

Marcelo Viana

Professor & Director
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Birth and citizenship

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

Education

B.Sc. – Department of Mathematics, Universidade do Porto, 1984.
Ph.D. – Instituto de Matemática Pura e Aplicada, Rio de Janeiro, 1990.

Research fields

Dynamical systems, ergodic theory, bifurcation theory.

Awards and fellowships

National Research Council Grant, since 1991.
Guggenheim Foundation Fellowship, 1993–1994.
TWAS Award in Mathematics, Academy of Sciences of the Developing World, 1998.
UMALCA Award, Mathematical Union for Latin America and the Caribbean, 2000.
Ramanujan Prize, International Centre for Theoretical Physics, Trieste, 2005.
Prize Universidade de Coimbra, 2007.
Grand Prix Scientifique Louis D., Académie des Sciences de Paris, Institut de France, 2016.
CBMM Science Prize, Companhia Brasileira de Metalurgia e Mineração, 2019.

Academies of sciences

Brazilian Academy of Sciences, member, elected in 1997.
The World Academy of Sciences (TWAS), member, elected in 2000.
Portuguese Academy of Sciences, corresponding member, elected in 2006.
Chilean Academy of Sciences, corresponding member, elected in 2009.

Distinguished lectures (selection)

Plenary Speaker, International Congress of Mathematical Physics, Paris, 1994.
Invited Speaker, International Congress of Mathematicians, ICM Zurich, 1994.
Plenary Speaker, International Congress of Mathematicians, ICM Berlin, 1998.
Santaló Distinguished Lecturer, Universidad Complutense, Madrid, 2005.
Plenary Speaker, Latin American Congress of Mathematicians, CLAM Córdoba, 2012.
Plenary Speaker, International Congress on Industrial and Applied Mathematics, ICIAM Valencia, 2019.
IMU Centennial Conference, Strasbourg, 2021.

Meetings organized (selection)

CLAM 2004 and 2008 – Latin American Congresses of Mathematicians (co-chair).
ICM 2018 – International Congress of Mathematicians (head organizer).
MCA 2013, 2017 and 2021 – Mathematical Congress of the Americas (co-organizer).

Professional activities

CAPES – Brazilian Graduate Studies Agency: chair for Mathematics and Statistics 2006–2009.
CNPq – Brazilian National Research Council: chair for Mathematics and Statistics 1998–2001 and 2004–2007, directing council member 2009–2013.
FAPERJ – State of Rio de Janeiro Research Agency: chair for Mathematics and Statistics 2004–2008, directing council member 2019–2023.
IMU – International Math. Union: executive committee member 2007–2010, vice-president 2011–2014.
MCoFA – Math. Council of the Americas: executive committee member 2013–2022, treasurer 2016–2023.
PROFMAT – Brazil's nationwide master program for math teachers: co-founder and chair 2011–2015.
SBM – Brazilian Mathematical Society: vice-president 2009–2013, president 2013–2015.
TWAS – The Academy of Sciences of the World: head of the Latin American Regional Office 2009–2010.
UMALCA – Mathematical Union for Latin America and the Caribbean: scientific coordinator 2001–2008.

Editorial boards

Dynamics and Stability of Systems, Nonlinearity, Ergodic Theory & Dynamical Systems, Dynamical Systems: An International Journal, Portugaliae Mathematicae, Discrete and Continuous Dynamical Systems, Stochastics and Dynamics, Nonlinear Differential Equations and Applications, Dynamics of Partial Differential Equations, Journal of the European Mathematical Society and, currently, *Bulletin of the Brazilian Mathematical Society* (Editor-in-Chief).

