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Current Positions

Assistant Professor, Universidade Federal de Minas Gerais, ICEx, (Bra).

Visiting Professor, Southern University of Science and Technology, (Chn)

Education.

B.Sc., specialization in Mathematics, Universidad de la República Oriental del Uruguay (Uy), August 2005.

M.Sc. Mathematics, University of Toronto (Can), September 2006.

Thesis: Investigations on Markov Partitions

Advisor: Michael Shub

Ph.D. Mathematics, University of Toronto (Can), March 2011.

Thesis: Compact Dynamical Foliations

Advisors: Charles Pugh and Michael Shub

Pos-Doc, IMPA (Bra), September 2011 a September 2013.

Supervisor: Enrique Pujals

Pos-Doc, ICMC-USP (Bra), December 2013 to December 2014.

Supervisor: Ali Tahzibi

Pos-Doc, Penn State University (Us), January 2015 to January 2016.

Supervisor: Federico Rodríguez-Hertz

Publications

Refereed articles

Equilibrium states for center isometries- w/ F. Rodriguez Hertz. **Journal of the Institute of Mathematics of Jussieu**, 2023, pp 1–61.

Extended flexibility of Lyapunov exponents for Anosov diffeomorphisms- w/ R. Saghin. **Transactions of the AMS**, vol. 375, pp. 3411–3449, 2022.

Geometrical constructions of equilibrium states- w/ F. Rodriguez Hertz. **Mathematics Research Reports**, vol. 2, 2021, pp. 45–54.

Invariance of entropy for maps isotopic to Anosov- w/ C. Lizana, E. Pujals and C. Vásquez. **Nonlinearity**, vol. 34(3), 2021, pp. 1612–1632.

A new example of robustly transitive diffeomorphism- w/ D. Obata. **Math Research Letters**, vol. 8(3), 2021, pp. 665–679.

A symmetric Random Walk defined by the time-one map of a geodesic flow- w/ T. Vales. **Discrete and Continuous Dynamical Systems**, Discrete and Continuous Dynamical Systems - A, vol. 41(6), 2021, pp. 2891-2905.

Classification of partially hyperbolic diffeomorphisms under some rigid conditions w/ E. Pujals and F. Rodriguez Hertz. **Ergodic Theory and Dynamical Systems**, vol. 9(41), 2021, pp. 2770-2781.

Random Products of Standard Maps. **Communications in Mathematical Physics**, vol. 377(2), 2020 May, pp. 773–810.

Partial Hyperbolicity in Dimension Three- w/ F. Rodriguez Hertz, J. Rodriguez Hertz and R. Ures. **Ergodic Theory and Dynamical Systems**, Invited article, vol. 8(31), 2018, pp. 2801–2837.

Symbolic dynamics for normally hyperbolic foliations. **Dynamical Systems**, vol. 33(3), 2018, pp. 419–440.

Compact Dynamical Foliations. **Ergodic Theory and Dynamical Systems**, vol. 35(8), 2015, pp. 2474–2498.

Non uniformly hyperbolic diffeomorphisms derived from the standard map - w/ P. Berger. **Communications in Mathematical Physics**, vol. 329(1), 2014, pp. 239–262.

Preprints and accepted papers

Rigidity of equilibrium states and unique quasi-ergodicity for horocyclic foliations - w/ F. Rodriguez Hertz. **Preprint** at [arxiv:/2304.13384](https://arxiv.org/abs/2304.13384), 2023.

Contributions to the ergodic theory of hyperbolic flows: unique ergodicity for quasi-invariant measures and equilibrium states for the time-one map- w/ F. Rodriguez Hertz. To appear in **Israel Journal of Mathematics**, 2023.

Non-Uniformly Hyperbolic Endomorphisms- w/ M. Andersson and R. Saghin. **Preprint** at [arxiv:2206.08295](https://arxiv.org/abs/2206.08295), 2022

Visiting Positions

SUSTech (Chn), February 2023-November 2023.

Xiamen University (Chn), May 2023.

Peking University (Chn), April 2023.

Penn State University (Us), August 2011, October 2019, July 2022.

ICMC-USP (Bra), January 2013.

Universidad de Santiago de Chile (Cl), August 2014.

