

CURRICULUM VITAE

ISAAC GOLDBRING

University of Illinois at Chicago
Department of Mathematics, Statistics, and
Computer Science
851 S. Morgan Street
Chicago, IL 60607-7045

isaac@math.uic.edu

<http://www.math.uic.edu/~isaac>

EMPLOYMENT

University of Illinois at Chicago June 2012-Present
Assistant Professor

University of California, Los Angeles July 2009-June 2012
Hedrick Assistant Adjunct Professor

EDUCATION

Ph.D., Mathematics October 2009
University of Illinois at Urbana-Champaign
Thesis Title: Nonstandard Methods in Lie Theory
Thesis Advisor: Lou van den Dries

B.S. & M.A. in Mathematics, June 2004
University of California, Los Angeles
Major: Mathematics (Departmental Highest Honors)
Minor: Philosophy
Graduated Magna Cum Laude

RESEARCH INTERESTS

- Model theory
- Nonstandard analysis
- Continuous logic
- Lie theory
- Geometric group theory
- Operator algebras

PUBLICATIONS

1. *Bezout domains and elliptic curves* (with M. Masdeu Sabate)
Communications in Algebra, Volume 36 (2008) Issue 12, 4492-4499.
2. *Nonstandard hulls of locally exponential Lie algebras*
Journal of Logic and Analysis, Volume 1:5 (2009), 1-25.
3. *Locally compact contractive local groups* (with Lou van den Dries)
Journal of Lie Theory, Volume 19 (2009), 685-695.

4. *Hilbert's fifth problem for local groups*
Annals of Mathematics, Volume 172 (2010), No. 2, 1269-1314.
5. *Globalizing locally compact local groups* (with Lou van den Dries)
Journal of Lie Theory, Volume 20 (2010), 519-524.
6. *Ends of groups: a nonstandard perspective*
Journal of Logic and Analysis, Volume 3:7 (2011), 1-28.
7. *Definable functions in Urysohn's metric space*
Illinois Journal of Mathematics, Volume 55 (2011), 1423-1435.
8. *Thorn-forking in continuous logic* (with Clifton Ealy)
Journal of Symbolic Logic, Volume 77 (2012), 63-93.
9. *Definable operators on Hilbert spaces*
Notre Dame Journal of Formal Logic, Volume 53 (2012), 193-201.
10. *An approximate Herbrand's theorem and definable functions in metric structures*
Mathematical Logic Quarterly, Volume 58, Issue 3 (2012), 208-216.
11. *Nonstandard hulls of locally uniform groups*
Fundamenta Mathematicae, Volume 220 (2013), 93-118.
12. *Further thoughts on definability in the Urysohn sphere*
Proceedings of the 12th Asian Logic Conference, World Scientific (2013), 144-154.
13. *The theory of tracial von Neumann algebras does not have a model companion*
(with Bradd Hart and Thomas Sinclair). Journal of Symbolic Logic, Volume 78 (2013), 1000-1004.
14. *Transseries and Todorov-Vernaeve's asymptotic fields* (with Matthias Aschenbrenner). Archive for Mathematical Logic, Volume 53 (2014), 65-87.
15. *An approximate logic for measures* (with Henry Towsner).
Israel Journal of Mathematics, Volume 199 No. 2 (2014), 867-913.
16. *Definable closure in randomizations* (with Uri Andrews and H. Jerome Keisler).
Annals of Pure and Applied Logic, Volume 166 No. 3 (2015), 325-341.
17. *High density piecewise syndeticity of sumsets* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg).
Advances in Mathematics, Volume 278 (2015), 1-33.

PAPERS ACCEPTED FOR PUBLICATION

1. *Hilbert's fifth problem* (with Lou van den Dries). To appear in L'Enseignement Mathématique.
2. *Pseudofinite and pseudocompact metric structures* (with Vinicius Cifú Lopes). To appear in Notre Dame Journal of Formal Logic. arXiv 1109.2246.
3. *On a sumset conjecture of Erdős* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg) To appear in the Canadian Journal of Mathematics. arXiv 1307.0767.
4. *On Kirchberg's embedding problem* (with Thomas Sinclair)
To appear in the Journal of Functional Analysis. arXiv 1404.1861.
5. *Games and elementary equivalence of II_1 factors* (with Thomas Sinclair).
To appear in the Pacific Journal of Mathematics. arXiv 1406.5242.

