

## ANA CANNAS DA SILVA

### CONTACT INFORMATION

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### CIVIL INFO

Born in 1968 in Lisbon, Portugal; married, one child (2006).

### EDUCATION

- 2010 *Agregação* (habilitation) in Mathematics, Instituto Superior Técnico (IST), Lisbon.
- 1996 Ph.D. in Mathematics, Massachusetts Institute of Technology (MIT).  
Thesis advisor: Victor Guillemin.
- 1994 M.Sc. in Mathematics, MIT.
- 1990 *Licenciatura* in Mathematics, IST, Lisbon.

### PROFESSIONAL APPOINTMENTS

- 2018-present Titular Professor, Department of Mathematics, ETH Zurich.
- 2011-present Senior Scientist, Department of Mathematics, ETH Zurich.
- 2006-2012 Senior Lecturer and Research Scholar, Dep. Mathematics, Princeton University.
- 2001-2012 Associate Professor, Dep. Mathematics, IST, Lisbon, mostly on leave since 2006.
- 1997-2001 Assistant Professor, Departamento de Matemática, IST, Lisbon.
- 1996-1998 Morrey Assistant Professor, Dep. Mathematics, University of California, Berkeley.
- 1996-1997 Post-Doctoral Member, Mathematical Sciences Research Institute (MSRI), Berkeley.
- 1990-1996 Teaching Assistant, Dep. Mathematics, IST, Lisbon.
- 1988-1990 Undergraduate Teaching Assistant, Dep. Mathematics, IST, Lisbon.

### VISITING POSITIONS

- 2001 *Institute for Advanced Study (IAS)*, Princeton, Member (September-December).
- 2001 *Max-Planck-Institut für Mathematik*, Bonn, Germany, Invited Scholar (August).
- 2001 *Université Louis Pasteur*, Strasbourg, France, Professeur Associé Invité (February-June).

### RESEARCH FUNDING

- 2008 team member, FCT (Portuguese NSF) PTDC/MAT/098577/2008.  
Project title: *Symplectic and related geometries*.
- 2004 team member, FCT POCI/MAT/57888/2004.  
Project title: *Symplectic topology and related geometries*.
- 1996 grant coordinator, FCT PCEX/C/MAT/44/96.  
Project title: *Symplectic and related geometries*.
- 1994 grant holder, INVOTAN/NATO grant 15/A/94/PO for PhD studies.

## RESEARCH INTERESTS

Symplectic Geometry, Differential Geometry, Geometric Topology, Geometric Analysis.

## SELECTED TALKS

- 2019 *Four-folds and fold-forms*, colloquium at the University of Cologne.  
 2017 *Embedded lagrangians in  $CP^2$* , Symplectic Geom. and Microlocal Anal. conference at MIT.  
 2017 *Four-folds and fold-forms*, Women in Geometry and Topology conference, ETH Zurich.  
 2016 *A Chiang-type lagrangian in  $CP^2$* , Poisson 2016 conference, ETH Zurich.  
 2015 *Lagrangian correspondences*, seminar at the University of Illinois, Urbana-Champaign.  
 2015 *Lagrangian correspondences – a toric case study*, AMS/EMS/SPM meeting, Porto.  
 2012 *Folding and unfolding symplectic manifolds*, seminar at EPFL.  
 2010 *Folded and unfolded symplectic manifolds*, seminar at ETH, Zurich.  
 2009 *Symplectic origami*, topology seminar at the University of California, Berkeley.  
 2008 *From hermitian matrices to symplectic geometry*, colloquium at Bryn Mawr College.  
 2007 *Number theory from Atiyah-Bott for orbifolds*, talk at an AMS Meeting, Rutgers University.  
 2005 *Fold-forms for four-folds*, seminar talk at the Université de Montréal.  
 2004 *Fold-forms for four-folds*, seminar talk at Princeton University.  
 2003 *Geometry in dimension 4*, colloquium at the University of Lisbon.  
 2002 *Fold-forms for four-folds*, conference talk at Massachusetts Institute of Technology.  
 2001 *Existence of folded symplectic forms*, seminar talk at the Institute for Advanced Study.  
 2000 *Symplectic folds, twists, and cuts*, seminar talk at Harvard University.  
 1998 *Reciprocity laws, lattice points and quantization*, seminar talk at Stanford University.  
 1997 *Folding symplectic manifolds*, colloquium at the University of California, Berkeley.

