

# Curriculum vitae Hans L. Bodlaender

## Personal data

- Full name: Hans Leo Bodlaender
- Birth: April 21, 1960, Bennekom, the Netherlands
- Nationality: Dutch
- Email: h.l.bodlaender@uu.nl.
- Family: Hans Bodlaender married in October 1986 with Brigitte J. Bodlaender-Peters. They have three children, born in 1988 (Marijke), 1990 (Wim), and 1993 (Annefleur).

## Education

- 1972 – 1978: Highschool (VWO / Atheneum), Christelijk Streeklyceum Ede, the Netherlands
- 1978: start of studies Mathematics, Utrecht University
- April 1981: Kandidaatsexamen (comparable with B.Sc.) Mathematics, Utrecht University, with distinction *cum laude*.
- August 1983: Doctoraalexamen (comparable with M.Sc.) Mathematics, Utrecht University. Thesis subject: distributed computing. Thesis advisor: prof. dr. Jan van Leeuwen.
- August 1983 – November 1986: Ph.D. thesis research, at the Department of Computer Science, Utrecht University, under supervision of prof. dr. Jan van Leeuwen. Thesis defense: November 16, 1986. Thesis title: *Distributed Computing, Structure and Complexity*

## Employment

- August 1983 – January 1984: Research assistant at the Department of Computer Science, Utrecht University.
- February 1984 – January 1986: Research assistant at the Department of Computer Science, Utrecht University, employed by Z.W.O. (predecessor of N.W.O.)
- February 1986 – August 1986: visit of the Department of Computer Science of the Massachusetts Institute of Technology as a post-doctoral fellow, with a grant from the Netherlands Organization for Scientific Research.
- August 1987 – June 2003: universitair docent or docent-onderzoeker at the Department of Computer Science (Institute of Information and Computing Sciences) of Utrecht University.

- June 2003 – October 2014: universitair hoofddocent or senior docent-onderzoeker at the Institute of Information and Computing Sciences (Department of Information and Computing Sciences, Department of Computer Science) of Utrecht University.
- November 2014 – October 2018: part time professor *Network Algorithms*, Technical University Eindhoven. 0.2 appointment.
- November 2014 – now: professor *Algorithms and Complexity* at the Department of Information and Computing Sciences, Utrecht University. (0.8 appointment till October 2018; 1.0 appointment starting November 2018.)

## Research

### Prizes and qualifications

- The EATCS-IPEC Nerode Prize 2014 for outstanding papers in the area of multivariate algorithmics for the paper: *On problems without polynomial kernels*, Hans L. Bodlaender, Rodney G. Downey, Michael R. Fellows, Danny Hermelin, Journal of Computer and System Sciences, 2009; joint with *Infeasibility of instance compression and succinct PCPs for NP*, Lance Fortnow, Rahul Santhanam, Journal of Computer and System Sciences, 2011.
- Senior qualification Research of Utrecht University, 1997.

### Thesis

- [1] H. L. Bodlaender. *Distributed Computing: Structure and Complexity*. PhD thesis, Utrecht University, Utrecht, the Netherlands, 1986.
- [2] H. L. Bodlaender. *Distributed Computing: Structure and Complexity*. CWI Tract 43. CWI, Amsterdam, the Netherlands, 1987.

### Program committee memberships

- Member of program committee STACS'93: 10th Annual Symposium on Theoretical Aspects of Computer Science.
- Member of program committee WG'96: 22th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee CIAC'97: 3rd Italian Conference on Algorithms and Complexity.
- Member of program committee WG'97: 23th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee SIROCCO'97: International Colloquium on Structural Information and Communication Complexity.
- Member of program committee WG'98: 24th International Workshop on Graph-Theoretic Concepts in Computer Science.

- Member of program committee WG'99: 25th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee ESA'99: European Symposium on Algorithms.
- Member of program committee WG 2000: 26th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee WG 2001: 27th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee WG 2002: 28th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee ISAAC 2002: International Symposium on Algorithms and Computation.
- Member of program committee WADS 2003: Workshop on Algorithms and Data Structures.
- Chairman of program committee WG 2003: 29th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee WG 2004: 30th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee IWPEC 2004: 1st International Workshop on Parameterized and Exact Computation.
- Member of program committee WG 2005: 31th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee ICALP 2005: 32nd International Colloquium on Automata, Languages and Programming.
- Chairman of program committee IWPEC 2006: 2nd International Workshop on Parameterized and Exact Computation (cochair with Michael Langston).
- Member of program committee AAIM 2006: 2nd International Conference on Algorithmic Aspects in Information and Management.
- Member of program committee SOFSEM 2007: 33rd International Conference on Current Trends in Theory and Practice of Computer Science.
- Member of program committee WG 2007: 33rd International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee AAIM 2007: 3rd International Conference on Algorithmic Aspects in Information and Management.
- Member of program committee UAI 2007: 23rd Conference on Uncertainty in Artificial Intelligence.

