

CURRICULUM VITÆ

MARCELO VIANA

Birth - Citizenship:

March 4, 1962 in Rio de Janeiro - Brazilian and Portuguese.

Academic Degrees:

- B. Sc. (Mathematics) University of Porto, 1984
- Ph. D. Instituto de Matemática Pura e Aplicada (IMPA), 1990
Thesis: *Strange attractors in higher dimensions* Advisor: Jacob Palis

Position and Affiliation: Professor of Mathematics

IMPA

Est. D. Castorina 110, Jardim Botânico, 22460-320 Rio de Janeiro, Brazil

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Research Topics: Dynamical Systems, Ergodic Theory, Bifurcation Theory:

- Mathematical theory of chaotic dynamics and strange attractors: physical (Sinai-Ruelle-Bowen) measures, correlation functions, stochastic stability.
- Ergodic and geometric theory of Hénon-like maps and Lorenz-like flows. Multidimensional strange attractors.
- Bifurcations leading to chaotic behavior: homoclinic tangencies, heteroclinic cycles, saddle-node cycles.
- Relative frequency of dynamical phenomena in the unfolding of bifurcations, in two and higher dimensions. Coexistence of infinitely many attractors.
- Fractional invariants, such as Hausdorff dimension, limit capacity, and thickness, and their role in Dynamics.
- Partial hyperbolicity, systems with dominated splittings. Invariant foliations of partially hyperbolic systems. Related rigidity phenomena.
- Non-uniformly hyperbolic systems. Existence and finiteness of physical measures. Thermodynamical formalism, equilibrium states.
- Lyapunov exponents of linear cocycles. Non-vanishing exponents, simplicity of Lyapunov spectra. Dependence of Lyapunov exponents on the dynamics.
- Interval exchange transformations and translation surfaces. Dynamics of Teichmüller flows and renormalization operators. Geometry of flat surfaces.

Selected Invited Lectures:

- ≤ 1989: *Congress of the GMEL*, Coimbra 1985. University of Paris-Sud 1985. *Brazilian Mathematical Colloquium*, IMPA, Rio de Janeiro 1987. *International Workshop on Dynamical Systems*, ICTP, Trieste 1988. *International Workshop on Dynamical Systems*, IMPA, Rio de Janeiro 1989.
- 1990: *International Colloquium on Dynamical Systems*, ENS, Lyon. *International Conference on Dynamical Systems and Related Topics*, Nagoya. University of Kyoto. *Chilean Symposium on Dynamical Systems*, Santiago de Chile. KTH, Stockholm. University of Dijon.
- 1991: *Extended Midwest Conference on Dynamical Systems*, Northwestern University, Evanston. *Dynamical Systems*, Mathematisches Forschungsinstitut, Oberwolfach. *Brazilian Mathematical Colloquium*, IMPA, Rio de Janeiro. *International Workshop on Dynamical Systems*, ICTP, Trieste. *Workshop on Dynamical Systems*, Euler Institute, Saint-Petersburg. Princeton University. Boston University. Cornell University, Ithaca. University of Paris-Sud.

