

Curriculum Vitae

Flavio Abdenur

Personal Data

- *Name:* Flavio Erthal Abdenur
- *Nationality:* Brazilian
- *Email address:* flavio.abdenur@gmail.com
- *Professional homepage:* www.mat.puc-rio.br/~flavio

Education

- CNPq Postdoctorate at the Université de Paris 13, February-July 2009
Supervisor: Sylvain Crovisier (CNRS - Directeur de Recherche)
- PhD in Mathematics, IMPA 2002
Thesis: *Isolated transitive sets of C^1 -generic dynamical systems*
Advisor: Marcelo Viana
- BS in Economics, PUC-Rio 2000

Professional History

- June 2011-current: Risk Analyst at Vantor Investimentos
- January 2009-June 2011: Assistant Professor at the Catholic University of Rio de Janeiro (PUC-Rio), *with (PUC-Rio's analogue of) tenure*
- March 2006-December 2008: Assistant Professor at the Catholic University of Rio de Janeiro (PUC-Rio), *without (PUC-Rio's analogue of) tenure*
- November 2002-February 2006: Prodoc/CAPES Fellow at IMPA
- March 2002-November 2002: Faperj Post-Doctoral Fellow at the Federal University of Rio de Janeiro (UFRJ)

Administrative Positions

- March 2010-July 2011: Head of “Bolsa Arquimedes” scholarship program¹
- March 2007-June 2011: Head of Mathematics BS Program at PUC-Rio
- November 2006-June 2011: Head of Mathematics Department Homepage at PUC-Rio (www.mat.puc-rio.br)

¹Awards yearly stipends to the top undergraduate mathematics students at PUC-Rio; financed by donations from the private sector.

Languages: fluent in English, Portuguese, and Spanish

Awards and Distinctions

- 2009: Grant from the “Young Scientists of Rio de Janeiro State” program²/FAPERJ
- 2008: Grant from the “Productivity in Research Program for New Professors”/PUC-Rio
- 2007: Federal Stipend³ for Productivity in Research (PQ), CNPq
- 2002-2006: Prodoc/CAPES fellow⁴ at IMPA/CAPES

Research

A) *Topics:* C^1 -generic properties of diffeomorphisms and flows; homoclinic classes; topological and metric attractors; robust transitivity; dominated splittings; the C^1 Newhouse phenomenon; pseudo-orbit shadowing and stability; entropy and Lyapunov exponents of generic systems; physical measures; partial hyperbolicity

B) *Participation in funded research projects*

- Apoio às Instituições de Ensino e Pesquisa Sediadas no Estado do RJ/FAPERJ (2009-current): *Weakly Hyperbolic Dynamical Systems and Applications* (Headed by Maria José Pacifico - UFRJ)
- PADCT/FAPERJ (2009-2011): *Stochastic Processes, Dynamical Systems, and Ergodic Theory* (Headed by Claudio Landim - IMPA)
- MATH-Amsud/CNRS-CNPq (2009-2011): *Dynamical Systems and Ergodic Theory* (Headed by Marcelo Viana - IMPA)
- Universal/CNPq (2008-2011): *Chaotic Dynamical Systems* (Headed by Lorenzo J. Díaz - PUC-Rio)
- Jovens Pesquisadores/CNPq (2008-2010): *Real Dynamical Systems* (Headed by Vilton Pinheiro - UFBA)
- Cientistas do Nosso Estado/FAPERJ (2007-2009): *Dynamic and Chaotic Systems* (Headed by Lorenzo J. Díaz - PUC-Rio)
- PRONEX/MCT (2005-2011): *Dynamical Systems* (Headed by Marcelo Viana - IMPA)

²Awarded by the Rio de Janeiro state research agency to the top junior science researchers in the state.

³A long-term stipend awarded by the Brazilian federal research agency to the most productive science researchers in Brazil.

⁴A special long-term postdoctoral fellowship awarded by the Brazilian higher education council to about 100 young scientists in Brazil.