PAPERS SUBMITTED FOR PUBLICATION

1. *The fundamental group of a locally finite graph with ends: a hyperfinite approach* (with Alessandro Sisto). arXiv 1203.4609.
2. *A computability-theoretic reformulation of the Connes Embedding Problem* (with Bradd Hart) arXiv 1308.2638.
3. *Existentially closed II_1 factors* (with Ilijas Farah, Bradd Hart, and David Sherman) arXiv 1310.5138.
4. *Independence in randomizations* (with Uri Andrews and H.J. Keisler). arXiv 1409.1531
5. *Dividing and weak quasi-dimensions in arbitrary theories* (with Henry Towsner) arXiv 1409.7407
6. *Model-theoretic aspects of the Gurarij operator space* (with Martino Lupini) arXiv 1501.04332
7. *Omitting types in operator systems* (with Thomas Sinclair) arXiv 1501.06395
8. *The pseudoarc is a co-existentially closed continuum* (with Christopher Eagle and Alessandro Vignati) arXiv 1503.03443
9. *A monad measure space for logarithmic density* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg) arXiv 1503.03810

BOOKS

- *Hilbert's fifth problem* (joint with Lou van den Dries), in preparation.

INVITED TALKS-MEETINGS

- *Canadian Mathematical Society Winter Meeting*, Plenary lecture, McMaster University, December 2014.
- *East Coast Operator Algebra Symposium*, Fields Institute, Toronto, Canada, October 2014.
- *American Mathematical Society Fall Sectional Meeting*, Special Session on Von Neumann algebras and related fields, University of Wisconsin-Eau Claire, September 2014.
- *DMV-PTM Joint Meeting*, Special Session on Wild algebraic and geometric topology, Poznan, Poland, September 2014.
- *16th Latin American Symposium on Mathematical Logic*, Conference tutorial on Applications of Continuous Model Theory (4 hours) and Semiplenary talk in Special Session on Model Theory, Buenos Aires, Argentina, July 2014.
- *Model Theory of C^* Algebras*, Münster, Germany, July 2014.
- *2014 Joint Mathematics Meeting*, AMS-ASL Special Session on Logic and Probability, Baltimore, Maryland, January 2014.
- *Model theory and applications workshop*, Lisbon, Portugal, July 2013
- *Association for Symbolic Logic European Summer Meeting*, Special Session in Logic and Analysis, Evora, Portugal, July 2013
- *Association for Symbolic Logic North American Annual Meeting*, Special Session in Applications of Logic to Operator Algebras, University of

- Waterloo, May 2013
- *Midwest Model Theory Day, University of Illinois at Chicago, October 2012*
 - *Association for Symbolic Logic North American Annual Meeting, Plenary talk, University of Wisconsin, March 2012*
 - *American Mathematical Society Spring Sectional Meeting, Special Session on Nonstandard Analysis, University of Hawaii, March 2012*
 - *12th Asian Logic Conference, Victoria University of Wellington, New Zealand, December 2011*
 - *Logic in Southern California, UC Irvine, December 2011*
 - *Model Theory of Groups (Interactions between Model Theory and Geometric Group Theory), Luminy, France, November 2011*
 - *Geometric Group Theory and Logic: The Elementary Theory of Groups, University of Illinois at Chicago, August 2011*
 - *Association for Symbolic Logic North American Annual Meeting, Special Session in Model Theory, University of California, Berkeley, March 2011*
 - *2011 Joint Mathematics Meeting, American Mathematical Society Special Session on Model Theory of Fields and Applications, New Orleans, Louisiana, January 2011*
 - *First Joint Meeting between the American Mathematical Society and Sociedad Matematica de Chile, Special Session in Algebra and Model Theory, Pucon, Chile, December 2010*
 - *Model Theory Conference in Seoul, Yonsei University, Seoul, South Korea, May 2010*
 - *Yonsei University Special Logic Colloquium, Seoul, South Korea, May 2010*
 - *American Mathematical Society Spring Sectional Meeting, Special Session on Geometric Group Theory, University of New Mexico, Albuquerque, April 2010*
 - *Urbana in Lyon Meeting, Lyon, France, July 2009*
 - *Association for Symbolic Logic North American Annual Meeting, Special Session in Model Theory, Notre Dame University, May 2009*
 - *Seminar Sophus Lie, University of Paderborn, Germany, January 2009*
 - *Meeting on Dependent Theories, Bogota, Colombia, March 2008*
 - *Geometric Groups on the Gulf Coast, Pensacola Beach, Florida, March 2008*