- 1992: *International Workshop on Dynamical Systems*, ICTP, Trieste. *Workshop on Dynamical Systems*, Mittag-Leffler Institute, Stockholm. *Learning With Artificial Neural Networks*, Trento. University of Groningen. University of Amsterdam.
- 1993: *Conference on Real and Complex Dynamics*, Copenhagen. *Dynamical Systems*, Mathematisches Forschungs Institut, Oberwolfach. *International Workshop on Dynamical Systems*, IMPA, Rio de Janeiro.
- 1994: University of California at Los Angeles. Princeton University. *International Conference on Dynamical Systems and Chaos*, Tokyo Metropolitan University. University of Michigan. CIMAT, Guanajuato. ETH, Zurich. *International Conference on Dynamical Systems*, Landau Institute, Moscow. University of Barcelona. University of Dijon.
- 1995: *International Workshop on Dynamical Systems*, Montevideo. *International Workshop on Dynamical Systems*, ICTP, Trieste. University of Geneva. *Ergodic Theory and Dynamical Systems*, Warsaw. *International Colloquium Adrien Douady*, University of Paris-Sud. University of Dijon. ENS of Lyon. *Dynamical Systems Conference*, Groningen.
- 1996: *Annual Iranian Mathematical Conference*, Shiraz. *International Conference on Dynamical Systems*, Beijing. University of Porto. *Hyperbolic Systems with Singularities*, Schrödinger Institute, Vienna. University of Dijon. KTH, Stockholm.
- 1997: *International Congress on Dynamical Systems*, CIC, Cuernavaca. *Selected Topics in Dynamical Systems*, ISI, Torino. *Dynamical Systems*, Mathematisches Forschungs Institut, Oberwolfach. *Quadriennial International Conference on Dynamical Systems*, IMPA, Rio de Janeiro. University of Dijon. University of Paris-Jussieu. University of Porto.
- 1998: *International Conference on Dynamical Systems*, KTH, Stockholm. *International Workshop on Dynamical Systems*, ICTP, Trieste. University of Dijon. University of Paris-Jussieu.
- 1999: University of Warwick. *International Conference on Dynamical Systems*, IST, Lisboa. *XII ELAM Lima*. *International Symposium on Dynamical Systems*, Dijon. *EquaDiff 99*, Berlin.
- 2000: *International Conference on Dynamical Systems*, Porto. Princeton University. *International Conference on Dynamical Systems*, ICMS, Edinburgh. *1st Latin-American Congress of Mathematicians*, IMPA. *4th Brazilian School of Probability*, Angra dos Reis. *International Conference on Dynamical Systems and Differential Equations*, Atlanta. *Nonlinear Analysis*, Courant Institute NYU. University of Paris-Sud Colloquium.
- 2001: University of Maryland Colloquium. KTH, Stockholm. University of Yale Colloquium. *Petrovskii Centenary Conference*, Moscow. *International Conference on Partial Hyperbolicity*, Northwestern University. *Global Analysis of Dynamical Systems*, Groningen. *Dynamical Systems*, Mathematisches Forschungs Institut, Oberwolfach. *School and Workshop on Dynamical Systems*, ICTP, Trieste. *Dynamical Systems and Statistical Mechanics*, Erdős Center, Budapest. Imperial College, London.
- 2002: University of Rouen Colloquium. *International conference on Dynamical Systems and Differential Equations*, American Mathematical Sciences Institute, Wilmington NC. École Normale Supérieure de Lyon. University of Paris-Sud (Orsay). Institut de Mathématiques de Jussieu, Paris. Harriot-Watt Univ Colloquium, Edinburgh. University of Marseille Colloquium. *New Directions in Dynamical Systems*, Kyoto. *International Conference in honor of H. Rosenberg*, Dijon. *International Conference in honor of J. Mather*, Princeton. *Colloque Michael Herman*, Institut Henri Poincaré, Paris. *Workshop on Randomness and Dynamics*, Santiago de Chile.
- 2003: *International Conference in honor of A. Verjovsky*, Cuernavaca, Mexico. *Recent Trends in Dynamics*, Porto. *Equadiff 2003*, Hasselt. *Workshop on Dynamical Systems*, Antofagasta. Imperial College of London. *Annual Meeting of the London Mathematical Society*, Southampton.
- 2004: *Geometry of Submanifolds and Chaotic Dynamics*, Maceio. *International Conference on Dynamical Systems in honor of J. Massera*, Montevideo. *Dynamical Systems and Applications*, Porto. *Multidimensional Chaotic Systems*, Luminy. *Summer School and Conference on Dynamical Systems*, ICTP, Trieste. *International Conference in Honor of A. Katok*, Mathematical Sciences Research Institute.

