

CURRICULUM VITAE

Ronald Michiel de Wolf

Address : Centrum Wiskunde & Informatica (CWI)
Science Park 123
1098 XG Amsterdam
The Netherlands
Tel: +31 20 5924078
Email : rdewolf@cwi.nl
Homepage: <http://homepages.cwi.nl/~rdewolf>
Birth : January 28, 1973, in Zaandam, the Netherlands
Nationality : Dutch

I Current professional activities:

Senior researcher (tenured) at CWI in Algorithms & Complexity, the group of Harry Buhrman, and part-time full professor at the Institute for Logic, Language and Computation (ILLC) of the University of Amsterdam. My scientific interests include quantum computing, computational complexity, and learning theory.

II Education:

1985–1991: Gymnasium, Comenius Scholengemeenschap, Capelle a/d IJssel, Netherlands

1991–1996: Computer Science, Erasmus University of Rotterdam

June-1996: Master's degree Computer Science (*cum laude*)
Thesis: Contributions to Inductive Logic Programming
Advisor: Dr. Shan-Hwei Nienhuys-Cheng

1993–1997: Philosophy, Erasmus University of Rotterdam

July-1997: Master's degree Philosophy (*cum laude*)
Thesis: Philosophical Applications of Computational Learning Theory
Advisor: Dr. Gert-Jan Lokhorst

1997–2001: PhD studies in Computer science, CWI and University of Amsterdam

September 6, 2001: PhD Computer Science, University of Amsterdam (*cum laude*)
Thesis: Quantum Computing and Communication Complexity
Advisors: Profs. Harry Buhrman and Paul Vitányi

III Employment record:

Aug 1997 – Aug 2001: PhD student at University of Amsterdam and CWI.
Working visits to U of Oxford, Calgary, LRI (Paris), and Waterloo.

Sep 2001 – Aug 2002: Postdoc at UC Berkeley, in the group of Umesh Vazirani.
Working visits to Caltech and MIT.

Sep 2002 – Dec 2006: Postdoc at CWI

Working visits to Montréal, LRI (Paris, several times).

Jan 2007 - ∞ : Senior researcher (tenured) at CWI

Working visits to U of Tel Aviv (2 \times), Tata Institute (Mumbai), MIT (2 \times), Paris-Sud and Paris-Diderot (4 \times), UCSB, NEC Princeton, CQT Singapore (2 \times), NYU.

Mar 2011 - ∞ : Part-time full professor (0.2 fte) at ILLC, University of Amsterdam

Working visits to Prague (2 \times), Calgary, Oxford, Georgia Tech, Paris, CQT Singapore, Austin, Bristol, Microsoft Research

IV Teaching:

2006 Combinatorics for information sciences (U of Amsterdam)

2008 Combinatorics with applications in computer science (Leiden U)

2012, 2014, 2016 Combinatorics with computer science applications (U of Amsterdam)

2011, 2013, 2015, 2017, 2018, 2019 Quantum computing (U of Amsterdam and Mastermath)

V Invited talks:

I have been an invited keynote speaker at the following conferences: TQC'10, ICITS'11, QIP'13, CCC'13, TQC'15, WAOA'16, EQTC'19.

I have taught mini-courses on various aspects of quantum computing and theoretical computer science at: University of Warsaw'10, Riga'10, Montreal'10, Ile-de-re'12, Aachen'14, Sevres'14, Eindhoven'15, Prague'16, Stockholm'18.

VI Students:

Advisor (promotor) of PhD students at CWI & U of Amsterdam:

started Sep 2015: S. Gribling (Quantum computing, co-advising with Monique Laurent)

started Oct 2015: A. Gilyén (Quantum computing)

started Sep 2015: J. van Apeldoorn (Quantum computing, co-advising with Monique Laurent)

started Feb 2015: J. Witteveen (Complexity theory, co-advising with Leen Torenvliet)

graduated Nov 2013: G. Scarpa (CWI & U of Amsterdam, Quantum Computing)

graduated Apr 2018: S. Arunachalam (CWI & U of Amsterdam, Quantum Computing)

Co-advisor (co-promotor) of PhD students:

2006 R. Špalek (CWI & U of Amsterdam, Quantum Computing)

Examiner/opposition in PhD defenses of:

