

**CURRICULUM VITAE**  
**ANTONIO MONTALBÁN**

Department of Mathematics,  
University of Chicago,  
5734 S. University Avenue,  
Chicago, Illinois 60637,  
USA.

Office: Ryerson 358  
e-mail: [antonio@math.uchicago.edu](mailto:antonio@math.uchicago.edu)  
web page: [www.math.uchicago.edu/~antonio](http://www.math.uchicago.edu/~antonio)

**Citizenship:** Uruguay.

Permanent Resident of the USA.

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

RESEARCH INTEREST

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

EDUCATION

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

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.  
2007-2011. Assistant Professor at the University of Chicago.  
2011-current. Associate Professor at the University of Chicago.

AWARDS (POST PH.D.)

- **Sacks Prize 2005**. This prize is given to the best Ph.D. thesis in logic of the year, world wide. It is given by the Association of Symbolic Logic.
- **AMS Centennial Fellowship 2009**. This prize is given to one and sometimes more (one in my year) young researchers in mathematics in North America each year. It is given by the American Mathematical Society and consist of a whole year of salary. The primary selection criterion for the Centennial Fellowship is the excellence of the candidate's research, as cited from their web-page.
- **Packard Fellowship 2010**. This fellowship consist of a five-year grant of US\$ 875,000. It is given to 17 scientists from the whole spectrum of science, and, in average, it is given to one mathematician every year.

GRANTS (AS PRINCIPAL INVESTIGATOR)

- **NSF Grant** June 2006-May 2009. DMS-0600824 for US\$87,679.
- **NSF Grant** Sept 2009-Aug 2012. DMS-0901169 for US\$ 291,000.  
This latter grant includes US\$ 52,545 (without further reductions) for graduate student support.

OTHER ACTIVITIES

- Editor for the Transactions and Memoirs of the AMS, effective 01 February 2012.
- Member of the Council of the ASL.
- Editor for the Perspectives in Mathematical Logic Series.
- Write a column for the quarterly magazine *Uruguay Ciencia*.
- Referee for various journals; Reviewer for Math Reviews and Zentralblatt.

## MEETINGS I ORGANIZE OR CO-ORGANIZE

- Birthday conference for Richard Shore on January 2007.
- Special session on Computable Structures at the ASL annual meeting in Irvine, CA on May 2008.
- Midwest computability meeting, that meets 3 times a year in Chicago, IL.
- Workshop in Computability Theory, as a satellite for the LC10 in Paris, France, July 2010.
- Workshop in Computability Theory, as a satellite for the LC11 in Barcelona, Spain, July 2011.
- Workshop in Reverse Mathematics, Chicago, IL, September 2011.
- Oberwolfach Seminar in Proof Theory, Germany, October 2011.
- Special session in Algebraic Structures at the Asian Logic Colloquium, Wellington, New Zealand, December 2011.
- Special session in Logic at the Latin-american Mathematics Meeting, Cordona, Argentina, August 2012.

## PH.D. STUDENTS CO-ADVISED

- Chris Conidis, graduated 2009 (secondary advisor).
- Damir Dzhafarov, graduated 2011 (secondary advisor).

## POSTDOCS MENTORED

- Asher Kach, 2011-2012.

## 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.
  - Reverse Mathematics. Fall 2010.
  - Computable Structures. Fall 2010.
  - Introduction to Analysis and Linear Algebra. Spring 2011.

**4.6 over 5** is my average in teaching evaluations over the 5 undergrad courses I taught as Assistant Professor.

## MEMBERSHIPS

American Mathematical Society

Association of Symbolic Logic

## 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.*  
Logic colloquium 2006, **Lecture Notes in Logic**, 2009, pp. 229-246.
- (27) *A Computable  $\aleph_0$ -categorical Structure Whose Theory Computes True Arithmetic.* With Bakhadyr Khoussainov. **Journal of Symbolic Logic**, 75 (2010), 728-740.
- (28) *Computability of Fraïssé limits.* With B. F. Csima; V. Harizanov and R. Miller.  
**Journal of Symbolic Logic**, 76 (1), 2011, pp. 66-93.
- (29) *The Slaman-Wehner Theorem in higher recursion theory.* With N. Greenberg and T. A. Slaman.  
**Proceedings of the AMS**, 139 (2011), pp. 1865-1869.
- (30) *Counting the back-and-forth types.*  
**Journal of Logic and Computability**, (2010), DOI: 10.1093/logcom/exq048
- (31) *On the  $n$ -Back-and-Forth types of Boolean Algebras.* With Kenneth Harris.  
To appear in the **Transactions of the AMS**.
- (32) *The Veblen functions for computability theorists.* With Alberto Marcone.  
To appear in the **Journal of Symbolic Logic**.
- (33) *Cuts of Linear Orders.* With A. Kach.  
To appear in **Order**. DOI: 10.1007/s11083-010-9194-9
- (34) *Borel structures: a brief survey.* With Andre Nies.  
To appear in the **Lecture Notes in Logic**.
- (35)  *$K$ -Trivials are never continuously random.* With G. Barmpalias, N. Greenberg and T. A. Slaman.  
To appear in the **Proceedings of the 11th Asian Logic Conference**.
- (36) *Extensions of Embeddings below computably enumerable degrees.* With R. Downey, N. Greenberg and A. Lewis. To appear in the **Transactions of the AMS**.
- (37) *The limits of determinacy in Second Order Arithmetic.* With Richard A. Shore.  
To appear in the **Proceedings of the London Math Society**.
- (38) *Isomorphism and Bi-Embeddability Relations on Computable Structures.* With E. B. Fokina, S. Friedman, V. Harizanov, J. F. Knight and C. McCoy. To appear in the **Journal of Symbolic Logic**.
- (39) *Open questions in Reverse Mathematics.*  
To appear in the **Bulletin of Symbolic Logic**.
- (40) *Boolean Algebra Approximations.* With Kenneth Harris.  
Submitted for publication.
- (41) *A fixed point for the jump operator on structures.*  
Submitted for publication.
- (42) *Matemática Computable.*  
Submitted for publication. (In Spanish.)
- (43) *Coding and Definiability in Computable Structures.*  
Submitted for publication.
- (44) *Relative to any non-hyperarithmetical set.* With N. Greenberg and T. A. Slaman.  
Submitted for publication.