- 2005: Colloquium of the CIM, Coimbra. *Workshop on Differential Geometry and Chaotic Dynamics*, University of Bahia. *Nonlinear Science in Three Continents*, Consortium for the Americas, Santa Fe. *Contemporary Mathematics*, IMU Workshop/IMPA. Imperial College of London. *International Conference on Nonlinear Dynamics and Complexity*, NCTS, Taiwan. Chinese Academy of Sciences. University of Beijing Colloquium. *Colloque International en Systèmes Dynamiques*, Bordeaux. *Chaos and disorder in mathematics and Physics*, in honor of Ya. Sinai, Bresanone. *Santaló Conference*, Madrid. *Brazil-France Inter-Academies Meeting*, Paris. *International Conference in honor of Michael Jakobson*, Penn State University. *XIV ELAM*, Montevideo. Ramanujan Prize Lecture, ICTP, Trieste.
- 2006: *Workshop on partial hyperbolicity, laminations, and Teichmüller flows*, Fields Institute, Toronto. University of Coimbra, Colloquium. *Bienal da Sociedade Brasileira de Matemática*. *European Conference on Complex Systems*, Oxford. *International Conference on Dynamical Systems*, Lima.
- 2007: Aula Inaugural, UFF-Niterói. Colloquium, University of Oslo. First IME/IST Joint Meeting, São Paulo. *Workshop on Dynamical Systems*, Penn State University. IST Colloquium, Lisbon. Gulbenkian Foundation, Lisbon.
- 2008: Aula Inaugural, UNESP-S. J. Rio Preto. Seminaire Eliasson-Yoccoz, Jussieu. *Mathematics in the World*, Hungarian Academy of Sciences, Budapest. *Workshop on Probability and Dynamics*, CMM-Santiago de Chile. Annual Conference, Unión Matemática Argentina, Mendoza. Colloquium, Institute of Physics, University of São Paulo.
- 2009: Annual Meeting, Chinese Mathematical Society, Xiamen. Colloquium, Peking University. *Dynamical Trends in Analysis*, KTH, Stockholm. *Global Dynamics Beyond Uniform Hyperbolicity*, Peking University. *Encontro Brasil-França*, IMPA. Annual Meeting of the Mexican Mathematical Society, Zacatécas. 1^o *Colóquio de Matemática da Região Centro-Oeste*, Universidade Federal do Mato Grosso do Sul, Campo Grande.
- 2010: First *Brazilian School on Dynamical Systems*, Maceió. First *Encontro Internacional de matemática do Nordeste*, João Pessoa. Aula Inaugural, Universidade Federal de Juiz de Fora. 1^o *Colóquio de Matemática da Região Sul*, Universidade Federal de Santa Maria. Colloquium, Universidade Federal de Santa Catarina. *Semana da Matemática*, Universidade Federal do Rio Grande do Norte, Natal. Chilean Academy of Sciences. 1^o *Colóquio de Matemática da Região Norte*, Universidade Federal do Pará, Belém.
- 2011: Aula Inaugural, Universidade Federal de Minas Gerais.

Research Courses:

- *Differentiable Ergodic Theory*, Summer School on Dynamical Systems, ICTP, Trieste, 1988.
- *Homoclinic Bifurcations*, Chilean School on Dynamical Systems, Santiago de Chile, 1990.
- *Hyperbolic Dynamics and Homoclinic Bifurcations*, Summer School on Dynamical Systems, ICTP, Trieste, 1991.
- *Nonhyperbolic Dynamics and Strange Attractors*, Summer School on Dynamical Systems, ICTP, Trieste, 1992.
- *Homoclinic Bifurcations and Strange Attractors*, Conference on Real and Complex Dynamics, Copenhagen, 1993.
- *Statistical Properties of Attractors*, Conference on Selected Topics in Dynamical Systems, Torino, 1997.
- *Stochastic Dynamics of Deterministic Systems*, 200 pages, Brazilian Mathematical Colloquium, IMPA, Rio de Janeiro, 1997.
- *Ergodic Properties of Dissipative Dynamics*, Summer School on Dynamical Systems, ICTP, Trieste, 1998.
- *Attractors and Physical Measures*, XII ELAM, Lima, 1999.
- *Ergodic Theory of Chaotic Systems*, IST-Technical University of Lisbon, 2000.
- *Partially Hyperbolic Dynamics*, SISSA, Trieste, 2002.
- *Deterministic Products of Matrices*, Scuola Normale Superiore, Pisa, 2002.
- *Dynamics Beyond Uniform Hyperbolicity*, Collège de France, Paris, 2002.
- *Linear Cocycles*, New Trends on Dynamical Systems, University of Porto, 2003.