ICTP (It), August 2016.

Universidade Federal de Rio de Janeiro (Bra), September 2016.

Pontificia Universidad Católica de Valparaíso (Cl), November 2012, December 2013, January 2017, April 2018, March 2020.

IMPA (Bra), January-February 2016, February 2017, January 2018.

Invited Talks

Dynamical Systems Seminar Peking University (Chn), April 2023 - Title: *Unique quasi-ergodicity of the unstable foliation.*

Dynamical Systems Seminar Xiamen University (Chn), May 2023 - Title: *Quasi-cocycles and Livsic theorem*

Matrix III Satellite event SUSTech (Chn), March 2023 - Title: *Non-Uniformly hyperbolic endomorphisms: questions and problems*

Séminaire de Systèmes Dynamiques Jussieu (Fr), December 2022 - Title: *Explicit computations of bounded cohomology*

From elliptic islands to hyperbolic waves: celebrating Pedro Duarte's 60th birthday (Bra), September 2022 - Title: *A robust $\mathcal{C}^1$ class of endomorphisms: questions and problems.*

University of Chicago Dynamics Seminar (Us), March 2022 - Title: *Unique quasi-ergodicity of horocyclic foliations.*

Somachi LXXXIX (Cl), December 2021 -Title *Exponentes positivos robustos para cociclos sobre endomorfismos.*

Zoominar in Dynamical Systems (Por), November 2021 - Title: *Non-uniformly hyperbolic endomorphisms.*

33 Colóquio Brasileiro de Matemática (Bra), August 2021 - Title: *Unique ergodicity of quasi-invariant measures for time-one maps of hyperbolic flows.*

40 + 40 ∞ online seminar, May 2021 - Title: *Métodos de deformação para sistemas conservativos* (Deformation methods for conservative systems).

Resistência dinâmica online seminar, April 2021 - Title: *Extended flexibility for Anosov and Expanding maps.*

Pontificia Universidad Católica de Valparaíso (Cl), March 2020 - Title: *Paseos aleatorios como sistemas dinámicos* (Random Walks as dynamical systems).

TopDin 2020 (Bra), February 2020 - Title: *Partially hyperbolic DA's with bounded geometry.*

3DD Three dynamical days at UFRJ (Bra), January 2020 - Title: *Non-uniform hyperbolicity of random coupled standard maps.*

Penn Sate University (Us), October 2019 - Title: *Non-uniform hyperbolicity of random coupled standard maps .*

IMPA (Bra), January 2019 - Title: *Partially Hyperbolic Diffeomorphisms with constant exponents.*

Conference *Dynamics Valparaíso* (Cl), December 2018 - Title: *Simple models for partially hyperbolic diffeomorphisms in dimension three*

Pontificia Universidad Católica de Valparaíso (Cl), April 2018 - Title: *Entropía en la clase de isotopía de mapas hiperbólicos* (Entropy in the isotopy class of hyperbolic maps).

Universidade Federal de Viçosa (Bra), February 2018 - Title: *Exemplos de sistemas conservativos não-uniformemente hiperbólicos.*

Universidade Federal de Itajubá (Bra), November 2017 - Title: *Exemplos de sistemas conservativos não-uniformemente hiperbólicos.*

Pontificia Universidad Católica de Valparaíso (Cl), January 2017 - Title: *Sistemas no uniformemente hiperbólicos sin splitting dominado.*

ICTP (It), July 2016 - Title: *Geometric constructions of Equilibrium States.*

ICTP Conference School on Algebraic, Geometric and Probabilistic Aspect of Dynamical Systems and Control Theory (It), July 2016 - Title: *Equilibrium States are determined by their unstable conditionals.*

EDAI (Bra) #61, April 2016 - Title: *K-Estados de equilibrio para o Weyl Chambers flow.* (K-Equilibrium states for the Weyl chambers flow).

Universidade Federal de Rio de Janeiro (Bra), April 2016 - Title: *Symbolic Representation of the center stable and center unstable foliations.*

Universidade Federal de Campinas (Bra), March 2016, Title: *Estados de equilibrio para ações Anosov* (Equilibrium states for Anosov actions.)