## SELECTED TEACHING EXPERIENCE

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|------------|---|----------------------------------|
| 2017       | <i>Symplectic Geometry</i> , MSc- and PhD-level course,                         | ETH Zurich.                      |
| 2014-2017  | <i>Mathematics V</i> , undergraduate course with co-teaching,                   | ETH Zurich.                      |
| 2012-2019  | <i>Mathematics I and II</i> , undergraduate course sequence (taught in German), | ETH Zurich.                      |
| 2012       | <i>Multilinear Algebra and Its Applications</i> , undergraduate course,         | ETH Zurich.                      |
| 2011       | <i>Analysis III</i> , undergraduate course,                                     | ETH Zurich.                      |
| 2008, 2010 | <i>Multivariable Calculus</i> , undergraduate course,                           | Princeton Univ.                  |
| 2010       | <i>Junior Seminar</i> on differential geometry and symplectic geometry,         | Princeton Univ.                  |
| 2006-2009  | <i>Linear Algebra with Applications</i> , undergraduate course,                 | Princeton Univ.                  |
| 2004, 2006 | <i>Symplectic Geometry</i> , graduate seminar/course,                           | Princeton Univ.                  |
| 2003       | <i>Linear Algebra A</i> , undergraduate honors course,                          | IST, Lisbon.                     |
| 2002       | <i>Geometry I</i> , course for math majors,                                     | IST, Lisbon.                     |
| 2001       | <i>Analyse M3</i> , advanced calculus (taught in French),                       | Univ. Louis Pasteur, Strasbourg. |
| 1999-2003  | <i>Mathematical Analysis III</i> , multivariable calculus,                      | IST, Lisbon.                     |
| 1999-2000  | <i>Mathematical Analysis IV</i> , complex analysis and differential equations,  | IST, Lisbon.                     |
| 1998       | <i>Riemannian Geometry</i> , graduate course,                                   | UC Berkeley.                     |
| 1998       | <i>Abstract Algebra</i> , advanced undergraduate course,                        | UC Berkeley.                     |
| 1997-2000  | <i>Differential Geometry</i> , undergraduate course,                            | UC Berkeley and IST, Lisbon.     |
| 1997, 2000 | <i>Symplectic Geometry</i> , graduate course,                                   | UC Berkeley and IST, Lisbon.     |

## ADVANCED MINI COURSES

- 2011 *Symplectic Manifolds and Folded Symplectic Manifolds*, 2-lecture course at the European Women in Mathematics Summer School, Lorentz Center, Leiden.
- 2007 *4-Manifolds (Symplectic or Not)*, 3-lecture course at the XVI International Fall Workshop on Geometry and Physics, Lisbon.
- 2004 *4-Manifolds, Symplectic or Not*, 2-lecture course at the Lie Groups and Hamiltonian Systems Summer School, Universiteit Utrecht.
- 2002 *Symplectic and Hamiltonian Geometry*, 5-lecture course at the Summer Program of the Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro.
- 2001 *Symplectic Toric Manifolds*, 6-lecture course at Centre de Recerca Matemàtica (CRM), Barcelona.
- 1999 *Symplectic Geometry*, 9-lecture course at Centro de Matemática e Aplicações Fundamentais, Lisbon.
- 1996 *Symplectic Geometry and Quantization*, 4-lecture course at Inst. Superior Técnico, Lisbon. (all lectures of hour and a half, except for the 2007 course)

