

Rutger Kuyper

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Education

- 2012–2015 **Ph.D. in Mathematics** (*cum laude**)
Radboud University Nijmegen, the Netherlands
Thesis: Computability, Probability and Logic
Advisor: Sebastiaan A. Terwijn.
- 2010–2011 **M.Sc. in Mathematics** (*summa cum laude**)
Radboud University Nijmegen
Specialisation: Mathematical Foundations of Computer Science
Thesis: Probability Logic
Advisor: Sebastiaan A. Terwijn.
- 2007–2010 **B.Sc. in Mathematics** (*summa cum laude**)
Radboud University Nijmegen
Thesis: Set-Theoretic Paradoxes in λU and λU^-
Advisor: Herman Geuvers.

Employment

- 2016–2017 **Post Doctoral Fellow**
Victoria University of Wellington, New Zealand
Courses taught: Algebra; Foundations of Algebra, Analysis and Topology
- 2015–2016 **Van Vleck Visiting Assistant Professor**
University of Wisconsin–Madison, United States of America
Courses taught: Advanced Topics in Foundations, Set Theory, Undergraduate Logic.
- 2012–2015 **DIAMANT Ph.D. Candidate**
Leiden University / Radboud University Nijmegen, the Netherlands
Courses taught as teaching assistant: Analysis, Convex Optimisation, Logic
Substitute lecturer for several individual lectures on: Analysis, Logic.
- 2008–2011 **Teaching Assistant**
Radboud University Nijmegen
Courses taught: Discrete Mathematics, Group Theory, Linear Algebra, Rings and Fields
Also assistant for a masterclass for high school students on the Poincaré conjecture.

*For Bachelor and Master degrees in the Netherlands, *summa cum laude* is the highest distinction awarded. For Ph.D. degrees, *cum laude* is the highest distinction available. In all three cases this distinction is awarded to less than 5% of the candidates.

Grants and prizes

- 2015 Stieltjes Prize, awarded to the best Ph.D. thesis in mathematics in the Netherlands.
2012 John Templeton Foundation Turing Centenary Research Scholarship, £45 000.
2011 DIAMANT Ph.D. grant.
2006 Winner Mathematics Tournament of the Radboud University Nijmegen.

Publications

- U. Andrews, J. F. Knight, R. Kuyper, J. S. Miller and M. I. Soskova, *Continuous functions on the reals*, in preparation.
- U. Andrews, H. A. Ganchev, R. Kuyper, S. Lempp, J. S. Miller, A. A. Soskova and M. I. Soskova, *On cototality and the skip operator in the enumeration degrees*, submitted.
- R. Kuyper, *On Weihrauch reducibility and intuitionistic reverse mathematics*, to appear in The Journal of Symbolic Logic.
- R. Kuyper, *Levels of uniformity*, to appear in the Notre Dame Journal of Formal Logic.
- V. Brattka, R. Hölzl and R. Kuyper, *Monte Carlo computability*, in H. Vollmer and B. Vallée (eds.), 34th Symposium on Theoretical Aspects of Computer Science (STACS 2017), Leibniz International Proceedings in Informatics 66, Schloss Dagstuhl, 2017, 17:1–17:14.
- L. Bienvenu and R. Kuyper, *Parallel and serial jumps of weak König's Lemma*, in A. Day et al. (eds.), *Computability and Complexity*, Festschrift dedicated to Rod Downey on the occasion of his 60th birthday, Lecture Notes in Computer Science 10010, Springer, 2017, 201–217.
- U. Andrews, R. Kuyper, S. Lempp, M. I. Soskova and M. M. Yamaleev, *Nondensity of double bubbles in the d.c.e. degrees*, in A. Day et al. (eds.), *Computability and Complexity*, Festschrift dedicated to Rod Downey on the occasion of his 60th birthday, Lecture Notes in Computer Science 10010, Springer, 2017, 547–562.
- R. Kuyper and J. S. Miller, *Nullifying randomness and genericity using symmetric difference*, *Annals of Pure and Applied Logic* 168(9), 2017, 1692–1699.
- D. R. Hirschfeldt, C. G. Jockusch, Jr., R. Kuyper and P. E. Schupp, *Coarse reducibility and algorithmic randomness*, *The Journal of Symbolic Logic* 81(3), 2016, 1028–1046.
- R. Kuyper, *First-order logic in the Medvedev lattice*, *Studia Logica* 103(6), 2015, 1185–1224.
- R. Kuyper, *Computational aspects of satisfiability in probability logic*, *Mathematical Logic Quarterly* 60(6), 2014, 444–470.
- R. Kuyper, *Natural factors of the Medvedev lattice capturing IPC*, *Archive for Mathematical Logic* 53(7), 2014, 865–879.
- R. Kuyper and S. A. Terwijn, *Effective genericity and differentiability*, *Journal of Logic & Analysis* 6(4), 2014, 1–14.
- R. Kuyper, *Natural factors of the Muchnik lattice capturing IPC*, *Annals of Pure and Applied Logic* 164(10), 2013, 1025–1036.

