

Curriculum Vitae
Fernando Codá Marques
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Personal information

Name: Fernando Codá Marques
Date of birth: October 8th of 1979
Nationality: Brazilian

Address

IMPA - Associação Instituto Nacional de Matemática Pura e Aplicada
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Education

2000-2003 **Ph.D. in Mathematics**
Cornell University, C. U., Ithaca/NY USA
Thesis Advisor : José F. Escobar
Title : *Existence and compactness theorems on conformal deformations of metrics*
Scholarship from : Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)

1998-1999 **Mathematics M.S.**
IMPA, Rio de Janeiro/RJ Brazil
Advisor : Bruno César Scardua
Scholarship from : Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)

1996-1999 **Mathematics B.S.**
UFAL - Universidade Federal de Alagoas
Maceió, Alagoas - Brazil

Employment history

2003-2007 Assistant Professor, IMPA
2007-2010 Associate Professor, IMPA
2010-present Professor, IMPA

Visiting Positions

2013 École Polytechnique, École Normale Supérieure and Université Paris-Est
Marne la Vallée, Paris, France
2012 Institut Henri Poincaré, Paris, France (1 month)
2011 Stanford University, USA (2 months)
2011 Institut Fourier, Grenoble, France (1 month)
2010 Stanford University, USA (3 months)
2009 Stanford University, USA (1 month)
2008 Member of the Institute for Advanced Study (IAS), USA (3 months)
2008 Princeton University, USA (1 month)
2005-2006 Stanford University, USA (post-doc)

Research interests

Mathematics
Differential Geometry
Geometric Partial Differential Equations
General Relativity

Honors and Awards

- 2014 Member of the Brazilian Academy of Sciences, Brazil
- 2013 Invited as Plenary Speaker, International Congress of Mathematicians
- ICM 2014, Seoul (Korea)
- 2012 TWAS Prize in Mathematics
- 2012 Ramanujan Prize - ICTP, Abel Memorial Fund and IMU
- 2012 UMALCA Prize, Union Matematica de America Latina y el Caribe
- 2011 TWAS-ROLAC Young Scientist Prize
- 2011 Affiliated Member of the TWAS
- Academy of Sciences for the Developing World, TWAS
- 2010 Invited Speaker, International Congress of Mathematicians
- ICM 2010, Hyderabad (India)
- 2009 Affiliated Member of the Brazilian Academy of Sciences, Brazil
- 2001 Battig Prize, Cornell University, USA.

Editorial boards

Journal of Differential Geometry
Journal de l'École Polytechnique
Mathematische Annalen

Publications

- (with Neves, A.), “Min-max theory, Willmore conjecture and the energy of links”, to appear in *Bulletin of the Brazilian Mathematical Society: Special Issue IMPA 60 anos*.
- (with Neves, A.), “Min-max theory and the Willmore conjecture”, *Annals of Mathematics*, **179** 2 (2014), pp. 683–782.
- (with Neves, A.), “Rigidity of min-max minimal spheres in three-manifolds”, *Duke Math. J.*, **161** 14 (2012), pp. 2725–2752.

- “Deforming three-manifolds with positive scalar curvature”, *Annals of Mathematics*, **176**, (2012), pp. 815–863
- (with Brendle, S. and Neves, A.) “Deformations of the hemisphere that increase scalar curvature”, *Invent. Math.*, **185**, (2011), pp. 175-197
- (with S. Brendle), “Recent progress on the Yamabe Problem”, *Surveys in Geometric Analysis and Relativity*, book dedicated to the 60th birthday of Richard Schoen, (2011).
- (with Brendle, S.) “Scalar curvature rigidity of geodesic balls in S^n ”, *Journal of Differential Geometry*, **88**, 3, (2011), pp 379-394
- “Scalar curvature, conformal geometry, and the Ricci flow with surgery”, *Proceedings of the International Congress of Mathematicians - Hyderabad, India*, (2010)
- “Uma introdução ao Fluxo de Ricci”, book published for *XVI Differential Geometry School*, São Paulo - Brazil (in Portuguese).
- “Blow-up examples for the Yamabe Problem”, *Calculus of Variations and Partial Differential Equations*, **36**, (2009), pp. 377-397
- (with Brendle, S.) “Blow-up phenomena for the Yamabe equation II”, *Journal of Differential Geometry*, **81**, (2009), pp. 225-250
- (with Khuri, M. and Schoen, R.) “A Compactness Theorem for the Yamabe Problem”, *Journal of Differential Geometry*, **81**, (2009), pp. 143-196
- “Isolated singularities of solutions to the Yamabe equation”, *Calculus of Variations and Partial Differential Equations*, **32**, (2008), pp. 349-371
- “Conformal deformations to scalar-flat metrics with constant mean curvature on the boundary”, *Communications in Analysis and Geometry*, **15**, (2007), pp. 381-405
- “On the mathematical work of José F. Escobar”, *Matemática Contemporânea*, **29**, (2005)
- “A priori estimates for the Yamabe problem in the non-locally conformally flat case”, *Journal of Differential Geometry*, **71** n. 2, (2005), pp.

315-346

- “Existence results for the Yamabe problem on manifolds with boundary”, *Indiana University Mathematics Journal*, **54** n. 6, (2005), pp. 1599-1620

- (with Alencar, H. and do Carmo, M.) “Upper bounds for the first eigenvalue of the operator L_r and some applications”, *Illinois Journal of Mathematics*, **45** n. 3, (2001), pp. 851-863.

