
BIOGRAPHICAL SKETCH

Current Address

Department of Mathematics
Texas A&M University
College Station, TX 77843-3368

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Date of Birth: May 1st, 1962.

Place of Birth: Garanhuns, Brazil.

In the Profession

- *Professor*,
Department of Mathematics, Texas A&M University,
(September 2004 - present)
- *Associate Professor*,
Department of Mathematics, Texas A&M University,
(September 1998 - August 2004)
- *Visiting Professor*
Departamento de Matemática, Instituto Superior Técnico, Lisbon, Portugal
(February-March 2004, July 2003, July 2001, June 2000)
- *Visiting Member*
Institute des Hautes Études Scientifiques
(March 2000)
- *Visiting Professor*
Department of Mathematics, Stanford University
(January 1999 - May 1999)

- *Assistant Professor*,
Department of Mathematics, Texas A&M University,
(September 1993 - August 1998)
- *Visiting Professor*
Department of Mathematics, Universität Osnabrück
(July 1999, July 1996, June 1994, June 1993)
- *Visiting Member*
Mathematical Sciences Research Institute (MSRI)
(November 1993)
- *Dickson Instructor*,
Department of Mathematics, The University of Chicago,
(October 1990 - September 1993)
- *Visiting Member*,
School of Mathematics, The Institute for Advanced Study, Princeton
(September 1989 - July 1990)

Additional University Titles

- Associate Head for Graduate Studies, Mathematics Graduate Program
(September 2005 - present)

Education

- Ph.D. Mathematical Sciences, SUNY at Stony Brook, NY, 1989.
Thesis: *Homotopy Groups of cycle spaces*
Advisor: *Prof. H. Blaine Lawson, Jr.*
- M. A. Mathematical Sciences, Univ. Federal de Pernambuco, Recife, Brazil, 1985.
Master Thesis: *Minimal Cones and elliptic equations on minimal hypersurfaces.*
Advisor : *Prof. Jorge Hounie*
- B.Sc. Mathematical Sciences, Univ. Federal de Pernambuco, Recife, Brazil, 1984.

Professional Memberships

American Mathematical Society

RESEARCH

Areas of Expertise

- Algebraic Geometry and Homotopy theory

Refereed Journal articles

- [1] *Lawson homology for quasiprojective varieties*, *Compositio Math.*, **84**, (1992) 1-23.
- [2] *On the generalized cycle map*, *J. Differential Geometry*, **38**, (1993) 105-129.
- [3] *Completions and fibrations for topological monoids*, *Transactions of AMS*, **340**, (1993) 127-147.
- [4] *Algebraic cycles and infinite loop spaces*, (with Charles Boyer, H. Blaine Lawson, Benjamin Mann and Marie-Louise Michelsohn), *Inventiones Math.*, **113**, (1993) 373-388.
- [5] *The topological group structure of algebraic cycles*, *Duke Math. J.*, **75**, (1994) 467-491
- [6] *Algebraic cycles and equivariant cohomology theories*, (with H. Blaine Lawson and Marie-Louise Michelsohn), *Proceedings of the London Math. Soc.*, **73**, (1996) 679–720
- [7] *On the equivariant homotopy of free abelian groups on G -spaces and G -spectra*, *Mathematische Zeitschrift*, **224**, (1997) 567–601
- [8] *Chow quotients and projective bundle formulas for Euler-Chow series*, (with E. Javier Elizondo), *Journal of Algebraic Geometry*, **7**, (1998) 695–729
- [9] *On Equivariant Algebraic Suspension*, (with H. Blaine Lawson and Marie-Louise Michelsohn), *Journal of Algebraic Geometry*, **7**, (1998) 627–650
- [10] *Algebraic families of E_∞ -spectra*, *Topology and its applications*, *Proceedings of the II Ibero-American Topology Conference*, Mexico, March 1997, **98**, (1999) 217–233
- [11] *Holomorphic K -theory, algebraic co-cycles and loop groups*, (with R. Cohen), *K -Theory*, **23**, (2001) 345- 376
- [12] *Algebraic cycles and the classical groups. Part I: real cycles*, (with H. Blaine Lawson, Jr., and Marie-Louise Michelsohn), *Topology*, **42**, (2003) 467-506
- [13] *Topological properties of the algebraic cycles functor*, *Proceedings of the "Ecole d'Ete 2001"*, Institute Fourier, Grenoble, *London Math. Soc., Lecture Note Series*, **313**, (2004) 75-119.
- [14] *Quaternionic algebraic cycles and reality*, (with Pedro dos Santos), *Transactions of the AMS*, **356**, (2004) 4701-4736.
- [15] *Algebraic cycles and the classical groups. Part II: quaternionic cycles*, (with H. Blaine Lawson, Jr., and Marie-Louise Michelsohn), *Topology and Geometry*, **9**, (2005) 1187-1220.

