Chris Lambie-Hanson, PhD

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Experience

2021 –	Researcher Institute of Mathematics Czech Academy of Sciences
2018 – 2021	Postdoctoral Research Fellow Department of Mathematics & Applied Mathematics Virginia Commonwealth University
2016 – 2018	Coleman-Soref Postdoctoral Fellow Department of Mathematics Bar-Ilan University
2014 – 2016	Lady Davis Postdoctoral Fellow Einstein Institute of Mathematics Hebrew University of Jerusalem

Education

2009 – 2014	**PhD, Carnegie Mellon University** in Mathematical Sciences Advisor: James Cummings Thesis Title: Covering matrices, squares, scales, and stationary reflection
2005 – 2009	**BA, Yale University** in Mathematics (Intensive) *cum laude*
Spring 2008	Budapest Semesters in Mathematics

Publications

Published or Accepted Journal Articles

1. Simultaneously vanishing higher derived limits (with Jeffrey Bergfalk). *Forum of Mathematics, Pi*, 9, E4, 2021.
2. Separating diagonal stationary reflection principles (with Gunter Fuchs). *The Journal of Symbolic Logic*. To appear.

3. Forcing a $\square(\kappa)$-like principle to hold at a weakly compact cardinal (with Brent Cody and Victoria Gitman). *Annals of Pure and Applied Logic*. To appear.
4. Knaster and friends II: The C-sequence number (with Assaf Rinot). *Journal of Mathematical Logic*, 21(1):2150002, 2021.
5. Diagonal supercompact Radin forcing (with Omer Ben-Neria and Spencer Unger). *Annals of Pure and Applied Logic*, 171(10):102828, 2020.
6. On the growth rate of chromatic numbers of finite subgraphs. *Advances in Mathematics*, 369:107176, 2020.
7. Extremal triangle-free and odd-cycle-free colourings of uncountable graphs (with Dániel T. Soukup). *Acta Mathematica Hungarica*, 163(1), 174–193, 2021.
8. A forcing axiom deciding the generalized Souslin Hypothesis (with Assaf Rinot). *Canadian Journal of Mathematics*, 71(2):437–470, 2019.
9. Reflection on the coloring and chromatic numbers (with Assaf Rinot). *Combinatorica*, 39:165, 2019.
10. Partitioning subsets of generalised scattered orders (with Thilo Weinert). *Journal of the Mathematical Society of Japan*, 71(1):235–257, 2019.
11. Knaster and friends I: Closed colorings and precalibers (with Assaf Rinot). *Algebra Universalis*, 79:90, 2018.
12. Squares, ascent paths, and chain conditions (with Philipp Lücke). *The Journal of Symbolic Logic*, 83(4):1512–1538, 2018.
13. Pseudo-Prikry sequences. *Proceedings of the American Mathematical Society*, 146:4905–4920, 2018.
14. Simultaneous stationary reflection and square sequences (with Yair Hayut). *Journal of Mathematical Logic*, 17(2):1750010, 2017.
15. Squares and narrow systems. *The Journal of Symbolic Logic*, 82(3):834–859, 2017.
16. Aronszajn trees, square principles, and stationary reflection. *Mathematical Logic Quarterly*, 63(3–4):265–281, 2017.
17. Bounded stationary reflection II. *Annals of Pure and Applied Logic*, 168(1):50–71, 2017.
18. Covering properties and square principles. *Israel Journal of Mathematics*, 220(2):617–648, 2017.
19. The Hanf number for amalgamation of coloring classes (with Alexei Kolesnikov). *The Journal of Symbolic Logic*, 81(2):570–583, 2016.
20. Bounded stationary reflection (with James Cummings). *Proceedings of the American Mathematical Society*, 144(2):861–873, 2016.
21. Good and bad points in scales. *Archive for Mathematical Logic*, 53:749–777, 2014.
22. Covering matrices and squares. *Annals of Pure and Applied Logic*, 165(2):673–694, 2014.
23. Evidence for the microscopic formation of mixed-symmetry states from magnetic moment measurements (V. Werner *et al*). *Physical Review C* **78,** 031301(R), 2008.

Submitted Journal Articles

1. Knaster and Friends III: Subadditive colorings (with Assaf Rinot).
2. Higher-dimensional Delta-systems.
3. A note on highly connected and well-connected Ramsey theory.
4. Cohomology of the ordinals I: Basic theory and consistency results (with Jeffrey Bergfalk).
5. Robust reflection principles.
6. Individual Choice in the Presence of Shared Risk (with Timothy Lambie-Hanson).

Workshop Proceedings

- On the strengths and weaknesses of weak squares (with Menachem Magidor). *Appalachian Set Theory: 2006-2012*. Cambridge University Press, 2012.

