

Michael J. Lieberman, Ph.D.

CONTACT INFORMATION

Brno University of Technology
Department of Mathematics
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RESEARCH INTERESTS

Mathematical logic, category theory and applications: model theory of nonelementary classes, categorical model theory, accessible categories, large cardinal properties.

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.
External Researcher, September 2021-present
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). (**AI**S 0,549, **Q2**)
2. *A topology for Galois types in abstract elementary classes*, Mathematical Logic Quarterly **57**(2), pp. 204-216 (2011). (**AI**S 0,509, **Q3**)
3. *Ranks and partial stability spectra for tame abstract elementary classes*, Notre Dame Journal of Formal Logic **54**(11), pp. 153-166 (2013). (**AI**S N/A, **historically Q3**)
4. (With J. Rosický) *Limits of abstract elementary classes*, Theory and Applications of Categories **30**(48), pp. 1647-1658 (2015). (**AI**S 0,645, **Q3**)
5. (With J. Rosický) *Classification theory for accessible categories*, Journal of Symbolic Logic **81**(1), pp. 151-165 (2016). (**AI**S 0,772, **Q2**)
6. (With W. Boney, R. Grossberg, J. Rosický and S. Vasey) *μ -Abstract Elementary*

- Classes and other generalizations*, Journal of Pure and Applied Algebra **220**(9), pp. 3048-3066 (2016). (**AI**S 0.715, Q2)
7. (With J. Rosický) *Metric abstract elementary classes as accessible categories*, Journal of Symbolic Logic **82**(3), pp. 1022-1040 (2017). (**AI**S 0.808, Q2)
 8. (With J. Rosický) *Hanf numbers via accessible images*, Logical Methods in Computer Science **13**(2:11), pp. 1-15 (2017). (**AI**S 0.370, Q3)
 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). (**AI**S 0.799, Q2)
 10. (With J. Rosický and S. Vasey) *Internal sizes in μ -abstract elementary classes*. Journal of Pure and Applied Algebra, **223**(10), pp. 4560-4582 (2019). (**AI**S 0.813, Q2)
 11. (With J. Rosický and S. Vasey) *Forking independence from the categorical point of view*, Advances in Mathematics **346**, pp. 719-772 (2019). (**AI**S 1.920, D1)
 12. (With J. Rosický and S. Vasey) *Sizes and filtrations in accessible categories*, Israel Journal of Mathematics **238**(1), pp. 243-278 (2020). (**AI**S 1.077, Q2)
 13. *A category-theoretic characterization of almost measurable cardinals*. Proceedings of the AMS **148**(9), pp. 4065-4077 (2020). (**AI**S 0.901, Q2)
 14. (With L. Positselski, J. Rosický, and S. Vasey) *Cofibrant generation of pure monomorphisms*. Journal of Algebra **560**, pp. 1297-1310 (2020). (**AI**S 1.759, Q1)
 15. (With W. Boney) *Tameness, powerful images, and large cardinals*. Journal of Mathematical Logic **21**(1), 2021. doi.org/10.1142/S0219061320500245. (**AI**S 1.496, Q1)
 16. (With J. Rosický and S. Vasey) *Induced and higher-dimensional stable independence*. Annals of Pure and Applied Logic **173**(7), pp. 1-15 (2022). (**AI**S 0.702, Q2)
 17. (With J. Rosický and S. Vasey) *Cellular categories and stable independence*. Journal of Symbolic Logic **88**(2), pp. 811-834 (2023). (**AI**S N/A, historically Q2)
 18. (With J. Rosický and S. Vasey) *Hilbert spaces and C^* -algebras are not finitely concrete*. Journal of Pure and Applied Algebra **227**(4), 2023. (**AI**S N/A, historically Q2)
 19. (With J. Rosický and P. Zambrano) *Tameness in generalized metric structures*. Archive for Mathematical Logic **62**(3-4), pp. 531-558 (2023). (**AI**S N/A, historically Q3)

PREPRINTS

20. (With J. Rosický) *Approximations of superstability in concrete accessible categories*. Preprint. arXiv:1505.06047.

SELECTED TALKS (INVITED)

- Stable independence and higher amalgamation*
Categorical Logic and Higher Categories, Manchester, December 2024
- Abstract elementary classes and categories* (Tutorial)
WAECO: Workshop for Rami Grossberg's 70th birthday, Waco, June 2024
- Recent developments in categorical model theory: stable independence*
Peripatetic Seminar on Sheaves and Logic 106, Brno, May 2022
- Hilbert spaces and C^* -algebras are not finitely concrete*
Carnegie Mellon Model Theory Seminar (online), November 2021
- Recent developments in categorical model theory*
Southern Illinois University Logic Seminar (online), May 2021

Induced and higher-dimensional stable independence

Carnegie Mellon Model Theory Seminar (online), February 2021

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

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

Louise Hay Logic Seminar, University of Illinois at Chicago, March 2014

SELECTED TALKS
(CONTRIBUTED)

Hilbert spaces and C^ -algebras are not finitely concrete*

22nd Colloquiumfest, Prague, December 2019

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

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

TEACHING
EXPERIENCE

What is model theory, and why do we care?
Kalamazoo College Math Seminar, November 2013

Brno University of Technology:

Mathematics 1 (Calculus, Cz); Winters 2020, 2024.
Mathematics 1A (Calculus, Eng); Winters 2018-23.
Mathematics 2A (Multivariable, Eng); Summers 2019-23.
Mathematics 3A (ODEs, Eng); Winters 2021-24.
Graphs and Algorithms (Masters level, Eng); Winters 2023-24.
Mathematical Logic (Masters level, Eng); Summers 2020-24.
Mathematical Logic (Masters level, Cz); Summers 2020-24.

Masaryk University:

As primary instructor:

Model Theory (MATH 9260); Fall 2017.

As recitation instructor:

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

Category Theory (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	
SUPERVISION	Topics of doctoral projects (Brno University of Technology): New directions in set-theoretic accessible categories (ongoing).	
OTHER	Organizing committee, Peripatetic Seminar on Sheaves and Logic 103	
PROFESSIONAL	Referee: Journal of the London Mathematical Society, Notre Dame Journal of Formal Logic, Proceedings of the AMS, Annals of Pure and Applied Logic, Journal of Symbolic Logic, Journal of Mathematics and Music	
SERVICE	Referee, Swiss National Science Foundation (SNF) Doctoral Grant application Reviewer, AMS Math Reviews	
	Masaryk University: Doctoral examination committees (2019-2020)	
	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), Czech (moderate, ECRF B1/B2), French (moderate, ECRF A2/B1), 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)
	Stephen DeBacker	smdbackr@umich.edu (teaching)