Papers Submitted

- [1] *Holonomy Lie algebras and the LCS formula for graphic arrangements*, (with H. Schenck),
- [2] *Bigraded equivariant cohomology of real quadrics*, (with P. dos Santos),

Preprints

In preparation.

- [1] *Tree operads and polynomial maps*,
- [2] *Integral Deligne cohomology for real varieties*, (with Pedro F. dos Santos),

Books and Monographs

- [1] M. Dajczer, P. Lima-Filho et al., *Submanifolds and Isometric Immersions*, Mathematics Lecture Series, **13**, Publish or Perish, (1990)
- [2] *On a homology theory for algebraic varieties*, IAS Preprint, (1990)

Other Writings

- ★ P. Lima-Filho and J. Walton, *Lecture notes on Modelling Ecosystems*, (notes from a VIGRE course),

Research Conference Talks

1. 1 hour talk, *Topological monoids and cycles on products of projective spaces and quadrics*. III Encontro de Geometria Diferencial, Fortaleza, Brazil, January, 1988.
(Source of funds: Conference Committee).
2. 45 min. talk, *Excision for L-homology and the projectivization of ample bundles*. AMS Summer Institute in Differential Geometry, UCLA, Summer 1990.
(Source of funds: Conference Committee).
3. 1 hour talk, *Algebraic cycles and L-homology for algebraic varieties*. Topological Methods in Modern Mathematics, SUNY @ Stony Brook, April 1992.
(Source of funds: Conference Committee).
4. 45 min. talk, *Topologies on Algebraic cycles, Lawson homology and the Abel-Jacobi map*. Workshop on Hodge Theory and Singularities, Univ. of California, Riverside., May 1993.
(Source of funds: Workshop Committee).

5. 45 min. talk, *AMS Meeting, Special Session on Texas Topology and Geometry*. College Station, TX, October, 1993.
(Source of funds: none required).
6. 20 min. talk, *Homotopy Invariants of the Topological Groups of Algebraic Cycles*. AMS 100th Annual Meeting, Special Session on The Topology of Moduli Spaces , January, 1994.
(Source of Funds: TAMU Start-up funds).
7. 1 hour talk, *On the Topology of Group actions on Algebraic Cycles*. Workshop on “The Topology of Moduli Spaces”, McGill University, Montréal, Canada, May, 1995.
(Source of Funds: Workshop Committee).
8. 45min. talk, *The equivariant algebraic suspension theorem*. AMS Meeting, Guanajuato, Mexico. Special Session on Algebraic Geometry, November, 1995.
(Source of Funds: NSF Grant).
9. 1 hour talk, *Projective bundle formulas for Euler-Chow series*. Workshop on “Homotopy, Geometry and Physics”, Fields Institute, Toronto, Canada , April 1996.
(Source of funds: Workshop Committee).
10. 1 hour survey talk, *Algebraic cycles from a topological point of view*. Conference on “Interplays between Geometry and Topology”, ICMS, Edinburgh, Scotland, June 1996.
(Source of funds: Conference Committee).
11. 1 hour talk, *Algebraic cycles and equivariant homotopy theory*. Conference on “Interplays between Geometry and Topology”, ICMS, Edinburgh, Scotland, June 1996.
(Source of funds: Conference Committee).
12. 1 hour talk, *Chow varieties and Euler-Chow series*. Conference on “Interplays between Geometry and Topology”, ICMS, Edinburgh, Scotland, June 1996.
(Source of funds: Conference Committee).
13. 1 hour talk, *The topology of real and quaternionic algebraic cycles*. Mathematisches Forschungsinstitut Oberwolfach, Meeting on “Cohomology of Moduli Spaces”, September 1996.
(Source of Funds: Conference Committee and Grant).
14. 45 min. talk, *Generating functions for Euler-Chow invariants of projective varieties*. TGTC - Texas Geometry and Topology Conference, Texas Christian University, Fort Worth, TX, February 1997.
(Source of funds: Conference Committee).
15. 45 min. talk, *Algebraic families of E_∞ -spectra*. II Ibero-American Topology Conference, March 1997.
(Source of funds: Conference Committee/NSF Grant).
16. 45 min.talk, *The homotopy type and deloopings of quaternionic algebraic cycles*. AMS Meeting, Special Session on Quaternions in Riemannian and Algebraic Geometry, November 1997.
(Source of funds: NSF Grant).

