Floris van Doorn

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Education and Employment

feb-mar 2021	Tutor, Center of Mathematical Sciences and Applications, Harvard University.
2018 - present	Postdoctoral Associate, Mathematics Department, University of Pittsburgh.
2013 - 2018	Ph.D. in Pure and Applied Logic, Carnegie Mellon University.
2011 - 2013	M.Sc. (cum laude), Mathematical Sciences, Utrecht University.
2008 - 2011	B.Sc. (cum laude), Mathematics, Utrecht University.
2008 - 2011	B.Sc. (cum laude), Physics and Astronomy, Utrecht University.

Publications

2020 *Sequential Colimits in Homotopy Type Theory*, Kristina Sojakova, Floris van Doorn, Egbert Rijke. Thirty-Fifth Annual ACM/IEEE Symposium on Logic in Computer Science (LICS).

2020 *Maintaining a Library of Formal Mathematics*, Floris van Doorn, Gabriel Ebner, and Robert Y. Lewis. 13th Conference on Intelligent Computer Mathematics (CICM).

2020 *A Formal Proof of the Independence of the Continuum Hypothesis*, Jesse Michael Han and Floris van Doorn. Certified Programs and Proofs (CPP).

2020 *The Lean Mathematical Library*, the mathlib community.[1] Certified Programs and Proofs (CPP).

2019 *A Formalization of Forcing and the Unprovability of the Continuum Hypothesis*, Jesse Michael Han and Floris van Doorn. Interactive Theorem Proving (ITP).

2018 *Higher Groups in Homotopy Type Theory*, Ulrik Buchholtz, Floris van Doorn, Egbert Rijke. Logic in Computer Science (LICS).

2017 *Homotopy Type Theory in Lean*, Floris van Doorn, Jakob von Raumer, Ulrik Buchholtz. 8th International Conference on Interactive Theorem Proving (ITP).

2016 *Constructing the Propositional Truncation using Non-recursive HITs*, Floris van Doorn. The 5th ACM SIGPLAN Conference on Certified Programs and Proofs (CPP).

2015 *The Lean Theorem Prover (System Description)*, Leonardo de Moura, Soonho Kong, Jeremy Avigad, Floris van Doorn, Jakob von Raumer. The 25th jubilee edition of the International Conference on Automated Deduction (CADE).

2014 *The Structural Theory of Pure Type Systems*, Cody Roux and Floris van Doorn. LNCS Advanced Research in Computing and Software Science.

2013 *Explicit Convertibility Proofs in Pure Type Systems*, Floris van Doorn, Herman Geuvers, Freek Wiedijk. Workshop on Logical Frameworks and Meta-languages: Theory and Practice (LFMTP).

[1] This was a paper written collectively by the contributors to `mathlib`. I wrote part of the paper.

Teaching

2021 Instructor for Abstract Algebra (Pitt) (Prospective).
2020 Instructor for Topics in Geometry (Pitt).
2019 Instructor for Calculus I (Pitt).
2016 TA for Differential and Integral Calculus with Russell C. Walker (CMU).
2015 TA for Logic and Mathematical Inquiry with Jeremy Avigad (CMU).
2015 TA for Game Theory with Adam Bjorndahl (CMU).
2014 TA for Formal Logic with Steve Awodey (CMU).
2012 TA for Discrete Mathematics with Han Hoogeveen (UU).
2011 TA for Foundations of Mathematics with Jaap van Oosten (UU).

Competitions and Awards

2012 First prize at the International Mathematics Competition for University Students.
2011 Second prize at the International Mathematics Competition for University Students.
2010 Second prize at the International Mathematics Competition for University Students.
2009 Royal Holland Society of Sciences and Humanities "Young Talent Incentive Price" for mathematics.
2008 Silver medal at the International Mathematical Olympiad.

Unpublished Work

2020 *Progress on a Perimeter Surveillance Problem*, Jeremy Avigad and Floris van Doorn.
2018 *On the Formalization of Higher Inductive Types and Synthetic Homotopy Theory*, Floris van Doorn. Dissertation. Main advisor: Jeremy Avigad
2016 *Logic and Proof*, Jeremy Avigad, Robert Y. Lewis, Floris van Doorn. Online textbook for an introductory course to logic and proof assistants.
2015 *The Lean Theorem Prover*, Floris van Doorn. Blog post.
2015 *Constructing the Propositional Truncation using Nonrecursive HITs*, Floris van Doorn. Blog post.
2014 *Propositional Calculus in Coq*, Floris van Doorn. Short article.
2013 *Explicit Convertibility Proofs in Pure Type Systems*, Floris van Doorn. Master thesis. Advisor: Freek Wiedijk.

Service

2019 - present	Maintainer for Lean's mathematical library `mathlib`.
2020	Program Committee for Certified Programs and Proofs (CPP) 2021.
2019	Program Committee for Certified Programs and Proofs (CPP) 2020.

I have reviewed manuscripts as external reviewer for TYPES 2016, Journal of Automated Reasoning (special issue), Mathematical Structures in Computer Science (special issue), CICM 2019, Transactions on Computational Logic and 2020.

Extracurricular Service

2009 - 2013	Trainer of the Dutch Mathematical Olympiad.
2008 - 2013	Volunteer for the "Vierkant voor Wiskunde" mathematics summer camps.
2012 - 2013	Chairman of the Benelux Mathematical Olympiad 2013.
2011 - 2012	Treasurer of the Dutch University Mathematical Olympiad 2012.
2009 - 2011	IT committee member for the International Mathematical Olympiad 2011.
2009 - 2010	Head awards ceremony of the Benelux Mathematical Olympiad 2010.
2008 - 2009	Secretary of the Benelux Mathematical Olympiad 2009.

Selected Talks

2020 *Structures and Classes*, Lean for the Curious Mathematician 2020, online.

2020 *Tactics in Lean*, HCM Workshop: Mathematical Language and Practical Type Theory, Bonn.

2019 *A Formal Abstract of the Classification of Finite Simple Groups*, Vietnam – USA Joint Mathematical meeting.

2018 *Towards Spectral Sequences for Homology*, Homotopy Type Theory Electronic Seminar Talks, online.

2018 *Formal Abstracts*, seminar: Formalization of Mathematics in Type Theory.

2018 *Spectral Sequences in Homotopy Type Theory*, Workshop: Types, Homotopy Type theory, and Verification, Hausdorff Research Institute for Mathematics.

2017 *Homotopy Type Theory in Lean*, Computer-aided mathematical proof, Cambridge.

2017 *Eilenberg-MacLane Spaces in Homotopy Type Theory*, ASL North American annual meeting, Boise.

2016 *Reducing Higher Inductive Types to Quotients*, Workshop on Homotopy Type Theory and Univalent Foundations of Mathematics, Fields Institute Toronto.

2016 *The Lean Theorem Prover and Homotopy Type Theory*, together with Jeremy Avigad. Workshop on Homotopy Type Theory and Univalent Foundations of Mathematics, Fields Institute Toronto.

Languages

Dutch (native), English (fluent), German (basic), French (basic).
Programming: Lean, LaTeX, Mathematica, Coq.
Some experience in C, Python, Standard ML.