- Universal/CNPq (2005-2007): *Geometric and Ergodic Theory of Nonhyperbolic Systems* (Headed by Lorenzo J. Díaz - PUC-Rio)
- Universal/CNPq (2004-2006): *Singular Hyperbolicity and Geometric Theory of Dynamical Systems* (Headed by Maria José Pacifico - UFRJ)
- Cientistas do Nosso Estado/FAPERJ (2004-2006): *Chaotic Dynamical Systems* (Headed by Marcelo Viana - IMPA)

C) *Papers*

- 13) *The geometric mechanism for partially hyperbolic robust transitivity (tentative title)*
Work in progress
(with S. Crovisier)
- 12) *Flavors of partial hyperbolicity*
Work in progress
(with M. Viana)
- 11) *Ergodic theory of generic continuous maps*
Work in progress
(with M. N. Andersson)
- 10) *Transitivity and topological mixing for C^1 diffeomorphisms*
Submitted for publication
(with S. Crovisier)
- 9) *Nonuniform hyperbolicity for C^1 -generic diffeomorphisms*
Israel Journal of Mathematics, vol. 183, pp. 1-60, (2011)
(with Ch. Bonatti and S. Crovisier)
- 8) *Periodic points in homoclinic classes*
Ergodic Theory and Dynamical Systems, vol. 27, pp. 1-22, (2007)
(with Ch. Bonatti, S. Crovisier, L. J. Díaz, and L. Wen)
- 7) *Pseudo-orbit shadowing in the C^1 topology*
Discrete and Continuous Dynamical Systems, vol. 17, pp. 222-245, (2007)
(with L. J. Díaz)
- 6) *Global dominated splittings and the C^1 Newhouse phenomenon*
Proceedings of the American Mathematical Society, vol. 134, pp. 2229-2237, (2006)
(with Ch. Bonatti and S. Crovisier)
- 5) *Generic diffeomorphisms on compact surfaces*
Fundamenta Mathematicae, vol. 187, pp. 129-157, (2005)
(with Ch. Bonatti, S. Crovisier, and L. J. Díaz)

- 4) *Nonwandering sets with nonempty interior*
Nonlinearity, vol. 17, no. 1, pp. 175-191, (2004)
 (with Ch. Bonatti and L. J. Diaz)
- 3) *Robust transitivity and topological mixing for C^1 flows*
Proceedings of the American Mathematical Society, vol. 132, pp. 699-705, (2004)
 (with. A. Avila and J. Bochi)
- 2) *Generic robustness of spectral decompositions*
Annales Scientifiques de l'Ecole Normale Superieure, vol. 36, pp. 213-224, (2003)
- 1) *Attractors of generic diffeomorphisms are persistent*
Nonlinearity, vol. 16, pp. 301-312, (2003)

Selected Talks

- 20) June 2011: International Workshop on Global Dynamics Beyond Uniform Hyperbolicity (Luminy, France)
- 19) July 2010: ICM 2010 Satellite Conference on Various Aspects of Dynamical Systems (Vadodara, India)
- 18) February 2010: International Conference on Dynamical Systems celebrating the 70th anniversary of Jacob Palis (Buzios, Brazil)
- 17) October 2009: Dynamical Systems at Valparaiso (Valparaiso, Chile)
- 16) August 2009: International Workshop on Global Dynamics Beyond Uniform Hyperbolicity (Beijing, China)
- 15) July 2009: 7th ISAAC Congress (at Imperial College London) (London, England)
- 14) December 2007: Dynamics Days (Antofagasta, Chile)
- 13) July 2007: 26to Colóquio Brasileiro de Matemática, dynamical systems section (Rio de Janeiro, Brazil)
- 12) November 2006: CIMPA/IMCA School on Dynamical Systems and Related Sciences (Lima, Peru)
- 11) October 2006: International Symposium of Dynamical Systems in Honor of Wellington de Melo (Salvador, Brazil)
- 10) May 2006: International Workshop on Global Dynamics Beyond Uniform Hyperbolicity (Chicago, USA)
- 9) August 2005: International Conference on Dynamical Systems (Angra dos Reis, Brazil)

- 8) August 2004: Summer School and Conference on Dynamical Systems at the International Center for Theoretical Physics (Trieste, Italy)
- 7) March 2004: International Conference on Dynamical Systems in Honor of J. Massera (Montevideo, Uruguay)
- 6) July 2003: 25to Colóquio Brasileiro de Matemática, dynamical systems section (Rio de Janeiro, Brazil)
- 5) July 2003: Recent Trends in Dynamics III (Porto, Portugal)
- 4) September 2002: Franco-brazilian Conference in Honor of Harold Rosenberg (Dijon, France)
- 3) January 2002: Workshop on Real and Conservative Dynamical Systems at IMPA (Rio de Janeiro, Brazil)
- 2) August 2001: International Conference on Dynamical Systems at the International Center for Theoretical Physics (Trieste, Italy)
- 1) May 2001: Northwestern University Conference on Partial Hyperbolicity in Honor of C. Pugh (Evanston, USA)