17. 1 hr. talk, *An algebraic geometric realization of the Chern character*. Bay Area Topology Conference, Berkeley, February 1999.
(Source of Funds: Conference Committee).
18. 45 min.talk, *Quaternionic K-theory and quaternionic morphic cohomology for real varieties*. Joint AMS and Mexican Mathematical Society Meeting, Special Session on Algebraic Geometry, May 2001.
(Source of funds: NSF/Departmental).
19. 45 min.talk, *Twisted wreath constructions, multiplicative transfers and characteristic classes*. Joint AMS and Mexican Mathematical Society Meeting, Special Session on Algebraic Topology and K-theory, May 2001.
(Source of funds: NSF/Departmental).
20. 1hr talk, *Transfers and Characteristic classes*. Texas Geometry and Topology Conference, College Station, TX, November 2001.
21. 1 hr. talk, *The equivariant homotopy type of cycles on Brauer-Severi varieties*. Minimal varieties in geometry and physics, Stony Brook, NY, June 2002.
(Source of funds: Conference Committee).
22. Mini-course, *Equivariant aspects of the algebraic cycles functor*. The arithmetic, Geometry and Topology of Algebraic Cycles, Morelia, Mexico, June 2003.
(Source of funds: The Clay Mathematical Institute).
23. 20 min. talk, . 6th Joint Meeting of AMS and Mexican Mathematical Society, Special Session on Algebraic Geometry, Houston, TX, May 2004.
24. 45 min. talk, . II Latin-American Congress of Mathematicians, Cancun, Mexico, June 2004.
(Source of funds: Conference committee/Departmental funds).
25. 50min. talk, *On the holonomy Lie algebra of graphic arrangements*. Arrangements of hyperplanes: Algebra, Combinatorics, Geometry and Topology, Centro Stefano Franscini, Ascona, Switzerland, May 2005.
(Source of funds: Conference committee/Departmental funds).
26. 45min. talk, *Group actions on trees and polynomial maps*. XXXIII Congreso Nacional de Matematicas, Mexico City, October 2005.
(Source of funds: Conference committee).
27. 50min. talk, *From motivic to Deligne to Bredon: realizations for real varieties*. REGULATORI II : Banff International Research Station, Canada, December 2005.
(Source of funds: Conference committee/Departmental funds).
28. 2 1hr. talks, *Bredon cohomology of geometrically cellular varieties*. Workshop on Algebraic Cycles, Guanajuato, Mexico, February 2006.
(Source of funds: Conference committee/Departmental funds).