- Member of program committee COCOA'08: 2nd International Conference on Combinatorial Optimization and Applications.
- Member of program committee WG 2009: 35th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of Program Committee TAMC 2009: 6th Annual Conference on Theory and Applications of Model of Computation.
- Member of Program Committee IWPEC 2009: 4th International Workshop on Parameterized and Exact Computation.
- Member of Program Committee SWAT 2010: 12th Scandinavian Workshop on Algorithm Theory.
- Member of Program Committee ESA 2010: 18th European Symposium on Algorithms.
- Member of Program Committee TAMC 2010: 7th Annual Conference on Theory and Applications of Model of Computation.
- Member of Program Committee IPEC 2011: 6th International Symposium on Parameterized and Exact Computation.
- Member of Program Committee WALCOM 2012: 6th Workshop on Algorithms and Computation.
- Member of program committee STACS 2012: 29th Annual Symposium on Theoretical Aspects of Computer Science.
- Member of program committee APEX 2012: International Workshop on Approximation, Parameterized and EXact algorithms.
- Member of program committee WG 2012: 38th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Chairman of Program Committee ESA 2013: 21st European Symposium on Algorithms. (Track A.)
- Member of Program Committee IPEC 2014: 9th International Symposium on Parameterized and Exact Computation.
- Member of Program Committee FAW 2014: 8th International Frontiers of Algorithmics Workshop.
- Member of program committee WG 2014: 40th International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of Program Committee WALCOM 2015: 9th Workshop on Algorithms and Computation.
- Member of program committee ICALP 2015: 42nd International Colloquium on Automata, Languages and Programming.

- Member of program committee FAW 2015: 9th International Frontiers of Algorithms Workshop.
- Member of program committee LATA 2016: 10th International Conference on Language and Automata Theory and Applications.
- Member of program committee FAW 2016: 10th International Frontiers of Algorithms Workshop.
- Member of program committee WG 2016: 42nd International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee SOFSEM 2017: 43rd International Conference on Current Trends in Theory and Practice of Computer Science.
- Chairman of program committee WG 2017: 43rd International Workshop on Graph-Theoretic Concepts in Computer Science.
- Co-chairman of program committee MFCS 2017: 42nd International Symposium on Mathematical Foundations of Computer Science.
- Member of program committee LICS 2018: IEEE-ACM Symposium on Logic in Computer Science
- Member of Program Committee WALCOM 2019: 13th Workshop on Algorithms and Computation.
- Member of program committee WG 2019: 45rd International Workshop on Graph-Theoretic Concepts in Computer Science.
- Member of program committee TAMC 2019: 15th Annual Conference on Theory and Applications of Models of Computation.
- Member of program committee WALCOM 2019: 13th International Conference and Workshops on Algorithms and Computation.
- Member of program committee SODA 2019: 31st Annual ACM-SIAM Symposium on Discrete Algorithms.

### Invited lectures

- Invited lecture at 7th International Meeting of Young Computer Scientists, Smolenice, November 1992.
- Invited lecture at the International Symposium on Mathematical Foundations of Computer Science (MFCS'97), August 1997.
- Invited lecture at 6th International Conference on Graph Theory, Marseilles, August 28 - September 2, 2000. 'The Algorithmic Theory of Treewidth'.
- Invited lecture at the 31st Annual Conference on Current Trends in Theory and Practice of Informatics, SOFSEM 2005, January 22 - 28, 2005.

- Invited lecture at the 32nd International Workshop on Graph-Theoretic Concepts in Computer Science, WG 2006. ‘Treewidth: Characterizations, Applications, and Computations’.
- Invited lecture at the 14th International Colloquium on Structural Information and Communication Complexity, SIROCCO 2007. ‘Treewidth: Structure and Algorithms’.
- Invited lecture at Workshop in Graph Decomposition: Theoretical, Algorithmic and Logical Aspects, April 7-11, 2008, CIRM, Luminy, Marseille.
- Invited lecture at 4th International Workshop on Parameterized and Exact Computation, IWPEC 2009, September 10-11, 2009, Copenhagen, part of ALGO 2009.
- Invited lecture at the Theory Day of the Nederlandse Vereniging voor Theoretische Informatica, March 3 2011, Utrecht.
- Tutorial on Kernels, 6th International Symposium on Parameterized and Exact Computation, IPEC 2011, Saarbrücken, Germany, September 7–9, 2011.
- Invited lecture at the 5th Workshop on Graph Classes and Width Parameters, GROW 2011, Daejeon, Korea, October 27–29, 2011.
- Tutorial on Fixed Parameter Tractability, ECSQARU 2013, Utrecht, the Netherlands, July 2013.
- Invited lecture at 9th International Workshop on Parameterized and Exact Computation, IWPEC 2014, Wrocław, Poland, part of ALGO 2014, September 8–12, 2014. (Invited lecture associated to EATCS-IPEC Nerode Prize.)
- Invited lecture at ICT-OPEN, Apeldoorn, the Netherlands, March 22, 2016.
- Invited lecture at Networks Day, December 8, 2017, Eindhoven, the Netherlands.
- Invited lecture at 19th Haifa Workshop on Interdisciplinary Applications of Graphs, Combinatorics and Algorithms, Haifa, Israel, June 11, 2019.

## Ph. D. students

Co-promotor A. J. J. (Ton) Kloks, June 7, 1993. Title of thesis: Treewidth. (Promotor: prof. dr. J. van Leeuwen.)

Co-promotor Goos Kant, June 14, 1993. Title of thesis: Algorithms for drawing planar graphs. (Promotor: prof. dr. J. van Leeuwen.)

Co-promotor Babette L. E. de Fluiter, March 19, 1997. Title of thesis: Algorithms for graphs of small treewidth. (Promotor: prof. dr. J. van Leeuwen.)

Co-promotor Thomas Wolle, June 13, 2005. Title of thesis: Computational Aspects of Treewidth. Lower Bounds and Network Reliability. (Promotor: prof. dr. J. van Leeuwen.)

Co-promotor Johan H. P. Kwisthout, October 29, 2009. Title of thesis: The Computational Complexity of Probabilistic Networks. (Promotor: prof. dr. J. van Leeuwen and prof. dr. ir. L. C. van der Gaag. Other co-promotor: dr. G. Tel.)

Co-promotor Johan M. M. van Rooij, June 24, 2011. Title of thesis: Exact Exponential-Time Algorithms for Domination Problems in Graphs. (Promotor: prof. dr. J. van Leeuwen.)