## ORGANIZATION OF CONFERENCES, SEMINARS AND SUMMER SCHOOLS

- 2012-present Co-organizer of the weekly research seminar *Symplectic Geometry* at ETH Zurich.
- 2011 Main organizer of the *Number Theory* undergraduate summer school at the Gulbenkian Foundation in Lisbon with about 70 participants.
- 2010 Main organizer of the undergraduate conference and summer school *O Gosto pela Matemática* held at the Gulbenkian Foundation in Lisbon with about 70 participants.
- 2009 Main organizer of the *Geometry Summer School* held at IST, Lisbon with about 90 participants.
- 2008 Member of the organizing committee of the two-day conference *MIT Women in Mathematics: A Celebration* held at MIT.
- 2003 Co-organizer of the first *EMS Mathematical Weekend*, a weekend meeting of the European Mathematical Society held in Lisbon with about 80 participants.
- 2002 Co-organizer of *Poisson 2002*, a one-week conference on Poisson geometry held at IST, Lisbon with 20 fully-funded invited speakers and about 80 participants.
- 2000 Founder and organizer of the bi-weekly undergraduate seminar *Diagonal*, IST, Lisbon; this seminar still runs.
- 1999-2000 Founder and organizer of the bi-weekly geometry research seminar *Geometria em Lisboa*, IST and University of Lisbon; this seminar still runs.
- 1999-2000 Co-organizer of the bi-weekly working seminar on Mathematical Physics, IST, Lisbon.
- 1999 Main organizer of  $\omega^{99}$  – *Conference on Symplectic Geometry*, a one-week conference held at IST with 20 fully-funded invited speakers and about 100 participants.
- 1998 Co-organizer of the weekly working seminar *Poisson Cohomology* at UC Berkeley.
- 1998 Co-organizer of the three-day *Conference on Symplectic Geometry and Microlocal Analysis* at MIT.
- 1997-1998 Co-organizer of the weekly seminar *Symplectic Geometry* at UC Berkeley.

## SCIENTIFIC PUBLICATIONS

- A Chiang-type lagrangian in  $CP^2$ . *Lett. Math. Phys.* 108 (2018), 699–710.
- Symplectic origami, with V. Guillemin and A. R. Pires, *Int. Math. Res. Not. (IMRN)* 2011 (2011), 4252-4293.
- Fold-forms for four-folds, *J. Symplectic Geom.* 8 (2010), 189-203.
- 4-manifolds with a symplectic bias, *Proc. XVI International Fall Workshop on Geometry and Physics*, eds. R. L. Fernandes and R. Picken, AIP Conf. Proc. 1023 (2008), 34-54.
- Symplectic geometry, overview written for the *Handbook of Differential Geometry*, eds. F.J.E. Dillen and L.C.A. Verstraelen, Elsevier (2006), 79-188.
- Symplectic toric manifolds, *Symplectic Geometry of Integrable Hamiltonian Systems*, Advanced Courses in Mathematics – CRM Barcelona, Birkhäuser (2003), 85-173.
- (book) *Introduction to Symplectic and Hamiltonian Geometry*, Publicações Matemáticas, IMPA (Rio de Janeiro), 2003, revised reprinting in 2008.
- (book) *Lectures on Symplectic Geometry*, Lecture Notes in Mathematics 1764, Springer-Verlag, 2001, revised reprinting in 2008.
- On the unfolding of folded symplectic structures, with V. Guillemin and C. Woodward, *Math. Res. Lett.* 7 (2000), 35-53.
- Quantization of presymplectic manifolds and circle actions, with Y. Karshon and S. Tolman, *Trans. Amer. Math. Soc.* 352 (2000), 525-552.
- Quantization of symplectic orbifolds and group actions, with V. Guillemin, *North. California Symplectic Geom. Seminar*, eds. Y. Eliashberg et al., A.M.S. Translations 196 (1999), 1-12.
- (book) *Geometric Models for Noncommutative Algebras*, with A. Weinstein, Berkeley Mathematics Lecture Notes series, American Mathematical Society, 1999.
- On the Kostant multiplicity formula for group actions with non-isolated fixed points, with V. Guillemin, *Advances in Math.* 123 (1996), 1-15.

All scientific publications available at <http://www.math.ethz.ch/~acannas/>

MathSciNet total citations (as of September 2019): 503.

## COLLABORATORS

- M. Abreu (IST Lisbon)
- M. Audin (Strasbourg)
- V. Guillemin (MIT)
- Y. Karshon (Toronto)
- E. Lerman (UI Urbana-Champaign)
- A. R. Pires (Edinburgh)
- S. Tolman (UI Urbana-Champaign)
- A. Weinstein (Berkeley)
- C. Woodward (Rutgers)

## OUTREACH PUBLICATIONS

- (book) *Simetria Passo a Passo – Step by Step Symmetry*, bilingual edition (Portuguese and English), CTT, 2016.
- *22 séculos a medir área*, with M. Abreu, *Klein Project*, <https://klein.sbm.org.br/category/artigos> (Portuguese edition), 2012.
- *Simetria passo a passo*, *Klein Project*, <https://klein.sbm.org.br/category/artigos> (Portuguese edition), 2011.