Ph.D. students

Stefano Luzzatto, 1995. José F. Alves, 1997. Maria João Costa, Isabel L. Rios, Vítor D. Araújo, Armando Castro, 1998. Vanderlei Horita, 1999. Alexandre Baraviera, 2000. Paulo Sabini, Nivaldo Muniz, Jairo Bochi, 2001. Flávio Abdenur, Krerley Oliveira, 2002. Michelle Dysman, 2003. Carlos Matheus, Alexander Arbieto, 2004. Nuno Luzia, Mário Bessa, 2005. Martin Andersson, Jimmy Santamaria, Paulo Varandas, 2007. Jiagang Yang, 2008. Javier Solano, Maria João Resende, Alien Herrera Torres, Carlos Bocker, 2009. Mohammad Fanaee, 2010. José Régis Varão, 2012. Michel Cambraïna, Vanessa Ramos, 2013. Elaís Cidely Malheiro, Ricardo Bortolotti, 2014. Lucas Backes, Karina Marín, 2015. Mauricio Poletti, 2016. Andréa Takai, 2017. El Hadji Yaya Tall, Adriana Sánchez, 2018. Catalina Freije, 2019. Jamerson Bezerra, 2020. Sankhadip Chakraborty, 2021.

Research papers (selection)

Abundance of strange attractors, with L. Mora, *Acta Math.* 171 (1993), 1–71.
High dimension diffeomorphisms displaying infinitely many periodic attractors, with J. Palis, *Annals of Math.* 140 (1994), 207–250.
Strange attractors in saddle-node cycles: prevalence and globality, with L. J. Díaz and J. Rocha, *Invent. Math.* 125 (1996), 37–74.
Multidimensional nonhyperbolic attractors, *Publ. Math. IHES.* 85 (1997), 63–96.
Infinite-modal maps with global chaotic behavior, with M. J. Pacifico and A. Rovella, *Annals of Math.* 148 (1998), 1–44.
SRB measures for partially hyperbolic systems whose central direction is mostly expanding, with J. F. Alves and C. Bonatti, *Invent. Math.* 140 (2000), 351–398.
Solution of the basin problem for Hénon-like attractors, with M. Benedicks, *Invent. Math.* 143 (2001), 375–434.
The Lyapunov exponents of generic volume preserving and symplectic systems, with J. Bochi, *Annals of Mathematics* 161 (2005) 1423–1485.
Simplicity of Lyapunov spectra: proof of the Zorich-Kontsevich conjecture, with A. Avila, *Acta Mathematica* 198 (2007), 1–56.
Almost all cocycles over any hyperbolic system have non-zero Lyapunov exponents, *Annals of Mathematics* 167 (2008), 643–680.
Extremal Lyapunov exponents: an Invariance Principle and applications, with A. Avila, *Inventiones Mathematicae* 181(2010), 115–189.
Absolute continuity, rigidity, and Lyapunov exponents I: geodesic flows, with A. Avila, A. Wilkinson, *Journal of the European Mathematical Society* 17 (2015), 1435–1462.
Geometric and measure-theoretical structures of maps with mostly contracting center, with D. Dolgopyat and J. Yang, *Comm. Math. Physics.* 341 (2016), 991–1014.
Continuity of Lyapunov exponents for 2D random matrices, with C. Bocker, *Ergod. Th. & Dynam. Syst.* 37 (2017), 1413–1442.
Moduli of continuity for the Lyapunov exponents of random $GL(2)$ -cocycles, with E. Y. Tall, *Trans. Amer. Math. Soc.* 373 (2020), 1343–1383.
Absolute continuity, rigidity, and Lyapunov exponents II: systems with compact center leaves, with A. Avila and W. Wilkinson, *Ergod. Th. & Dynam. Sys.* 42 (2022), 437–490.

Books (selection)

Dynamics beyond uniform hyperbolicity: A global geometric and probabilistic perspective, with C. Bonatti and L. J. Díaz. *Encyc. Math. Sciences*, vol 102, xviii+384 pages, Springer Verlag, 2004.
Lectures on Lyapunov exponents, x + 202 pages, Cambridge University Press, 2014.
Foundations of Ergodic Theory, with K. Oliveira, Cambridge University Press, xvi + 530 pages, 2016.
Proceedings of the International Congress of Mathematicians, ICM 2018 Rio de Janeiro, with B. Sirakov and P. N. de Souza (ed), vols 1–4, Brazilian Mathematical Society & World Scientific, 2019.

Popularization

Organized the Biennium of Mathematics in Brazil 2017–2018. Writes a weekly column about mathematics and science in *Folha de São Paulo*, Brazil’s most prominent newspaper, since March 2017.