

Curriculum Vitæ

Alexander Arbieto

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Birth - Citizenship

December, 10 of 1978 - Lima, Peru. Peruvian.

Academic Degrees

Bsc. on Mathematics: February/2005 at Federal Univeristy of Rio de Janeiro.

Msc. on Mathematics: January/2001 at Instituto de Matemática Pura e Aplicada (IMPA).

Phd. on Mathematics: June/2004 at Instituto de Matemática Pura e Aplicada (IMPA).

Position and Affiliation Post-Doc at Federal University of Rio de Janeiro.

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Research Topics: Dynamical Systems, Ergodic Theory, Differential Geometry and Partial Differential Equations.

- Dynamical Systems: Lyapunov Exponents of Linear Cocycles; Computational Theory applied for Dynamical Systems; Robust Transitivity for volume preserving dynamical systems and its consequences: Dominated Splittings, Equilibrium States for non-uniformly expanding systems, random systems and systems with singularities (Viana Maps), ergodic properties of equilibrium states; Properties of systems with weak forms of hyperolicity and its ergodic consequences, for instance the stability of the Bernoulli property.
- Geometry: Immersions with fractal sets of points with some geometric properties; positive mass theorems, PDE's with geometrical meaning: The Yamabe problem.

- Partial Differential Equations: the Cauchy problem for nonlinear Schrödinger Equations and Korteweg-de Vries equations, the periodic Schrödinger-Debye equation, the Schrödinger-KdV equation and the study of nonlinear Schrödinger equations with critical nonlinearity with respect to the Sobolev embedding com linearidade crítica para o mergulho de Sobolev. The study of divergence equations and the Jacobian equation and applications for perturbations of volume preserving dynamical systems. Rough solutions for the periodic Schrödinger-KdV equation.

Books

- Aspectos Ergódicos da Teoria dos Números. Joint with Carlos Gustavo Moreira and Carlos Matheus. Publicações Matemáticas do IMPA - 26º Colóquio Brasileiro de Matemática 2007.

Publications

- L^p -Generic Cocycles Have One-Point Lyapunov Spectrum. Joint with Jairo Bochi. Stochastics and Dynamics v. 3, no. 1. pp 73–81. 2003.
- Decidability of chaos for some families of dynamical systems. Joint with Carlos Matheus. Foundations of Computational Mathematics, vol. 4, 269-275 (2004).
- Equilibrium states for random non-uniformly expanding maps. Joint with Carlos Matheus and Krerley Oliveira. Nonlinearity, vol. 17, n. 2, p. 581-593.
- The Bernoulli property for weakly hyperbolic systems. Joint with Carlos Matheus and Maria Jose Pacifico. Journal of Statistical Physics, vol. 117, 243-260 (2004).
- O trabalho de Ennio De Giorgi sobre o problema de Plateau. Joint with Carlos Matheus e Krerley Oliveira. Revista Matematica Universitaria, n. 35 (december, 2003), p. 1-29.
- Immersions with fractal set of points of zero Gauss-Kronecker curvature. Joint with Carlos Matheus. Bulletin of the Brazilian Mathematical Society, vol. 35, n. 3, p. 363-376.
- Rough solutions for the periodic Schrödinger - Korteweg-deVries system. Joint with Adan Corcho and Carlos Matheus. Journal of Differential Equations, vol.230, n.1, p.295-336, 2006.

Publications to appear

- On the periodic Schrödinger-Debye equation. To appear in Communications in Pure and Applied Analysis. Joint with Carlos Matheus.

- A pasting lemma and some applications for conservative systems. To appear in Ergodic Theory and Dynamical Systems. Joint with Carlos Matheus.
- Maximal entropy measures for Viana maps. To appear in Discrete and Continuous Dynamical Systems. Joint with Carlos Matheus and Samuel Senti.

Preprints

- Fast decay of correlations of equilibrium states of open classes of non-uniformly expanding maps and potentials. Joint work with Carlos Matheus. Submitted to Ergodic Theory and Dynamical Systems.

