

September 7, 2009

**CURRICULUM VITAE  
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**Citizenship:** Uruguayan. Permanent Resident in the USA

**Date of Birth:** December 27th, 1978.

RESEARCH INTEREST

Mathematical Logic. More specifically: Computability theory, Computable mathematics and Reverse mathematics.

EDUCATION

- Ph.D. in Mathematics. Cornell University, August 2005  
Thesis adviser: Richard A. Shore. Thesis title: *Beyond the Arithmetic*.
- M.S. in Computer Sciences. Cornell University, January 2005.
- M.S. in Mathematics. Cornell University, 2002.
- Licenciatura (B.S.) en Matemáticas. Universidad de la República (UdelaR), Montevideo, Uruguay 2000.

EMPLOYMENT (post Ph.D.)

2005-2006. L. E. Dickson Instructor at the University of Chicago.  
2006-2007. Postdoctoral position at the University of Victoria Wellington. New Zealand.  
2007-present. Assistant Professor at the University of Chicago.

PUBLICATIONS

- (1) *Embedding Jump Upper Semilattices into the Turing Degrees.*  
**Journal of Symbolic Logic**, Vol. 68 (3), 2003, pp. 989-1014.
- (2) *Embedding and coding below a 1-generic degree.* With Noam Greenberg.  
**Notre Dame Journal of Formal Logic**, Vol. 44 (4), 2003, pp. 200-216.
- (3) *Generalized High degrees have the complementation property.* With N. Greenberg and R. A. Shore. **Journal of Symbolic Logic**, Vol. 69 (4), 2004, pp. 1200-1220.
- (4) *Teoría de Conjuntos Según Von Newman (Set Theory in the sense of Von Newman).* **Publicaciones Matemáticas del Uruguay**, Vol. 10, 2005, pp. 91-110.  
(Extracted from my undergraduate thesis.)
- (5) *Up to equimorphism, hyperarithmetic is recursive.*  
**Journal of Symbolic Logic**, Vol 70 (2), 2005, pp. 360-378.
- (6) *A minimal pair of K-degrees.* With Barbara F. Csima.  
**Proceedings of the AMS**, 134, (2006), 1499-1502.
- (7) *There is no order in the Generalized High/Low Hierarchy.*  
**Archive of Mathematical Logic** Vol 45(2), 2006, pp. 215-231.
- (8) *Equivalence between Fraïssé's conjecture and Jullien's theorem.*  
**Annals of Pure and Applied Logic** Vol 139 (1-3) 2006, pp. 1-42.
- (9) *Boolean Algebras, Tarski Invariants, and Index Sets.* With B. F. Csima and R. A. Shore. **Notre Dame Journal of Formal Logic** Vol 47 (1), 2006, pp. 1-23.
- (10) *Indecomposable linear orderings and Theories of Hyperarithmetic Analysis.*  
**Journal of Mathematical Logic** Vol 6, (1), 2006, pp. 89-120.

- (11) *Equimorphism invariants for scattered linear orderings.*  
**Fundamenta Mathematicae** Vol 191, 2006, pp. 151-173.
- (12) *A cappable almost everywhere dominating computably enumerable degree.* With George Barmpalias. **Proceedings of the Third International Conference on Computability and Complexity in Analysis (CCA 2006)**, Vol 167, 2007, pp. 17–31 (electronic).
- (13) *On the equimorphism types of linear orderings.*  
**Bulletin of Symbolic Logic** Vol 13, 2007, pp. 71-99.
- (14) *Countably complementable linear orderings.*  
**Order** Vol 23, 2006, pp321–331 (2007).
- (15) *Computable linearizations of well-partial-orderings.*  
**Order** Vol 24, 2007, p 39-48.
- (16) *Ranked Structures and Arithmetic Transfinite Recursion.* With Noam Greenberg.  
**Transactions of the AMS** Vol 360, 2008, pp. 1265-1307.
- (17) *Subspaces of Computable Vector Spaces.* With Rodney G. Downey, Denis R. Hirschfeldt, Asher M. Kach, Steffen Lempp, and Joseph R. Mileti.  
**Journal of Algebra** Vol. 314, 2007, pp. 888-894.
- (18) *On the triple jump of the set of atoms of a Boolean algebra.*  
**Proceedings of the AMS**, Vol 136, 2008, pp. 2589-2595
- (19) *A weakly 2-random set that is not generalized low.* With A. Lewis and A. Nies.  
**Proceedings of the CiE 2007**, Vol 4497, 2007, pp. 474-477.
- (20) *Slender Classes.* With Rod Downey.  
**Journal of the London Math. Society**, Vol 78, 2008, pp. 36-50.
- (21) *From Automatic Structures to Borel Structures.* With G. Hjorth and B. Khoussainov and A. Nies. **Proceedings of 23rd Annual IEEE Symp. on Logic in Computer Science (LICS 2008)**, (2008), pp. 431-441.
- (22) *The isomorphism problem for torsion-free Abelian groups is analytic complete.* With Rod Downey. **Journal of Algebra**, Vol 320, 2008, pp. 2291-2300.
- (23) *On the  $\Pi_1^1$  Separation Principle.*  
**Mathematical Logic Quarterly** Vol 54 (6), 2008, pp. 563-578.
- (24) *Notes on the Jump of a structure..* **Mathematical Theory and Computational Practice**, 2009, pp. 372-378.
- (25) *On Fraïssé’s conjecture for linear orders of finite Hausdorff rank.* With Alberto Marcone. **Annals of Pure and applied Logic**, 160, 2009, pp. 355-367.
- (26) *Embeddability in the Turing Degrees.*  
To appear in the **Proceedings of the Logic colloquium ‘06**.
- (27) *A Computable  $\aleph_0$ -categorical Structure Whose Theory Computes True Arithmetic.* With Bakhadyr Khoussainov. To appear in the **Journal of Symbolic Logic**.
- (28) *On the  $n$ -Back-and-Forth types of Boolean Algebras.* With Kenneth Harris.  
Submitted for publication.
- (29) *Computability of Fraïssé limits.* With B. F. Csima; V. Harizanov and R. Miller.  
Submitted for publication.
- (30)  *$K$ -Trivials are  $NCR_1$ .* With Theodore A. Slaman.  
Submitted for publication.

