

# CURRICULUM VITAE

Bruno Rodrigues Santiago

Adjoint Professor  
Department of Analysis  
Institute of Mathematics and Statistics  
Federal Fluminense University

## 1) Personal Information

Date of birth: 17/09/1988

Place of Birth: Niterói-RJ-Brazil

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s/n, Bloco G Gabinete 72, 4º andar, Campus do Gragoatá,  
São Domingos - Niterói - RJ - CEP: 24.210-201

## 2) Academic Education

### PhD in Mathematics

August 2011 to August 2015

Federal University of Rio de Janeiro (UFRJ)

Advisor: Alexander Arbieto

Co-advisor: Christian Bonatti (Université de Bourgogne-France)

Sandwich period: Université de Bourgogne (Dijon-France)

November 2013 to March 2014

Supervisor: Christian Bonatti

*Title of the thesis: Commuting vector fields and generic dynamics*

Jury: Alexander Arbieto (advisor), Christian Bonatti (co-advisor), Maria José Pacífico (UFRJ), Katrin Gelfert (UFRJ), Lorenzo Diaz (PUC-Rio) and Alejandro Koscsard (UFF).

### Master in Mathematics

August 2009 to August 2011

Federal University of Rio de Janeiro (UFRJ)

Advisor: Alexander Arbieto

*Title of Dissertation: Essential hyperbolicity on surfaces*

Jury: Alexander Arbieto (advisor), Maria José Pacífico (UFRJ) and Jairo Bochi (PUC-Rio)

### Undergraduate in Mathematics

January 2006 to July 2010

Federal University of Rio de Janeiro (UFRJ)

### 3) **Pos-doc**

#### **2016-2017**

Université de Bourgogne (Dijon-France)  
Bourse Post-doctorale Marco Brunella

#### **2015-2016**

Instituto Nacional de Matemática Pura e Aplicada (IMPA)  
Grant of CAPES

### 4) **Visiting Professor**

#### **2017**

December 4<sup>th</sup> to 15<sup>th</sup>  
Universidad de la República (Montevideo-Uruguay)  
Invited by Sébastien Álvarez

#### **2017**

March 13<sup>th</sup> to March 30<sup>th</sup>  
Pontifica Univerisidade Catolica do Rio de Janeiro (PUC-Rio de Janeiro)  
Invited by Lorenzo Diaz

#### **2016**

November 28<sup>th</sup> to December 15<sup>th</sup>  
Universidad de La Republica (Montevideo-Uruguay)  
Invited by Rafael Potrie

#### **2016**

November 1<sup>st</sup> to November 4<sup>th</sup>  
Pontifica Univerisidade Catolica do Rio de Janeiro (PUC-Rio de Janeiro)  
Invited by Lorenzo Diaz

### 5) **Complementary Education**

#### **Federal Fluminense University (UFF)**

Differential Topology – Summer Course 2008  
Instructor: Leonardo de Carvalho

#### **Federal Fluminense University (UFF)**

Real Analysis – Summer Course 2010  
Instructor: Leonardo de Carvalho

### 6) **Per-review**

2016                      Journal: Discrete and Continuous Dynamical Systems  
2016 – 2017          Journal: Ergodic Theory and Dynamical Systems  
2018                      Journal: Proceedings Springer

## 7) Publications

1. SANTIAGO, B; Dirac physical measures for generic diffeomorphisms. *Dynamical Systems*, 2018, Vol 33, N° 02, 185-194.
2. BONATTI, C.; SANTIAGO, B; Existence of common zeros for commuting vector fields on 3-manifolds. *Annales de L'institut Fourier*, 67, n° 04 (2017) p. 1741-1781.
3. ARBIETO, A ; JUNQUEIRA, A ; SANTIAGO, B . On Weakly Hyperbolic Iterated Function Systems. *Sociedade Brasileira de Matematica. Boletim, Nova Serie*, (2017) 48 n°01 111-1140
4. ARBIETO, A. ; MORALES, C. A. ; SANTIAGO, B. . On Araujo's Theorem for Flows. *Journal of Dynamical and Control Systems*, v. 22, p. 55-69, 2016.
5. ARBIETO, ALEXANDER ; CATALAN, THIAGO ; SANTIAGO, BRUNO . Mixing-like properties for some generic and robust dynamics. *Nonlinearity (Bristol. Print)*, v. 28, p. 4103-4115, 2015.
6. ARBIETO, A. ; MORALES, C. A. ; SANTIAGO, B. . Lyapunov stability and sectional-hyperbolicity for higher-dimensional flows. *Mathematische Annalen*, v. 361, p. 67-75, 2014.

