

Corey Bacal Switzer

Curriculum Vitæ

Education

- September 2020 **PhD, Mathematics**, *The Graduate Center, the City University of New York*, New York, NY, USA
- May 2016 **Masters 2 in Mathematical Logic and Foundations of Computer Science**, *L'Université de Paris 7, Denis Diderot*, Paris, France
- May 2015 **Masters 1 in Logic**, *L'Université de Paris 1, Panthéon-Sorbonne*, Paris, France
- May 2014 **B.A. in Math and Philosophy**, *Trinity College*, Dublin, Ireland

Employment

- November 2023– Present **Senior Postdoctoral Researcher**, *University of Vienna, Faculty of Mathematics*, PI of FWF Grant Number ESP 548-N
- January 2021 – October 2023 **Postdoctoral Researcher**, *University of Vienna, Faculty of Mathematics and Vienna University of Technology*, Supported by FWF Grant Numbers Y1012-N35 and I4513
- Autumn 2020 **Lecturer**, *Hunter College, CUNY*, New York, NY, USA

Research interests

Mathematical Logic and Set Theory: cardinal characteristics, iterated forcing, and their applications in topology, analysis and combinatorics; model theory of arithmetic

Notable Research Achievements: First nontrivial upperbound on \mathfrak{u} (with Cancino and Fischer), independence of axiomatizability of Kaufmann models - relating to Hodges' 1980 Problem in models of PA, consistency of SCFA with \square_{ω_1} (with Sakai), computation of the cardinal characteristics of the special tree model, elimination of "hulls condition" in subversion forcing arguments (with Fuchs), properness preservation theorem for independent families (with Fischer).

5 Most Important Publications

Currently I have 11 articles in highly respected, peer reviewed publications with several more under review and in final stages of completion. Link to all publications: <https://coreyswitzer.wordpress.com/research/>

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1. Vera Fischer and Corey Bacal Switzer, Tight eventually different families, to appear in *The Journal of Symbolic Logic*, 1–27pp., (2023). doi: 10.1017/jsl.2023.9. arXiv:2104.11291
2. Corey Bacal Switzer, The special tree number, *Fundamenta Mathematicae*, 262: 129-151, (2023). doi: 0.4064/fm180-1-2023. arXiv: 2203.04186
3. Jeffrey Bergfalk, Vera Fischer and Corey Bacal Switzer, Projective well orders and coanalytic witnesses, *Annals of Pure and Applied Logic*, 173(8): 103135, (2022). doi: 10.1016/j.apal.2022.103135. arXiv:2106.15359
4. Jörg Brendle and Corey Bacal Switzer, Higher dimensional cardinal characteristics for sets of functions II, to appear in *The Journal of Symbolic Logic*, 1–22pp., (2022). doi:10.1017/jsl.2022.18. arXiv:2107.05947
5. Corey Bacal Switzer, Destructibility and axiomatizability of Kaufmann models, *Archive for Mathematical Logic*, 61: 1091–1111 (2022). doi: 10.1007/s00153-022-00826-6. arXiv:2008.13540

Teaching

My teaching has been highly praised by students and in departmental teaching reviews. In every course I have taught I have been the instructor of record, in charge of every aspect of the course including writing and delivering lectures, producing syllabi, meeting with students, and writing and grading exams and homework. Due to the pandemic I have experience teaching online and hybrid as well as fully in person. Here is a list of the courses I have taught by institution.

Winter **University of Vienna**, *Vienna*, Austria

2021-22 ○ **Special Topics in Set Theory** (Masters Level)

January 2018 **Hunter College, CUNY**, *New York City, NY*, USA

– December ○ **Calculus with Analytic Geometry** (x 10)

2020 ○ **Precalculus** (x 2)

○ **Mathematical Proofs**

Fall 2020 **Bard High School Early College**, *New York City, NY*, USA

○ **College Mathematics Seminar**

○ Bard High School Early College is a collaboration between Bard College (NY, USA) and the NYC department of education offering college level courses to advanced high school students.

