Michael J. Lieberman

CONTACT
INFORMATION

Brno University of Technology
Department of Mathematics
Faculty of Mechanical Engineering
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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) *μ-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 μ-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*, Israel
Journal of Mathematics **238**(1), pp. 243-278 (2020).

13. *A category-theoretic characterization of almost measurable cardinals.* Proceedings of
the AMS **148**(9), pp. 4065-4077 (2020).

14. (With L. Positselski, J. Rosický, and S. Vasey) *Cofibrant generation of pure
monomorphisms.* Journal of Algebra **560**, pp. 1297-1310 (2020)

15. (With W. Boney) *Tameness, powerful images, and large cardinals.* Journal of
Mathematical Logic **21**(1), 2021. doi.org/10.1142/S0219061320500245.

PREPRINTS

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

17. (With J. Rosický and P. Zambrano) *Tameness in generalized metric structures.*
Submitted. arXiv:1810.02317.

18. (With J. Rosický and S. Vasey) *Cellular categories and stable independence.*
Submitted. arXiv:1904.05691.

19. (With J. Rosický and S. Vasey) *Hilbert spaces and C^*-algebras are not finitely
concrete.* Submitted. arXiv:1908.10200.

20. (With J. Rosický and S. Vasey) *Induced and higher-dimensional stable independence
concrete.* Submitted. arXiv:2011.13962.

SELECTED TALKS
(INVITED)

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

    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
Categorial abstract model theory
    Charles University Algebra Seminar, November 2012

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
    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 1 (Czech); Winter 2020.
    Mathematics 1A (Eng); Winter 2018, Winter 2019, Summer 2020.
    Mathematics 2A (Eng); Winter 2019, Summer 2020.

Mathematical Logic (Eng); Summer 2019, Summer 2020, Summer 2021.
Mathematical Logic (Cz); Summer 2020, Summer 2021.

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
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), 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)