CURRICULUM VITAE

ISAAC GOLDBRING

University of Illinois at Chicago   isaac@math.uic.edu
Department of Mathematics, Statistics, and
          Computer Science   http://www.math.uic.edu/~isaac
851 S. Morgan Street
Chicago, IL 60607-7045

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
- Combinatorial number theory

PUBLICATIONS

1. *Bezout domains and elliptic curves* (with Marc Masdeu Sabate)
   Communications in Algebra, Volume 36 (2008) 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), 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 (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 (2014), 867-913.
16. *Definable closure in randomizations* (with Uri Andrews and H. Jerome Keisler)
    Annals of Pure and Applied Logic, Volume 166 (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.
18. *On Kirchberg's embedding problem* (with Thomas Sinclair)
    Journal of Functional Analysis, Volume 269 (2015), 155-198.
19. *On a sumset conjecture of Erdős* (with Mauro di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg)
    Canadian Journal of Mathematics, Volume 67 (2015), 795-809.
20. *Pseudofinite and pseudocompact metric structures* (with Vinicius Cifú Lopes)
    Notre Dame Journal of Formal Logic, Volume 56 (2015), 493-510.
21. *Games and elementary equivalence of II_1 factors* (with Thomas Sinclair)
    Pacific Journal of Mathematics, Volume 278 (2015), 103-118.
22. *Dividing and weak quasi-dimensions in arbitrary theories* (with Henry Towsner)
    Archive for Mathematical Logic, Volume 54 (2015), 915-920.
23. *Hilbert's fifth problem* (with Lou van den Dries)
    L'Enseignement Mathématique, Volume 61/62 (2015), 3-43.

24. *The fundamental group of a locally finite graph with ends: a hyperfinite approach* (with Alessandro Sisto)
    Fundamenta Mathematicae, Volume 232 (2016), 21-39.
25. *Existentially closed II_1 factors (with Ilijas Farah, Bradd Hart, and David Sherman)*
    Fundamenta Mathematicae, Volume 233 (2016), 173-196.

PAPERS ACCEPTED FOR PUBLICATION

1. *High density piecewise syndeticity of product sets in amenable groups* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg)
   To appear in the Journal of Symbolic Logic. arXiv 1505.04701
2. *Omitting types in operator systems* (with Thomas Sinclair)
   To appear in the Indiana University Mathematics Journal. arXiv 1501.06395
3. *A computability-theoretic reformulation of the Connes Embedding Problem* (with Bradd Hart) To appear in the Bulletin of Symbolic Logic. arXiv 1308.2638
4. *A monad measure space for logarithmic density* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg)
   To appear in Monatshefte für Mathematik. arXiv 1503.03810
5. *The pseudoarc is a co-existentially closed continuum* (with Christopher Eagle and Alessandro Vignati)
   To appear in Topology and its applications. arXiv 1503.03443
6. *Model theory and the QWEP conjecture*. To appear in the Illinois Journal of Mathematics. arXiv 1511.00525

PAPERS SUBMITTED FOR PUBLICION

1. *Independence in randomizations* (with Uri Andrews and H. Jerome Keisler).
   arXiv 1409.1531
2. *Model-theoretic aspects of the Gurarij operator system* (with Martino Lupini)
   arXiv 1501.04332
3. *Approximate polynomial structure in addtitively large sets* (with Mauro Di Nasso, Renling Jin, Steven Leth, Martino Lupini, and Karl Mahlburg)
   arXiv 1508.02350
4. *Hindman's theorem and idempotent types* (with Uri Andrews)
   arXiv 1508.03613
5. *On the theories of McDuff's II_1 factors (with Bradd Hart)*
   arXiv 1602.01817
6. *On the axiomatizability of C* algebras as operator systems (with Thomas Sinclair)*
   arXiv 1603.05444

BOOKS

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

INVITED TALKS-MEETINGS

- *2016 Joint Mathematics Meeting*, Special Session on Classification problems in operator algebras, Seattle, Washington, January 2016
- *Combinatorics meets ergodic theory*, Banff, Alberta, Canada, July 2015
- *Neostability theory*, Oaxaca, Mexico, July 2015
- *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 Socidedad 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

- *Purdue Operator Algebra Seminar,* February 2016
- *Caltech Logic Seminar*, February 2016
- *Bogotá Logic Colloquium*, December 2015
- *University of California, Irvine Math Department Colloquium, November 2015*
- *University of California, San Diego Model Theory and Operator Algebras Seminar*, October 2015
- *University of Wisconsin Math Department Colloquium*, September 2015
- *Southern Wisconsin Logic Colloquium*, September 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

- American Institute of Mathematics, Accepted Workshop Proposal; project title: *Nonstandard methods in combinatorial number theory and Ramsey theory*

- Invited participant of the Hausdorff Research Institute of Mathematics Trimester Program on "Von Neumann Algebras", May-July 2016.

- Invited participant of the Institut Henri Poincaré Trimester Program on "Model theory, combinatorics, and tame valued fields", January-March 2018.

- 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-Chamapign, 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 2016

- Advanced Topics in Logic-Applied Nonstandard Analysis (512)

Fall 2015

- Calculus I (180)
- Calculus III (210)

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)

PROFESSIONAL SERVICES

Reviewing for *AMS Mathematical Reviews* and *Zentralblatt*

Refereeing for *Advances in Mathematics, Annales Mathematiques du Quebec, 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 American Mathematics Society, 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, Logica Universalis, 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

Organizer of UIC Model Theory Seminar, Spring 2015 and Spring 2016

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

Co-organizer of Midwest Model Theory Day, Fall 2013, Fall 2014, Fall 2015, and Spring 2016

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