# MICHAEL JOSEPH LIEBERMAN

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**CURRENT EMPLOYER:** Masaryk University | Brno, Czech Republic

**CURRENT POSITION:** *Postdoctoral Researcher* | Funded by the Eduard Čech Institute, based at the Department of Mathematics and Statistics, Algebra Group (September 2014-Present)

## EDUCATION AND TRAINING:

2009 — Doctor of Philosophy | Department of Mathematics, University of Michigan
PhD Thesis: *Topological and category-theoretic aspects of abstract elementary classes*
Advisor: Andreas Blass

2003 — Bachelor of Arts | Department of Mathematics, Reed College
Thesis: *Fibration representations of the lambda calculus*
Advisor: Thomas Wieting

## PRIOR APPOINTMENTS:

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| 8/2013-8/2014 | *Visiting Assistant Professor* \| Kalamazoo College |
| 9/2009-7/2013 | *Lecturer* \| University of Pennsylvania |
| 9/2012-12/2012 | *Visiting Researcher* \| Masaryk University |
| 9/2003-5/2009 | *Graduate Teaching Assistant* \| University of Michigan |

## PUBLICATIONS:

(An annotated list can be found at https://www.math.muni.cz/~lieberman/publications-abstracts.html.)

1. *Category-theoretic aspects of abstract elementary classes*, Annals of Pure and Applied Logic **162**(11):903-915 (2011).
2. *A topology for Galois types in abstract elementary classes*, Mathematical Logic Quarterly **57**(2):204-216 (2011).
3. *Ranks and partial stability spectra for tame abstract elementary classes*, Notre Dame Journal of Formal Logic **54**(11):153-166 (2013).
4. (With J. Rosický) *Limits of abstract elementary classes*, Theory and Applications of Categories **30**(48): 1647-1658 (2015).
5. (With J. Rosický) *Classification theory for accessible categories*, Journal of Symbolic Logic **81**(1):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):3048-3066 (2016).
7. (With J. Rosický) *Metric abstract elementary classes as accessible categories*, Journal of Symbolic Logic **82**(3): 1022-1040 (2017).
8. (With J. Rosický) *Hanf numbers via accessible images*, Logical Methods in Computer Science **13**(2:11):1-15 (2017).

## Preprints:

**9.** (with J. Rosický and S. Vasey) *Universal abstract elementary classes and locally multipresentable categories.* Submitted. arXiv:1707.09005.

**10.** (with J. Rosický and S. Vasey) *Internal sizes in $\mu$-abstract elementary classes.* Preprint. arXiv:1708.06782.

**11.** (with J. Rosický) *Approximations of superstability in concrete accessible categories.* In preparation. arXiv:1505.06047.

## Recent international conferences: (I): invited talk | (C): contributed talk

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| 2017 | Association of Symbolic Logic (ASL) Logic Colloquium, Stockholm<br>Title: *Set-theoretic pathologies in accessible categories* | (C) |
| | 6th European Set Theory Meeting, Budapest<br>Title: *Bootstrapping structural properties, via accessible images* | (C) |
| 2016 | ASL Logic Colloquium, Leeds<br>Title: *Abstract tameness from large cardinals, via accessible categories* | (C) |
| | Peripatetic Seminar in Sheaves and Logic (PSSL), Cambridge | |
| | Arbeitstagung Algemeine Algebra, Brno<br>Title: *Generalizing abstract model theory, with an eye toward applications* | (I) |
| 2015 | ASL Logic Colloquium, Helsinki<br>Title: *Metric AECs as accessible categories* | (C) |
| | Category Theory 2015, Aveiro | |
| | Prague Gathering of Logicians<br>Talk: *Foundations of categorical model theory* | (I) |
| | Joint Mathematics Meetings, San Antonio<br>Talk: *Toward a categorical model theory* | (C) |

## Recent seminar talks:

Charles University Algebra Seminar, Prague (2012, 2014, 2017)

Louise Hay Logic Seminar, University of Illinois at Chicago (2014, 2016)

Brno/Prague Algebra Workshop, Brno (2015, 2016)

Eduard Čech Institute Workshop, Telč/Třešť (2012, 2015, 2016)

Comenius University Algebra Seminar, Bratislava (2012)

## Expert assessments:

Referee, Proceedings of the American Mathematical Society

Referee, Annals of Pure and Applied Logic

Referee, Swiss National Science Foundation (SNF), Doctoral Grant application

Reviewer, AMS Math Reviews

Member, Ph.D. Preliminary Exam Committee for Matti Åstrand. University of Pennsylvania, 2012-13.