2002 W. van Dam (U of Amsterdam, Quantum computing)

2004 H. Röhrig (U of Amsterdam, Quantum computing)

2006 T. Lee (U of Amsterdam, Complexity theory)

2008 S. Wehner (U of Amsterdam, Quantum computing)
2008 F. Unger (U of Amsterdam, Quantum computing)
2011 J. Briët (U of Amsterdam, Quantum computing)
2011 A. Chailloux (U of Paris, Quantum computing)
2012 E. Dassen (U of Leiden, Mathematics)
2012 D. Garcia-Soriano (U of Amsterdam, Complexity theory)
2012 N. Bouman (U of Leiden, Cryptography)
2014 B. Loff (U of Amsterdam, Complexity theory)
2014 A. Belovs (U of Latvia, Quantum computing)
2014 H. Song (Tsinghua U, Beijing, Communication complexity)
2014 V. Lerays (U of Paris, Quantum computing)
2015 S. Zhong (U of Amsterdam, Quantum logic)
2016 T. Piovesan (U of Amsterdam, Quantum computing)
2016 F. Speelman (U of Amsterdam, Quantum computing)
2018 J. Zuiddam (U of Amsterdam, Complexity theory)

Advisor or co-advisor of MSc students:

1998 J. Verbeek (U of Amsterdam, Minimum Description Length principle)
2001 M. de Graaf (U of Amsterdam, Quantum computing)
2004 S. Wehner (U of Amsterdam, Quantum computing)
2006 J. Cirasella (U of Amsterdam, Quantum computing)
2006 J. de Vos (U of Amsterdam, Quantum computing)
2008 D. Chu (U of Amsterdam, Quantum computing)
2013 G. Sarailidis (U of Amsterdam, Computational learning and biology)
2015 H. Hu (U of Utrecht, Polyhedral combinatorics)
2015 F. Feys (U of Amsterdam, Social choice theory)
2016 R. van de Hoef (U of Utrecht, Quantum computing)
2018 A. Cornelissen (U of Delft, Quantum computing); recipient of KHMW math thesis prize
2018 C. Gyurik (U of Amsterdam, Quantum computing)

VII Publications:

At the time of writing (January 2019): about 80 refereed journal and conference publications, one book. According to Google Scholar, the number of citations to my work is 5964, and my h-index is 32.

An up-to-date publication list is available at <http://homepages.cwi.nl/~rdewolf>

The following are ten of my best publications:

- (a) S.H. Nienhuys-Cheng and R. de Wolf. Foundations of Inductive Logic Programming, Lecture Notes in Artificial Intelligence 1228, Springer, May 1997.

- (b) R. Beals, H. Buhrman, R. Cleve, M. Mosca, R. de Wolf. Quantum lower bounds by polynomials. *Journal of the ACM* 48(4): 778-797, 2001. Earlier version in FOCS'98.
- (c) H. Buhrman, R. Cleve, J. Watrous, R. de Wolf. Quantum fingerprinting. *Physical Review Letters* 87 (16), 167902, 2001.
- (d) I. Kerenidis, R. de Wolf. Exponential lower bound for 2-query locally decodable codes via a quantum argument. *Journal Computer Systems Sciences* 69(3): 395-420, 2004. Earlier version in STOC'03.
- (e) H. Klauck, R. Špalek, R. de Wolf. Quantum and classical strong direct product theorems and optimal time-space tradeoffs. *SIAM Journal on Computing* 36(5):1472-1493, 2007. Earlier version in FOCS'04.
- (f) D. Gavinsky, J. Kempe, I. Kerenidis, R. Raz, R. de Wolf. Exponential separation for one-way quantum communication complexity, with applications to cryptography. *SIAM Journal on Computing* 38(5): 1695-1708, 2008. Earlier version in FOCS'07.
- (g) D. Gavinsky, J. Kempe, O. Regev, and R. de Wolf. Bounded-error quantum state identification and exponential separations in communication complexity. *SIAM Journal on Computing*, 39(1):1-39, 2009. Earlier version in STOC'06.
- (h) H. Buhrman, R. Cleve, S. Massar, and R. de Wolf. Non-locality and Communication Complexity. *Reviews of Modern Physics*, 82:665-698, 2010.
- (i) S. Fiorini, S. Massar, S. Pokutta, H.R. Tiwary, R. de Wolf. Exponential Lower Bounds for Polytopes in Combinatorial Optimization. *Journal of the ACM* 62(2):17, 2015. Earlier version (under a different title) in STOC'12.
- (j) V. Chen, E. Grigorescu, and R. de Wolf. Efficient and Error-Correcting Data Structures for Membership and Polynomial Evaluation. *SIAM Journal on Computing*, 42(1):84-111, 2013.

