

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–present **Post Doctoral Fellow**
Victoria University of Wellington, New Zealand
- 2015–present **Van Vleck Visiting Assistant Professor**
University of Wisconsin–Madison, United States of America
Courses taught: Advanced Topics in Foundations, Set Theory, Undergraduate Logic.
(On leave during academic year 2016–2017.)
- 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.

*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.

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.

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.

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*, to appear in the *Annals of Pure and Applied Logic*.

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*.

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 February 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, PIA 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 score: 8.5/9)
 Japanese: intermediate
 French: elementary
 German: elementary