## Teaching experience: (L) primary lecturer | (R) recitation instructor | (C) course development

**Masaryk University:**

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| Model Theory/Teorie modelů (MATH 9260); Fall 2017. | (L) |
| Topology/Topologie (MATH 6140); Spring 2016, Spring 2017. | (R) |
| Category Theory/Teorie kategorií (MATH 7150); Fall 2016 | (R) |

**Kalamazoo College:**

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| Calculus I With Review, Part I (MATH 110); Fall 2013 | (L) (C) |
| Calculus I With Review, Part II (MATH 111); Winter 2014 | (L) (C) |
| Calculus I (MATH 112); Fall 2013, Spring 2014 | (L) |
| Calculus II (MATH 113); Winter 2014, Spring 2014 | (L) |

**University of Pennsylvania:**

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| Calculus I (MATH 103); Fall 2010 | (L) |
| Calculus II (MATH 104); Fall 2011 | (L) |
| Proving Things: Analysis (MATH 202); Fall 2011 | (L) |
| Calculus III: Vector calculus, ODEs (MATH 240); Spring 2013, Summer 2013 | (L) (C) |
| Calculus IV: Fourier analysis, PDEs (MATH 241); Fall 2009 | (L) |
| Linear Algebra (MATH 312); Fall 2010, Spring 2012. | (L) (C) |
| Computational Linear Algebra (MATH 313/513); Spring 2010 | (L) |
| ODEs with linear algebra (MATH 420); Fall 2009, Summer 2012 | (L) (C) |
| Computational Linear Algebra (MATH 313/513); Spring 2010 | (L) |
| Classical Model Theory (MATH 571/671,Phil 412); Spring 2011 | (L) (C) |

**University of Michigan:**

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| Precalculus (MATH 105); Fall 2003, Winter 2004 | (L) |
| Calculus I (MATH 115); Fall 2004 | (L) |
| Calculus II (MATH 116); Winter 2005, Winter 2006 | (L) |
| Multivariable Calculus (MATH 215); Fall 2005, Winter 2007, Fall 2007, Fall 2008 | (R) |
| Differential Equations (MATH 216); Fall 2006 | (R) |

## Curriculum development:

I have contributed to the development or redesign of a number of courses, most notably:

**Kalamazoo College, Calc I with Review**: Mandated topics, but taught according to the just-in-time methodology, involving continual shifting of pace and introduction of remedial material depending on student progress.

**University of Pennsylvania, Calc III/IV:** Involved in the reorganization of a confused array of mandated topics into a pair of rigorous courses in multivariable calculus and ordinary differential equations.

**University of Pennsylvania, Classical Model Theory:** Completely responsible for design of a graduate course in model theory leading from basic definitions to Morley's Theorem, with balanced coverage of applications in geometry and algebra.

## Additional relevant experience:

Member, Math Minor Advising Committee | University of Pennsylvania
Member, PhD Prelimary Exam Committee, Matti Åstrand | University of Pennsylvania
Supervision of graduate teaching assistants | University of Pennsylvania
Undergraduate Placement Advisor | University of Michigan

## Educational technology:

**Online homework:** Pearson's MyMathLab, MAA's MathWorks, Cengage WebAssign.
**Content management systems:** Blackboard, local equivalents.
**Interactive technologies:** TurningTechnologies clickers.

## 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)

## Language skills:

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| English | Native language |
| French | Speak, read, and write at advanced level |
| Czech | Read and write at advanced level, speaking moderate (CEFR level B1/2) |
| Mandarin Chinese | Speaking moderate, reading and writing limited |

## Professional references:

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