VIII Editorial work, program committees, and refereeing:

I am a managing editor of the open-access journal *Theory of Computing* and an editor of *SIAM Journal on Computing* and of *Quantum*.

Program committee member of QIP 2007, Complexity 2008, ICALP 2009, SOFSEM 2010, Complexity 2010, STACS 2011, MFCS 2011, QIP 2012, TQC 2012, STOC 2013, ESA 2013, ITCS 2014, QIP 2014, Complexity 2014, QIP 15 (PC chair) STOC 2016, AQIS 2016, STACS 2017, QIP 2018 (co-chair), ICALP 2018, TQC 2019.

2007-11: Steering committee member of the annual QIP conference

Refereed hundreds of papers for journals (J. ACM, SIAM J of Computing, Theoretical Computer Science, ACM Trans on Computational Logic, Algorithmica, IPL, J of Automated Reasoning, J of Logic Programming, Cryptology, ToC, QIC, IEEE Trans on Information Theory, Phys Rev Letters, Phys Rev A) and conferences (FOCS, STOC, SODA, Complexity, ICALP, STACS, Crypto, MFCS, FSTTCS, SOFSEM, ILP, QIP).

Refereed grant proposals for: US-Israel Binational Science Foundation, Czech Science Foundation, Research Grants Council of Hong Kong, ERC, NSERC Canada.

IX Awards and grants:

1995 Best Paper award at 7th Dutch Artificial Intelligence Conference (NAIC'95) for *Tidying up the Mess Around the Subsumption Theorem in Inductive Logic Programming*, with S-H. Nienhuys-Cheng.

- 2001 Talent-grant from NWO for 1-year stay as postdoctoral researcher at UC Berkeley.
- 2003 European Research Consortium for Informatics and Mathematics (ERCIM) Cor Baayen Award, for “most promising young researcher in computer science and applied mathematics from one of the ERCIM countries”.
- 2005-2008 3-year Veni-grant from NWO.
- 2008-2013 5-year Vidi-grant from NWO.
- 2000-∞ Participated in a number of EU-funded collaborative projects: QAIP, RESQ, QAP, workpackage-leader in QCS, QALGO, and QuantAlgo.
- 2012 Best Paper award (shared with another paper) at ACM STOC’12 for *Linear vs. Semidefinite Extended Formulations: Exponential Separation and Strong Lower Bounds*, with S. Fiorini, S. Massar, S. Pokutta, H. R. Tiwary.
- 2014-2019 ERC Consolidator Grant QPROGRESS from the European Union.
- 2014-2019 TOP-grant from NWO, together with Monique Laurent and Nikhil Bansal.
- 2017-2027 I am one of 6 main applicants in the NWO Zwaartekracht project “Quantum Software Consortium,” which has roughly 19 million Euros of funding over 10 years, split between Amsterdam, Delft, and Leiden.

X Organizational work:

At CWI I organize the Algorithms & Complexity seminar and used to organize the institute-wide Scientific Meeting.

- 2001 Co-organizer of 4th Workshop on Quantum Information Processing (QIP 2001), Amsterdam.
- 2003 Co-organizer of 1st RESQ meeting, CWI, Amsterdam
- 2004 Co-organizer of Quantum Information Processing workshop at Lorentz Center, Leiden.
- 2009–14 Co-organizer of the annual Theoretical Computer Science Amsterdam (TCSA) days.
- 2009–14 Member of the CWI Works Council (“Ondernemingsraad”); I chaired this council 2010–2013.
- 2014– Member of the Informatics advisory board of the Lorentz Center, Leiden.
- 2014– Member of the Board of examiners (Examencommissie) of the Master of Logic of the U of Amsterdam.

XI Languages:

Dutch (mother tongue), English (fluent), German (reasonable), French (reasonable)