Invited Colloquia and Seminar Talks

1. Princeton University, *On a homology theory for algebraic varieties*. December 1989. (Homotopy Theory Seminar).
2. University of Pennsylvania, *On the generalized cycle map*. January 1990. (Diff. Geom. Seminar).
3. Institute for Advanced Studies, *Cycle maps for Lawson homology*. March 1990.
4. SUNY @ Stony Brook, *Excision and cycles maps for L-homology*. April 1990. (Topology and Geometry Seminar).
5. The University of Chicago, *Algebraic cycles and homology for quasiprojective varieties*. October 1990. (Alg. Geometry Seminar).
6. Univ. of New Mexico, *Topological monoids and Lawson homology for quasiprojective varieties*. April 1991.
7. SUNY @ Stony Brook, *Group completions and algebraic cycles*. April 1992. (Topology and Geometry Seminar).
8. Emory University, *Algebraic cycles and equivariant theories with Chern classes*. February, 1993.
9. University of Oregon, Eugene, OR, *New equivariant cohomology theories*. March 1993.
10. Texas A&M University, College Station, TX, *Algebraic cycles and infinite loop spaces*. March 1993.
11. Northwestern University, Evanston, IL, *Lawson homology and the Abel-Jacobi map*. May 1993. (Algebra Seminar).
12. Mathematical Sciences Research Institute, Berkeley, CA, *On the topological structure of algebraic cycles*. November 1993.
13. Ohio State University, Columbus, OH, *Algebraic cycles and the infinite loop map structure of the total Chern class*. January 1994.
14. Rice University, Houston, TX, *Topological applications of algebraic cycles*. February 1994.
15. SUNY @ Stony Brook, NY, *Equivariant Dold-Thom theorems*. May 1994.
16. Universität Osnabrück, Germany, *Algebraic cycles as a topological group functor*. June 1994.
17. CIMAT (Centro de Investigaciones Matemáticas), Guanajuato, Mexico, *Algebraic cycles on group representations*. March 1995. (Seminar of Geometry and Dynamical Systems).
18. UNAM (Universidad Autónoma de México), Mexico City, *New equivariant cohomology theories with Chern classes*. March 1995.
19. Osnabrück Universität, Germany, *Computation of coefficients in equivariant morphic cohomology*. June 1995.

20. Bielefeld Universität, Germany, *On equivariant cohomology theories associated to algebraic varieties*. June 1995.
21. The University of Chicago, *On the morphic spectra associated to algebraic varieties*. October 1995.
(Homotopy theory seminar).
22. The University of Texas, Austin, *Finite group actions on algebraic cycles*. October 1995.
23. SUNY @ Stony Brook, NY, *Projective bundle formulas and Euler-Chow series*. March 1996.
24. Osnabrück Universität, Germany, *Equivariant morphic spectra: Coefficients in the $\mathbf{Z}/2$ case*. June 1996.
25. Osnabrück Universität, Germany, *Real and quaternionic algebraic cycles*. July 1996.
26. Osnabrück Universität, Germany, *Unstable invariants from Chow varieties*. July 1996.
27. Bielefeld Universität, Germany, *Euler-Chow functions for algebraic varieties*. July 1996.
28. Stanford University, *The topology of quaternionic algebraic cycles*. May 1997.
(Topology seminar).
29. University of Florida, *The topology of antiholomorphic actions on algebraic cycles*. December 1997.
30. UNAM (Universidad Autonoma de Mexico), Mexico City, *Holomorphic K-theory and the Chern character*. August 1998.
31. IHES (Institute des Hautes Études Scientifiques), France, *Algebraic cocycles, loop groups and the Chern character in holomorphic K-theory.*. March 2000.
32. Instituto Técnico Superior, Lisbon, Portugal, *Using $Grass^k(C^n)$ to build character*. July 2000.
33. Univ. of Missouri, *Quaternionic cycles and reality*. September 2000.
34. Univ. of Wisconsin, Madison, *Cycles on Brauer-Severi varieties and $\mathbf{Z}/2$ -equivariant cohomology*. November 2000.
35. Osnabrueck Universitaet, *Brauer-Severi varieties and symplectic K-theory*. November 2000.
36. Univ. of Washington, *Twisted wreath constructions, transfers and characteristic classes*. March 2001.
37. Univ. of Texas, Austin, *Characteristic classes for holomorphic K-theory*. April 2001.
38. Instituto Técnico Superior, Lisbon, Portugal, *Twisted wreath products, transfers and characteristic classes*. July 2001.
39. The Mexican Academy of Sciences, Mexico City, Mexico, *Equivariant homotopy and equivariant characteristic classes for real and quaternionic bundles*. June 2003.
40. Instituto Técnico Superior, Lisbon, Portugal, *Twisted algebraic K-theory and the generalized Brauer group*. July 2003.

41. Mexican Academy of Sciences, *RO(Z/2)-graded equivariant cohomology theory, Brauer-Severi varieties and KR-theory*. May 2004.
(Hosted by Prof. Samuel Gitler).
42. Louisiana State Univ., *Trees, operads and polynomial maps*. March 2004.
43. Instituto Técnico Superior, Lisbon, Portugal, *On the holonomy Lie algebra of graphic arrangements*. July 2005.
44. Instituto de Matematicas, UNAM, Mexico, *The bigraded equivariant cohomology ring of real quadrics*. October 2005.
45. Texas Christian Univ., *Bigraded equivariant cohomology of geometric cellular real varieties*. September 2006.
46. Univ. of Texas, El Paso, *Invariants for graphic arrangements*. October 2006.

