

Ivan Struchiner

Curriculum vitae

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Departamento de Matemática, IME-USP, room 118A

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Research interests

Lie groupoids and Lie algebroids, Poisson geometry, and their applications to classical geometry: G -structures, foliations, Lie pseudogroups and the geometry of PDEs.

Positions

2012–present	Professor Doutor (Assistant Professor), Department of Mathematics, Institute of Mathematics, Statistics and Computer Science, University of São Paulo (IME-USP).
2009–2012	Postdoctoral researcher, Utrecht University, with Marius Crainic.
2009	Postdoctoral fellow (CNPq), IMECC-UNICAMP, with Luiz A. B. San Martin.

Education

2004–2009	Doctorate in Mathematics, IMECC, State University of Campinas (UNICAMP). Thesis: <i>The classifying Lie algebroid of a geometric structure</i> . Supervisor: Rui Loja Fernandes. Co-supervisor: Luiz A. B. San Martin. January–June 2006 at Instituto Superior Técnico, Lisbon (CAPES sandwich fellowship).
1998–2003	Undergraduate studies, State University of Campinas (UNICAMP).

Preprints

- L. Accornero, M. M. de Melo, I. Struchiner. *A Chern–Weil theory for Lie groupoids with Cartan connections*. arXiv:2610.31219 (2026).

Publications

- [1] L. Accornero, M. M. de Melo, I. Struchiner. *A note on Chern–Weil classes of Cartan connections*. Differential Geom. Appl. **103** (2026), article 102365.
- [2] M. M. de Melo, I. Struchiner. *The closure of linear foliations*. Proc. Amer. Math. Soc. **154** (2026), 1755–1762.
- [3] C. C. Cárdenas, J. N. Mestre, I. Struchiner. *Deformations of symplectic groupoids*. Trans. Amer. Math. Soc. **379** (2026), no. 2, 1371–1433.
- [4] R. L. Fernandes, I. Struchiner. *The global solutions to a Cartan’s realization problem*. Mem.

Amer. Math. Soc. **306** (2025), no. 1548.

- [5] M. M. Alexandrino, M. K. Inagaki, M. M. de Melo, I. Struchiner. *Lie groupoids and semi-local models of singular Riemannian foliations*. Ann. Global Anal. Geom. **61** (2022), no. 3, 593–619.
- [6] R. L. Fernandes, I. Struchiner. *The classifying Lie algebroid of a geometric structure II: G-structures with connection*. São Paulo J. Math. Sci. **15** (2021), no. 2, 524–570.
- [7] M. Crainic, J. N. Mestre, I. Struchiner. *Deformations of Lie groupoids*. Int. Math. Res. Not. IMRN **2020**, no. 21, 7662–7746.
- [8] C. C. Cárdenas, I. Struchiner. *Stability of Lie group homomorphisms and Lie subgroups*. J. Pure Appl. Algebra **224** (2020), no. 3, 1280–1296.
- [9] M. Crainic, M. A. Salazar, I. Struchiner. *Multiplicative forms and Spencer operators*. Math. Z. **279** (2015), no. 3–4, 939–979.
- [10] M. Crainic, F. Schätz, I. Struchiner. *A survey on stability and rigidity results for Lie algebras*. Indag. Math. **25** (2014), no. 5, 957–976.
- [11] R. L. Fernandes, I. Struchiner. *The classifying Lie algebroid of a geometric structure I: classes of coframes*. Trans. Amer. Math. Soc. **366** (2014), no. 5, 2419–2462.
- [12] M. Crainic, I. Struchiner. *On the linearization theorem for proper Lie groupoids*. Ann. Sci. Éc. Norm. Supér. **46** (2013), no. 5, 723–746.
- [13] I. Struchiner, M. A. F. Rosa. *On Zeeman topology in Kaluza–Klein and gauge theories*. Hadronic J. **32** (2009), no. 2, 221–229.
- [14] R. L. Fernandes, I. Struchiner. *Lie algebroids and classification problems in geometry*. São Paulo J. Math. Sci. **2** (2008), no. 2, 263–283.

Grants and fellowships

As principal investigator

- FAPESP thematic project 2022/16097-2, *Modern methods in differential geometry and geometric analysis* (2023–2028; responsible researcher P. Piccione): associate researcher 2023–2025, principal investigator since October 2025.
- FAPESP visiting researcher grant 2025/21915-4 (February–April 2026), for Francesco Cattafi (Würzburg): *Geometric structures on Lie groupoids*.
- CNPq international collaboration grant 444207/2024-4 (2025–2027), with D. L. Gonçalves (USP) and L. Bonatto (Oxford): *Homology and homotopy of framed configuration spaces*.
- FAPESP visiting researcher grant 2022/16384-1 (April–June 2023), for David Martínez Torres: *Connections with prescribed curvature via Poisson geometry*.
- FAPESP regular research grant 2022/16310-8 (2023–2025): *Classification problems and moduli spaces of geometric structures via Lie theory*.
- FAPESP SPRINT grant 2015/50472-1 (2016–2018), with R. L. Fernandes (University of Illinois) and C. Ortiz (USP): *Geometric structures via Lie theory*.
- FAPESP regular research grant 2015/22059-2 (2016–2018): *Geometry and topology via Lie theory*.
- FAPESP regular research grant 2013/16753-8 (2013–2015): *Stability of Lie brackets and their morphisms*.