- *Lyapunov Exponents*, DANCE Winter School on Nonlinear Science, Castellon, 2005.
- *Lyapunov Exponents of Teichmüller Flows*, International Conference on Global Dynamics Beyond Uniform Hyperbolicity, Chicago, 2006.
- *Geometry and Dynamics of Flat Surfaces*, CIM-Centro Internacional de Matemática, Coimbra, 2007.
- *A Stochastic Approach to Deterministic Systems*, Second School on New Trends in Mathematics of Complex Systems, Institut des Systemes Complexes, Paris, 2008.
- *Dynamics in the Moduli Spaces of Flat Surfaces*, Summer School on Dynamical Systems, CIM-Centro Internacional de Matemática, Coimbra, 2008.

Research Visits:

- (1984) University of Paris-Sud.
- (1985) University of Paris-Sud.
- (1990) KTH-Stockholm, University of Dijon.
- (1991) IAS-Princeton, Cornell University, University of Santiago de Compostela, University of Paris-Sud (Orsay).
- (1992) Mittag-Leffler Institute-Stockholm, University of Groningen.
- (1993) University of Oviedo.
- (1994) University of California at Los Angeles, Princeton University, CIMAT-Mexico, University of Michigan, ETH-Zurich, University of Porto, University of Barcelona, University of Dijon.
- (1995) University of Geneva, University of Paris-Sud, University of Porto, University of Dijon .
- (1996) KTH-Stockholm, University of Porto, Schrödinger Institute-Vienna, University of Dijon.
- (1997) University of Dijon.
- (1998) University of Dijon.
- (1999) IMCA-Peru, IHES-Paris, University of Dijon.
- (2000) University of Porto, IST-Technical University of Lisbon, University of Dijon.
- (2001) KTH-Stockholm, ICTP-Trieste.
- (2002) University of Paris-Sud (Orsay), Institut de Mathématiques de Jussieu, Collège de France, KTH-Stockholm, University of Dijon.
- (2003) Imperial College of London.
- (2004) University of Dijon. Scuola Normale Superiore, Pisa. University of Barcelona. University of Paris-Jussieu.
- (2005) Imperial College of London. University of Beijing.
- (2006) Fields Institute, Toronto.

Ph.D. Students:

- (1) José Ferreira Alves, IMPA, Aug 11, 1997 : *SRB measures for nonhyperbolic systems with multidimensional expansion*.
Ann. Sci. École Norm. Sup. 33 (2000), 1–32.
Ergod. Th. & Dynam. Sys. 22 (2002), 1–32.
- (2) Maria João Costa, IMPA, Feb 09, 1998 : *Global strange attractors after collision of horseshoes with periodic sinks*.
Anais Acad. Bras. Ciências 70 (1998), 393–400.
Disc. & Cont. Dynam. Sys. 9 (2002), 505–548.
- (3) Isabel Lugão Rios, IMPA, Oct 14, 1998 : *Unfolding homoclinic tangencies inside horseshoes: hyperbolicity, fractal dimensions, and persistent tangencies*.
Nonlinearity 14 (2001), 431–462.
- (4) Vítor Domingos Araújo, IMPA, Nov 19, 1998 : *Attractors and time averages for random maps*.
Annales de l'Inst. Henri Poincaré - Analyse Non-Linéaire 17 (2000), 307–369.
- (5) Augusto Armando de Castro Júnior, Nov 25, IMPA, 1998 : *Backward inducing and exponential decay of correlations for partially hyperbolic attractors whose central direction is mostly contracting*.
Israel J. of Math. 130 (2001), 29–75.
- (6) Vanderlei Minori Horita, IMPA, May 24, 1999 : *Hausdorff dimension of non-hyperbolic repellers derived from Anosov diffeomorphisms*.
J. Statistical Physics 105 (2001), 835–862.