Series of Lectures I

University of Osnabrueck, Germany,
(Sponsored by the Sonderforschungsbereich 343: Diskrete Strukturen in der Mathematik).

1. *Algebraic Cycles as a Topological Group Functor*. June 06, 1994.
2. *Lawson Homology for Algebraic Varieties*. June 13, 1994.
3. *Intersection Theory for Lawson Homology*. June 20, 1994.
4. *Equivariant Homotopy of Algebraic Cycles, and Equivariant Dold-Thom Theorems in the Stable and Unstable Categories*. June 23, 1994.

Series of Lectures II

University of Osnabrueck, Germany,
(Sponsored by the Sonderforschungsbereich 343: Diskrete Strukturen in der Mathematik).

1. *Equivariant Complex Suspension Theorems*. June 14, 1995.
2. *Morphic Cohomology, d'apres Friedlander and Lawson*. June 16, 1995.
3. *Equivariant Morhic Spectra of Algebraic Varieties*. June 23, 1995.
4. *Computations of Coefficients in Equivariant Morhic cohomology*. June 27, 1995.

Series of Lectures III

Institute Fourier, Grenoble, France
(Sponsored by hosting institution).

1. *4 Lectures on "Topological aspects of the algebraic cycles functor (Lawson homology)"*.
Summer 2001.

Series of Lectures IV

Instituto Técnico Superior,
(Sponsored by the hosting institution).

1. 6 Lectures on “Motivic Cohomology Theory”. Feb-March 2004.

Funding

- (1) NSF: “Topological Applications of Algebraic Cycles”, \$67,500, DMS-9401533, July 1994 - June 1997 (extended to June 1998).
- (2) CAREER AND DEVELOPMENT PROGRAM, TAMU: “GAT Seminar”, \$2,500.00, December 1995 – current.
(joint with Prof. Peter Stiller).
- (3) NSF: “Geometry, Analysis and Topology: Research, Technology, Industry and Education”, \$400,334, DMS-9632028, 1996–1999.
(Co-PI).
- (4) INTERDISCIPLINARY RESEARCH INITIATIVE, TAMU: “The Development of a Fractal Topology Approach to Wildlife Conservation Modeling”, \$19,000, September 1997 – August 1998.
(joint with Prof. Thomas Lacher, *Kleberg Chair in Wildlife Ecology*, Wildlife and Fisheries Dept.).
- (5) NSF: “BIOCOMPLEXITY, Incubation Activity: Applications of Mathematical Methods and Scientific Computation to Complex Ecological Problems”, September 2000 – August 2003. \$98,000.00,
(Joint with Thomas Lacher (Wildlife and Fisheries Dept.), Mike Pilant, Peter Stiller and Jay Walton (Math. Dept.)).
- (6) NSF: “Conference Funding, Solving polynomial equations”, May 2002. \$27,500.00,
(Co-PI’s: Hal Schenck and Maurice Rojas).
- (7) RESEARCH ENHANCEMENT PROGRAM - TAMU: “Workshop on methods of commutative algebra and algebraic geometry”, May 2002. \$7,000.00,
- (8) U.S. DEPARTMENT OF EDUCATION GAAN GRANT: “Graduate Fellowships for Ph.D. Students of Need in Mathematics”, September 2006 - August 2009. \$126,672.00,
(CoPI’s: Al Boggess, Sue Geller, Maurice Rojas, Joel Zinn.).

Interdisciplinary Activities

- ★ Consultant for the Project “Continuous Quality Improvement in the Research Environment”, financed by *SRC - Semiconductor Research Corporation*, NC, and directed by Prof. Maciej Styblinski, Electrical Engineering Dept., TAMU. (Summer 1997.)
- ★ Biocomplexity Incubation Grant seminar, Spring 2001.

Recognition/Awards

- ★ Departmental Teaching Award Fall 2002.