Co-promoter Bart M. P. Jansen, July 1, 2013. Title of thesis: The Power of Data Reduction — Kernels for Fundamental Graph Problems. (Promotor: prof. dr. J. van Leeuwen.) Bart Jansen received for his thesis the *Christiaan Huygens prize*: best thesis on ICT in the Netherlands over a period of 5 years (10.000 euro).

Promotor Tom C. van der Zanden, June 26, 2019. Title of thesis: Theory and Practical Applications of Treewidth.

Promotor Sándor Kisfaludi-Bak, June 27, 2019. (Other promotor: Mark T. de Berg.) Title of thesis: ETH-Tight Algorithms for Geometric Network Problems. Sándor Kisfaludi-Bak was awarded the distinction *cum laude* for his thesis.

### Current supervision

- Federico d'Ambrosio (since 2016), Scientific simulation, promotor and cosupervision with Gerard Barkema, UU.
- Marieke van der Wegen (since 2017), Gonality of graphs, promotor and cosupervision with Gunther Cornelissen (Mathematics), UU.
- Nils Donselaar (since 2017), Parameterized Complexity of Approximate Bayesian Inferences, promotor and partly supervision (main supervisor Johan Kwisthout), Donders Institute Nijmegen.
- Roel W. van den Broek (since 2016), Train material optimization, promotor, UU.
- Roel Brouwer (since 2019), Large schale simulation of smart energy systems, promotor, UU.
- Rogier Wuijts (since 2019), Algorithmic Computing and Data-mining for Climate integrated Energy System Models, promotor, UU.

### Supervision of Research Guest and Postdocs

- Dimitrios Thilikos (postdoc, 2 years. 1996 – 1998)
- Koichi Yamazaki (postdoc, 1 year, 1996 – 1997)
- Eelko Penninx (2005 – 2011). Topic: Parameterized graph problems and branchwidth.
- Marc Comas (Ph.D student, Barcelona), 2009 (6 months).
- Yota Otachi (Ph.D. student, Gunma, Japan), 2009 (6 weeks).
- Manu Basavaraju (Ph. D. student, India), 2009 (2 months).
- Zhang Wenyan (Ph.D. student, Fudan University, Shanghai, China, 2011 (2 months)
- Stefan Kratsch (postdoc, 2 years, 2010 – 2012)
- Jesper Nederlof (postdoc, 2 years, 2012 – 2014)
- O-joung Kwon and Jisu Jeong (Ph.D. student, KAIST, Daejeon, S. Korea, 3 weeks, winter 2014)

- Tesshu Hanaka (Ph.D. student, 2 weeks, winter 2016)
- Lars Jaffke (Ph.D. student, 2 weeks, spring 2019)
- Hisao Tamaki (sabbatical, 4 months, spring/summer 2019)
- Toshiki Saitoh (sabbatical, 4 months, summer/fall 2019)

## Grants (as PI)

1989-1993: Grant from Foundation for Computer Science (S.I.O.N) of the Netherlands Organization for Scientific Research (N.W.O.). Project ‘Algorithms for tree-structured graphs’.

1993-1997: Grant from Foundation for Computer Science (S.I.O.N) of the Netherlands Organization for Scientific Research (N.W.O.). Project ‘Algorithms for tree-structured graphs and their practical aspects’.

In March 1996 - February 1997, Koichi Yamazaki visited as a postdoc with a grant from the Japanese government.

In March 1996 - February 1998, Dimitrios Thilikos visited and visits as a postdoc with a grant from the EC Human Mobility Capital project.

2001/2002-2006: Grant from the Netherlands Organization for Scientific Research (N.W.O.) Project ‘Treewidth and Combinatorial Optimization’. Joint project with prof. Stan van Hoesel, Maastricht.

2005-2009: Grant from the Netherlands Organization for Scientific Research (N.W.O.). Project ‘Algorithmic Complexity of Probabilistic Networks’.

2009-2013: Grant from the Netherlands Organization for Scientific Research (N.W.O.). Project: KERNELS: Combinatorial Analysis of Data Reduction.

2012-2014: Grant from the Netherlands Organization for Scientific Research (N.W.O.). Project: Space and Time Efficient Structural Improvements of Dynamic Programming Algorithms.

Some small grants for organizing workshops, including grant for Japanese-Dutch workshop in 2018.

## Editorships

- Editor Discrete Algorithms (2014 – present)
- Guest editor special issue *Algorithmica*, Volume 27, number 3/4, 2000.
- Editor Acta Cybernetica (1997 – present)
- Managing Editor (Section ‘Graphs and Algorithms’) of Discrete Mathematics and Theoretical Computer Science, till 2004. 2004 - 2008: Editor (Section ‘Graphs and Algorithms’) of Discrete Mathematics and Theoretical Computer Science. 2008 - now: Board member of Discrete Mathematics and Theoretical Computer Science.
- Editor proceedings WG’2003: *Graph-Theoretic Concepts in Computer Science, 29th International Workshop, WG 2003*, volume 2880 of *Lecture Notes in Computer Science*, Berlin, 2003. Springer.