## 8) Preprints

1. SANTIAGO, B; The semicontinuity lemma. Permanent preprint, available in <http://www.professores.uff.br/brunosantiago/wp-content/uploads/sites/17/2017/07/01.pdf>
2. DIAZ, L; GELFERT, K and SANTIAGO, B. Weak-star and entropy approximation of ergodic measures: a geometrical approach. Available in <https://arxiv.org/pdf/1804.05913.pdf>
3. ALVAREZ, S. ;BONATTI, C. and SANTIAGO, B. Existence of common zeros for commuting vector fields II. Solving global difficulties. Available in <https://arxiv.org/pdf/1710.06743.pdf>
4. LEGUIL, M; OBATA, D and SANTIAGO, B. On the centralizer of vector fields: criteria of triviality and genericity results. Available in <https://arxiv.org/pdf/1810.05085.pdf>

## 9) Articles in Preparation

1. GUARINO, P; GUIHENEUF, P.-A. and SANTIAGO, B *Dirac physical measures for generic diffeomorphisms II. (working title)*
2. BONATTI, C; DA LUZ, A; SANTIAGO, B; *Generic bi-Lyapunov stable chain recurrence classes for flows.*
3. ALVAREZ, S; BONATTI, C; SANTIAGO, B; *Dynamics of smooth  $\mathbb{R}^2$ -actions on three manifolds.*
4. CORREA, J; LEGUIL, M; OBATA, D; SANTIAGO, B; *Expansiveness, entropy and centralizers of flows (working title)*

## 10) Book

1. ARBIETO, A; SODERO, T; SANTIAGO, B; Fluxos Estrela. Publicações Matemáticas, IMPA. 28° Colóquio Brasileiro de Matemática.

## 11) Teaching

**Regular teaching duties of the Analysis Department at UFF** Since 2017

**Exercise Classes Real Analysis** (Master in Mathematics UFRJ) 2014

**Exercise Classes Differential Geometry** (Undergraduate in Mathematics UFRJ) 2012

**Exercise Classes Honours Calculus I** (Undergraduate in Engineering UFRJ) 2010

**Professor in the Pré-Vestibular Social do Governo do Estado do Rio de Janeiro (CEDERJ)**

Social Program intended to prepare students for university admission exams

Unidade São João de Meriti 2008

**Professor in the Pré-Vestibular Social do Governo do Estado do Rio de Janeiro (CEDERJ)**

Social Program intended to prepare students for university admission exams

Unidade Niterói 2009

## 12) Jury compositions

1. *Transitividade no intervalo e na reta*. Master dissertation of Miguel Angel Angel Piñeda Reyes. **Universidade Federal do Rio de Janeiro**. Jury: Alexander Arbieto (advisor), Sérgio Romãna and Bruno Santiago

2. *Limit theorems for uniquely ergodic systems*. Master dissertation of Aline de Melo Machado. **Pontificia Universidade Católica do Rio de Janeiro**. Jury: Sylvius Klein (advisor), Simon Griffiths, Yuri Ki and Bruno Santiago.

