	2023
Phil Huneke Excellence in Teaching Award (OSU)	2022
Distinguished First-Year Graduate Teaching Associate Award (OSU)	2019
National Council for Scientific and Technological Development (CNPq - grant 134593/2016-2)	2016-2018
Honorable mention for outstanding performance in the Mathematics B.Sc. program (USP)	2016
São Paulo Research Foundation (FAPESP - grant 2014/09781-8)	2014-2016

Publications & preprints

The publications are listed in reverse order of completion.
The year indicated on items not currently in press is the year of completion.
Some DOI codes might still be inactive.

8. **Killing fields on compact pseudo-Kähler manifolds** (with A. Derdzinski).
e-print arXiv 2309.09820, 7 pages. // Submitted for publication, 2023.
DOI: <https://doi.org/10.48550/arXiv.2309.09820>
7. **Codazzi tensor fields in reductive homogeneous spaces** (with J. Marshall Reber).
e-print arXiv 2306.07444, 12 pages. // Submitted for publication, 2023.
DOI: <https://doi.org/10.48550/arXiv.2306.07444>

¹Original title in Portuguese: *Caracterizações de Subvariedades Marginalmente Aprisionadas em Formas Espaciais.*

²This is the **highest graduate teaching award** offered by The Ohio State University.

6. **Compact locally homogeneous manifolds with parallel Weyl tensor** (with A. Derdzinski).
e-print arXiv 2306.01600, 14 pages // Submitted for publication, 2023.
DOI: <https://doi.org/10.48550/arXiv.2306.01600>
5. **The metric structure of compact rank-one ECS manifolds** (with A. Derdzinski).
Annals of Global Analysis and Geometry, vol. **64** (2023), no. 4, Article 24.
DOI: <https://doi.org/10.1007/s10455-023-09929-6>
4. **Rank-one ECS manifolds of dilational type** (with A. Derdzinski).
26 pages, Portugaliae Mathematica (online first), 2023.
DOI: <https://doi.org/10.4171/PM/2110>
3. **Conformal flatness of compact three-dimensional Cotton-parallel manifolds**.
5 pages, Proceedings of the American Mathematical Society (AMS First View), 2023.
DOI: <https://doi.org/10.1090/proc/16446>
2. **The topology of compact rank-one ECS manifolds** (with A. Derdzinski).
Proceedings of the Edinburgh Mathematical Society, vol. **66** (2023), no. 3, pp. 789–809.
DOI: <https://doi.org/10.1017/S0013091523000408>
1. **New examples of compact Weyl-parallel manifolds** (with A. Derdzinski).
13 pages, Monatshefte für Mathematik (published online), 2023.
DOI: <https://doi.org/10.1007/s00605-023-01908-0>

Books

2. **Introduction to Lorentz Geometry: Curves and Surfaces** (with A. LyMBERopoulos).
Chapman & Hall/CRC Press, Boca Raton, FL, 2021. ix+340 pp.
(English translation of the Portuguese original.)
DOI: <https://doi.org/10.1201/9781003031574>, ISBN: 9780367468644.
1. **Introdução à Geometria Lorentziana: Curvas e Superfícies** (with A. LyMBERopoulos).
Brazilian Mathematical Society - SBM, **Universitary Texts Collection**, vol. **21**, Rio de Janeiro, RJ, 2018. 546 pp. (In Portuguese. **Errata**.)
ISBN: 9788583371397.

Scientific dissemination and other expository texts

3. **Mergulhos Clássicos de Variedades Grassmannianas: uma visão geral**.
Revista Matemática Universitária (Brazilian Mathematical Society), vol. **1** (2021), pp. 1-14.
(In Portuguese. English title: *Classical Embeddings of Grassmannian Manifolds: an overview*).
DOI: <http://doi.org/10.21711/26755254/rmu20211>
2. **Topics in Lorentz Geometry**, lecture notes (not intended for publication).
e-print arXiv:1908.01710, 76 pages.
DOI: <https://doi.org/10.48550/arXiv.1908.01710>
1. **Usando Geometria Diferencial para classificar trajetórias de fótons na Relatividade Especial**, *Acta Legalicus* (Institute of Mathematics and Computer Sciences – USP), n° **14** (2018), 14 pp.
(In Portuguese. English title: *Using Differential Geometry to classify trajectories of photons in Special Relativity*).