## OTHER OUTREACH ACTIVITIES

- 2019 Short talk titled *Math Serendipity* in the workshop on female role models at the Kantonsschule Zürcher Oberland, Wetzikon.
- 2017 Workshop on wallpaper stamps at the 28th Swiss day on mathematics and teaching (*28. Schweizerischer Tag fuer Mathematik und Unterricht*), Wettingen.
- 2013 Colloquium on wallpaper stamps for highschool teachers, ETH Zurich.
- 2010 General audience lecture on symmetry at the Gulbenkian Foundation, Lisbon.
- 2010 Production of a brochure on the study of symmetry in Portuguese cobblestone sidewalks.
- 2006 One-hour interview for the portuguese national television *RTP2*.
- 2005 Interview for a supplement to the main portuguese newspaper *Público*.
- 2005-present Cooperation with the Lisbon cityhall to enhance symmetry in cobblestone sidewalks.

## SELECTED ACADEMIC COMMITTEES

- 2019 Professor search, ETH.
- 2019-present Board of trustees of the Language Center of UZH and ETH Zurich.
- 2018-2019 Postdoc selection, ETH.
- 2016 Senior scientist search, ETH.
- 2013, 2015 Assistant professor searches, ETH.
- 2007 Associate professor in architecture, Tech. Univ. Lisbon.
- 2003-2004 Undergraduate merit prize *Prof. Campos Ferreira*, IST Lisbon.
- 2000-2011 National contest for undergraduate excellency awards *Novos Talentos em Matemática*, Gulbenkian Foundation, Lisbon.

## PHD STUDENT COMMITTEES

- 2016 Valentina Georgoulas, ETH, member of the PhD committee.
- 2010 Ana Rita Pires, MIT, member of the PhD committee and co-advisor.
- 2001 Paulo Tabuada, IST Lisbon, member of the PhD committee.
- 2000 Pedro Freitas, Univ. Lisboa, member of the PhD recognition committee.
- 2000 Ana Rita Gaio, Univ. Porto, member of the PhD recognition committee.
- 1999 Gustavo Granja, IST Lisbon, member of the PhD recognition committee.
- 1999 Leonor Godinho, IST Lisbon, member of the PhD recognition committee.

## STUDENT TRAINING

- 2019 Joël Beimler, Bachelor's Thesis at ETH, Zurich.  
Title: *Classification of Surfaces Equipped with Area Forms.*
- 2018 Alessandro Fasse, Master's Thesis at ETH, Zurich.  
Title: *Lagrangian Submanifolds of Symplectic Toric Manifolds.*
- 2018 Lisa Ricci, Master's Thesis at ETH, Zurich.  
Title: *Equivariant Cohomology and the Duistermaat-Heckman Theorems.*
- 2018 Amanda Jenny, Bachelor's Thesis at ETH, Zurich.  
Title: *The Fiber Connected Sum.*
- 2017 Vincent Kowalsky, Master's Thesis at ETH, Zurich.  
Title: *Floer Homology in Symplectic Geometry.*
- 2014 Radivoje Banković, Master's Thesis at ETH, Zurich.  
Title: *An Example of a Lagrangian 1-to-1 Transverse Lifting.*
- 2012 Jakob Oesinghaus, Bachelor's Thesis at ETH, Zurich.  
Title: *Symplectic Toric Bestiary.*
- 2001 Sandra Francisco, Master's Thesis at IST, Lisbon.  
Title: *Pseudoholomorphic Curves in Folded Symplectic Manifolds.*

## OTHER PROFESSIONAL EXPERIENCE

- 2017-present Supervisor for numerous semester projects and reading courses at ETH, Zurich.
- 2016 *Golden Owl* prize for exceptional teaching awarded by VSETH (student association at ETH).
- 2009 Guest editor of *Port. Math.* 67 (2010).
- 2004-2011 Co-organizer of yearly Mathematics summer schools for undergraduate students in Portugal sponsored by the Gulbenkian Foundation, Lisbon.
- 2003-2004 Director of the undergraduate mathematics program at IST, Lisbon with an enrollment of around 200 math and computer science majors.
- 2001-2011 Co-organizer of yearly undergraduate Mathematics conferences in Portugal sponsored by the Gulbenkian Foundation.
- 2000-2010 Member of the research center *Centro de Análise Matemática, Geometria e Sistemas Dinâmicos* based at IST.
- 1998 Supervisor for reading courses by Ph.D. students on Symplectic Geometry, Seiberg-Witten Invariants, Poisson Geometry and Riemannian Geometry, UC Berkeley.