CURRICULUM VITAE

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Research Interests

Algebraic Number Theory and Arithmetic Algebraic Geometry:

- canonical and minimal degree liftings of curves and their applications;
- arithmetic of elliptic curves and Abelian varieties;
- p-adic and local fields;
- applications to coding theory and cryptography;
- computational aspects.

Appointments

- **Associate Professor.** University of Tennessee. Since 08/12.
- **Assistant Professor.** University of Tennessee. Since 08/06.
- **Visiting Assistant Professor.** Ohio State University. From 09/04 to 06/06.
- **Visiting Assistant Professor.** University of California, Santa Barbara. From 09/01 to 07/04.
- **Assistant Instructor.** University of Texas at Austin. From 09/00 to 08/01.

Education

- **B.S. (Mathematics)**
  University of São Paulo (Brazil). From 03/91 to 11/94.
- **M.S. (Mathematics)**
  University of São Paulo (Brazil). From 03/95 to 02/97.
- **Ph.D. (Mathematics)**
  University of Texas at Austin. From 09/97 to 08/01. (Advised by J. F. Voloch.)

Financial Supports and Fellowships

- **Scientific Initiation Fellowship:** From 05/93 to 11/94. Funds from FAPESP (Foundation of Support to Research of the State of São Paulo).
- **Master Fellowship:** From 03/95 to 02/97. Funds from FAPESP.
- **Ph.D. Fellowship:** From 09/97 to 08/01. Funds from CAPES (Brazilian government institution).
- **Bruton Fellowship** for the academic year of 2000/2001. Funds from the University of Texas at Austin.
- **Barrett Lectures 2019: Recent Advancements in Number Theory**. Conference funding grants from *NSF* and *IMA*.

Projects and Dissertations

- **Scientific Initiation Project:** detailed analysis of Gauss's *"Disquisitiones Generales circa Superficies Curvas"*.
- **Master Dissertation:** *"The Absolute Hilbert Class Field of Quadratic Imaginary Extension"*.
- **Ph.D. Thesis:** *"Canonical and Minimal Degree Liftings of Curves."*

Publications

- *"Degrees of the Elliptic Teichmüller Lift"*. *J. Number Theory*, 95:123–141, 2002.
- *"Minimal Degree Liftings of Hyperelliptic Curves"*. *J. Math. Sci. Univ. Tokyo*, 11:1–47, 2004.
- *"Minimal Degree Liftings in Characteristic 2"*. *J. Pure Appl. Algebra*, 207:631–673, 2006.
- *"A Formula For the Supersingular Polynomial"*. *Acta Arith.*, 139(3):265-273, 2009.
- *"Lifting the j-Invariant: Questions of Mazur and Tate"*. *J. Number Theory*, 130(3):620-638, 2010.
- *"Computations with Witt Vectors of Length 3"*. *J. Théor. Nombres Bordeaux*, 23(2):417-454, 2011.
- *"Nonexistence of Pseudo-Canonical Liftings"*. *Int. J. Number Theory* , 8(1):31-55, 2012.
- *"Coordinates of j-Invariant of the Canonical Liftings"*. *Funct. Approx. Comment. Math.*, 49(1):57-72, 2013.
- *"Computations with Witt Vectors and the Greenberg Transform"*. *Int. J. Number Theory*, 10(6):1431–1458, 2014.
- *"Weierstrass Coefficients of the Canonical Lifting"*. *Int. J. Number Theory*, 16(2):397–422, 2020.
- *"An Elementary Proof for the Number of Supersingular Elliptic Curves"*, *São Paulo J. Math. Sci.*, DOI 10.1007/s40863-020-00170-8, 2020.
- *"Denominators of the Weierstrass Coefficients of the Canonical Lifting"*, joint with Delong Li. Submitted.
- *"The Discriminant in Universal Formulas for the Canonical Lifting"*, Bull. Sci. Math. 169 (2021), Paper No. 102981, 20 pp.
- *"Alternative Symmetries and Systems"* (in Music and Mathematics). Submitted.

Conferences Organized

- **Palmetto Number Theory Series XXVIII:** September 16-17 2017, at the University of Tennessee Knoxville. (**Co-organized** with M. Jameson.)
- **49th John H. Barrett Memorial Lectures:** May 28-30, 2019, at the University of Tennessee Knoxville. (*Co-organized* with M. Jameson.)