R. Kuyper and S. A. Terwijn, *Model theory of measure spaces and probability logic*, The Review of Symbolic Logic 6(3), 2013, 367–393.

R. Kuyper, *Computational hardness of validity in probability logic*, in S. Artemov and A. Nerode (eds.), Proceedings of Logical Foundations of Computer Science, Lecture Notes in Computer Science 7734, Springer, 2013, 252–265.

Invited talks

- 2016 Destroying randomness and genericity using symmetric differences, ASL 2016 Annual Meeting, Special Session on Computability Theory, Storrs, 24 May 2016.
- 2016 Connecting intuitionistic logic and computability through the Medvedev and Muchnik degrees, Keynote at the Graduate Student Conference in Logic, South Bend, 10 April 2016.
- 2016 A connection between Weihrauch reducibility and intuitionistic reverse mathematics, SEALS 2016, Gainesville, 27 February 2016.
- 2016 Preservation of randomness and genericity under symmetric differences, Computability, Complexity and Randomness 2016, Honolulu, 7 January 2016.
- 2015 A measure of uniformity, AMS Central Fall Sectional Meeting, Special Session on Computability Theory and Applications, Chicago, 4 October 2015.
- 2015 The Medvedev lattice and first-order logic, Third Workshop on 'Mind, Mechanism and Mathematics', Bucharest, 27 June 2015.
- 2014 Intuitionistic logic & computability, Second Workshop on 'Mind, Mechanism and Mathematics', New York, 12 May 2014.
- 2013 Computational semantics for intuitionistic logic using the Muchnik lattice, Dagstuhl Seminar on Duality in Computer Science, 29 July 2013.
- 2013 Probability logic & inductive learning, Workshop on 'Mind, Mechanism and Mathematics', Milan, 30 June 2013.

Contributed and colloquium talks

- 2016 Progress towards an arithmetical characterisation of ML-reducibility, Analysis, Randomness and Applications 2016, Capulálpam de Méndez, Mexico, 3 December 2016.
- 2016 Destroying genericity using symmetric differences, Universität der Bundeswehr München, 25 July 2016.
- 2016 Connecting Weihrauch reducibility and intuitionistic reverse mathematics, Computability in Europe 2016, Paris, 30 June 2016.
- 2016 Obliterating genericity using symmetric differences, University of Notre Dame, South Bend, 12 April 2016.
- 2016 An introduction to (algorithmic) randomness, Marquette University, Milwaukee, 22 Febru-