SERVICE

Extra-University Activities

- ★ Member, organizing Committee of the **TGTC Fall-94**, *Texas Geometry and Topology Conference*, November 1994, 95 participants. NSF Funding.
- ★ Member, organizing Committee of the conference on *Aspects of Algebraic Geometry and Commutative Algebra*, Texas A&M University, May 18 - 20, 2000.
- ★ Member, organizing Committee of the CBMS Conference on *Solving Polynomial Equations*, Texas A&M University, May 2002.
- ★ Member, Scientific Committee of the conference *Minimal Varieties in Geometry and Physics*, SUNY @ Stony Brook, June 2002.
- ★ Panelist for NSF EPSCoR program, November 2006.

Departmental Activities

- ★ Organization of **GAT** (Geometry-Analysis-Topology) Seminar.
- ★ Topology Qualifying Examination Committee: May 1995, Jan. and May 1996; Jan. and May 2000; Jan. 2001; Jan. 2003.
- ★ Speakers Committee member, January 1999 – December 2000.
- ★ Graduate Committee member, January 1998 – Fall 2000.
- ★ Algebra Search Committee, Fall 2000/Spring 2001.
- ★ Executive Committee, Spring 2001 - Fall 2003.
- ★ Undergraduate Studies Committee, Spring 2003 - Fall 2004.
- ★ Departmental Graduate Advisor, Fall 2005 – present.

Graduate Students and Post-Docs Mentored

- ★ *Post-Docs*: Pawel Gajer, Pedro F. dos Santos, Zhaohu Nie.
- ★ *Graduate Students*: Robert Main, Marvin Decker, R. Bhatt, Haibo Yang.

Reviewing and Refereeing

- ★ Reviewer for *Math Reviews*: 3 reviews in 1993.
- ★ Refereed for *Memoirs of AMS*, 1993.
- ★ Reviewer for *Math Reviews*: 2 reviews in 1994.
- ★ Reviewer for NSF : 1 review in 1995.
- ★ Refereed for *Compositio Math.*, 1995.
- ★ Refereed for *Transactions of AMS*, 1995.
- ★ Refereed for *Topology*, 1996, 1999, 2000.
- ★ Refereed for *J. Pure and Appl. Algebra*, 2000.
- ★ Reviewer for *Math Reviews*: 2 reviews in 1996.
- ★ Reviewer for NSF : 1997, 1999, 2000, 2001.
- ★ Refereed for *Bull. Soc. Math. Mex.*: 2000, 2003.
- ★ Refereed for *K-theory*: 2003
- ★ Refereed for *Proceedings of AMS*: 2003

TEACHING

Regularly Scheduled Classes Taught

- SPRING 1992: Math 256
- FALL 1992: Math 203, Math 204
- SPRING 1993: Math 205, Math 241
- FALL 1993: Math 415
- SPRING 1994: Math 171, Math 251
- SUMMER 1994: Math 151
- FALL 1994: Math 636
- SPRING 1995: Math 637
- FALL 1995: Math 636
- SPRING 1996: Math 637, Math 151
- FALL 1996: Math 643
- SPRING 1997: Math 644, Math 152

SUMMER 1997: Math 251
FALL 1997: Math 172
SPRING 1998: Math 467, Math 251
SUMMER 1998: Math 308
FALL 1998: Math 467, Math 643
FALL 1999: Math 636
SPRING 2000: Math 308, Math 637
FALL 2000: Math 643
SPRING 2001: Math 644, Math 152, Math 304
SUMMER 2001: VIGRE Seminar w/ J. Walton
FALL 2001: Math 415
SPRING 2002: Math 416
SUMMER 2002: VIGRE Seminar w/ J. Walton
FALL 2002: Math 636
SPRING 2003: Math 637, Math 689
FALL 2003: Math 251, Math 304, Directed Studies
FALL 2004: Math 643, Math 689
SPRING 2005: Math 644
FALL 2005: Math 636
SPRING 2006: Math 637
SUMMER 2006: REU program: Ecological Modeling
FALL 2006: Math 643
SPRING 2007: Math 644

Additional Courses

- ★ Topics course: Math541- Topics in Differential Geometry: *Bochner Techniques in Riemannian and Kahler Geometry*, Spring 1993.
- ★ Topics course: Math 689 - *The theory of schemes*, Spring 2003.

Course Development

- ★ Reformulation of the graduate sequence in Topology, Math 636 and Math 637 Spring 1994.
- ★ Math 436 Introduction to topology.