Recent Selected Conference Talks

- *Separating Subversion Forcing Principles Arctic Set Theory* 2023, University of Helsinki (February 2023) (**Invited**)
- *Ideal Independence and Filters* German Mathematical Society in Berlin, DMV Annual Meeting (September 2022) (**Invited**)
- *The Special Tree Number* University of Turin, European Set Theory Society Meeting (July 2022)

- *Ideal Independence and the Ultrafilter Number* University of Vienna, 36th Annual Summer Topology Conference, (July 2022)
- *Higher Dimensional Cardinal Characteristics for Sets of Functions on Baire Space* University of Kyoto, Japan, RIMS Set Theory Workshop 2021, (November 2021)
- *Projective Well Orders of the Reals and Coanalytic Witnesses to Cardinal Characteristics*, CIRM Marseille Luminy, 16th International Luminy Workshop in Set Theory (September 2021) (**Invited**)
- *Cardinal Characteristics for Sets of Functions*, University of Kobe, Japan (November 2019) (**Invited**)

Recent Selected Seminar Talks

- *Definability of Galois-Tukey Connections*, Harvard University, Guest Lecture (April 2023)
- *The Special Tree Number*, Rutgers University, Rutgers Logic Seminar (October 2022)
- *Axiomatizing Kaufmann Models of Arithmetic in Strong Logics*, University of Vienna, KGRC Logic Colloquium (May 2022)
- *Projective Well Orders and Other Beautiful Pathologies* CUNY Graduate Center, CUNY Set Theory Seminar (November 2021)
- *Higher Dimensional Cardinal Characteristics for Sets of Functions*, University of Toronto, Toronto Set Theory Seminar (January 2021)
- *Some Set Theory of Kaufmann Models*, University of Oxford, Oxford Set Theory Seminar (June 2020)

Additional research achievements

1. PI of Austrian Science Fund (FWF) ESPRIT Grant, number ESP 548-N (€316,036.52 over 3 years)
2. CUNY Mathematics Fellowship, 5 Year Fully Funded PhD contract, CUNY Graduate Center, Fall 2016-Fall 2020 (\$255,000.00 over 5 years, 5th year declined due to finishing early)
3. Austrian Forschungsförderungsgesellschaft Career Grant, awarded to help talented young researchers relocate to Austria
4. Doctoral Students Research Grant, Awarded for the project *Forcing Axioms Compatible with CH*, CUNY Graduate Center, June 2019- June 2020
5. Invited Talk at the 6th Arctic Set Theory Conference, Kilpisjärvi, Finland, February 2023
6. Invited Talk at the Annual German Mathematical Society Meeting in Berlin, September 2022
7. Invited Talk at the 16th International Luminy Workshop in Set Theory, September 2021
8. Invited Talk at the Journées des Arithmétiques Faibles in New York City, USA, May 2019
9. Invited Research Visit to the University of Kobe, Japan, November 2019
10. Invited Research Visit to University College, Oxford, UK January 2019
11. Invited Research Visit to the University of Pennsylvania, USA, April 2019

Service

- Local Organizing Committee for the conference *Set Theory at the Erwin Schrödinger Institute*, Vienna 2022

- Referee for *Proceedings of the American Mathematical Society*, *The Journal of Symbolic Logic*, *Mathematical Logic Quarterly* and Conference Proceedings of the 16th Asian Logic Conference.
- Reviewer for *Mathematical Reviews*, American Mathematical Society
- Co-organizer (with V. Gitman), **Set Theory Seminar**, The Graduate Center, CUNY. Fall 2018–January 2021.
- Co-organizer (with G. Fuchs and V. Gitman), CUNY Spring Fling Set Theory Conference, an NSF funded conference to be held at CUNY April 22-24, 2020. CANCELED due the Coronavirus Pandemic.
- Organizer, **Student Set Theory Seminar**, The Graduate Center, CUNY. Fall 2018.

Languages

Fluent **English**

Fluent **French**

A2.2 Level **German**

References

- **Jörg Brendle**, Professor of Mathematics, Graduate School of Information Sciences
University of Kobe
Email: brendle@kobe-u.ac.jp
- **Vera Fischer**, Assistant Professor, Faculty of Mathematics
University of Vienna
Email: vera.fischer@univie.ac.at
- **Gunter Fuchs**, Professor in Mathematics
The Graduate Center and the College of Staten Island, CUNY
Email: gunter.fuchs@gmail.com
- **Joel David Hamkins**, O'Hara Professor of Philosophy and Mathematics
University of Notre Dame
Email: jdhamkins@nd.edu
- (For Teaching) **Ilya Kapovich**, Professor of Mathematics
Hunter College, CUNY
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- **Roman Kossak**, Professor Emeritis of Mathematics
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