

Robert Y. Lewis

Personal Data

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Positions

2018 – 2020	Vrije Universiteit , Amsterdam, NL Postdoc, Theoretical Computer Science Matryoshka project
2012 – Present	Carnegie Mellon University , Pittsburgh, PA PhD, Pure and Applied Logic, expected 2017 MS, Mathematics, 2015 MS, Logic, Computation, and Methodology, 2014 Dissertation committee: Jeremy Avigad (chair), Steve Awodey, Leonardo de Moura, Thomas Hales, André Platzer
Summer 2016	Wolfram Research , Champaign, IL Intern, Mathematica Algorithms R&D
Summer 2015	University of Newcastle , NSW, Australia Visiting student, CARMA Priority Research Centre
2010 – 2012	St. Agnes Academy , Houston, TX Secondary School Teacher 10 th grade geometry, 11 th and 12 th grade pre-calculus, 12 th grade AP Calculus AB
2006 – 2010	Rice University , Houston, TX BA, Mathematics and Philosophy

Publications

Jeremy Avigad, Robert Y. Lewis, and Floris van Doorn. *Logic and Proof*. An online [interactive/static](#) textbook using the Lean theorem prover. Under development.

Robert Y. Lewis and Minchao Wu. *A bi-directional extensible ad hoc interface between Lean and Mathematica*. Submitted.

Robert Y. Lewis. *An extensible ad hoc interface between Lean and Mathematica*. (Workshop version.) In Dubois, C. and Paleo, B. W. eds., proceedings of Proof eXchange for Theorem Proving 2017.

Jeremy Avigad, Robert Y. Lewis, and Cody Roux. *A heuristic prover for real inequalities*. (Journal version.) Journal of Automated Reasoning 56(3), 2016.

Jeremy Avigad, Robert Y. Lewis, and Cody Roux. *A heuristic prover for real inequalities*. In Klein, G. and Gamboa, R., eds., proceedings of Interactive Theorem Proving 2014 (Springer LNCS).

Leobardo Rosales, Robert Y. Lewis, et. al. *Energy-minimizing unit vector fields*. Involve 3(4), 2010.

Presentations

An extensible ad hoc interface between Lean and Mathematica.

- [Proof eXchange for Theorem Proving workshop](#), Brasilia, Brazil. 09/2017.
- [Wolfram Technology Conference](#), Champaign, IL. 10/2016.

Automation and computation in the Lean theorem prover.

- [Hammers for Type Theory workshop](#), IJCAR, Coimbra, Portugal. 07/2016.
- [AITP 2016: Artificial Intelligence in Theorem Proving](#), Obergurgl, Austria. 04/2016.
- TU München Logic and Verification Seminar, Munich, Germany. 03/2016.

Algebra and analysis in the Lean theorem prover.

- [MAP 2016: Effective Analysis](#), Marseille, France. 01/2016.

Dependent types and the algebraic hierarchy.

- [Workshop on Mathematics and Computation](#), Newcastle, NSW, Australia. 06/2015.

A heuristic prover for real inequalities.

- [ITP 2014: Interactive Theorem Proving](#), Vienna, Austria. 07/2014.
- [6th Podlasie Conference on Mathematics](#), Bialystok, Poland. 07/2014.
- CMU Graduate Research Sharing Forum, Pittsburgh, PA. 12/2013.

Computers in mathematics: automated and interactive proofs.

- CMU Summer School in Logic and Formal Epistemology. 06/2014.

Some unintuitive consequences of the Axiom of Choice.

- Rice University Undergraduate Mathematics Colloquium. 09/2009.

Energy-minimizing vector fields of unit length.

- Rice University VIGRE Summer Seminar. 07/2009.

Teaching

All classes at Carnegie Mellon University, unless otherwise indicated.

Fall 2016	80-211, <i>Logic and Mathematical Inquiry</i> (instructor)
Spring 2015	80-110, <i>Nature of Mathematical Reasoning</i> (instructor)
Fall 2014	21-257, <i>Models and Methods of Optimization</i> (teaching assistant)
Summer 2014	80-110, <i>Nature of Mathematical Reasoning</i> (instructor)
Spring 2014	80-311, <i>Undecidability and Incompleteness</i> (grader)
Fall 2013	80-610, <i>Formal Logic</i> (grader and guest lecturer)
2010 – 2012	<i>Geometry, Pre-calculus, AP Calculus AB</i> (St. Agnes Academy, instructor)
2007 – 2010	MATH 221/222/354, <i>Honors Calculus III/IV, Honors Linear Algebra</i> (Rice, grader)

Service

2015, 2016	CMU Dept. Philosophy Graduate Admissions Committee
2015	CMU Dept. Philosophy 30 th Anniversary Conference Planning Committee
2013 – 2017	Organizer, CMU Dept. Philosophy Graduate Research Sharing Forum
2011 – 2012	Coach and Sponsor, St. Agnes Academy Engineering/Robotics Team
2008 – 2010	Coordinator and tutor, SRC Society of Academic Fellows, Rice University

Awards, Grants, and Honors

2017	Laboratory of Symbolic and Educational Computation research fellowship
2017	Future Faculty , Eberly Center for Teaching Excellence & Educational Innovation
2015 – 2016	William S. Dietrich II Presidential PhD Fellowship
2014	Honorable Mention, NSF Graduate Research Fellowship Program