

# Michael J. Lieberman

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## CONTACT INFORMATION

Masaryk University  
Department of Mathematics and Statistics  
Kotlářská 2, Building 8  
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## RESEARCH INTERESTS

Mathematical logic and applications: model theory of non-elementary classes, abstract model theory, universal algebra, categorical logic, logics of rational agency.

## EMPLOYMENT

**Brno University of Technology**, Department of Mathematics  
*Assistant Professor*, September 2018-present  
**Masaryk University**, Department of Mathematics and Statistics  
*Postdoctoral Researcher*, September 2014-August 2019.  
**Kalamazoo College**, Department of Mathematics, Physics, and Computer Science  
*Visiting Assistant Professor*, September 2013-August 2014  
**University of Pennsylvania**, Department of Mathematics  
*Lecturer*, January-July 2013  
**Masaryk University**, Department of Mathematics and Statistics  
*Visiting Researcher*, September-December 2012  
**University of Pennsylvania**, Department of Mathematics  
*Lecturer*, September 2009-July 2012

## EDUCATION

**University of Michigan, Ann Arbor**, Department of Mathematics  
Ph.D. in Mathematics, August 2009  
Thesis: "Topological and category-theoretic aspects of abstract elementary classes."  
Advisor: Andreas Blass  
**Reed College**, Mathematics Department  
B.A. in Mathematics, May 2003  
Thesis: "Fibration representations of the lambda calculus."

## PUBLICATIONS

1. *Category-theoretic aspects of abstract elementary classes*, *Annals of Pure and Applied Logic* **162**(11), pp. 903-915 (2011).
2. *A topology for Galois types in abstract elementary classes*, *Mathematical Logic Quarterly* **57**(2), pp. 204-216 (2011).
3. *Ranks and partial stability spectra for tame abstract elementary classes*, *Notre Dame Journal of Formal Logic* **54**(11), pp. 153-166 (2013).
4. (With J. Rosický) *Limits of abstract elementary classes*, *Theory and Applications of Categories* **30**(48), pp. 1647-1658 (2015).
5. (With J. Rosický) *Classification theory for accessible categories*, *Journal of Symbolic Logic* **81**(1), pp. 151-165 (2016).
6. (With W. Boney, R. Grossberg, J. Rosický and S. Vasey)  *$\mu$ -Abstract Elementary Classes and other generalizations*, *Journal of Pure and Applied Algebra* **220**(9),

pp. 3048-3066 (2016).

7. (With J. Rosický) *Metric abstract elementary classes as accessible categories*, Journal of Symbolic Logic **82**(3), pp. 1022-1040 (2017).
8. (With J. Rosický) *Hanf numbers via accessible images*, Logical Methods in Computer Science **13**(2:11), pp. 1-15 (2017).
9. (With J. Rosický and S. Vasey) *Universal abstract elementary classes and locally multipresentable categories*, Proceedings of the AMS **147**(3), pp. 1283-1298 (2019).
10. (With J. Rosický and S. Vasey) *Internal sizes in  $\mu$ -abstract elementary classes*. Journal of Pure and Applied Algebra, **223**(10), pp. 4560-4582 (2019).
11. (With J. Rosický and S. Vasey) *Forking independence from the categorical point of view*, Advances in Mathematics **346**, pp. 719-772 (2019).
12. (With J. Rosický and S. Vasey) *Sizes and filtrations in accessible categories*. To appear in *Israel Journal of Mathematics*. arXiv:1902.06777.

## PREPRINTS

13. (With J. Rosický) *Approximations of superstability in concrete accessible categories*. Preprint. arXiv:1505.06047.
14. *A category-theoretic characterization of almost measurable cardinals*. Submitted. arXiv:1809.05953.
15. (With J. Rosický and P. Zambrano) *Tameness in generalized metric structures*. Submitted. arXiv:1810.02317.
16. (With W. Boney) *Tameness, powerful images, and large cardinals*. Submitted. arXiv:1902.10212.
17. (With J. Rosický and S. Vasey) *Weak factorization systems and stable independence*. Submitted. arXiv:1904.05691.

## SELECTED TALKS (INVITED)

- Completeness, Incompleteness, and Independence* (Lecture series)  
American University of Beirut/CAMS, Beirut, February 2019
- Extensions of ZFC through the lens of accessible categories*  
Accessible categories and their connections, Leeds, July 2018
- Nonforking for the rest of us*  
Charles University Algebra Seminar, May 2017
- Bootstrapping structural properties, via accessible images*.  
Louise Hay Logic Seminar, University of Illinois at Chicago, December 2016
- Generalizing abstract model theory, with an eye toward applications*  
Arbeitstagung Allgemeine Algebra 91, February 2016  
Brno/Prague Algebra Workshop, May 2015
- Foundations of categorical model theory*  
Prague Gathering of Logicians, February 2015
- Toward a categorical model theory*  
Joint Mathematics Meetings-San Antonio, January 2015
- Classification theory for accessible categories*  
Charles University Algebra Seminar, November 2014  
Louise Hay Logic Seminar, University of Illinois at Chicago, March 2014

*What is (abstract) model theory?*

Comenius University Mathematics Seminar, December 2012

*Categorical abstract model theory*

Charles University Algebra Seminar, November 2012

SELECTED TALKS  
(CONTRIBUTED)

*Weak factorization systems and stable independence*

Logic Colloquium 2019, Prague, August 2019.