INVITED TALKS-SEMINARS/COLLOQUIA

- *Southern Wisconsin Logic Colloquium, April 2015*
- *USC Algebra Seminar, March 2015*
- *University of Illinois at Urbana Champaign Logic Seminar, February 2015*
- *Notre Dame Model Theory Seminar, February 2015*
- *Notre Dame Logic Seminar, February 2015*
- *University of Iowa Operator Theory Seminar, January 2015*
- *Vanderbilt University Subfactor Seminar, March 2014*
- *University of Hawaii Math Department Colloquium, January 2014*
- *Harvard/MIT Logic Seminar, November 2013*

- *New York Logic Workshop*, September 2013
- *Vassar College Math Department Colloquium*, September 2013
- *The Ohio State University Logic Seminar*, January 2013
- *University of Waterloo Pure Math Colloquium*, January 2013
- *McMaster University Model Theory Seminar*, November 2012
- *Fields Institute Seminar on Set Theory and C*-algebras*, November 2012
- *University of Pennsylvania Logic Seminar*, October 2012
- *University of Illinois at Urbana Champaign Logic Seminar*, October 2012
- *Southern Wisconsin Logic Colloquium*, September 2012
- *UC Irvine Logic Seminar*, February 2012
- *Cal Poly San Luis Obispo Math Department Colloquium*, January 2012
- *University of Illinois at Chicago Math Department Colloquium*, January 2012
- *Notre Dame Math Department Colloquium*, January 2012
- *University of Wisconsin Mathematics Department Colloquium*, November 2011
- *Southern Wisconsin Logic Colloquium*, November 2011
- *UCLA Logic Colloquium*, November 2011
- *Géométrie et Théorie des Modèles* (Geometry and Model Theory Seminar), Paris, France, May 2011
- *Paris Model Theory Seminar*, Paris, France, May 2011
- *Paris Logic Seminar*, Paris France, May 2011
- *University of California Berkeley Logic Colloquium*, October 2010.
- *University of California Berkeley Model Theory Seminar*, October 2010.
- *University of Illinois at Urbana-Champaign Model Theory Seminar*, September 2010
- *University of Illinois at Chicago Logic Seminar*, September 2010
- *California State University Dominguez Hills Mathematics Colloquium*, March 2010
- *UCLA Logic Colloquium*, November 2009
- *Notre Dame Logic Seminar*, September 2009
- *Notre Dame Model Theory Seminar*, September 2009
- *Western Illinois University Mathematics Colloquium*, May 2009
- *The Ohio State University Logic Seminar*, October 2008
- *McMaster University Model Theory Seminar*, September 2008
- *University of Illinois at Chicago Logic Seminar*, October 2007

GRANTS

- National Science Foundation CAREER Grant (2014-2019)
- National Science Foundation Grant DMS-1007144 (2011-2014)