- Disc. & Cont. Dynam. Sys. 13 (2005), 1125–1152.
- (7) Alexandre Tavares Baraviera, IMPA, Nov 16, 2000 : *Robust nonuniform hyperbolicity for volume preserving maps*.
- (8) Paulo Rogério Sabini, IMPA, Feb 20, 2001 : *Nonperiodic bifurcations at the boundary of hyperbolic systems*.
Ergod. Th. & Dynam. Sys. 27 (2007), 459–492.
- (9) Nivaldo Costa Muniz, IMPA, Jul 12, 2001 : *Hénon-like attractors in arbitrary dimensions: SRB measures and basin problem*.
Disc. & Cont. Dynam. Sys. 15 (2006), 481–504.
- (10) Jairo Bochi, IMPA, Jul 13, 2001: *Zero Lyapunov exponents*. Bolsista Nota 10 - Faperj. Affiliated Member Brazilian Academy of Sciences 2007.
Ergod. Th. & Dynam. Sys. 22 (2002), 1167–1696.
Annals of Math. 161 (2005) 1423–1485.
- (11) Flávio Abdenur, IMPA, Jan 09, 2002 : *Isolated transitive sets of C^1 generic systems*.
Nonlinearity 16 (2001), 301–311.
Annales Sci. École Normale Supérieure 36 (2003), 213–224.
Procs. American Math. Society 132 (2004), 699–705.
- (12) Krerley Oliveira, IMPA, Oct 07, 2002 : *Equilibrium states for non-uniformly hyperbolic maps*. Affiliated Member Brazilian Academy of Sciences 2007.
Ergod. Th. & Dynam. Sys. 23 (2003), 1891–1905.
- (13) Mychelle Dysman, IMPA, Apr 14, 2003 : *Hausdorff dimension of repellers of maps with holes*.
J. Statistical Physics 120 (2005), 479–509.
- (14) Carlos Matheus, IMPA, Apr 06, 2004 : *Contributions to the ergodic theory of non-hyperbolic systems*. Bolsista Nota 10 - Faperj.
Comentarii Math. Helvetici 79 (2004), 753–757.
Nonlinearity 17 (2004), 581–593.
J. Statistical Physics 117 (2004), 243–260.
- (15) Alexander Arbieto, IMPA, Jun 08, 2004 : *Topics in conservative dynamics and related problems*. Bolsista Nota 10 - Faperj. Affiliated Member Brazilian Academy of Sciences 2010.
J. Stochastics and Dynamics 3 (2003), 73–81.
Found. Computational Mathematics 4 (2004), 269–275.
Bull. Braz. Math. Soc. 35 (2004), 363–376.
- (16) Nuno Luzia, IMPA, Feb 25, 2005: *A variational principle for dimension of a class of non-conformal repellers*.
Ergod. Th. & Dynam. Sys. 26 (2006), 821–846.
- (17) Mário Bessa, IMPA, May 05, 2005: *Lyapunov exponents of conservative continuous time systems*.
J. Differential Equations 228 (2006), 685–706.
Ergod. Th & Dynam. Sys. 27 (2007), 1445–1472.
- (18) Martin Andersson, IMPA, July 12, 2007: *Robustness of ergodic properties in partially hyperbolic dynamics*.
Trans. Amer. Math. Soc. 362 (2010), 1831–1867.
- (19) Jimmy Santamaria, IMPA, August 30, 2007; *Cocycles over hyperbolic maps*.
- (20) Paulo Varandas, IMPA, November 9, 2007; *Existence and stability of equilibrium states for non-uniformly expanding maps*.
Annales de l’Inst. Henri Poincaré - Analyse Non-Linéaire 27 (2010), 555–593.
- (21) Jiagang Yang, IMPA, June 18, 2008; *C^1 dynamics far from tangencies*. Bolsista Nota 10 - FAPERJ.
Ergod. Th. & Dynam. Sys.
- (22) Javier Solano, IMPA, February 19, 2009; *Absolutely continuous invariant measures for non-uniformly expanding skew-products*.
- (23) Maria João Resende, IMPA, February 27, 2009; *Exponential decay for the Teichmüller flow in the moduli space of quadratic differentials*.
- (24) Alien Herrera Torres, IMPA, August 5, 2009; *Simplicity of the Lyapunov spectrum for multidimensional continued fraction algorithms*.

- (25) Carlos Bocker, IMPA. December 14, 2009; *Continuity of Lyapunov exponents for 2D random matrices*. Bolsista Nota 10 - FAPERJ. Best thesis IMPA 2010.
- (26) Mohammad Fanaee, IMPA, May 3, 2010; *Simple cocycles over Lorenz attractors*.

