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

Mar 2011 - ∞: Part-time full professor (0.2 fte) at ILLC, University of Amsterdam
> Working visits to Paris (multiple times), CQT Singapore (multiple times), Academy of Science Prague (multiple times), MIT (multiple times), U of Tel Aviv, NEC Princeton, Tata Institute (Mumbai), UCSB, Calgary, Oxford, Georgia Tech, NYU, UT 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, 2020, 2021, 2022, 2023 Quantum computing (U of Amsterdam and national MasterMath program)

V Invited talks:

I have been an invited keynote speaker at the following conferences and seminar series: TQC'10, ICITS'11, QIP'13, TCS+'13, Complexity'13, TQC'15, WAOA'16, EQTC'19, QCTIP'19, DPG Fall meeting'19, Quantum colloquium of the Simons Institute (Berkeley)'21, Cambridge-Warwick Quantum Computing Colloquium'22.

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, Bad Honnef'22, Copenhagen'23.

VI Students:

Advisor (promotor) of PhD students:

graduated Nov 2013: Giannicola Scarpa (CWI & U of Amsterdam, Quantum computing)

graduated Apr 2018: Srinivasan Arunachalam (CWI & U of Amsterdam, Quantum computing)

graduated May 2019: András Gilyén (CWI & U of Amsterdam, Quantum computing); graduated *cum laude* and received the 2019 ERCIM Cor Baayen Award

graduated Sep 2019: Sander Gribling (CWI & U of Tilburg, Quantum computing, advised jointly with Monique Laurent)

graduated Jan 2020: Jouke Witteveen (U of Amsterdam, Complexity theory, advised jointly with Leen Torenvliet)

graduated Feb 2020: Joran van Apeldoorn (CWI & U of Amsterdam, Quantum computing, advised jointly with Monique Laurent)

started 2020 Yanlin Chen, quantum computing

started 2022 Lynn Engelberts, quantum computing

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

2006 Robert Špalek (CWI & U of Amsterdam, Quantum computing, promotor: H. Buhrman)

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)

2017 M. Laurière (U of Paris, Quantum computing)

2018 H. Nobrega (U of Amsterdam, Computability theory)

2018 J. Zuiddam (U of Amsterdam, Complexity theory)

2020 C. Vuillot (U of Delft, Quantum error-correction)

2021 Y. Dulek (U of Amsterdam, Quantum cryptography)

2021 J. Doriguello (U of Bristol, Quantum computing)

2021 S. Sherif (TIFR Mumbai, Quantum computing)

2021 A. Piedrafita (U of Amsterdam, Quantum computing)

2022 J. Czajkowski (U of Amsterdam, Quantum cryptography)

2022 F. Labib (U of Amsterdam, Quantum computing)

Advisor or co-advisor of MSc students:

1998 J. Verbeek (U of Amsterdam, Minimum description length learning)

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 ASML national mathematics thesis prize of KHMW

2018 C. Gyurik (U of Amsterdam, Quantum computing)

2022 J. Kamminga (U of Nijmegen, Quantum computing)

2023 F. Henstra (U of Utrecht, Quantum computing)

VII **Publications:**

At the time of writing (Oct 2023): about 100 refereed journal and conference publications, one book. According to Google Scholar, the number of citations to my work is 9503, and my h-index is 39.

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

The following are ten of my best publications, in chronological order. Also, my Quantum Computing lecture notes are used as teaching material in many courses all over the world.

(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) 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.

(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) S. Apers and R. de Wolf. Quantum speedup for graph sparsification, cut approximation and Laplacian solving. In SIAM Journal on Computing, 51(6), 2022. Earlier version in FOCS'20.

VIII Editorial work, program committees, and refereeing:

I am a coordinating editor of *Quantum*. I was an editor of *SIAM Journal on Computing* until 2023, and a managing editor of the open-access journal *Theory of Computing* for many years until 2020.

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 2015 (PC chair), STOC 2016, AQIS 2016, STACS 2017, QIP 2018 (co-chair), ICALP 2018, NMC 2019, TQC 2019, ITCS 2020, NMC 2020, Complexity 2020, FSTTCS 2020, NMC 2021, STOC 2022, SODA 2023, QIP 2023, FOCS 2023.

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.

I was on the ERC Starting Grant Panel for computer science (PE6) in 2021.

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 PIs in the NWO Zwaartekracht project "Quantum Software Consortium," which has roughly 20 million Euros of funding over 10 years, split between Amsterdam, Delft, and Leiden.

2022 STOC 10-Year Test of Time Award (shared with another paper) for
Linear vs. Semidefinite Extended Formulations: Exponential Separation and Strong Lower Bounds, with S. Fiorini, S. Massar, S. Pokutta, H. R. Tiwary.

2023 Gödel Prize (shared with another paper) for
Linear vs. Semidefinite Extended Formulations: Exponential Separation and Strong Lower Bounds, with S. Fiorini, S. Massar, S. Pokutta, H. R. Tiwary.

X **Organizational work:**

At CWI for many years I organized the Algorithms & Complexity seminar and 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.

2014–2019 Member of the Informatics advisory board of the Lorentz Center, Leiden.

2014–2019 Member of the Board of examiners (Examencommissie) of the Master of Logic of the U of Amsterdam.

2019 Organizer of 2nd QuantAlgo meeting, CWI, Amsterdam

XI **Languages:**

Dutch (mother tongue), English (fluent), German (reasonable), French (reasonable), Spanish (muy malo).