Makkai 80th Birthday Conference, Budapest, June 2019.

*Tameness, compactness, and cocompleteness*

CLMPST 16, Prague, August 2019.

*A category-theoretic characterization of almost measurable cardinals*

Eduard Čech Institute Workshop, Třešť, October 2018.

*Set-theoretic pathologies in accessible categories*

ASL Logic Colloquium 2017, Stockholm, August 2017

*Bootstrapping structural properties, via accessible images*

6th European Set Theory Meeting, Budapest, July 2017

*Hanf numbers for amalgamation and joint embedding in accessible categories*

Eduard Čech Institute Workshop, Telč, October 2016

*Abstract tameness from large cardinals, via accessible categories*

ASL Logic Colloquium 2016, Leeds, August 2016

*Metric AECs as accessible categories*

Eduard Čech Institute Workshop, Třešť, October 2015

ASL Logic Colloquium 2015, Helsinki, August 2015

*I know you know, but do you know I know you know?*

Kalamazoo College Math Seminar, March 2014

*What is model theory, and why do we care?*

Kalamazoo College Math Seminar, November 2013

TEACHING  
EXPERIENCE

**Brno University of Technology:**

Mathematics 1A; Fall 2018.

Mathematical Logic, SML-A; Winter 2019.

**Masaryk University:**

As primary instructor:

Model Theory/Teorie modelů (MATH 9260); Fall 2017.

As recitation instructor:

Topology/Topologie (MATH 6140); Spring 2016, Spring 2017.

Category Theory/Teorie kategorií (MATH 7150); Fall 2016.

**Kalamazoo College**

Calculus I With Review, Part I (MATH 110); Fall 2013

Calculus I With Review, Part II (MATH 111); Winter 2014

Calculus I (MATH 112); Fall 2013, Spring 2014  
Calculus II (MATH 113); Winter 2014, Spring 2014

### **University of Pennsylvania**

Undergraduate:

Calculus I (MATH 103); Fall 2010  
Calculus II (MATH 104); Fall 2011  
Proving Things: Analysis (MATH 202); Fall 2011  
Calculus III: Vector calculus, ODEs (MATH 240); Spring 2013, Summer 2013  
Calculus IV: Fourier analysis, PDEs (MATH 241); Fall 2009  
Linear Algebra (MATH 312); Fall 2010, Spring 2012.  
Computational Linear Algebra (MATH 313/513); Spring 2010  
ODEs with linear algebra (MATH 420); Fall 2009, Summer 2012

Graduate:

Computational Linear Algebra (MATH 313/513); Spring 2010  
Classical Model Theory (MATH 571/671, Phil 412); Spring 2011

### **University of Michigan:**

As primary instructor:

Precalculus (MATH 105); Fall 2003, Winter 2004  
Calculus I (MATH 115); Fall 2004  
Calculus II (MATH 116); Winter 2005, Winter 2006

As recitation instructor:

Multivariable Calculus (MATH 215); Fall 2005, Winter 2007, Fall 2007, Fall 2008  
Differential Equations (MATH 216); Fall 2006

### **PROFESSIONAL SERVICE**

Organizing committee, Peripatetic Seminar on Sheaves and Logic 103  
Referee, Proc. of the AMS, Ann. of Pure and Appl. Log., J. of Math. and Music  
Referee, Swiss National Science Foundation (SNF), Doctoral Grant application  
Reviewer, AMS Math Reviews

University of Pennsylvania:

Member, Ph.D. Preliminary Exam Committee (2011-2012)  
Member, Math Minor Advising Committee (2009-2012)

University of Michigan:

Math Placement Advisor, Orientation 2008  
Math Department Representative, Rackham Graduate Forum (2004-2005)

### **AWARDS AND HONORS**

Association for Symbolic Logic Student Travel Grant (2008, 2010)  
Outstanding Graduate Student Instructor Award (University of Michigan, 2008)  
Departmental Fellowships (University of Michigan, 2004-2007)  
Phi Beta Kappa, Reed College (2003)  
Hawley and Dorothy Bloomquist Scholarship, Reed College (2002-2003)

## LANGUAGES

English (fluent), French (moderate), Czech (moderate, ECRF B1/B2), Mandarin (basic).

## REFERENCES

Andreas Blass	ablass@umich.edu
Jiří Rosický	rosicky@math.muni.cz
John Baldwin	jbaldwin@math.uic.edu
Rami Grossberg	rami@cmu.edu
John Fink	john.fink@kzoo.edu (teaching)
Robin Pemantle	pemantle@math.upenn.edu (teaching)
Stephen DeBacker	smdbackr@umich.edu (teaching)