In preparation

- **Notes on Causality Theory** (with P. Piccione). // Working title, 308 pages.
- **Geometric aspects of magnetic flows without conjugate points** (with V. Assenza and J. Marshall Reber). // Working title.

Peer reviewing service

Referee for:

- International Electronic Journal of Geometry.

Participation at conferences, courses, seminars and other events

(22 items)

- 2023 • SLMath Summer School: *Topics in Geometric Flows and Minimal Surfaces* (St. Mary's College).
• *Graduate Student Conference in Algebra, Geometry, and Topology* (Temple University).
• *2023 Midwest Geometry Conference* (Kansas State University).
- 2022 • *2022 Midwest Dynamical Systems Conference* (Indiana University–Purdue University).
• *Pacific Northwest Geometry Seminar* (Seattle University).
• *Lehigh Conference on Differential Geometry* (Lehigh University).
• *Geometric Structures (re)United* (University of Illinois at Chicago).
• *Midwest Dynamical Systems Early Career Conference* (University of Notre Dame).
• *36th Annual Geometry Festival* (New York University – Courant Institute). // Online.
- 2021 • *Workshop Modern Techniques in Riemannian Geometry* (Durham University & UNAM). // Online.
• *X International Meeting on Lorentzian Geometry* (University of Córdoba). // Online.
- 2020 • *5th Geometry-Topology Summer School* (Istanbul Center for Mathematical Sciences). // Online.
• *Pacific Northwest Geometry Seminar* (Lewis and Clark College).
• *Symmetry and Geometry on the Southern Great Plains* (University of Oklahoma).
- 2019 • *Graduate Student Topology and Geometry Conference* (University of Illinois at Urbana-Champaign).
- 2018 • *University of São Paulo's Institute of Physics' 2018 summer courses*.
- 2017 • *School of Mathematics for Latin America and Caribbean* (University of Antioquia).
- 2016 • *24th USP International Symposium of Undergraduate Research* (University of São Paulo).
— Poster presentation: *A version of Weierstrass' Representation in Lorentz-Minkowski Space*.
• *68th Reunion of the Brazilian Society for the Progress of Science* (Federal University of South of Bahia).
— Poster presentation: *Curves and Surfaces in Lorentz-Minkowski Space*.
- 2015 • *23th USP International Symposium of Undergraduate Research* (University of São Paulo).
— Poster presentation: *Curves and Surfaces in Lorentz-Minkowski Space*³.
• *XLV ed. of the University of São Paulo's Institute of Mathematics and Statistics' summer courses*.
- 2014 • *XLIV ed. of the University of São Paulo's Institute of Mathematics and Statistics' summer courses*.

Talks and mini-courses taught

(11 items)

Links for talk slides are provided when possible.

- 2023 • Invited Talk. *An overview of completeness in Lorentzian geometry*. Oklahoma State University MGSS Graduate Student Seminar. // Online.
• Seminar talk. *The bundle structure of compact rank-one ECS manifolds*. University of São Paulo Differential Geometry Seminar.
• Contributed talk. *Compactifying rank-one Weyl-parallel manifolds*. Graduate Student Conference in Algebra, Geometry, and Topology (Temple University).
• Seminar talk. *Conformal flatness and compactness in dimension three*. OSU Geometry, Topology, and Dynamics Student Seminar (The Ohio State University).
• Contributed talk. *On compact rank-one ECS manifolds*. 2023 Midwest Geometry Conference.

³This work received an honorable mention.

- 2022 • Mini-course. *Causality and Spacetimes*. 2nd edition of the OSU Graduate Math Summer Mini-Courses (The Ohio State University).
 - Contributed talk. *Magnetic Cotangent Bundles*. Midwest Dynamical Systems Early Career Conference (University of Notre Dame).
- 2021 • Mini-course. *Symplectic Geometry Crash Course*. 1st edition of the OSU Graduate Math Summer Mini-Courses (The Ohio State University).
 - Contributed talk. *On rigidity of θ -isotropic submanifolds of Lorentzian space forms*. X International Meeting on Lorentzian Geometry (University of Córdoba). // Online.
 - Seminar talk. *Guillemin-Kazhdan path marked length spectrum rigidity I*. Ohio State Smooth Dynamics Seminar.
- 2020 • Invited talk. *Contrasts between Riemannian and Lorentzian Geometry*. First year anniversary of the undergraduate Mathematics Program at *Federal Institute of Ceará - IFCE*. // In Portuguese. Recording available at <https://youtu.be/ywnX95Pqx5Q>.
- 2019 • Mini-course. *MAT6702 - Topics in Lorentz Geometry* taught at the *University of São Paulo - USP*. Partly supported by the OSU and USP departments of Mathematics, and by a FAPESP-OSU 2015 Regular Research Award (grant 2015/50265-6).
 - Seminar talk. *Characterization of non-admissible curves in Lorentz-Minkowski space via a single invariant*. Ohio State MGSA Graduate Student Seminar.

