# Curriculum Vitae

Dr. Jan Goedgebeur

## Personalia


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| Name | Jan Goedgebeur |
| Address | Department of Applied Mathematics, Computer Science and Statistics<br>Ghent University<br>Krijgslaan 281 - S9<br>9000 Ghent, Belgium |
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| Homepage | http://caagt.ugent.be/jgoedgeb/ |
| Nationality | Belgian |


## Employment

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|---|---|
| 10/2018 - present | **Postdoctoral Researcher**<br>Belgian National Fund for Scientific Research (F.R.S-FNRS), University of Mons, Belgium |
| 10/2017 - present | **Senior Postdoctoral Researcher**<br>Research Foundation Flanders (FWO), Ghent University, Belgium |
| 10/2014 - 09/2017 | **Junior Postdoctoral Researcher**<br>Research Foundation Flanders (FWO), Ghent University, Belgium |
| 09/2013 - 09/2014 | **Senior IT Consultant**<br>Deloitte Brussels, Belgium |
| 02/2011 - 06/2011 | **Visiting Researcher**<br>Australian National University, Canberra, Australia |
| 10/2009 - 08/2013 | **Ph.D. Fellow**<br>Research Foundation Flanders (FWO), Ghent University, Belgium |

## Education

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| 2009 - 2013 | **Ph.D. in Computer Science**<br>Ghent University<br>Thesis: *Generation Algorithms for Mathematical and Chemical Problems*<br>Advisor: Prof. Gunnar Brinkmann<br>Date of defence: 24 May 2013 |
| 2007 - 2009 | **M.Sc. in Computer Science Engineering** (summa cum laude)<br>Ghent University<br>Thesis: *Design of powerful routing algorithms for a logistic platform*<br>Advisors: Prof. Mario Pickavet and Dr. Pieter Audenaert |
| 2004 - 2007 | **B.Sc. in Informatics** (magna cum laude)<br>Ghent University |

## Publications

All papers are available on `http://caagt.ugent.be/jgoedgeb/`

### Preprints

1. J. Goedgebeur, E. Máčajová and M. Škoviera, The smallest nontrivial snarks of oddness 4, 38 pages, 2019. Preprint: arXiv:1901.10911
2. J. Goedgebeur, B. Meersman and C.T. Zamfirescu, Graphs with few Hamiltonian Cycles, 27 pages, 2018. Preprint: arXiv:1812.05650
3. J. Goedgebeur, K. Ozeki, N. Van Cleemput and G. Wiener, On the minimum leaf number of cubic graphs, 17 pages, 2018. Preprint: arXiv:1806.04451
4. G. Exoo and J. Goedgebeur, Bounds for the smallest $k$-chromatic graphs of given girth, 17 pages, 2018. Preprint: arXiv:1805.06713
5. J. Goedgebeur, D. Mattiolo and G. Mazzuoccolo, A unified approach to construct snarks with circular flow number 5, 27 pages, 2018. Preprint: arXiv:1804.00957
6. J. Goedgebeur, A. Neyt and C.T. Zamfirescu, Structural and computational results on platypus graphs, 20 pages, 2017. Preprint: arXiv:1712.05158
7. J. Goedgebeur, On minimal triangle-free 6-chromatic graphs, 15 pages, 2017. Preprint: arXiv:1707.07581
8. M. Abreu, J. Goedgebeur, D. Labbate and G. Mazzuoccolo, Colourings of cubic graphs inducing isomorphic monochromatic subgraphs, 31 pages, 2017. Preprint: arXiv:1705.06928
9. M. Chudnovsky, J. Goedgebeur, O. Schaudt and M. Zhong, Obstructions for three-coloring and list three-coloring $H$-free graphs, 40 pages, 2017. Preprint: arXiv:1703.05684

10. J. Goedgebeur and C.T. Zamfirescu, On almost hypohamiltonian graphs, 20 pages, 2017. Preprint: arXiv:1606.06577

11. M. Chudnovsky, J. Goedgebeur, O. Schaudt and M. Zhong, Obstructions for three-coloring graphs without induced paths on six vertices, 27 pages, 2015. Preprint: arXiv:1504.06979

**Journal articles**

1. J. Goedgebeur, E. Máčajová and M. Škoviera, Smallest snarks with oddness 4 and cyclic connectivity 4 have order 44, *Ars Mathematica Contemporanea*, 16(2):277-298, 2019.