Research Visits

- Université de Paris XIII, by invitation of S. Crovisier, July 2010
- Scuola Normale Superiore di Pisa, by invitation of M. J. Pacifico, June 2009
- Université de Bourgogne en Dijon, by invitation of Ch. Bonatti, February 2007
- Université de Paris XIII, by invitation of S. Crovisier, January 2007
- Universidade Federal do Rio Grande do Sul, by invitation of J. Bochi, November 2006
- Université de Paris XIII, by invitation of S. Crovisier, September 2005
- Universidade Federal do Rio Grande do Sul, by invitation of J. Bochi, June 2005
- Université de Bourgogne en Dijon, by invitation of Ch. Bonatti, April 2004

Minicourses Taught

- July 2007: *Hiperbolicidade, Estabilidade, e Caos em Dimensão Um (Hyperbolicity, Stability, and Chaos in Dimension One)*, at the 26th Colóquio Brasileiro de Matemática (Rio de Janeiro, Brazil)
- January 2006: *Introduction to Partial Hyperbolicity*, at the ICTP-IMPA Meeting on Dynamical Systems (Rio de Janeiro, Brazil)
- August 2005: *Nonuniform Hyperbolicity of C^1 -Generic Diffeomorphisms*, at the IV Workshop on Dynamical Systems (San Pedro de Atacama, Chile)

Courses Taught

- *Undergraduate*: Calculus I, Calculus II, Calculus III, Introduction to Analysis, Complex Analysis, Introduction to Probability
- *Graduate*: General Topology, Ordinary Differential Equations, Introduction to Dynamical Systems, Hyperbolic Dynamics, Ergodic Theory, Topics in Dynamical Systems, Differentiable Manifolds

Graduate Student Advising

- Luiz Felipe Nobili França, Doctoral Thesis at PUC-Rio (co-advisor with L. J. Díaz): *(no title yet)*, began February 2009
- Luiz Felipe Nobili França, Masters Dissertation at PUC-Rio: *Estabilidade e densidade dos difeomorfismos Morse-Smale do círculo (Stability and density of Morse-Smale circle diffeomorphisms)*, concluded March 2008

Undergraduate Research Advising

- Ricardo Lomba Araújo, Undergraduate Research Fellow at PUC-Rio: *Topics in complex analysis*, concluded August 2009
- Pedro Castro Gonzaga, Undergraduate Research Fellow at PUC-Rio: *Elementary dynamical systems*, concluded August 2008
- Felipe Mello Pereira, Undergraduate Research Fellow at PUC-Rio: *Elementary dynamical systems*, concluded August 2008
- Pedro Chaves Meurer Moreira, Undergraduate Research Fellow at PUC-Rio: *Elementary dynamical systems*, concluded August 2008
- Pedro Chaves Meurer Moreira, Undergraduate Research Fellow at PUC-Rio: *The irrationals have full measure*, concluded August 2007
- Pedro Henrique de Castro Simões, Undergraduate Research Fellow at PUC-Rio: *The Nash equilibrium theorem*, concluded August 2007

- Thiago Pereira Neves, Undergraduate Research Fellow at IMPA: (*took two advanced undergraduate courses at IMPA*), concluded December 2006

Journal Refereeing

Ergodic Theory and Dynamical Systems, Nonlinearity, Revista Matemática Iberoamericana, Bulletin of the Brazilian Mathematical Society, Transactions of the American Mathematical Society, Discrete and Continuous Dynamical Systems

Organization of Events

- *Desafio em Matemática 2010 da PUC-Rio (Undergraduate PUC-Rio Mathematics Challenge Competition)*, co-organizer (with Nicolau Saldanha), November 2010
- *Desafio em Matemática 2009 da PUC-Rio (Undergraduate PUC-Rio Mathematics Challenge Competition)*, co-organizer (with Nicolau Saldanha), November 2009
- *Desafio em Matemática 2008 da PUC-Rio (Undergraduate PUC-Rio Mathematics Challenge Competition)*, co-organizer (with Nicolau Saldanha), November 2008
- *Jornada de Matemática da PUC-Rio*, co-organizer (with Thomas Lewiner), April 2007