#### TALKS

##### Invited Talks at Conferences or Workshops.

- ASL annual meeting. **Chicago**, IL, May 2003.  
*Embedding Jump Upper Semilattices into the Turing Degrees.* (20m)
- Computability and Logic Workshop, **Heidelberg**, Germany, June 2003.  
*Embedding Jump Upper Semilattices into the Turing Degrees.* (20m)
- Southeastern Logic Symposium. **Gainesville**, FL, March 2004  
*There is no order in the Generalized High/Low Hierarchy.*(20m)

- Fall 2004, AMS Central Section Meeting. **Evanston**, IL, October 2004.  
*On Fraïssé's conjecture and some equivalent statements.* (20m)
- Joint Mathematics meetings. **Atlanta**, GA, January 2005.  
*On the proof theoretic strength of Jullien's results.* (20m)
- ASL Annual Meeting Stanford, **Palo Alto**, CA, March, 2005.  
*A minimal pair of K-degrees*, joint workd with Barbara. F. Csima. (20m)
- Computational Prospects of infinity. **Singapore**, July-August 2005.  
*Indecomposable linear orderings and Theories of Hyperarithmetical Analysis.* (1hr)
- **Plenary talk.** Southeastern Logic Symposium. **Gainesville**, FL, March 10-12 of 2006.  
*Equimorphism invariants for scattered linear orderings.* (1hr)
- AMS Central Section Meeting. **Notre Dame**, IN, April, 8,9 of 2006.  
*Computable linearizations of well-partial-orderings.* (20m)
- Greater Boston Logic Conference, **Boston**, MA, May 12-14 of 2006.  
*Well-quasi-orderings and computability theory* (1hr)
- **Plenary talk.** Annual Meeting of the ASL, **Montreal**, Canada, May 17-21 of 2006.  
*Equimorphisms types of Linear Orderings.* (1hr)
- **Plenary talk.** ASL Summer Meeting "Logic Colloquium '06". **Nijmegen**, Netherlands, 27 July- 2 Aug. of 2006.  
*Embeddability and decidability in the Turing Degrees.* (1hr)
- Proof Theory of arithmetic, **Kyoto**, Japan, August 21st-23rd of 2006.  
*Aspects of Computability Theory.* (1hr)  
*Theories of Hyperarithmetical Analysis.* (1hr)
- Workshop on Computability, Randomness and Model theory, **Auckland**, New Zealand, Nov 8-9 2006.  
*Equimorphism invariants for scattered linear orderings.* (1hr)
- Mini-Workshop: Logic, Combinatorics and Independence Results, **Oberwolfach**, Germany, Nov 26th - Dec 2nd, 2006. *Theories of Hyperarithmetical Analysis.* (1hr)
- Joint Meeting of AMS-NZMS. **Wellington**, New Zealand, Dec 12-15, 2007.  
*On the n-Back-and-Forth types of Boolean Algebras.* (20m)
- Computability, Complexity and Randomness, **Nanjing**, China, May 19-23, 2008.  
*Extensions of Embeddings in the degrees below the Turing Jump.* (1hr)
- Workshop in Effective Mathematics of the Uncountable, Cuny, **New York** NY. Aug 18-22 of 2008.  
*From Büchi to Borel structures.* (1hr)
- AMS Fall Eastern Section Meeting, **Middletown**, CT. Oct 11-12 of 2008.  
*When low information is no information.* (20m)
- Computability, Reverse Mathematics and Combinatorics, **Banff**, Canada. December 7-12, 2008.  
*On the Strength Frass's Conjecture.* (1hr)
- Foundational Adventures: A Conference in Honor of Harvey Friedmans 60th Birthday, **Columbus**, OH. May 15-17, 2009.  
*Theories of Hyperarithmetical Analysis - A survey.* (40m)
- ASL annual meeting. **Notre Dame**, IN, May 20-23, 2009.  
*The Veblen Ordinal Functions for Computability Theorists.* (30m)
- Computability in Europe, **Heidelberg**, Germany, July 2009.  
*On the Jump of a Structure.* (40m)
- Workshop on Computability Theory, **Sofia**, Bulgaria, August 2009.  
*On complete sets of Pi-n relations of a structure.* (1hr)