Masters Students:

- (1) José Ferreira Alves, University of Porto, 1992, joint with M. Carvalho. Diss. *Absolutely continuous invariant measures for the quadratic family*.
- (2) Fernando Jorge S. Moreira, University of Porto, 1992, joint with M. Carvalho. Diss. *Chaotic dynamics of quadratic maps*.
- (3) Roberto Imbuzeiro Moraes Felinto de Oliveira, IMPA, 2000.
- (4) Carlos Bocker, IMPA, 2006.
- (5) José Regis Azevedo Varão Filho, IMPA, 2007. Bolsista Nota 10 - Faperj.
- (6) Mauricio de Mello Rodrigues Collares Neto, IMPA, 2009.
- (7) Philip Thommpson, IMPA, 2010.
- (8) Rafael Montezuma Cabral, IMPA, 2011.

Prizes and Distinctions:

- Prize for best undergraduate in Science, Fundação Eng. António José de Almeida, Porto, 1984.
- Plenary Speaker, *International Congress of Mathematical Physics*, Paris, 1994.
- Invited Speaker, *International Congress of Mathematicians*, ICM-Zurich, 1994.
- Member of the Brazilian Academy of Sciences, elected in 1997.
- Third World Academy of Sciences Award in Mathematics, 1998.
- Plenary Speaker, *International Congress of Mathematicians*, ICM-Berlin, 1998.
- Grand Croix of the Order of Scientific Merit, granted by the President of Brazil, 2000.
- Member of the Third World Academy of Sciences, elected in 2000.
- UMALCA (União Matemática da América Latina e do Caribe) Award in Mathematics, 2000.
- Invited Professor, Collège de France, Paris, 2002.
- Santaló Distinguished Lecturer, Universidad Complutense, Madrid, 2005.
- Ramanujan Prize, ICTP, 2005.
- Corresponding Member Portuguese Academy of Sciences, 2006.
- Prize University of Coimbra, 2007.
- Distinction "Grande Cientista Brasileiro", Universidade Federal Fluminense, 2009.
- Corresponding Member Chilean Academy of Sciences, 2009.

Grants and Research Projects:

- Calouste Gulbenkian Foundation Fellowship, 1988-1990
- International Mathematical Union Grant to attend the ICM90 - Kyoto, 1990
- Guggenheim Foundation Fellowship, 1993-1994
- CNPq Research Grant, since 1991, highest level (1A)
- coordinator CNPq Research Project "Edital Universal", 2001-2002
- coordinator FAPERJ Fellowship "Cientista do Nosso Estado", 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010.
- coordinator PRONEX/CNPq Research Project "Sistemas Dinâmicos", 2004-2006, 2007-2009, 2010-2012.
- coordinator PROSUL/CNPq Research Projects "UMALCA na America do Sul", 2004-2005, 2007-2009.
- coordinator PROSUL/CNPQ Network "Rede Sul-Americana de Sistemas Dinamicos" for scientific cooperation in South America, 2003-2005, 2006-2008.
- coordinator PROCAD/CAPES IMPA/UFES/UFF graduate teaching cooperation project, 2006-2009.
- coordinator CNPq Research Project "Edital Universal", 2007-2009.
- coordinator MathAmSud project DySET-Dynamical Systems and Ergodic Theory, 2009-2012.
- "Projeto Klein em Língua Portuguesa"-SBM, CAPES, 2010-2014.

Previous Academic Positions:

- Associate Professor, IMPA (Oct 1992 – Jun 1997)

- Assistant Professor, IMPA (Dec 1991 – Oct 1992)
- Assistant Professor, University of Porto (Sep 1991 – Sep 1993)
- Assistant II, University of Porto (Jul 1987 – Sep 1991)
- Research Assistant, IMPA (Jun 1987 – Dec 1991)
- Assistant I, University of Porto (Oct 1984 – Jul 1987)

Editorial Board Member:

- *Dynamics and Stability of Systems*, 1995 – 1999.
- *Nonlinearity*, 1996 – 2003.
- *Ergodic Theory & Dynamical Systems*, since 1998.
- *Dynamical Systems: An International Journal*, since 1999.
- *Portugaliae Mathematica*, since 1999.
- *Discrete and Continuous Dynamical Systems*, since 1999.
- *Journal of Stochastics and Dynamics*, since 2000.
- *Nonlinear Differential Equations and Applications*, 2001–2008.
- *Dynamics of Partial Differential Equations*, since 2004.