- FAPESP meeting organisation grant 2013/06095-3 (2013): Mini Workshop in Poisson Geometry and Related Topics.

Fellowships

- CNPq research productivity fellowship 307131/2016-5 (2017–2020).
- CNPq research productivity fellowship 304840/2013-0 (2014–2017).
- CNPq postdoctoral fellowship 150383/2009-6 (2009), IMECC-UNICAMP.
- CAPES sandwich doctoral fellowship BEX 3035/05-0 (2006), IST Lisbon.
- FAPESP direct doctoral fellowship 03/13114-2 (2004–2009), IMECC-UNICAMP.

Associate researcher of the FAPESP thematic project 2016/23746-6 (P. Piccione), *Algebraic, topological and analytical techniques in differential geometry and geometric analysis* (until 2023).

Invited talks (selection)

- *Lie theory and Cartan's realization problem.* Symposium on Contemporary Differential Geometry at USP, 7th BRICS Mathematics Conference, IME-USP, August 2026.
- *A Lie theoretic approach to moduli problems in differential geometry.* Plenary lecture, Poisson 2026 — International Conference on Poisson Geometry, KU Leuven, August 2026.
- *Chern–Weil classes of Cartan connections.* Inaugural Workshop of the Centro Brasileiro de Geometria, IMECC-UNICAMP, March 2026.
- *On geometric structures with regular symmetry pseudogroups.* São Paulo Meeting on Geometry (EPG 2025), IME-USP, November 2025.
- XI Workshop on Poisson Geometry and Related Topics, UFAM, Manaus, November 2024.
- Plenary lecture, Escola Brasileira de Geometria Diferencial, Diamantina, 2024.
- Plenary lecture, 59th Seminar Sophus Lie, Universität Würzburg, March 2024.
- Symplectic Seminar, UFF, Niterói, 2022.
- Geometry Webinar AmSur/AmSul, online, 2021 and 2022.
- International Conference on Poisson Geometry, IMPA, Rio de Janeiro, December 2019.
- V Workshop on Geometry in Algebra and Algebra in Geometry, Universidad de Antioquia, Medellín, October 2019.
- Differential Geometry section, 32nd Colloquium of the Brazilian Mathematical Society, IMPA, 2019.
- Mini-course, Summer School, Villa de Leyva, Colombia, 2018.
- Seminar, Department of Mathematics, University of Salerno, 2018.
- II Simpósio de Teoria de Lie e Aplicações, Universidade Estadual de Maringá, 2018.
- Workshop *Lie Pseudogroups: Old and New*, Driebergen, Netherlands, 2017.
- Workshop on Geometric Structures on Lie Groupoids, Banff International Research Station, 2017.
- Latin American Mathematical Congress (CLAM), Barranquilla, Colombia, 2016.
- Center for Quantum Geometry of Moduli Spaces, Aarhus, 2015.

- First Joint Meeting of Mathematicians Ohio State University – USP, São Paulo, 2015.
- Seminar, Department of Mathematics, University of Illinois at Urbana–Champaign, 2015 and 2018.
- Colloquium of the Brazilian Mathematical Society, IMPA, 2015.
- Mini-course (5 lectures), CIMPA School: Algebraic and Geometric Aspects of Representation Theory, UFPR, Curitiba, 2013.
- Focused Workshop on Exterior Differential Systems and Lie Theory, Fields Institute, Toronto, 2013.
- Mini-course (4 lectures), 6th International Young Researchers Workshop on Geometry, Mechanics and Control, Coimbra, 2012.
- XVIII International Fall Workshop on Geometry and Physics, Benasque, Spain, 2009.
- Differential Geometry Seminar, IMPA, 2008.
- Workshop on Geometric Mechanics: Continuous and Discrete, Finite and Infinite Dimensional, Banff International Research Station, 2007.
- Groupoid Seminar, IST, Lisbon, 2006.

Research visits (selection)

- University of Oxford (L. Basualdo Bonatto), June 2026.
- University of Illinois at Urbana–Champaign (R. L. Fernandes), December 2013, March–April 2015, April 2017 and September 2024.
- Julius-Maximilians-Universität Würzburg, March 2024.
- Utrecht University (M. Crainic), May 2013 and September–October 2017.
- IMPA (H. Bursztyn), October 2016.
- Aarhus University, Center for Quantum Geometry of Moduli Spaces (F. Schätz), June 2015.

Supervision

Postdoctoral researchers

- Bruno Suzuki, 2022–2024 (FAPESP).
- Mateus Moreira de Melo, concluded 2023 (FAPESP).
- João Nuno Mestre, concluded 2020 (FAPESP).