#### Contributed Talks at Conferences.

- Logic, Computability and Randomness. Cordoba, Argentina, September 2004.  
*Up to equimorphism, hyperarithmetical is computable.*

#### Invited Talks at other Universities.

- UdelaR. Montevideo, Uruguay, December 2001.

- University of Notre Dame. Notre Dame, IN, November 2004.
- University of Wisconsin-Madison. Madison, WI, December 2004.
- University of Chicago. Chicago, IL, December 2004.
- University of Connecticut. Storrs, CT, January 2005.
- University of Illinois at Chicago, IL, November 2005.
- City University of New York, NY, December 2005.
- University of Wisconsin-Madison. Madison, WI, February 2006.
- Harold Washington College. Chicago, IL, April 2006.
- University of California Los Angeles, CA, June 2006.
- University of Udine, Italia. June 2006.
- University of Heidelberg, Germany. July 2006.
- National University of Singapore, Singapore, August 2006.
- Massachusetts institute of technology, MA, February 2007.
- University of California Los Angeles, CA, February 2007.
- Auckland University, New Zealand, May 2007
- Cornell University, September 2007.
- Massachusetts institute of technology, MA, February 2008.
- University of Wisconsin-Madison, CA, February 2008.
- University of Notre Dame. Notre Dame, IN, March 2008.
- University of California, Bekeley, CA, August 2008.
- Daley College, Chicago, IL, December 2008.
- Univeisty of Leeds. UK. January 2009.
- Bonn University, Germany, January 2009.

#### TEACHING

- TA at the UdelaR. From Fall 1999 to Spring 2000.
- TA at Cornell University. From Fall 2002 to Spring 2005.
- Instructor at the University of Chicago.
  - Analysis in  $\mathbb{R}^n$ , part III. Fall 2005.
  - Analysis in  $\mathbb{R}^n$ , part I. Winter 2006.
  - Analysis in  $\mathbb{R}^n$ , part III. Spring 2006.
  - Topics in Logic; Reverse Mathematics. Spring 2006.
- Assistant Professor at the University of Chicago.
  - Analysis in  $\mathbb{R}^n$ , part I. Fall 2007.
  - Mathematical Logic I. Fall 2007.
  - Mathematical Logic II. Winter 2008.
  - Mathematical Logic I. Fall 2008.
  - Topics in Logic; Higher Recursion Theory. Fall 2008.
  - Introduction to Analysis and Linear Algebra. Spring 2009

#### GRANTS AND AWARDS

- Batting award in Mathematics, 2004. Intended to recognize outstanding graduate students in Mathematics.
- [Sacks Prize](#) to the best Ph.D. thesis in logic of the year, world wide, given by the ASL.
- **NSF Grant** (as Principal Investigator) June 2006-May 2009. DMS-0600824 for US\$87,679
- Associate Inv. in a Marsden Grant (New Zealand) with Bakhadyr Khoussainov (PI) and Andre Nies (co-PI) 2009-2011.
- [AMS Centennial Fellowship](#) 2009.
- **NSF Grant** (as Principal Investigator) Sept 2009- Aug 2012. DMS-0901169 for US\$ 291,000.

#### SCHOLARSHIPS AND ASSISTANTSHIPS

- Fellowship for summer school. Instituto Nacional de Matemática pura e aplicada (IMPA), Rio de Janeiro, Brazil. (January, February 1998)

- Research assistant for Paula Severi, UdelaR. (March 1998- December 1999)
- Teaching assistant for the Math Dept. of the UdelaR. (August 1999- July 2000)
- Cornell Graduate Fellowship. Cornell University (August 2000 - July 2002)
- Teaching assistant, Cornell University. (August 2002 - May 2005)
- I had summer support in 2002, 2003, 2004 and 2005 from Richard A. Shore's NSF grant.

#### MATH OLYMPIADS

- Won several medals in math Olympiads in Latin America, including two gold medals in the Iberoamerican Olympiads of Mathematics in Chile (1995) and Costa Rica (1996).
- Jury for the National Math Olympiads of Uruguay (1997-1999), for the *Olimpiada Rioplatense* in Argentina (1997) and for the *Olimpiada del Cono Sur* in Uruguay (2000).
- Trainer for the Uruguayan team. (1997)

#### MEMBERSHIPS

American Mathematical Society

Association of Symbolic Logic