Referee for Annals of Mathematics, Inventiones Mathematicae, Publications Mathématiques de l'IHES, Annales Scientifiques de l'ENS, Ergodic Theory & Dynamical Systems, Nonlinearity, Annales de l'Institut Henri Poincaré, Commentarii Mathematici Helvetici, Proceedings of the AMS, Comptes Rendus de l'Académie des Sciences de Paris, Discrete and Continuous Dynamical Systems, Journal of Complexity, Communications in Mathematical Physics, Israel Journal of Mathematics, Journal of Differential Equations, and other journals.

Organization:

- *International Conference on Dynamical Systems*, Porto, August 1992.
- *International Conference on Dynamical Systems*, 25th anniversary of IMPA's Dynamical Systems Seminar, September 1994.
- *Workshop Bifurcations to chaos and low-dimensional dynamics in Ergodic Theory & Dynamical Systems*, Warsaw, June 1995.
- *Workshop on Non-uniformly hyperbolic dynamics*, Atlanta, May 2000.
- *International Conference on Dynamical Systems, celebrating the 60th birthday of J. Palis*, IMPA, July 2000.
- *School and Workshop on Dynamical Systems*, ICTP-Trieste, August 2001.
- *Workshop on Robustness and Partial Hyperbolicity*, Rio de Janeiro, November 2003.
- *Workshop on the Geometry of Submanifolds and Chaotic Dynamics*, Maceio, February 2004.
- *Workshop on Dynamical Systems and Applications*, Porto, May 2004.
- *2nd Latin American Congress of Mathematicians*, Cancún, June 2004.
- *Summer Conference and School on Dynamical Systems*, ICTP-Trieste, July-August 2004.
- *1^{as} Jornadas de Iniciação Científica*, IMPA, November 2004.
- *Workshop on Chaotic Dynamics and Differential Geometry*, Salvador, March 2005.
- *25th Brazilian Mathematical Colloquium*, IMPA, July 2005.
- *International Congress on Dynamical Systems*, Angra, August 2005.
- *1st Workshop on Conservative Dynamics and Symplectic Geometry*, IMPA, August 2005.
- *2^{as} Jornadas de Iniciação Científica*, IMPA, November 2005.
- *ICTP-CNPq School and Workshop on Dynamical Systems*, IMPA, January 2006.
- *Workshop on Topology and Dynamical Systems*, UFF, February 2006.
- *International Congress on the Applications of Mathematics ICAM 2006*, CMM, Santiago de Chile, March 2006.
- *International Conference on Dynamics Beyond Uniform Hyperbolicity*, Chicago, May 2006.
- *International Congress of Mathematical Physics/Young Researchers Symposium 2006*, IMPA, August 2006.
- *Symposium of Dynamical Systems*, celebrating the 60th birthday of W. de Melo, Salvador, October 2006.
- *3^{as} Jornadas de Iniciação Científica*, IMPA, November 2006.