AWARDS, FELLOWSHIPS, AND INVITATIONS

- Gerald Sacks Prize for best dissertation in mathematical logic worldwide- Association for Symbolic Logic, 2009
- Invited participant of the Banff International Research Station workshop “Combinatorics meets ergodic theory”, July 2015.
- Invited participant of the Banff International Research Station workshop “Neostability theory”, Oaxaca, Mexico, July 2015.
- Invited participant of the workshop “Model theory and C* algebras”, Muenster, Germany, July 2014.
- Invited participant of the Oberwolfach workshop “Model Theory: Groups, Geometry, and Combinatorics”, January 2013.
- Robert Sorgenfrey Distinguished Teaching Award, UCLA Department of Mathematics, 2012.
- American Institute of Mathematics, Accepted Proposal for SQuaREs program; project title: *Nonstandard methods in number theory*
- Irving Reiner Memorial Award in Algebra- University of Illinois at Urbana-Champaign, 2008
- Scott Dissertation Completion Fellowship, 2008-2009
- Arnold O. Beckman Research Award Research Assistantship- Spring, Summer and Fall 2008
- University of Illinois at Urbana-Champaign Incomplete List of Teachers Ranked Excellent by Their Students, Fall 2006 (Top 10%), Spring 2007
- National Science Foundation VIGRE Fellowship- University of Illinois at Urbana-Champaign, 2004-2005, 2005-2006
- Daus Prize in Mathematics- UCLA, June 2004

TEACHING

University of Illinois at Chicago

Spring 2015

- Abstract Algebra I (330)

Fall 2014

- Abstract Algebra I (330)
- Model Theory II (507)

Spring 2014

- Model Theory I (506)

Fall 2013

- Mathematical Logic (502)

Spring 2013

- Calculus III (210)

Fall 2012

- Advanced Topics in Logic-Model Theory for Metric Structures (512)

University of California, Los Angeles

Mathematical Logic (114L), Computability Theory (114C), Abstract Algebra (110A), Real Analysis (131A), Linear Algebra (115A), Ordinary Differential Equations (135), Differential Equations (33B), Probability Theory for Life Science (3C), Participating Seminars in Logic (Nonstandard methods in functional analysis, Model theory for metric structures-290 D)

UCLA Summer School in Logic

Nonstandard Analysis (2009 & 2012), O-minimality (2010)

University of Illinois at Urbana-Champaign

Finite Mathematics (Instructor)

Calculus I, Calculus for Business (T.A.)

PROFESSIONAL SERVICES

Reviewing for *AMS Mathematical Reviews* and *Zentralblatt*

Refereeing for *Advances in Mathematics*, *Annals of Pure and Applied Logic*, *Archive for Mathematical Logic*, *Bulletin of the London Mathematics Society*, *Fundamenta Mathematicae*, *Houston Journal of Mathematics*, *Indiana Journal of Mathematics*, *Israel Journal of Mathematics*, *Journal of the Institute of Mathematics of Jussieu*, *Journal of Logic and Analysis*, *Journal of Symbolic Logic*, *Korean Journal of Mathematics*, *Lecture Notes in Mathematics*, *Mathematical Logic Quarterly*, *Notre Dame Journal of Formal Logic*, *Random Structures and Algorithms*, *Transactions of the American Mathematical Society*

Organizer of UIC Logic Seminar, Fall and Spring 2013

Co-organizer of UIC Department Colloquium, AY 2013-2014 and 2014-2015

Co-organizer of Midwest Model Theory Day, Fall 2013, Fall 2014, and Fall 2015

Co-organizer of Notre Dame Center for Mathematics Model Theory Meeting,
May-June 2016

Co-organizer of Special Session in Model Theory, AMS Fall 2015 Central
Sectional Meeting, Loyola University Chicago

Co-organizer of Special Session in Model Theory, AMS Spring 2012 Western
Sectional Meeting, University of Hawaii

NSF RTG Grant Undergraduate Outreach Talks on Nonstandard Analysis at
Loyola Marymount University and Claremont McKenna College-October 2011

Organizer of Caltech-UCLA Logic Seminar-Winter and Spring 2011

Co-organizer of 10th Annual Graduate Student Conference in Logic, April 2009

Organizer of Model Theory Seminar- University of Illinois at Urbana-Champaign,
Fall 2005

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Association for Symbolic Logic

American Mathematical Society