Languages

Portuguese (native), English (fluent), Spanish (intermediate), French (basic reading).

Teaching experience

2018–present: Graduate Associate in *The Ohio State University's* College of Arts and Sciences. Courses taught (in any capacity):

- Autumn 2023 - MATH2177 - Mathematical Topics for Engineers (TA).
- Autumn 2022 - MATH2177 - Mathematical Topics for Engineers (TA).
- Spring 2022 - MATH2177 - Mathematical Topics for Engineers (TA).
- Spring 2021 - MATH3345 - Foundations of Higher Mathematics (Grader).
- Autumn 2020 - MATH1150 - Precalculus (TA).
- Spring 2020 - MATH1149 - Trigonometry (TA).
- Autumn 2019 - MATH2173 - Engineering Mathematics B (TA).
- Spring 2019 - MATH1152 - Calculus II (TA).
- Autumn 2018 - MATH1151 - Calculus I (TA).

2018: Teaching Assistant at *University of São Paulo - USP*, for:

- 1stsem/2018 - MAT3120 - Differential and Integral Calculus III (Oceanographic Institute).
- XLVII Ed. of the Institute of Mathematics and Statistics' summer courses - MAT5719 - Geometric Differential Calculus in \mathbb{R}^n .

2017: Higher Education Improvement Program (PAE) internship at *University of São Paulo - USP*, for:

- 2ndsem/2017 - MAT2454 - Differential and Integral Calculus II (Polytechnic School).
- 1stsem/2017 - MAT2453 - Differential and Integral Calculus I (Polytechnic School).

2013–2016: Teaching Assistant at *University of São Paulo - USP*, for:

- XLVI Edition of the Institute of Mathematics and Statistics' summer courses - Linear Algebra.
- 2ndsem/2016 - MAT0336 - Differential Geometry II (Institute of Mathematics and Statistics).
- 2ndsem/2016 - MAT0326 - Differential Geometry I (Institute of Mathematics and Statistics).

- 1stsem/2014 - MAT0111 - Differential and Integral Calculus I (Oceanographic Institute).
- 2ndsem/2013 - MAE0116 - Elements of Statistics (Institute of Mathematics and Statistics).

2013: Mathematics teacher for middle school at *Youhua Languages Institute*.

Other work experience and department service

2021–2022: Writing, editing and proofreading the *Precalculus with Review* online Ximera book for the OSU courses MATH1120 and MATH1121. // Summer 2021, Spring 2022.

2021–present: Member of the OSU Math. Dept. Directed Reading Program committee.

2020–2021: Conversion of distance learning Geodetic Science and Mathematics courses to \LaTeX beamers, as part of an interdisciplinary project between OSU's Department of Mathematics and the School of Earth Sciences – funded by the National Geospatial-Intelligence Agency (NGA). // Summer 2020, Fall 2021.

Students supervised

4. Pallav Pant, OSU Math. Dept. Directed Reading Program (2022–present).
Reading projects: • *Smooth manifolds and the Frobenius theorem*; • *The Schwarzschild metric and Birkhoff's theorem*.
3. Kabir Belgikar, OSU Math. Dept. Directed Reading Program (2021).
Reading project: • *A construction of the hyperreals and an introduction to non-standard analysis*.
2. Will Scites, OSU Math. Dept. Directed Reading Program (2020–2021).
Reading projects: • *Frames adapted to surfaces*; • *Riemannian Geometry & Lagrangian Mechanics*.
1. Maverick Huang, OSU Math. Dept. Directed Reading Program (2019–2021).
Reading projects: • *Some metric aspects in Riemannian geometry*; • *The Einstein-Hilbert functional and the Einstein field equations*.