- Co-editor with Michael A. Langston: proceedings IWPEC 2006: 2nd International Workshop on Parameterized and Exact Computation, volume 4169 of *Lecture Notes in Computer Science*, Berlin, 2006. Springer.
- Member Editorial Board Information and Computation, 2008 - 2012.
- Co-editor with Rod Downey, Fedor V. Fomin, and Dániel Marx: The Multivariate Algorithmic Revolution and Beyond - Essays Dedicated to Michael R. Fellows on the Occasion of His 60th Birthday. *Lecture Notes in Computer Science 7370*, Springer 2012, ISBN 978-3-642-30890-1.
- Co-editor with Giuseppe F. Italiano: Proceedings ESA 2013: 21st Annual European Symposium on Algorithms, volume 8125 of *Lecture Notes in Computer Science*, Berlin, 2013. Springer. ISBN 978-3-642-40449-8.
- Co-editor with K. G. Larsen and J.-F. Raskin: Proceedings MFCS 2017: 42nd International Symposium on Mathematical Foundations of Computer Science. Schloss Dagstuhl, LIPICS, volume 42.
- Co-editor with Gerhard Woeginger: Proceedings WG 2017: *Graph-Theoretic Concepts in Computer Science, 43rd International Workshop, WG 2017*, volume 10520 of *Lecture Notes in Computer Science*, Berlin, 2017. Springer.

## Miscellaneous

- Reviewer for Zentralblatt für Mathematik. (Till 2006.)
- Reviewer for Mathematical Reviews. (Till 2006.)
- Scientific Organizer (with Fedor Fomin and Saket Saurabh) of WORKER 2010: Workshop on Kernelization 2010, Lorentz Center Leiden, November 2010.
- Scientific Organizer (with Pinar Heggernes and Daniel Lokshtanov) of Dagstuhl Seminar *Graph modification problems*, February 9, 2014 – February 14, 2014.
- Scientific Organizer (with Endre Boros, Pinar Heggernes and Dieter Kratsch) of Lorentz Center Workshop *Enumeration Algorithms using Structure*, August 24 – August 28, 2015.
- Scientific Organizer (with Mark de Berg, Michael Fellows and Christian Knauer) of Lorentz Center Workshop *Fixed Parameter Computational Geometry*, April 4 – April 8, 2016.
- Scientific Organizer (with Mark de Berg, Benjamin Burton and Christian Knauer) of Lorentz Center Workshop *Fixed Parameter Computational Geometry*, May 14 – May 18, 2018.
- Organizer (scientific and local) of NWO-JSPS joint seminar *Computations on Networks with a Tree-Structure: From Theory to Practice*. September 2018, Eindhoven.

## Journal publications

- [1] J. van Leeuwen, H. L. Bodlaender, and H. A. G. Wijshoff. Compositions of double diagonal and cross latin squares. *Nieuw Archief voor Wiskunde*, 4:256–266, 1984.
- [2] H. L. Bodlaender and J. van Leeuwen. Simulations of large networks on smaller networks. *Information & Control*, 71:143–180, 1986.
- [3] A. A. Schoone, H. L. Bodlaender, and J. van Leeuwen. Diameter increase caused by edge deletion. *Journal of Graph Theory*, 11(3):409–427, 1987.
- [4] H. L. Bodlaender. The complexity of finding uniform emulations on fixed graphs. *Information Processing Letters*, 29:137–141, 1988.
- [5] H. L. Bodlaender. A better lower bound for distributed leader finding in bidirectional, asynchronous rings of processors. *Information Processing Letters*, 27(6):287–290, 1988.
- [6] H. L. Bodlaender. The classification of coverings of processor networks. *Journal of Parallel and Distributed Computing*, 6:166–182, 1989.
- [7] H. L. Bodlaender. Achromatic Number is NP-complete for cographs and interval graphs. *Information Processing Letters*, 31:135–138, 1989.
- [8] H. L. Bodlaender. The complexity of finding uniform emulations on paths and ring networks. *Information and Computation*, 86(1):87 – 106, 1990.
- [9] H. L. Bodlaender. Polynomial algorithms for chromatic index and graph isomorphism on partial  $k$ -trees. *Journal of Algorithms*, 11(4):631 – 643, December 1990.
- [10] H. L. Bodlaender, P. Gritzmann, V. Klee, and J. van Leeuwen. Computational complexity of norm-maximization. *Combinatorica*, 10:203–225, 1990.
- [11] H. L. Bodlaender and G. Tel. Bit-optimal election in synchronous rings. *Information Processing Letters*, 36(1):53–56, 1990.
- [12] H. L. Bodlaender. Some lower bound results for decentralized extrema-finding in rings of processors. *Journal of Computer and System Sciences*, 42(1):97–118, 1991.
- [13] H. L. Bodlaender. New lower bound techniques for distributed leader finding and other problems on rings of processors. *Theoretical Computer Science*, 81:237–256, 1991.
- [14] H. L. Bodlaender. On the complexity of some coloring games. *International Journal of Foundations of Computer Science*, 2(2):133–148, 1991.
- [15] H. L. Bodlaender and D. Kratsch. The complexity of coloring games on perfect graphs. *Theoretical Computer Science*, 106:306–326, 1992.
- [16] H. L. Bodlaender. On linear time minor tests with depth first search. *Journal of Algorithms*, 14(1):1–23, 1993.
- [17] H. L. Bodlaender. Complexity of path-forming games. *Theoretical Computer Science*, 110(1):215–245, 1993.