## 13) Talks

1. XXI Brazilian Topology Meeting. Title: *Existence of common zeros for commuting vector fields on three manifolds*. August 2018
2. Dynamical Systems Seminar, Montevideo. Title: *Approximation of ergodic invariant measures by horseshoes in the partially hyperbolic scenario*. December 2017

3. Dynamical Systems Seminar, Montevideo. Title: *Centralizers of chaotic flows*. December 2016
4. Journée de l'Équipe de Géométrie et Systèmes Dynamiques, IMB (Dijon) Title: *Existence de zéros communs pour les champs de vecteurs qui commutent en dimension 3*. November 2016
5. Groupe de Travail de Théorie Ergodique et Systèmes Dynamiques, Université de Paris-Sud (Orsay). Title: *Existence de zéros communs pour les champs de vecteurs qui commutent en dimension 3*. November 2016
6. EDAI, 4 de novembro (PUC-Rio). Title: *Dinâmicas Morse-Smale e existência de zeros comuns para campos que comutam em dimensão três*. November 2016
7. Séminaire de Géométrie et Systèmes Dynamiques, Université de Bourgogne (Dijon) Title: *Centralisateurs des flots expansifs*. September 2016
8. Seminário de Sistemas Dinâmicos, Universidade Federal Fluminense (UFF). Title: *Generic bi-Lyapunov stable chain recurrence classes for flows*. July 2016
9. Seminário de Teoria Ergódica, Universidade Federal do Rio de Janeiro (UFRJ). Title: *Centralizadores de fluxos expansivos*. June 2016
10. Workshop for young researchers: groups acting on manifolds (Teresópolis). Title: *Measurable partitions, conditional measures and disintegration*. June 2016
11. Séminaire Étudiants, Université de Bourgogne (Dijon). Title: *Les flots d'Anosov ont un centralisateur trivial*. May 2016
12. Encontro Mineiro de Sistemas Dinâmicos, Universidade Federal de Uberlândia (UFU). Title: *Propriedades tipo mixing para dinâmicas robustas e genéricas*. November 2015
13. Seminário de Sistemas Dinâmicos, Universidade Federal Fluminense (UFF). Title: *Existence of common zeros for commuting vector fields on three manifolds*. September 2015
14. Seminário de Sistemas Dinâmicos, Universidade de São Paulo (USP). Title: *Sobre a existência de zeros comuns para campos que comutam*. June 2015
15. Workshop de Topologia e Dinâmica, Universidade Federal Fluminense (UFF). Title: *Sobre a existência de zeros comuns para campos que comutam*. February 2015
16. 28º Colóquio Brasileiro de Matemática, Curso Avançado: *Fluxos Estrela*. July 2011

#### **14) Conferences**

1. XXI Brazilian Topology Meeting. Niterói, August 2018
2. Workshop Groups, Geometry and Dynamics. Montevideo, July 2018
3. Mathamsud meeting physeco. Montevideo, December, 2017
4. International Conference on Dynamical Systems. Búzios, July 2016

5. Workshop for young researchers: groups acting on manifolds. Teresópolis. July 2016
6. IV Encontro Mineiro de Sistemas Dinâmicos. Universidade Federal de Uberlândia. November 2015
7. School and Conference on Dynamical Systems. Trieste-Italy. August 2015
8. Workshop de Topologia e Dinâmica. Universidade Federal Fluminense (UFF). Niterói. February 2015
9. III Brazilian School on Dynamical Systems. Bento Gonçalves. October 2014
10. A week on Dynamical Systems at IM-UFRJ. Universidade Federal do Rio de Janeiro (UFRJ). Janeiro 2013.
11. International Conference Beyond Uniform Hyperbolicity. Bedlewo-Polônia. May 2013.
12. ICTP-ESF School and Conference in Dynamical Systems. Trieste-Italy. May 2012.
13. II Brazilian School on Dynamical Systems. ICMC-USP, São Carlos. October 2012
14. Montevideo Dynamical Systems Conference. August 2012.
15. 28º Colóquio Brasileiro de Matemática July 2011
16. Workshop on Dynamical Systems. Salvador. November 2011.

#### **14) Organization of Events**

*Workshop de Topologia e Dinâmica, TopDin.* February 2018

*Encontro de Jovens Dinamicistas* (Meeting of young dynamicists of Rio de Janeiro). November 2014 to November 2015

Co-organized with Sebastien Alvarez, Davi Obata and Carolina Puppo.

*Colóquio do IME* (An internal seminar of the Institute of Mathematics and Statistics of Federal Fluminense University. Web page: <https://coloquioimeuff.wixsite.com/math>)

#### **15) Languages**

Portuguese, native language

English and French, good working knowledge