- ary 2016.
- 2016 A probability logic inspired by inductive learning, Southern Wisconsin Logic Colloquium, Madison, 2 February 2016.
 - 2015 Algorithmic randomness and coarse reducibility, Southern Wisconsin Logic Colloquium, Madison, 3 November 2015.
 - 2015 Medvedev and Muchnik reducibility: an introduction, Southern Wisconsin Logic Colloquium, Madison, 8 September 2015.
 - 2015 A hierarchy of uniformities between Medvedev and Muchnik reducibility, Logic Colloquium 2015, Helsinki, 5 August 2015.
 - 2015 Differentiability and effective genericity, Computability and Complexity in Analysis 2015, Tokyo, 15 July 2015.
 - 2015 Uniformity and randomness, Computability, Complexity and Randomness 2015, Heidelberg, 25 June 2015.
 - 2015 Intuitionistic logic, computability, and the Medvedev and Muchnik lattices, PIIA Seminar, University of Amsterdam, 20 May 2015.
 - 2014 Logic, computation and algebra: the Medvedev and Muchnik lattices, DIAMANT Symposium, Soest, 28 November 2014.
 - 2014 Computation, logic and the Medvedev and Muchnik lattices, Nijmegen Mathematics Ph.D. Colloquium, 25 November 2014.
 - 2014 Coarse degrees and randomness, Analysis, Randomness and Applications 2014, Gotemba, Japan, 4 September 2014.
 - 2014 Effective genericity & differentiable functions, Logic Colloquium 2014, Vienna, 15 July 2014.
 - 2014 Differentiable functions and 1-genericity, Southern Wisconsin Logic Colloquium, Madison, 6 May 2014.
 - 2014 Intuitionistic logic & the Medvedev and Muchnik lattices, PhDs in Logic 2014, Utrecht, 25 April 2014.
 - 2013 Coarse reducibility and randomness, University of Auckland, 3 December 2013.
 - 2013 Effective genericity and differentiability, Victoria University of Wellington, 22 November 2013.
 - 2013 Factors of the Muchnik lattice characterising intuitionistic logic, Logic Colloquium 2013, Évora, 26 July 2013.
 - 2013 The Muchnik lattice and intuitionistic logic, Buenos Aires Semester in Computability, Complexity and Randomness, 6 June 2013.
 - 2013 A probability logic for inductive learning, PhDs in Logic 2013, Munich, 8 April 2013.
 - 2013 Computational hardness of validity in probability logic, Logical Foundations of Computer Science 2013, San Diego, 7 January 2013.

- 2012 Model-theoretic and computability-theoretic aspects of probability logic, LIAFA Seminar, Université Paris Diderot, 14 December 2012.
- 2012 A probability logic for inductive learning, Utrecht University, 4 December 2012.
- 2012 Probability logic, Nijmegen Mathematics Ph.D. Colloquium, 15 November 2012.
- 2012 Logic & probability, DIAMANT Symposium, Nunspeet, 1 June 2012.

Professional activities

Referee for Computability, Journal of Applied Logic, Journal of Applied Non-Classical Logics, Journal of Symbolic Logic, Mathematical Structures in Computer Science, Computability in Europe, LICS, Logical Methods in Computer Science, TbiLLC and WoLLIC.

- 2012–2015 Organiser of Nijmegen Mathematics Ph.D. Colloquium.
- 2008, 2012 Problem writer for the Mathematics Tournament of the Radboud University Nijmegen (an annual tournament for high school students).
- 2012–2015 Member of the steering committee of the Mathematics Tournament.
- 2010–2011 Student representative on the mathematics and physics education board.
- 2011 Treasurer of the LIMO committee, the Dutch national inter-university mathematical olympiad.
- 2007–2010 Member of the ‘Gardner’ committee of ‘Desda’, the Radboud University mathematics students society. Gardner is responsible for Desda’s activities of an academic nature. Chairman of the committee from 2008-2010.

Linguistic skills

Dutch: mother tongue
 English: fluent (IELTS: 8.5/9)
 Japanese: upper intermediate (JLPT: N2)
 French: elementary
 German: elementary