- [18] H. L. Bodlaender and R. H. Möhring. The pathwidth and treewidth of cographs. *SIAM Journal on Discrete Mathematics*, 6(2):181–188, 1993.
- [19] H. L. Bodlaender and T. Kloks. A simple linear time algorithm for triangulating three-colored graphs. *Journal of Algorithms*, 15(1):160–172, 1993.
- [20] H. L. Bodlaender. A tourist guide through treewidth. *Acta Cybernetica*, 11:1–21, 1993.
- [21] H. L. Bodlaender. Improved self-reduction algorithms for graphs with bounded treewidth. *Discrete Applied Mathematics*, 54:101–115, 1994.
- [22] H. L. Bodlaender, S. Moran, and M. K. Warmuth. The distributed bit complexity of the ring: From the anonymous to the non-anonymous case. *Information and Computation*, 108(1):34–50, 1994.
- [23] H. L. Bodlaender, G. Tel, and N. Santoro. Trade-offs in non-reversing diameter. *Nordic Journal of Computing*, 1:111–134, 1994.
- [24] H. L. Bodlaender. On disjoint cycles. *International Journal of Foundations of Computer Science*, 5(1):59–68, 1994.
- [25] H. L. Bodlaender, K. Jansen, and G. J. Woeginger. Scheduling with incompatible jobs. *Discrete Applied Mathematics*, 55(3):219 – 232, 1994.
- [26] H. L. Bodlaender, J. R. Gilbert, H. Hafsteinsson, and T. Kloks. Approximating treewidth, pathwidth, frontsize, and minimum elimination tree height. *Journal of Algorithms*, 18:238–255, 1995.
- [27] H. L. Bodlaender, T. Gonzalez, and T. Kloks. Complexity aspects of two-dimensional data compression. *Nordic Journal of Computing*, 2:462–495, 1995.
- [28] H. L. Bodlaender and K. Jansen. Restrictions of graph partition problems. Part I. *Theoretical Computer Science*, 148:93–109, 1995.
- [29] H. L. Bodlaender, R. G. Downey, M. R. Fellows, and H. T. Wareham. The parameterized complexity of sequence alignment and consensus. *Theoretical Computer Science*, 147:31–54, 1995.
- [30] H. L. Bodlaender and M. R. Fellows. W[2]-hardness of precedence constrained  $K$ -processor scheduling. *Operations Research Letters*, 18(2):93–98, 1995.
- [31] H. L. Bodlaender, R. G. Downey, M. R. Fellows, M. T. Hallett, and H. T. Wareham. Parameterized complexity analysis in computational biology. *Computer Applications in the Biosciences*, 11(1):49–57, 1995.
- [32] H. L. Bodlaender, T. Kloks, and D. Kratsch. Treewidth and pathwidth of permutation graphs. *SIAM Journal on Discrete Mathematics*, 8(4):606–616, 1995.
- [33] H. L. Bodlaender. A linear time algorithm for finding tree-decompositions of small treewidth. *SIAM Journal on Computing*, 25:1305–1317, 1996.
- [34] H. L. Bodlaender and T. Kloks. Efficient and constructive algorithms for the pathwidth and treewidth of graphs. *Journal of Algorithms*, 21:358–402, 1996.

- [35] H. L. Bodlaender and B. L. E. de Fluiter. On intervalizing  $k$ -colored graphs for DNA physical mapping. *Discrete Applied Mathematics*, 71:55–77, 1996.
- [36] G. Kant and H. L. Bodlaender. Triangulating planar graphs while minimizing the maximum degree. *Information and Computation*, 135:1–14, 1997.
- [37] H. L. Bodlaender and J. Engelfriet. Domino treewidth. *Journal of Algorithms*, 24:94–123, 1997.
- [38] H. L. Bodlaender and D. M. Thilikos. Treewidth for graphs with small chordality. *Discrete Applied Mathematics*, 79:45–61, 1997.
- [39] H. L. Bodlaender, J. van Leeuwen, R. Tan, and D. Thilikos. On interval routing schemes and treewidth. *Information and Computation*, 139(1):92–109, 1997.
- [40] H. L. Bodlaender, D. T. Thilikos, and K. Yamazaki. It is hard to know when greedy is good for finding independent sets. *Information Processing Letters*, 61:101–106, 1997.
- [41] D. Thilikos and H. L. Bodlaender. Fast partitioning  $l$ -apex graphs with applications to approximating maximum induced-subgraph problems. *Information Processing Letters*, 61:227–232, 1997.
- [42] H. L. Bodlaender, J. S. Deogun, K. Jansen, T. Kloks, D. Kratsch, H. Müller, and Zs. Tuza. Rankings of graphs. *SIAM Journal on Discrete Mathematics*, 11:168–181, 1998.
- [43] H. L. Bodlaender and T. Hagerup. Parallel algorithms with optimal speedup for bounded treewidth. *SIAM Journal on Computing*, 27:1725–1746, 1998.
- [44] H. L. Bodlaender, T. Kloks, D. Kratsch, and H. Mueller. Treewidth and minimum fill-in on  $d$ -trapezoid graphs. *Journal of Graph Algorithms and Applications*, 2(5):1–23, 1998.
- [45] H. L. Bodlaender. A partial  $k$ -arboretum of graphs with bounded treewidth. *Theoretical Computer Science*, 209:1–45, 1998.
- [46] K. Yamazaki, H. L. Bodlaender, B. de Fluiter, and D. M. Thilikos. Isomorphism for graphs of bounded distance width. *Algorithmica*, 24:105–127, 1999.
- [47] H. L. Bodlaender and D. M. Thilikos. Graphs with branchwidth at most three. *Journal of Algorithms*, 32:167–194, 1999.
- [48] H. L. Bodlaender. A note on domino treewidth. *Discrete Mathematics and Theoretical Computer Science*, 3(4):109–118, 1999.
- [49] H. L. Bodlaender and K. Jansen. On the complexity of the maximum cut problem. *Nordic Journal of Computing*, 7:14–31, 2000.
- [50] H. Zantema and H. L. Bodlaender. Finding small equivalent decision trees is hard. *International Journal of Foundations of Computer Science*, 11(2):343–354, 2000.
- [51] H. L. Bodlaender. Introduction. *Algorithmica*, 27(3/4):209–211, 2000. Introduction to special issue on Treewidth, guest editor.