#### CONFERENCE TALKS

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

- (1) ASL annual meeting. **Chicago**, IL, May 2003. (20m)
- (2) Computability and Logic Workshop, **Heidelberg**, Germany, June 2003. (20m)
- (3) Southeastern Logic Symposium. **Gainesville**, FL, March 2004 (20m)
- (4) Fall 2004, AMS Central Section Meeting. **Evanston**, IL, October 2004. (20m)
- (5) Joint Mathematics meetings. **Atlanta**, GA, January 2005. (20m)
- (6) ASL Annual Meeting Stanford, **Palo Alto**, CA, March, 2005. (20m)
- (7) Computational Prospects of infinity. **Singapore**, July-August 2005. (1hr)
- (8) Southeastern Logic Symposium. **Gainesville**, FL, March 10-12 of 2006. Plenary talk (1hr)
- (9) AMS Central Section Meeting. **Notre Dame**, IN, April, 8,9 of 2006. (20m)
- (10) Greater Boston Logic Conference, **Boston**, MA, May 12-14 of 2006. (1hr)
- (11) Annual Meeting of the ASL, **Montreal**, Canada, May 17-21 of 2006. Plenary talk (1hr)
- (12) ASL Summer Meeting "Logic Colloquium '06". **Nijmegen**, Netherlands, 27 July- 2 Aug. of 2006.  
Plenary talk (1hr)
- (13) Proof Theory of arithmetic, **Kyoto**, Japan, August 21st-23rd of 2006. (1hr) (1hr)

- (14) Workshop on Computability, Randomness and Model theory, **Auckland**, New Zealand, Nov 8-9 2006. (1hr)
- (15) Mini-Workshop: Logic, Combinatorics and Independence Results, **Oberwolfach**, Germany, Nov 26th - Dec 2nd, 2006. (1hr)
- (16) Joint Meeting of AMS-NZMS. **Wellington**, New Zealand, Dec 12-15, 2007. (20m)
- (17) Computability, Complexity and Randomness, **Nanjing**, China, May 19-23, 2008. (1hr)
- (18) Workshop in Effective Mathematics of the Uncountable, Cuny, **New York** NY. Aug 18-22 of 2008. (1hr)
- (19) AMS Fall Eastern Section Meeting, **Middletown**, CT. Oct 11-12 of 2008. (20m)
- (20) Computability, Reverse Mathematics and Combinatorics, **Banff**, Canada. December 7-12, 2008. (1hr)
- (21) Foundational Adventures: A Conference in Honor of Harvey Friedmans 60th Birthday, **Columbus**, OH. May 15-17, 2009. (40m)
- (22) ASL annual meeting. **Notre Dame**, IN, May 20-23, 2009. (30m)
- (23) Computability in Europe, **Heidelberg**, Germany, July 2009. (40m)
- (24) Workshop on Computability Theory, **Sofia**, Bulgaria, August 2009. (1hr)
- (25) Workshop on Ramsey Theory in Logic, Combinatorics and Complexity, **Bertinoro**, Italy, October 2009. (1hr)
- (26) 2do Coloquio Uruguayo de Matemática, **Montevideo**, Uruguay, December 2009. **Tutorial**. (4.5 hrs)
- (27) Mal'tsev Meeting, **Novosibirsk**, Russia, May 2010. Plenary talk (1hr)
- (28) AMS fall Sectional meeting at **Notre Dame**, November 2010. (20min)
- (29) ASL annual meeting. Special Session for L. Harrington. **Berkeley**, CA, March 2011. (30 min)
- (30) Computability in Europe, **Sofia**, Bulgaria. June-July 2011. Plenary talk (1hr)
- (31) Infinity Meeting, **Barcelona**, Spain, July 2011, (1hr)
- (32) Prospects of infinity, **Singapore**, August 2011, (1hr)
- (33) Packard Meeting, **Monterey**, CA, September 2011. (15 min)
- (34) Seminar in Proof Theory, **Oberwolfach**, Germany, October 2011. (tutorial, 3hr)

Future talks:

- (35) 3er Coloquio Uruguayo de Matemática, **Montevideo**, Uruguay, December 2011. Plenary talk (1 hrs)
- (36) Workshop in Computability Theory, **Oberwolfach**, Germany, February 2012.
- (37) AMS Sectional Meeting at **Washington**, DC. March 2012 (20 min)
- (38) Annual ASL meeting, **Madison**, WI, April 2012. (Plenary talk, 1hr)
- (39) Latin American Symposium on Mathematical Logic, **Bogota**, Colombia, June 2012. (Plenary talk, 1hr)
- (40) The incomputable, **Cambridge**, UK, June 2012. (1hr)
- (41) Logic Colloquium, **Manchester**, UK, July 2012. (Tutorial 3 hrs)

**Contributed Talks at Conferences.**

- (1) Logic, Computability and Randomness. **Cordoba**, Argentina, September 2004. (1hr)