IMPA (Bra), February 2016, Title: *Dinamica simbólica para folheações normalmente hiperbólicas* (Symbolic Dynamics for Normally Hyperbolic Foliations.)

ICTP (It) School and Conference on Dynamical Systems, June 2015, Title: *Symbolic Dynamics for Normally Hyperbolic Foliations.*

Universidad de Santiago de Chile (Cl), August 2014, Title: *Margulis' measures for center isometries.*

Universidade Federal de Campinas (Bra), April 2014, Title: *An example of a robust non-uniformly hyperbolic symplectic map which is not Anosov.*

Pontificia Universidad Católica de Valparaíso (Cl), December 2013, Title: *Hiperbolicidad Parcial en 3-Variedades* (Partial Hyperbolicity in 3-manifolds).

Banach Center Conference *Beyond Uniform Hyperbolicity* (Pol), June 2013. Title: *Non uniformly hyperbolic attractors derived from the standard map.*

Universidade Federal Fluminense (Bra), February 2013 - Workshop de Topologia e Dinâmica. Title: *Non uniformly hyper-*

bolic attractors derived from the standard map.

Universidad de Santiago de Chile (Cl), November 2012 - Title: *Atractores no uniformemente hiperbólicos* (Non-uniformly hyperbolic attractors).

Pontificia Universidad Católica de Valparaíso (Cl), November 2012 - Title: *Atractores no uniformemente hiperbólicos*. (Non-uniformly hyperbolic attractors).

USP (Bra) September 2012 - Title: *Compact normally hyperbolic foliations*.

EDAI (Bra) #30, April 2012 - Title: *Partially hyperbolic diffeomorphisms with compact center leaves*.

CIRM (Fr) Conference *Beyond Uniform Hyperbolicity*, June 2011. Title : *Normally hyperbolic foliations by circles*.

Northwestern University (Us), November 2010. Title : *Normally Hyperbolic Foliations by circles*.

Current Students and PosDocs

Edhin Castillo - (since July 2023, UFMG) - PostDoc.

Victor Janeiro - (since August 2023, UFMG) - Ph.D. Research project: Smooth Ergodic Theory.

Flávio Menezes - (2023, ICEX-UFMG) - MSc Research project: Geometric Topology.

Frederico Coutinho Lacerda - (2023, UFMG) - MSc Research Project: Geometric Analysis.

Former Students

Ana Carolina Dias do Amaral Ramos (May 2023, UFMG) - Ph.D. dissertation title: Center dynamics and the entropy maximizing measure for partially hyperbolic systems.

Túlio Vales (March 2021, UFMG) w/ Sonia Pinto de Carvalho - Ph.D. dissertation title: Walks and Billiards: an incursion into random dynamical systems.

Victor Janeiro - (August 2023, UFMG) - M.Sc. dissertation title: Existence of robust non-uniformly hyperbolic endomorphism in homotopy classes.

Frederico Coutinho Lacerda - (2022, UFMG) - Electrical engineering research project: Some Methods In Functional And Harmonic Analysis For Frequency Domain Study Via Fourier Transforms.

Victor Janeiro - (2020, UFMG) - B.Sc. Research Project: Jakobson's theorem.

Bruno Berganholi Dias - (2021-2022, UFMG) - B.Sc. Research Project: Dynamics of satellites and problems in Celestial Mechanics.

Rafael Goncalves Almeida Ottoni - (2021-2022, UFMG) - B.Sc. Research Project: Dynamics of satellites and problems in Celestial Mechanics.

Flávio Menezes - (2021-2022, UFMG) - B.Sc. Research Project: Geometric Topology.

Gustavo Dehaini - (2018, UFMG) - B.Sc. Research Project: Gromov's Non-squeezing theorem.

Services and distinctions

Thesis Committees Participated

M.Sc. Jianhao Guo, SUSTech (Chn), 2023.

M.Sc. Victor Janeiro, UFMG (Bra), 2023.

Ph.D. Ana Carolina Amaral, UFMG (Bra), 2023.

Ph.D. Edhin Franklin Mamami, PUC Rio (Bra), 2022.

Ph.D. Douglas Danton Nepomuceno, Universidade Federal de Minas Gerais (Bra), 2022.