- [52] H. L. Bodlaender. The algorithmic theory of treewidth. In I. Rusu, editor, *Electronic Notes in Discrete Mathematics*, volume 5. Elsevier Science Publishers, 2000.
- [53] H. L. Bodlaender, M. R. Fellows, M. T. Hallett, H. T. Wareham, and Tandy J. Warnow. The hardness of perfect phylogeny, feasible register assignment and other problems on thin colored graphs. *Theoretical Computer Science*, 244:167–188, 2000.
- [54] H. L. Bodlaender. A generic NP-hardness proof for a variant of graph coloring. *Journal of Universal Computer Science*, 7(12):1114–1124, 2001.
- [55] H. L. Bodlaender and B. van Antwerpen-de Fluiter. Parallel algorithms for series parallel graphs and graphs with treewidth two. *Algorithmica*, 29:543–559, 2001.
- [56] H. L. Bodlaender and B. van Antwerpen-de Fluiter. Reduction algorithms for graphs of small treewidth. *Information and Computation*, 167:86–119, 2001.
- [57] H. L. Bodlaender and D. Kratsch. Kayles and nimbers. *Journal of Algorithms*, 43:106–119, 2002.
- [58] J. Alber, H. L. Bodlaender, H. Fernau, T. Kloks, and R. Niedermeier. Fixed parameter algorithms for DOMINATING SET and related problems on planar graphs. *Algorithmica*, 33:461–493, 2002.
- [59] H. L. Bodlaender, M. J. Dinneen, and B. Khoussainov. Relaxed update and partition network games. *Fundamenta Informaticae*, 49:1–12, 2002.
- [60] H. L. Bodlaender and F. V. Fomin. Approximation of pathwidth of outerplanar graphs. *Journal of Algorithms*, 43:190–200, 2002.
- [61] H. Zantema and H. L. Bodlaender. Sizes of ordered decision trees. *International Journal of Foundations of Computer Science*, 13:445–458, 2002.
- [62] H. L. Bodlaender and U. Rotics. Computing the treewidth and the minimum fill-in with the modular decomposition. *Algorithmica*, 36:375–408, 2003.
- [63] Hans L. Bodlaender. Necessary edges in  $k$ -chordalizations of graphs. *Journal of Combinatorial Optimization*, 7:283–290, 2003.
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- [156] Hans L. Bodlaender, Tom C. van der Zanden: On the Exact Complexity of Polyomino Packing. 9th International Conference on Fun with Algorithms, FUN 2018: LIPIcs vol 100, Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik 2018, 9:1-9:10.
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- [5] H. L. Bodlaender. Finding grid embeddings with bounded maximum edge length is NP-complete. Technical Report RUU-CS-85-18, Department of Computer Science, Utrecht University, Utrecht, 1985.
- [6] H. L. Bodlaender. Emulations of processor networks with buses. Technical Report RUU-CS-85-20, Department of Computer Science, Utrecht University, Utrecht, 1985.
- [7] H. L. Bodlaender and J. van Leeuwen. Distribution of records on a ring of processors. Technical Report RUU-CS-86-6, Department of Computer Science, Utrecht University, Utrecht, 1986.
- [8] H. L. Bodlaender. Dynamic programming on graphs with bounded treewidth. Technical Report MIT/LCS/TR-394, Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, 1987.
- [9] H. L. Bodlaender. A new lowerbound technique for distributed extrema finding on rings of processors. Technical Report RUU-CS-87-11, Department of Computer Science, Utrecht University, Utrecht, 1987.
- [10] H. L. Bodlaender. Planar graphs with bounded treewidth. Technical Report RUU-CS-88-14, Department of Computer Science, Utrecht University, Utrecht, 1988.
- [11] H. L. Bodlaender. Some classes of planar graphs with bounded treewidth. *Bulletin of the EATCS*, 36:116–126, 1988.
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- [13] T. Kloks and H. Bodlaender. Only few graphs have bounded treewidth. Technical Report RUU-CS-92-35, Department of Computer Science, Utrecht University, Utrecht, 1992.
- [14] J. Shawe-Taylor, C. Domingo, H. Bodlaender, and J. Abello. Learning minor closed graph classes with membership and equivalence queries. Technical Report LSI-94-37-R, Departament de Llenguatges i sistemes informàtics, Univeritat Politècnica de Catalunya, Barcelona, Spain, 1994.
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- [21] Hans L. Bodlaender and Dieter Kratsch. An exact algorithm for graph coloring with polynomial memory. Technical Report UU-CS-2006-015, Department of Information and Computing Sciences, Utrecht University, Utrecht, the Netherlands, 2006.
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- [23] Hans L. Bodlaender, Rod Downey, Fedor V. Fomin, Dniel Marx (Eds.): The Multivariate Algorithmic Revolution and Beyond - Essays Dedicated to Michael R. Fellows on the Occasion of His 60th Birthday. Lecture Notes in Computer Science 7370, Springer 2012, isbn 978-3-642-30890-1.
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- [25] Hans L. Bodlaender. Kernelization, Exponential Lower Bounds.. In Ming-Yang Kao, editor, *Encyclopedia of Algorithms*, 2015.
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- [27] Hans L. Bodlaender, Gerhard J. Woeginger: Graph-Theoretic Concepts in Computer Science - 43rd International Workshop, WG 2017, Eindhoven, The Netherlands, June 21-23, 2017, Revised Selected Papers. Lecture Notes in Computer Science 10520, Springer 2017, ISBN 978-3-319-68704-9.
- [28] Kim G. Larsen, Hans L. Bodlaender, Jean-Francois Raskin: 42nd International Symposium on Mathematical Foundations of Computer Science, MFCS 2017, August 21-25, 2017 - Aalborg, Denmark. LIPIcs 83, Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik 2017, ISBN 978-3-95977-046-0.