Conferences Attended

- **1999 Arizona Winter School:** "Local-to-Global Principles in Arithmetical Algebraic Geometry"
  Presented part of the students project "Application of the method of Coleman and Chabauty."
- **2000 Arizona Winter School:** "Topics in the Arithmetic of Function Fields"
- **Aspects of Algebraic Geometry and Commutative Algebra.** May 18-20, 2000 at Texas A&M University.
- **2001 Arizona Winter School:** "Modular Forms"
- **2002 Arizona Winter School:** "Periods"
- **2003 Arizona Winter School:** "Logic and Number Theory"
- **Third CICMA-CRM Far Hills Workshop:** "L-functions and p-adic cohomology: computational perspectives"
  January 02-04, 2004 in Val-Morin, Quèbec (Canada)

- **Joint Mathematics Meeting.** January 07-10 2004 in Phoenix, AZ.
- **2006 Arizona Winter School:** "Computational and Algorithmic Aspects of Algebra and Arithmetic"
- **Palmetto Number Theory Series I:** December 9-10 2006, at the University of South Carolina
- **2007 Arizona Winter School:** "p-adic Geometry"
- **2008 Arizona Winter School:** "Special Functions and Transcendence"
- **Number Theory as an Applied and Experimental Science.** Thematic semester at the Centre de Recherches Mathématiques (Montreal, Canada). From January to May 2010.
- **Palmetto Number Theory Series XVI:** September 10-11 2011, at the Emory University.
- **Palmetto Number Theory Series XIX:** December 1-2 2012, at the University of South Carolina.
- **Palmetto Number Theory Series XXI:** December 7-8 2013, at the Clemson University.
- **Palmetto Number Theory Series XXIII:** December 6-7 2014, at the University of South Carolina.
- **Modular Forms and Curves of Low Genus: Computational Aspects:** September 28 to October 02 2015, at the Institute for Computational and Experimental Research in Mathematics (ICERM) in Providence, RI.
- **2017 Arizona Winter School:** "Perfectoid Spaces", March 11-15 2017, at the University of Arizona.
- **Palmetto Number Theory Series XXVIII:** September 16-17 2017, at the University of Tennessee Knoxville. (**Co-organizer**.)
- **Palmetto Number Theory Series XXIX:** December 2-3 2017, at Clemson University.
- **Latin American Week on Coding and Information:** July 25-27 2018, at Unicamp (Campinas, Brazil).

Talks

- **1997 to 2001:**
  - *University of Texas at Austin:* "Number Theory Seminar" and "Graduate Number Theory Seminar".
  - *University of California Santa Barbara:* "Arithmetic and Geometry Seminar".
- **2002:**
  - *University of California Santa Barbara:* "Arithmetic and Geometry Seminar".
  - *University of Texas at Austin:* "Number Theory Seminar" (as invited speaker)
  - *University of São Paulo* (Brazil)
  - *University of São Paulo and University of São Paulo at São Carlos* (Brazil)
- **2003:**
  - *University of California Santa Barbara:* "Arithmetic and Geometry Seminar".
  - *AMS Sectional Meeting* in Boulder, CO. Special session: "Applications of Number Theory and Algebraic Geometry to Coding".
- **2004:**
  - *University of Nebraska Lincoln*
  - *University of Wyoming*
  - *Ohio State University:* "Number Theory Seminar".
- **2005:**
  - *AMS Sectional Meeting* in Santa Barbara, CA. Special session "Arithmetic Geometry".