Preprints

- (with Agol, I. and Neves, A.), “Min-max theory and the energy of links”, *arXiv:1205.0825v1 [math.GT]*, (2012)

- (with Neves, A.), “Existence of infinitely many minimal hypersurfaces in positive Ricci curvature”
arXiv:1311.6501 [math.DG], (2013)

Supervised Ph.D. Dissertations

2009 Sergio Almaraz, IMPA-Brazil.

2009 Almir Rogerio Silva Santos, IMPA-Brazil

2011 Ivaldo Paz Nunes, IMPA-Brazil

2014 Lucas Ambrozio, IMPA-Brazil

Special Lectures

2014 Joseph Fels Ritt Lectures (April 2014), Columbia University, USA

2014 S. Lojasiewicz Lecture (May 2014), Jagiellonian University, Krakow, Poland

2013 Hadamard Lectures, Institut Henri Poincaré, Paris, France

2013 Yamabe Lectures, Northwestern University, USA

2013 Barrett Memorial Lectures, University of Tennessee - Knoxville, USA

Invited Talks

- 2014 Colloquium at Université de Lorraine, Nancy
- 2014 ICMC Summer Meeting on Differential Equations, São Carlos, Brazil
- 2014 Séminaire Parisien d'Optimisation, Institut Henri Poincaré
- 2013 Special Day on Geometry and PDE, Columbia University
- 2013 TWAS 24th General Meeting, Buenos Aires, Argentina
- 2013 Analysis and Geometry Seminar, Paris 6
- 2013 Colloquium at Institut Fourier, Grenoble
- 2013 “The Willmore functional and the Willmore conjecture” Mini-workshop Oberwolfach -Germany
- 2013 Park City Mathematics Institute, Geometric Analysis (minicourse), USA
- 2013 Mathematical Congress of the Americas, Guanajuato, Mexico
- 2013 Plenary lecture, 29th Brazilian Colloquium of Mathematics, IMPA Rio de Janeiro, Brazil
- 2013 Encounters in Geometry, Cabo Frio - Brazil
- 2012 IMPA 60 Years, IMPA, Rio de Janeiro - Brazil
- 2012 Henri Poincaré Interdisciplinary Colloquium, IMPA, Rio de Janeiro - Brazil
- 2012 3rd Indo-Brazilian Symposium in Mathematics, IMPA, Rio de Janeiro - Brazil
- 2012 Geometric PDEs Conference, IHP - Paris, France
- 2012 Conformal and Kahler Geometry Program, minicourse, IHP - Paris, France
- 2012 Ramanujan Prize Lecture, ICTP - Trieste, Italy
- 2012 Workshop on the Willmore conjecture, University of Granada, Spain
- 2012 Conference Geometric Measure Theory, Albert Einstein Institute Potsdam, Germany
- 2012 ICTP-ESF Conference on Geometric Analysis, ICTP-Trieste, Italy
- 2012 Geometrie Workshop, Oberwolfach - Germany

2012 University of Zurich, Switzerland
2012 University of Warwick, UK
2012 Stanford University, USA
2012 Bay Area Differential Geometry Seminar, Stanford University, USA
2012 Miami University, USA
2012 27th Annual Geometry Festival, Duke University, USA
2012 UMALCA Prize Lecture, Cordoba, Argentina
2012 IV CLAM Latin American Congress of Mathematicians, Cordoba, Argentina
2012 XVII Differential Geometry School, Manaus - Brazil
2012 II EIMAN, UFS, Aracaju, Brazil
2012 II Workshop on Differential Geometry, UFAL, Maceio, Brazil
2011 Chern Centennial Conference, MSRI, Berkeley, USA (November)
2011 Beijing International Center for Mathematical Research, Peking University, China
2011 Geometric Analysis, Edinburgh, Scotland
2010 PRIMA Conference on Geometric Analysis, University of British Columbia
Vancouver, Canada
2010 XVI Differential Geometry School, Sao Paulo - Brazil
2010 Imperial College, London, England
2010 University of Warwick, England
2010 Geometrie Workshop, Oberwolfach - Germany
2010 University of Texas, Austin, USA
2010 Stanford University, Stanford, USA
2010 University of Texas, Austin, USA
2009 III CLAM Latin American Congress of Mathematicians, Santiago, Chile
2009 International Conference - Spectral Theory and Geometry, Grenoble, France
2009 TWAS-ROLAC 5th Young Scientist Conference, Rio de Janeiro, Brazil

- 2009 Bay Area Differential Geometry Seminar, Stanford University, USA
- 2009 Duke University, USA
- 2008 City University of New York, USA
- 2008 University of Pennsylvania, USA
- 2008 Princeton University, USA
- 2008 Institute for Advanced Study, Princeton, USA
- 2008 XV Differential Geometry School, Fortaleza - Brazil
- 2008 Ricci flow and related topics, Institut Henri Poincare (IHP), Paris - France
- 2007 Loss of compactness in nonlinear PDE : Recent trends,
at Banff International Research Station, Canada
- 2007 International Congress on Minimal and Constant Mean
Curvature Surfaces, Buzios - Brazil
- 2006 Workshop on Geometric and Nonlinear Analysis,
at Banff International Research Station, Canada
- 2006 XIV Differential Geometry School, Salvador - Brazil
- 2006 Duke University, USA
- 2006 Ohio State University, USA
- 2006 Princeton University, USA
- 2006 University of California, San Diego, USA
- 2006 International Conference in Memory of José Escobar
- Chepe, Universidad del Valle, Cali - Colombia
- 2005 25th Brazilian Colloquium of Mathematics, Rio de Janeiro - Brazil
- 2004 XIII Differential Geometry School, São Paulo - Brazil
- 2004 Second Latin American Congress of Mathematicians
(UMALCA), Cancun - Mexico
- 2003 24th Brazilian Colloquium of Mathematics, Rio de Janeiro - Brazil
- 2002 XII Differential Geometry School, Goiânia - Brazil
- 1998 22nd Brazilian Colloquium of Mathematics, Rio de Janeiro - Brazil