Miha E. Habič

Department of Theoretical Computer Science
Faculty of Information Technology
Czech Technical University in Prague
Thákurova 9, 160 00 Prague 6
Czech Republic

and

Department of Logic
Faculty of Arts
Charles University
Celetná 20, 116 42 Prague 1
Czech Republic

e-mail: habicm@ff.cuni.cz
website: https://mhabic.github.io

Academic positions

- Postdoctoral researcher, Czech Technical University in Prague, September 2018–present.
  Postdoc on OP VVV grant CZ.02.2.69/0.0/0.0/16_027/0008465: International Mobility of Researchers ČVUT.
- Postdoctoral researcher, Charles University, August 2017–present.
  Postdoc on FWF–GAČR grant 17-33849L: Filters, Ultrafilters and Connections with Forcing.

Education

- PhD in Mathematics, The Graduate Center, CUNY, June 2017.
  Advisor: Joel David Hamkins
  Thesis title: Joint Laver diamonds and grounded forcing axioms
- MSc in Mathematics, Faculty of Mathematics and Physics, University of Ljubljana, 2012.
- BSc in Mathematics, Faculty of Mathematics and Physics, University of Ljubljana, 2010

Research interests

Mathematical logic and set theory, particularly large cardinals, their interaction with forcing, and forcing axioms; the structure of forcing extensions and countable models of set theory; infinitary combinatorics, ultrafilters and large-cardinal measures; computability theory; set-theoretic topology.

Publications

[1] M. E. Habič and R. Honzík, *Capturing sets of ordinals by normal ultrapowers*, submitted, 2019.

[2] M. E. Habič, J. D. Hamkins, L. D. Klausner, J. Verner, and K. J. Williams, *Set-theoretic blockchains*, Arch. Math. Logic (2019), doi:10.1007/s00153-019-00672-z.

[3] M. E. Habič, *Joint diamonds and Laver diamonds*, accepted to J. Symb. Log., arXiv:1708.02145 [math.LO], 2017.

[4] M. E. Habič, *The grounded Martin's axiom*, MLQ Math. Log. Q. **63** (2017), no. 5, 437–453. MR 3748486

[5] E. Carmody, V. Gitman, and M. E. Habič, *A Mitchell-like order for Ramsey and Ramsey-like cardinals*, accepted to Fund. Math., arXiv:1609.07645 [math.LO], 2016.

[6] M. E. Habič, *Cardinal-recognizing infinite time Turing machines*, The nature of computation. CiE 2013, Milan. Proceedings, Lecture Notes in Comput. Sci., vol. 7921, Springer, Heidelberg, 2013, pp. 231–240. MR 3102023

[7] M. E. Habič, *Joint Laver diamonds and grounded forcing axioms*, Phd thesis, The Graduate Center, CUNY, 2017.

[8] M. E. Habič and J. Verner, *Surgery on Cohen reals*, in preparation, 2019.

Honors, Awards and Grants

- Doctoral student research grant, The Graduate Center, CUNY, 2015–2016
- Enhanced chancellor's fellowship, The Graduate Center, CUNY, 2014–2017
- Science fellowship, The Graduate Center, CUNY, 2012–2014
- Ad Futura scholarship, Slovenian government, 2012–2017
- Faculty Prešeren prize for outstanding thesis, University of Ljubljana, 2012

Teaching experience

- Graduate teaching fellow, Hunter College, CUNY, 2014–2017.

  Introduction to mathematical proofs, Math 15600 (Spring 2015, Summer 2016, Spring 2017)
  I was the principal instructor, solely responsible for the course. I composed the syllabus, including the selection of particular topics aimed at developing the students' understanding of a mathematical proof and its structure. I developed a grading policy, prepared all lectures and course materials, assigned homework, designed all exams and graded them. I held regular office hours and made all final grading decisions regarding my students.

  Precalculus, Math 12500 (Fall 2014, Fall 2015, Spring 2016, Fall 2016)
  I was the principal instructor, solely responsible for the course. I prepared all lectures and course materials, assigned homework, designed all midterm exams, and was fully responsible for all grading, including the final grade decisions. I held regular office hours. I was also asked to write recommendation letters for a few of my better students, and was glad to do so.

- Graduate teaching assistant, Faculty of Mathematics and Physics, University of Ljubljana, 2011–2012.
  I worked with faculty to supplement the introductory courses by holding weekly problem sessions for a small group of students and grading their homework. My assigned subjects were basic real analysis, linear algebra and topology of metric spaces.

Professional service

- Referee/reviewer for: Fundamenta Mathematicae, Mathematical Reviews, Cambridge University Press.
- Coorganizer (with V. Gitman) of the CUNY Set Theory seminar, 2015–2017.
- Coorganizer (with K. Minden and K. Williams) of the CUNY Student Set Theory seminar, 2013–2017.

Conference talks

- *Some results on ultrapower capturing*, Winter School in Abstract Analysis 2019, Hejnice, January 2019.
- *Embedding posets into the set-generic multiverse*, Forcing Project Networking Conference, Konstanz, September 2018.

- *Nonamalgamation in the generic multiverse*, Novi Sad Conference in Set Theory and General Topology, Novi Sad, July 2018.
- *Surgery and nonamalgability for Cohen reals*, Winter School in Abstract Analysis 2018, Hejnice, January 2018.
- *Restricting forcing axioms to ground models*, 6th European Set Theory Conference, Budapest, July 2017.
- *A Mitchell-like order for Ramsey cardinals*, 2017 Joint Mathematics Meetings, Atlanta, January 2017.
- *The grounded Martin's axiom*, NY Graduate Student Logic Conference, The Graduate Center, CUNY, May 2016.
- *Joint Laver diamonds*, Set Theory Day, The Graduate Center, CUNY, March 2016.
- *Joint Laver diamonds*, BEST 2015, San Francisco State University, June 2015.
- *Restricting Martin's axiom to a ccc ground model*, 2014 ASL Logic Colloquium, Vienna University of Technology, July 2014.
- *Restricting Martin's axiom to a ccc ground model*, 2014 Joint Mathematics Meetings, Baltimore, January 2014.
- *Cardinal-recognizing infinite time Turing machines*, Computability in Europe 2013, Milan, July 2013.

Seminar talks (by venue)

Charles University, Set theory seminar

- *The ultrapower capturing property (parts I & II)*, January 2019.
- *Surgery and generic coding*, October 2018.
- *Amalgamability between Cohen extensions*, March 2018.
- *Joint guessing principles*, November 2017.
- *The grounded Martin's axiom*, September 2017.

Kurt Gödel Research Center, Research seminar

- *Capturing powersets by ultrapowers*, March 2019.

Rutgers University, Logic seminar

- *The grounded Martin's axiom*, April 2016.

Virginia Commonwealth University, Analysis, logic and physics seminar

- *Some guessing principles in set theory*, April 2016.
- *Cardinal-recognizing infinite time Turing machines*, March 2014.

University of Ljubljana, Seminar for mathematical foundations

- *Infinite time Turing machines*, December 2012.
- multi-part tutorial on forcing, March 2012.

The Graduate Center, CUNY, Set theory seminar

- *Surgery and generic coding*, October 2018.
- *Tukey classes of complete ultrafilters*, May 2018.
- *Bukovský's theorem on forcing extensions*, November 2016.
- *The Mitchell order for Ramsey cardinals*, October 2015.

- *Constructing joint diamonds from a single diamond*, May 2015.
- *Joint Laver diamonds*, September 2014.
- *The consistency strength of PFA for posets preserving* $\aleph_2$ *or* $\aleph_3$, March 2014.
- *Grounded Martin's axiom*, November 2013.