Doctoral students

- Laura Ribeiro dos Santos, since 2026.
- Beatriz de Faria, since 2026.
- Luiz Felipe Villar Fushimi, *Cartan structure groupoids and algebroids*, 2024.
- Cristián Camilo Cárdenas, *Deformation problems for Lie groupoids*, 2018.
- Genaro Pablo Zamudio Chauca, *A generalisation of Γ -structures*, 2018.

Master's students

- Caio Domiciano Pires dos Santos, since 2026.
- Gustavo Bezerra Silva, since 2026.
- Bianca Carvalho de Oliveira, *Rational homotopy theory*, 2025.
- Sophia Lopes Ribeiro Fiorotto, *Braid, knots and links*, 2023 (jointly with L. Basualdo Bonatto).
- Sebastián Camilo Daza Alfonso, *G-structures on orbifolds*, 2021.
- Marcelo Barbosa Viana, *Finite simplicial complexes and Euler's theorem*, 2018.
- Gustavo Ignácio Duarte, *Spencer cohomology and the integrability of G-structures*, 2018.
- Luciana Basualdo Bonatto, *The Bott periodicity theorem from an algebraic topology viewpoint*, 2017.

Undergraduate research projects supervised since 2013, five of them with FAPESP fellowships.

Teaching

Graduate courses at IME-USP

Introduction to Lie Groupoids and Poisson Geometry (2013, 2026); Geometry and Topology (2013); Algebraic Topology I (2014, 2015, 2017); Algebraic Topology II (2015); Differential Topology (2016); Bundles and G -structures (2019, 2024); Algebraic Topology (2020); Topology of Manifolds (2021); Abstract Homotopy Theory (2023).

Undergraduate courses at IME-USP, 2012–2026

Calculus I and II; Linear Algebra; Analytic Geometry; Vectors and Geometry; Introduction to Algebraic Topology; Introduction to Algebraic and Differential Topology; Topics in Algebraic Topology; Topics in Differential Geometry.

Utrecht University

Topologie en Meetkunde (Topology and Geometry), 2011; teaching assistant for the Mastermath course *Analysis on Manifolds*, 2009.

Organisation of scientific events

- XIII Workshop on Poisson Geometry and Related Topics, IME-USP, October 2026 (organising and scientific committees).
- Mini-workshop on Poisson Geometry and Related Topics, UFES, Vitória, 2025 (scientific committee).
- *Interactions of Poisson Geometry, Lie Theory and Symmetries*, IST, Lisbon, June–July 2025 (organising committee).
- X Workshop on Poisson Geometry and Related Topics, IME-USP, October 2023 (with C. Ortiz and C. Netto).
- VIII Workshop on Poisson Geometry and Related Topics, online, 2021 (with C. Ortiz).
- Summer School on Non-Commutative Geometry and Poisson Geometry around Groupoids, Villa de Leyva, Colombia, 2018 (organising committee).

- *An Odd Old Day at IME-USP*, seminar day, April 2018.
- Workshop GAAG: Geometry in Algebra and Algebra in Geometry, USP, 2015, 2017 and 2018 (with C. Ortiz and K. Yusenko).
- Workshop on the Geometry of Lie Pseudogroups, USP, June 2016 (with F. R. T. de Almeida and O. O. Luciano).
- First Joint Meeting of Mathematicians Ohio State University – USP, IME-USP, 2015 (organising and scientific committees).
- I Brazilian Congress of Young Researchers in Pure and Applied Mathematics, USP, 2014 (organiser of the geometry section).
- Mini-workshop on Poisson Geometry and Related Topics: IMPA 2013, IME-USP 2014, ICMC São Carlos 2018 (organising and scientific committees).
- Poisson 2012, International Conference and School on Poisson Geometry and Applications, Utrecht University, 2012 (organising committee).

Service

- Guest editor of the special issue of SIGMA *Interactions of Poisson Geometry, Lie Theory and Symmetry*, in honour of the 60th birthday of Rui Loja Fernandes.
- Referee for Proc. Amer. Math. Soc., J. reine angew. Math., Int. Math. Res. Not. IMRN, J. Noncommut. Geom., Differential Geom. Appl., Transform. Groups, J. Lie Theory, SIGMA, J. Pure Appl. Algebra and Revista Matemática Universitária.
- Reviewer for FAPESP, CNPq, the Research Foundation — Flanders (FWO) and the German Research Foundation (DFG).
- Graduate Programme Committee of the Department of Mathematics, IME-USP, 2013–2015 and 2020–2022.
- Congregation of IME-USP, representative of the Professores Doutores, 2015–2019.
- Examining committee of the public competition for two positions of Professor Doutor, Department of Mathematics, IME-USP, 2023.

Distinctions

- Affiliate member of the Academy of Sciences of the State of São Paulo (ACIESP), 2020–2025.
- Honoured professor (*professor homenageado*) of the graduating classes of 2019, 2020, 2021 and 2022 of the bachelor's programme in mathematics, IME-USP.