- **2006:**
  - Colloquium talk at the University of Tennessee.
- **2007:**
  - *Junior Colloquium Talk* for undergraduates at the *Univ. of Tennessee:* Applications of Number Theory in Cryptography.
- **2008:**
  - *Palmetto Number Theory Series V*, at Furman University, SC.
  - Colloquium talk at the University of Tennessee.
  - *Palmetto Number Theory Series VIII*, at University of South Carolina.
- **2010:**
  - *Counting Points: Theory, Algorithms and Practice*, at the Centre de Recherches Mathématiques.
  - *Palmetto Number Theory Series XV*, at Clemson University.
- **2011:**
  - *Algebra Seminar* at Emory University.
  - *AMS Sectional Meeting* in Lincoln, NE. Special session: "Coding Theory".
- **2012:**
  - *Sage Days 36: p-adics* at the University of California San Diego.
  - *Witt Vectors in Arithmetic, Geometry, and Topology* at the University of New Mexico.
  - *Number Theory Seminar* at the University of Texas at Austin.
- **2013:**
  - *Joint Mathematics Meeting* in San Diego, CA. AMS Special Session: "Witt Vectors, Lifting and Descent".
  - *Number Theory Seminar* at the University of California Santa Barbara.
  - *Mathematical Congress of the Americas* in Guanajuato, Mexico. Special Session in Number Theory.
  - *First Alumini Meeting of the Graduate Program of the Institute of Mathematics and Statistics of the University of São Paulo* in São Paulo, Brazil.
- **2014:**
  - *XXIII Brazilian Algebra Meeting* in Maringá, Brazil.
- **2015:**
  - *Algebra Seminar* at the University of São Paulo, São Carlos, Brazil.
  - *Number Theory and Combinatorics Seminar* at the University of Texas at Austin.
- **2016:**
  - *Palmetto Number Theory Series XXVII*, at University of South Carolina.

Teaching

- **Courses taught at UCSB:**
  - M34A and M34B – Calculus for Social and Life Sciences (2 quarter sequence)
  - M3A, M3B, M3C – Calculus for Engineering and Natural Sciences (3 quarter sequence)
  - M5B – Multivariable Calculus
  - M5H – Honors Calculus
  - M103 – Introduction to Group Theory
  - M116 – Combinatorial Analysis
  - M137A – first quarter of Graph Theory

- **Courses taught at Ohio State University:**
  - Math 151 – Calculus and Analytic Geometry I
  - Math 366, 566 – Discrete Mathematical Structures I and II
  - Math 772 – Graduate Abstract Algebra III (Field Theory)
  - *Ross Program*, as an assistant instructor. (See `http://www.math.ohio-state.edu/ross/`).
- **Courses taught at the University of Tennessee:**
  - First Year Studies 129 – Mathematics of Finances
  - Math 141 – Calculus I
  - Math 251 – Matrix Algebra I
  - Math 300 – Introduction to Abstract Mathematics
  - Math 351 – Algebra I
  - Math 421 – Combinatorics
  - Math 455, 456 – Abstract Algebra I and II
  - Math 460 – Geometry
  - Math 499 – Applied and Computational Number Theory. *(New course!)*
  - Math 551, 552 – Modern Algebra I and II (Graduate)
  - Math 555, 556 – Number Theory I and II (Graduate)
  - Math 651, 652 – Topics in Algebra I and II (Graduate)
  - Project GRAD Summer Institute (a program for high school students of areas of lower income): 2008 to 2012, 2014 to 2019 – Algebra II.
  - Research Experience for Undergraduates 2008. (Co-advisor of project on factorization of tetranomials over $\mathbb{F}_3$.)
  - Math 504 – Discrete Mathematics for Teachers. *On line course.*
  - Math 506 – Algebra for Teachers. *On line course.*
- **Theses and Dissertations Directed**
  - *"On Cyclotomic Primality Tests"*, master thesis by T. Boucher, 2011.
  - *"The Galois Groups of $x^n - x^{n-1} - \cdots - x - 1$"*, master thesis by D. Walker, 2016.
  - *"p-adic Numbers"*, honors thesis by A. Belt, 2016.
  - *"Gröbner Basis"*, honors thesis by S. Pablo, 2017.
  - *"The Prime Number Theorem"*, honors thesis by N. Sharda, 2020.
  - *"Denominators of the Weierstrass Coefficients of the Canonical Lifting"*, Ph.D. thesis by D. Li, 2020.
  - *"Primality Testing"*, M.S. project by N. Velez.

Computer Skills

MAGMA, Sage, Python, PARI-GP, Mathematica, LaTeX, HTML/CSS, PHP, Shell Scripting, Linux.

Membership in Professional Societies

Member of the *American Mathematical Society* since 1998.

Personal Data

Born March 30, 1973, in Uberlândia, MG, Brazil.

US Permanent Resident.