- *Workshop on Topology and Dynamical Systems*, UFF, February 2007.
- *Escola de Altos Estudos-CAPES (Profs. G. Tian and L. Florit)*, IMPA, July 2007.
- *2nd Workshop on Conservative Dynamics and Symplectic Geometry*, IMPA, August 2007.
- *Workshop on Topology and Dynamical Systems*, UFF, February 2008.
- *School and Workshop on Dynamical Systems*, ICTP-Trieste, June-July 2008.
- *CIM School on Dynamical Systems*, CIM-Coimbra, July 2008.
- *4^{as} Jornadas de Iniciação Científica*, IMPA, November 2008.
- *EMALCA da Região Central*, Rondonópolis, MT, January 2009.
- *Workshop on Topology and Dynamical Systems*, UFF, February 2009.
- *5th TWAS-ROLAC Young Scientist Conference*, Rio de Janeiro, May 2009.
- *International Conference on Dynamics Beyond Uniform Hyperbolicity*, Beijing, August 2009.
- *EMALCA da Amazonia*, Manaus, August 2009.
- *3rd Workshop on Conservative Dynamics and Symplectic Geometry*, IMPA, August 2009.
- *3rd Latin American Congress of Mathematicians*, Santiago de Chile, September 2009.
- *Séminaire Brésil-France en Mathématiques*, Brazilian Academy of Sciences, September 2009.
- *1^o Colóquio de Matemática da Região Centro-Oeste*, Universidade Federal do Mato Grosso do Sul, Campo Grande, October 2009.
- *6th TWAS-ROLAC Young Scientist Conference*, Rio de Janeiro, December 2009.
- *International Conference on Dynamical Systems*, celebrating Jacob Palis' 70th birthday, Búzios, Rio de Janeiro, March 2010.
- *1^o Colóquio de Matemática da Região Sul*, Universidade Federal de Santa Maria, April 2010.
- *7th TWAS-ROLAC Young Scientist Conference*, Rio de Janeiro, May 2010.
- *1^o Colóquio de Matemática da Região Norte*, Universidade Federal do Pará, Belém, September 2010.
- *8th TWAS-ROLAC Young Scientist Conference*, Rio de Janeiro, December 2010.
- *1^o Colóquio de Matemática da Região Nordeste*,
- *Workshop on Topology and Dynamical Systems*, UFF, February 2011. Universidade Federal do Sergipe, Aracaju, March 2011.
- *International Conference on Dynamical Systems*, celebrating the 90th birthday of Maurício Peixoto, IMPA, April 2011.
- *1^o Colóquio de Matemática da Região Sudeste*, Universidade Federal de São João del Rei, April 2011.
- *Mathematics in the Americas*, IMPA, May 2011.

Academic Administration:

- Elected Member, Directing Council of Brazilian Mathematical Society, 1997–2001.
- Chair, Committee for Mathematics and Statistics, CNPq, 1998–2001 and 2004–2007.
- Area Coordinator for Mathematics, FAPERJ, since 2004–2008.
- Member, Membership Selection Committee, Brazilian Academy of Sciences, 2004–2009.
- Member, Committee for Mathematics and Statistics, CAPES, 2005–2007.
- Scientific Coordinator, Mathematical Union of Latin America and the Caribbean (UMALCA), since 2001.
- Chair, Department for Scientific Activities of IMPA, 1996–2004.
- Deputy Director, IMPA, 2004 - 2007.
- Member, Scientific Council, Centro Internacional de Matemática (CIM), 2005–2007.
- Elected Member, Executive Committee of International Mathematical Union, 2007–2010.
- Member, Advisory Membership Committee, Academy of Sciences for the Developing World (TWAS), 2007–2009.
- Member, L'Oréal Grant Committee for Women in Science, 2007–2010.
- Chair, Committee for Mathematics and Statistics, CAPES, 2005–2007.
- Chair, Forum for Research and Graduate Studies in Mathematics, 2008–2010.
- President, International Jury, Ibero-American Mathematical Olympiad, 2008.

- Member, Brin Prize Committee, University of Maryland, 2007–2011.
- Member, Ramanujan Prize Committee, ICTP/IMU, 2008–2010.
- Chair, Regional Office for Latin America and the Caribbean, Academy of Sciences for the Developing World (TWAS), 2009–2010.
- Member, Committee for the ELAM-Latin American School of Mathematics, UMALCA, 2009–2012.
- Vice-president, Brazilian Mathematical Society, 2009–2011.
- Member, Advisory Board, Universidade do Minho, 2009–2011.
- Member, Directing Board CNPq, 2009–
- Member, Steering Committee of the Mathematical Congress of the Americas, 2011–2013.
- Chair of PROFMAT - National Master Program for High-School Teachers in Brazil, 2011–

Membership:

- Brazilian Mathematical Society, since 1987.
- American Mathematical Society, since 1994.
- Brazilian Academy of Sciences, since 1997.
- Third World Academy of Sciences, since 2000.
- Portuguese Academy of Sciences and Letters, since 2006.

Publications

- (1) *The differentiability of the hairs of $\exp(z)$* , Procs. A. M. S. Vol 103, 4 (1988), 1179-1184.
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