M.Sc. Elivan Neri Lima, Universidade Federal de Baía (Bra), 2022.
 Ph.D. Túlio Vales, Universidade Federal de Minas Gerais (Bra), 2021.
 Ph.D. Lucas Henrique Rocha, Universidade Federal de Minas Gerais (Bra), 2021.
 Ph.D. Davi Obata, Universidade Federal de Rio de Janeiro (Bra), 2019.
 Ph.D. Carlos Alberto Salazar, Universidade Federal de Minas Gerais (Bra), 2019.
 Ph.D. Gabriel Núñez, UDELAR (Uy), 20/12/2018.
 Ph.D. Fabrício Vieira Oliveira. Universidade Federal de Minas Gerais (Bra), 2018.
 Ph.D. Mario Rodolfo Roldán, IMPA (Bra), 2014.
 M.Sc. Vanessa da Guilherme Antunes, Universidade Federal de Viçosa (Bra), 22/02/2018
 M.Sc. Enzo Abraham Fuentes, Pontificia Universidad Católica de Valparaíso (Cl), 2013.

Referee services

Advances of Mathematics.
 Journal of Modern Dynamics.
 Nonlinearity.
 Ergodic Theory and Dynamical Systems.
 Annales Henri Poincare.
 Communication in Mathematical Physics
 Proceedings of the AMS.
 Dynamical Systems.
 Journal Of Dynamical And Control Systems.
 Mathscinet.

Grants and prizes awarded

MATH-AMSUD, LESET, project number 88881.694481/2022-01 (2023). **Coordinator for Brazil.**
<https://sites.google.com/view/mathamsudleaset/>
 CNPq, Universal/Grupos Emergentes A, project number 403041/2021-0 (2022). **Coordinator.**
 FAPEMIG, Universal, project number 02160-21 (2021). **Coordinator.**
 CAPES, Print, PRPG 02/2021 (2021).
 MCTIC/CNPq., Universal/A, project number 28/2018 (2018). **Member.**
 FAPESP, project number 2013/16226-8, (2014-2017).
 CNPq, PDJ, (2011-2013).
 The Blyth Fellowship in Mathematics: University of Toronto, 2006 and 2010.
 Full M.Sc. scholarship: University of Toronto, 2005-2006.
 Full Ph.D. scholarship : University of Toronto, 2006-2010.

Events

Member of the organizing committee of:

1st LESET Workshop, 27-01 December 2023, Paraty-RJ (Bra).
<https://sites.google.com/view/mathamsudleaset/1st-leset-workshop/>

V Escola Brasileira de Sistemas Dinâmicos, 7-11 October 2019, UFMG (Bra).

<https://sites.google.com/view/ebsd2019/home>

Encontro Virtual Mineiro de Sistemas Dinâmicos, 19-20 August, 2021.

<https://sites.google.com/view/evmsd/home>

Problem session in honor of Charles Pugh 80th birthday: Things I like to think about. 22 September, 2021.

<https://sites.google.com/view/pugh80/home>

Member of the scientific committee of:

VII Escola Brasileira de Sistemas Dinâmicos, 23-27 October 2023, UFC (Bra).

<https://sites.google.com/view/ebsd2023>

Teaching

Mini-courses

Universidade Federal de Santa Catarina (Bra), 2018 - *Ergodic theory in Cantor Spaces*.

Universidad de Santiago de Chile (Cl), August 2014 - *Introduction to Ratner's theory*.

ICMC-USP (Bra), January 2013 - *Introduction to Ratner's theory*.

ICTP-ESF School and Conference in Dynamical Systems (It), May 2012–June 2012 - *Dynamics of partially hyperbolic systems and rigidity*.

Academic Experience

Universidade Geral de Minas Gerais, 2017 - 2022

Differential Manifolds (PhD)

Complex Analysis (PhD)

Ordinary Differential Equations (MSc)

Ergodic Theory (PhD)

Differentiable Manifolds (PhD)

3-Manifolds (PhD)

Complex Variables

Rings and Modules

Calculus I and II

Real Analysis I and II (BSc and MSc)

Linear Algebra II

University of Toronto, 2009 - 2010

Differential Equations

Calculus I and II

Linear Algebra