## Teaching

- 1980, 1981: Teaching assistant Computer Science, Utrecht University

- 1983 - 1986: *Werkcollegeleider* various courses.
- Hans Bodlaender lectured his first course in the fall of 1986: the course *Computer Algorithms* (3rd year Computer Science, bachelor programme.) From fall 1987 till now, Hans has been lecturing several computer science courses (one, two, or three each year). (See below for a list of titles.) He also has been ‘werkcollegeleider’ and practicumleider for various courses, has supervised master students (see below), and also has supervised some ‘third year projects’, ‘experimentation projects’, and ‘capita selecta’ courses. He is also coordinator of the course *Research Methods for Computer Science*.
- Basis qualification Education, of Utrecht University, 1997.
- Hans Bodlaender has followed a course for lecturers at the IVLOS institute.
- Teaching Award; In recognition of distinguished teaching, for the course *Algorithms and Networks*. (Received twice: 2014, 2015.)
- Senior Qualification Education, of Utrecht University, 2018.

### Master thesis project supervision (partial list)

- Frans van Haandel: Graph drawing.
- Bas van Zoeren: Graph isomorfism.
- Freek Weijers: Dynamisation of minimum cost flow algorithms.
- Mhammed Dahmane: Implementation of a chess-competition system (graph matching application.) Joint supervision with Hans Zantema.
- Joris Marx: The traveling salesman problem on graphs of bounded treewidth.
- Matthijs L. Havik: Partitioning a Questionnaire Graph (work done at the *Centraal Bureau voor de Statistiek*), 1998.
- Ernst de Ridder: Graph automorphisms with maximal projection distances, 1999.
- Arjan Bosse: The construction of a heuristic for the Windy Postman problem, 2000.
- Rogier van Koetsveld: Proving the wellfoundedness of two graphs: a combinatorial versus a symbolic approach. (2nd supervisor; CKI-student. First supervisor was Marc Bezem.)
- Thomas van Kuipers: An Alternative Method to Pearl’s loop Cutset Conditioning in Multiply Connected Multi-parent Single-split Probabilistic networks, 2003. (Co-supervision with Linda van der Gaag.)
- Erik Jan van Leeuwen: Optimization Problems on Mobile Ad Hoc Networks Algorithms for Disk Graphs, 2004.
- Els Maes: Development of a SUPporter for the MAPPING of GRAPH Models for Gras/GXL, 2004.

- Eelko Penninkx: Exploiting Connectivity: Faster Exact Algorithms on Planar Graphs, 2005.
- Bart de Boer: Trust networks, 2005.
- Johan van Rooij: Algorithm design using Measure and Conquer: An  $O(1.5086^n)$  algorithm for dominating set and similar problems, 2006.
- Thomas C. van Dijk: Fixed parameter complexity of feedback problems, 2007.
- Ron de Bruijn: Finding perfect matchings in regular bipartite graphs, 2007. Joint supervision with Marinus Veldhorst.
- Lukas Vermeer: Graph Decomposition for Bid Price Optimization in Airline Revenue Management (work done at ORTEC), 2008.
- Jesper Nederlof: Exact algorithms with Inclusion-Exclusion, 2008.
- Wouter Penard: Navigation and Flow Algorithms — Building a Navigation Framework (work done at Logica CMG), 2008.
- Ruben van der Zwaan: Exact algorithms for Vertex Ranking, 2007 – 2009.
- Bart Jansen: Kernelization for Max Leaf Spanning Tree, 2008 – 2009.
- Roeland Luitwieler: Fixed-Parameter Tractable Algorithms for Cluster Editing Variants, 2008 – 2009.
- Joris Borgdorff, Distributing knowledge in an organization by emergence, 2009.
- Luite Stegemann: Pareto curves for set covers, 2009 – 2010.
- Marnix Kammer: Plagiarism detection with graph isomorphism, 2009 – 2010.
- Bas den Heijer, Graph algorithmic methods for compiler optimization, 2011 – 2012.
- Thomas Dons. Kernelization for cluster editing, 2011.
- Vincent Kreuzen, Special treewidth, 2011 – 2012.
- Sjoerd Timmer, The cut-and-count technique for finding loop cutsets, 2011 – 2012.
- Pim de Weijer, Kernelization, 2012 – 2013.
- Stefan Fafianie, Rank based methods for dynamic programming on tree decompositions, 2013.
- Ioannis Katsikarelis, Rank based methods for dynamic programming on tree decompositions, 2013 – 2014.
- Max van Boxtel, Exact algorithms for Pathwidth and Minimum Cost Triangulations, 2013 – 2014.
- Lars Jaffke, Exploiting Treewidth for Faster Heuristics for the Steiner Tree Problem, 2013 – 2014.

- Luuk van der Graaff, Speeding up algorithms on nice tree decompositions, 2013 – 2014.
- Myrna van der Burgwal, Computing efficient tree decompositions, 2014 – 2015.
- Niels van Roden, Spanning trees with small span, 2014 – 2015.
- Simon Prince, Analysis of combinatorial games on graphs, 2014 – 2015
- Frank van Houten, Experimental Research and Algorithmic Improvements involving the Graph Parameter Boolean-width, 2014 – 2015.
- Tom van der Zanden, Parameterized Complexity of Graph Constraint Logic, 2014 – 2015.
- Chiel ten Brinke, Variations on Boolean-width, 2014 – 2015.
- Simon Prins, Finding a winning strategy in variations of Kayles, 2015.
- Matthias Beimer, Heuristics for TSP and Vehicle Routing, 2014 – 2015.
- Rick van de Hoef, Quantum testing algorithms for graph properties, 2016.
- Geertien de Vries, Feedback Vertex Kayles Finding a winning strategy in a two-player combinatorial game, 2016.
- Willem Pino, Cut and Count and Representative Sets on Branch Decompositions, 2016.
- Robin Kuipers, Deterministic branching algorithms for parameterized Co-Path/Cycle Packing and three variants, 2016 – 2017.
- Bas Brouwer. MM-Width: Observations, Algorithms and Approximations, 2016 – 2017.
- Jelco Bodewes, Divisorial gonality of graphs, 2016 – 2017.
- Marieke van der Wegen, Stable gonality of graphs, 2016 – 2017.
- Casper Hagens, Convex string recoloring, 2017 – now.
- Glenn Stewart, Tree-decomposition algorithms on a GPU, 2017 – 2018.
- Ruben Meerkerk, Independent set with removal budget, 2018 – 2019.
- Ferenc Balla, Cluster editing, 2018 – ongoing. (Expected graduation summer 2019.)
- Bram van der Klundert, Event selection datastructures, 2019 – ongoing. (Supervision with Federico d'Ambrosio.)