Awards

- Coleman-Soref Postdoctoral Fellowship at Bar-Ilan University, 2016-18
- Golda Meir Postdoctoral Fellowship at Hebrew University of Jerusalem, 2015-16
- Lady Davis Postdoctoral Fellowship at Hebrew University of Jerusalem, 2014-15
- Travel grant from the Association for Symbolic Logic to attend the Sixth Young Set Theory Workshop, 2013.
- Deforest Senior Mathematical Prize for proficiency in pure and applied mathematics, Yale University, 2009.
- Anthony D. Stanley Memorial Prize for excellence in pure and applied mathematics, Yale University, 2008.

Presentations

Conference Presentations

1. Strongly unbounded colorings. **Kobe Set Theory Workshop on the occasion of Sakaé Fuchino's retirement** Kobe, Japan, March 2021 (held virtually due to COVID-19).
2. Nontrivial coherent families of functions. **Southeastern Logic Symposium (SEALS)** University of Florida, February 2021 (held virtually due to COVID-19).
3. Pseudo-Prikry sequences. **Prikry Forcing Online** University of East Anglia, December 2020 (held virtually due to COVID-19).
4. Highly connected Ramsey theory. **RIMS Set Theory Workshop**. Kyoto, Japan, November 2020 (held virtually due to COVID-19).
5. Finite subgraphs of uncountable graphs. **AMS Sectional Meeting: Special Session on Recent Advances in Graph Theory and Combinatorics**. Charlottesville, Virginia, March 2020 (cancelled due to COVID-19).
6. Simultaneously vanishing higher derived limits. **Set Theory of the Reals CMO-BIRS Workshop**. Oaxaca, August 2019.
7. Unbounded functions and the C-sequence number. **SETTOP 2018**. Novi Sad, Serbia, July 2018.
8. Unbounded functions and infinite productivity of the Knaster property. **Set Theory, Model Theory and Applications**. Eilat, April 2018.
9. Squares, ascent paths, and chain conditions. **AMS-ASL Special Session on Set Theory, Logic and Ramsey Theory**. JMM, San Diego, January 2018.
10. Reflections on graph coloring. **MAMLS Logic Friday**. New York, October 2017.
11. Constructions from squares and diamonds. **6th European Set Theory Conference** (Contributed talk). Budapest, July 2017.
12. Pseudo-Prikry sequences. **Arctic Set Theory 3**. Kilpisjärvi, Finland, January 2017.

13. Squares, stationary reflection, and incompactness. **Young researcher's Seminar week**. Centre de Recerca Matemàtica, Barcelona, November 2016.
14. Square sequences and simultaneous stationary reflection. **SETTOP 2016**. Fruška Gora, Serbia, June 2016.
15. Robust reflection principles. **ASL Winter Meeting** (Contributed talk). Seattle, January 2016.
16. Patterns of stationary reflection. **Winter School in Abstract Analysis** (Set Theory & Topology Section). Hejnice, Czech Republic, February 2015
17. Bounded stationary reflection. **Graduate Student Conference in Logic**. University of Wisconsin, Madison, April 2014
18. Intermediate square principles (discussion section). **Young Set Theory Workshop 2013**. Oropa, Italy, June 2013
19. Intermediate square principles. **New York Graduate Student Logic Conference 2013**. CUNY Graduate Center, April 2013

Seminar Presentations

1. Higher dimensional Delta-systems. **Cornell University Logic Seminar** December 2020.
2. Set theoretic compactness and homological algebra. **VCU Analysis, Logic, and Physics Seminar**. August 2020.
3. Finite subgraphs of uncountable graphs. **CMU Mathematical Logic Seminar**. April 2020.
4. Finite subgraphs of uncountable graphs. **Rutgers Logic Seminar**. February 2020.
5. Set theoretic compactness and higher derived limits. **CUNY Set Theory Seminar**. January 2020.
6. Set theoretic compactness and higher derived limits. **Toronto Set Theory Seminar at the Fields Institute**. November 2019.
7. Finite subgraphs of uncountable graphs. **VCU Discrete Mathematics Seminar**. October 2019.
8. Finite subgraphs of uncountable graphs. **UNAM-Morelia Set Theory and Topology Seminar**. May 2019.
9. Chromatic numbers of finite subgraphs. **Research Seminar at the Kurt Gödel Research Center**. March 2019.
10. The C-sequence number. **CUNY Set Theory Seminar**. March 2019.
11. Uncountable triangle-free graphs. **VCU Discrete Mathematics Seminar**. December 2018.
12. Compactness and incompactness in set theory. **VCU Analysis, Logic, and Physics Seminar**. August 2018.
13. Chang's Conjecture, club-increasing sequences, and $\mathbb{P}_{\max}$ forcing. **Bar-Ilan University Set Theory Seminar**. May–June 2018.
14. A forcing axiom deciding the generalized Souslin Hypothesis. **Carnegie Mellon Mathematical Logic Seminar**. October 2017.
15. A forcing axiom deciding the generalized Souslin Hypothesis. **Miami University Set Theory Seminar**. September 2017.
16. Constructions from square and diamond, with an application to super-Souslin trees. **Oberseminar mathematische Logik, University of Bonn**. May 2017.