Selected Lectures

- INTERNATIONAL WORKSHOP ON ROBUSTNESS AND PARTIAL HYPERBOLICITY: "*EQUILIBRIUM STATES FOR SOME CLASS OF DYNAMICAL SYSTEMS*". 2005. Angra-Brasil
- Second Congress of Mathematics from Latin-America. *THE BERNOULLI PROPERTY FOR SOME WEAKLY HYPERBOLIC SYSTEMS*. Jun-2004. Cancun-Mexico.
- SUMMER SCHOOL AND CONFERENCE ON DYNAMICAL SYSTEMS. *BERNOULLI PROPERTY FOR SOME WEAKLY HYPERBOLIC DYNAMICAL SYSTEMS*. Ago-2004. Trieste-Itália.
- Seminar of Dynamical Systems at Jussieu. On Dominated Splittings for conservative dynamical systems. 2004.
- SEMINÁRIO DE GEOMETRIA DIFERENCIAL EM HOMENAGEM A LUCAS BARBOSA.
- INTERNATIONAL WORKSHOP ON ROBUSTNESS AND PARTIAL HYPERBOLICITY. *Lp-generic cocycles have one-point Lyapunov Spectrum*. 2002. Buzios-Brasil
- Workshop of Differential Geometry and Chaotic Dynamics: *Decomposição Dominada para Sistemas Conservativos*. 2005. Bahia-Brasil.
- Workshop of Geometry of submanifolds and chaotic dynamics. *A Propriedade Bernoulli para Sistemas Parcialmente Hiperbólicos*. 2003. Maceio-Brasil

Participation in Conferences

- Global Dynamics Beyond Uniform Hyperbolicity. Chicago-USA. 2006.
- XIV Escola de Geometria Diferencial em homenagem a Shiing-Shen Chern. 2006. Bahia-Brazil.

- International Congress of Mathematics. 2006. Madrid-Spain.
- School and Workshop on Dynamical Systems. São Paulo-Brazil. 2006.
- International Symposium of Dynamical Systems. Celebrating the 60th Anniversary of Wellington de Melo. 2006. Bahia-Brazil.
- Time at Work. Institut Henri Poincaré. Paris - France. 2005.
- WORKSHOP DE SUPERFÍCIES DE CURVATURA MÉDIA CONSTANTE E EDP. WORKSHOP DE SUPERFÍCIES DE CURVATURA MÉDIA CONSTANTE E EDP. 2004. Rio Grande do Sul - Brazil.
- I Reunião Regional de Sistemas Dinâmicos da UNESP. 2004.
- International Conference on Dynamical Systems IMPA-Brasil.
- First Latin American Congress of Mathematicians. IMPA-Brasil.

Mini Courses

- "Set Theory". IME-UFG. Goias. 2000.
- "Introduction to Dynamical Systems". IME-UFG. Goias. 2001.

Research Visits

- 2004. Université Jussieu. Paris 6. Paris.
- 2005. Institut Henri Poincaré. Paris

PRICES and GRANTS

- Bolsa Nota 10 da Faperj-Brasil. 2003-2004.
- Bolsa PRODOC da CAPES-Brasil. 2005.

Participation as Jury

- Phd Mário Bessa. IMPA. 2005.
- Phd Enoch Apaza Call. Federal University of Rio de Janeiro. 2005.

REFEREES

- Referee for Ergodic Theory and Dynamical Systems.

Recent Teaching

- Riemann Surfaces. Aug/Dec 2006.
- Topics in Geometry: Introduction to Ricci Flow. Mar/Jul 2007. Program:
 1. Introduction to Ricci flow. Solitons. Local existence and Uniqueness. de Turck's trick.

2. Evolution Equations of curvatures.
 3. Perelman's entropy functionals and applications to the study of breathers.
 4. Maximum Principles.
 5. Compactness and Convergence of blow ups.
 6. The Perelman's reduced distance and reduced volume. Applications to non-collaps theorems.
 7. Hamilton's theorem on 3-manifolds with positive Ricci curvature.
 8. Hamilton's theorem on behaviour of the Ricci flow on compact surfaces.
- *Real Analysis*, Summer Course of UFAL (Universidade Federal de Alagoas). 2005.
 - *Hyperbolic Dynamics* Mar/Jun-2003. IMPA.
 - *Real Analysis* Aug-Nov/2001, Aug-Nov/2002, Aug-Nov/2003, Aug-Nov/2004, Aug-Nov/2005 at IMPA.