Hans Bodlaender also was member of the thesis committee of a number of other master students, and supervised students in smaller projects (capita selecta, experimentation projects).

## **Courses**

### **Basic (bachelors) curriculum**

- Algoritmen en Datastructuren (in several different versions: Datastructuren, Algoritmen en Datastructuren 2, Computer Algoritmen, Algoritmiek).
- Databases
- Inleiding Informatica
- Inleiding Informatica en Management
- Software project
- Overdragen van de Informatica
- Programmeerproject Informatica en Management

### **Specialisation (masters) courses**

- Graph algorithms
- Network algorithms
- Toegepaste Netwerk Algoritmen (with Marinus Veldhorst)
- Algorithms and Networks
- Combinatorische Optimalisering
- Several seminaria

### **Courses in 2003/2004**

- Algoritmiek
- Network Algorithms
- Seminar Graph Drawing

### **Courses in 2004/2005**

- Algoritmiek
- Network Algorithms
- Seminar Local Search Algorithms

### **Courses in 2005/2006**

- Algoritmiek
- Algorithms and Networks
- Seminar Graph Drawing

### **Courses in 2006/2007**

- Algoritmiëk
- Algorithms and Networks
- Overdragen van Informatica Onderzoek

### **Courses in 2007/2008**

- Algoritmiëk
- Algorithms and Networks
- Seminar Graph Drawing

### **Courses in 2008/2009**

- Datastructuren
- Algorithms and Networks
- Seminar Exact Algorithms

### **Courses in 2009/2010**

- Datastructuren
- Algorithms and Networks
- Overdragen van Informatica Onderzoek

### **Courses in 2010/2011**

- Datastructuren
- Algorithms and Networks
- Overdragen van Informatica Onderzoek

### **Courses in 2011/2012**

- Datastructuren
- Algorithms and Networks
- Onderzoeksmethoden van de Informatica

### **Courses in 2012/2013**

- Datastructuren
- Algorithms and Networks
- Onderzoeksmethoden van de Informatica

### **Courses in 2013/2014**

- Datastructuren
- Algorithms and Networks
- Onderzoeksmethoden van de Informatica

### **Courses in 2014/2015**

- Datastructuren
- Algorithms and Networks
- Onderzoeksmethoden van de Informatica

### **Courses in 2015/2016**

- Algoritmie
- Algorithms and Networks

### **Courses in 2016/2017**

- Algoritmie
- Algorithms and Networks

### **Courses in 2017/2018**

- Algoritmie
- Algorithms and Networks

### **Courses in 2018/2019**

- Algorithms and Networks

## **Organizational tasks**

- Member of board of the NVTI (Nederlandse Vereniging voor Theoretische Informatica.) (Till 2005.)
- Member of the *Disciplinegroepbestuur Informatica 2004-2005*, with assignment *education*.
- Hans Bodlaender has been member of the *Dagelijks Bestuur* of the Department of Computer Science, Utrecht University and of the *Onderzoeksbestuur*.
- Hans Bodlaender was for about five year Vakreferent of the Library of the Institute of Information and Computing Sciences, till 2002, and has been from 2000 till 2002 the Chairman of the Library Committee. He has been member of several other committees of the Department/Institute.

- Since many years, Hans Bodlaender is the coordinator of the Technical Reports series of the Department/Institute.
- Member of the local organization committee of ESA'94 (European Symposium on Algorithms.)
- Chairman of steering committee WG: Workshop on Graph Theoretic Concepts in Computer Science (2007 – now).
- Chairman of steering committee IWPEC: International Workshop on Exact and Parameterized Computation (2009-2010, 2012 – now)
- Member of steering committee ESA: European Symposium on Algorithms (2012 – now).
- Group leader *Algorithmic Systems*, 2012 – 2013.
- Program leader Master program *Computing Science*, Utrecht University, 2011 – now.
- Various committee memberships, e.g., grant committees for NWO (Netherlands Organization for Scientific Research: VIDI, Free Competition, TOP Compartment 2).
- Member of the Program Board for Computer Science, Lorentz Center Leiden, 2015 – now.
- Member steering committee Focus area Complex Systems Studies, Utrecht University, 2015 – now.
- Associate member Center for Complex Systems Science, Utrecht University, 2018 – now.
- Chair committee Senior Qualification Education, Department of Computer Science, Utrecht University, 2018 – now.
- Chair Tenure and Promotion committee, Department of Computer Science, Utrecht University, 2018 – now.

## Miscellaneous facts

Citations are based upon Google scholar from January 11, 2018.

- Citations: 16756. Since 2014: 5576.
- h-index: 63. Since 2014: 36.
- i10-index: 176. Since 2013: 108.
- Most cited paper: A linear time algorithm for finding tree-decompositions: 1769 citations.
- Erdős number 2 (via Dieter Kratsch, Shlomo Moran, and/or Zsolt Tuza).