17. Reflections on the coloring and chromatic numbers. **University of Helsinki Logic Seminar**. April 2017.
18. Partition relations and generalized scattered orders. **Bar-Ilan University Set Theory Seminar**. March 2017.
19. Trees with ascent paths. **Hebrew University of Jerusalem Logic Seminar**. March 2017.
20. Reflections on the coloring and chromatic numbers. **Hebrew University of Jerusalem Logic Seminar**. January 2017.
21. Club-increasing sequences, Chang's conjecture, and pseudo-Prikry sequences. **Hebrew University of Jerusalem Logic Seminar**. June 2016.
22. Robust reflection principles. **Cornell University Logic Seminar**. September 2015.
23. Coloring classes and the Hanf number for amalgamation. **Ben Gurion University Logic, Set Theory, and Topology Seminar**. March 2015.
24. Coloring classes and amalgamation. **Ariel University Seminar on Algorithms, Combinatorics, Graph Theory and Algebra**. December 2014.
25. Bounded stationary reflection. **Hebrew University of Jerusalem Students' Set Theory Seminar**. December 2014.
26. Well-colorings and the Hanf number for amalgamation. **Bar-Ilan University Infinite Combinatorics Seminar**. November 2014.
27. Jonsson cardinals, partition relations, and stationary reflection. (3 parts) **CMU Mathematical Logic Seminar**. February-March 2014.
28. The transfinite subway and closure properties of uncountable cardinals. **CMU Mathematical Sciences Graduate Student Seminar**. January 2014.
29. The wonderful world of singular cardinals. **CMU Mathematical Sciences Graduate Student Seminar**. September 2013.
30. Covering matrices and squares. (2 parts) **CMU Mathematical Logic Seminar**. October 2012.
31. The chromatic number of the plane: an unfinished conversation in two acts. **CMU Mathematical Sciences Graduate Student Seminar**. August 2012.
32. The continuum hypothesis, the axiom of choice, and Lebesgue measurability. **CMU Mathematical Sciences Graduate Student Seminar**. October 2011.
33. A mathematical investigation of juggling. **CMU Mathematical Sciences Graduate Student Seminar**. November 2010.

Teaching Experience

Virginia Commonwealth University

Spring 2021 MATH 697: Directed Research

Fall 2020 MATH 409-001: Topology
MATH 201-004: Calculus with Analytic Geometry II

Fall 2019 MATH 201-001: Calculus with Analytic Geometry II
MATH 201-008: Calculus with Analytic Geometry II

Fall 2018 MATH 300-001: Introduction to Mathematical Reasoning
MATH 201-001: Calculus with Analytic Geometry II

UC Irvine

Summer 2016 Graduate Summer School in Set Theory

Carnegie Mellon University

Instructor

Summer 2014 Calculus in Three Dimensions

Summer 2013 Differential and Integral Calculus

Summer 2012 Spectral Graph Theory Undergraduate Reading Course
Differential and Integral Calculus

Teaching Assistant

Calculus in Three Dimensions (5 semesters)
Concepts of Mathematics (2 semesters)
Integration, Differential Equations, and Approximation (1 semester)
Introduction to Ordinary Differential Equations (1 semester)
Differential Equations (1 semester)

Other Teaching Activities

Spring 2020 I helped design and implement a series of lessons and activities on mathematical logic and theoretical computer science for middle- and high school students in the VCU Math Circle.

Fall 2019 and Fall 2020 I served as a site tester for TRIUMPHS (TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources), an NSF-funded project aimed at the design and implementation of lessons and projects using primary historical sources in mathematics courses.

Professional service

- Referee for *Advances in Mathematics*, *Israel Journal of Mathematics*, *Forum of Mathematics: Sigma*, *The Journal of Symbolic Logic*, *Annals of Pure and Applied Logic*, *Fundamenta Mathematicae*, *Discrete Mathematics*, *Mathematical Logic Quarterly*, *Archive for Mathematical Logic*, *Acta Mathematica Hungarica*, and *European Journal of Mathematics*.
- Reviewer for *Mathematical Reviews*.

Other

- Author of the *Point at Infinity* blog: pointatinfinityblog.wordpress.com
- Avid pianist, juggler, and bridge player.