2. J. Goedgebeur, On the smallest snarks with oddness 4 and connectivity 2, *Electronic Journal of Combinatorics*, 25(2), 5 pages, 2018.

3. M. Abreu, J. Goedgebeur, D. Labbate and G. Mazzuoccolo, A note on 2–bisections of claw–free cubic graphs, *Discrete Applied Mathematics*, 244:214-217, 2018.

4. K. Coolsaet, P.W. Fowler and J. Goedgebeur, Generation and properties of nut graphs, *MATCH Commun. Math. Comput. Chem.*, 80(2):423-444, 2018.

5. J. Goedgebeur and C.T. Zamfirescu, Infinitely many planar cubic hypohamiltonian graphs of girth 5, *Journal of Graph Theory*, 88(1):40-45, 2018.

6. J. Goedgebeur and C.T. Zamfirescu, On Hypohamiltonian Snarks and a Theorem of Fiorini, *Ars Mathematica Contemporanea*, 14(2):227-249, 2018.

7. J. Goedgebeur and O. Schaudt, Exhaustive generation of $k$-critical $\mathcal{H}$-free graphs, *Journal of Graph Theory*, 87(2):188-207, 2018.

8. J. Goedgebeur and C.T. Zamfirescu, Improved bounds for hypohamiltonian graphs, *Ars Mathematica Contemporanea*, 13(2):235-257, 2017.

9. G. Brinkmann and J. Goedgebeur, Generation of cubic graphs and snarks with large girth, *Journal of Graph Theory*, 86(2):255-272, 2017.

10. J. Goedgebeur and B.D. McKay, Fullerenes with distant pentagons, *MATCH Commun. Math. Comput. Chem.*, 74(3):659-672, 2015.

11. J. Goedgebeur and B.D. McKay, Recursive generation of IPR fullerenes, *Journal of Mathematical Chemistry*, 53(8):1702-1724, 2015.

12. J. Goedgebeur, A counterexample to the pseudo 2-factor isomorphic graph conjecture, *Discrete Applied Mathematics*, 193:57-60, 2015.

13. J. Goedgebeur and S.P. Radziszowski, The Ramsey Number $R(3, K_{10} - e)$ and Computational Bounds for $R(3, G)$, *Electronic Journal of Combinatorics*, 20(4), 25 pages, 2013.

14. G. Brinkmann, J. Goedgebeur and N. Van Cleemput, The History of the Generation of Cubic Graphs, *International Journal of Chemical Modeling*, 5(2-3):67-89, 2013.

15. G. Brinkmann, J. Goedgebeur, J. Hägglund and K. Markström, Generation and properties of Snarks, *Journal of Combinatorial Theory, Series B*, 103(4):468-488, 2013.
16. J. Goedgebeur and S.P. Radziszowski, New computational upper bounds for Ramsey numbers $R(3,k)$, *Electronic Journal of Combinatorics*, 20(1), 28 pages, 2013.
17. G. Brinkmann, K. Coolsaet, J. Goedgebeur and H. Mélot, House of Graphs: a database of interesting graphs, *Discrete Applied Mathematics*, 161:311-314, 2013.
18. S. Demeyer, J. Goedgebeur, P. Audenaert, M. Pickavet and P. Demeester, Speeding up Martins' algorithm for multiple objective shortest path problems, *4OR: A Quarterly Journal of Operations Research*, 11(4):323-348, 2013.
19. G. Brinkmann, J. Goedgebeur and J.C. Schlage-Puchta, Ramsey numbers $R(K_3,G)$ for graphs of order 10, *Electronic Journal of Combinatorics*, 19(4), 23 pages, 2012.
20. G. Brinkmann, J. Goedgebeur and B.D. McKay, The Generation of Fullerenes, *Journal of Chemical Information and Modeling*, 52(11):2910-2918, 2012.
21. G. Brinkmann, J. Goedgebeur and B.D. McKay, The smallest fullerene without a spiral, *Chemical Physics Letters*, 522:54-55, 2012.
22. G. Brinkmann, J. Goedgebeur and B.D. McKay, Generation of Cubic graphs, *Discrete Mathematics and Theoretical Computer Science*, 13(2):69-80, 2011.

**Conference papers**

1. J. Goedgebeur and O. Schaudt, Exhaustive generation of k-critical H-free graphs, *Proc. 42nd International Workshop on Graph-Theoretic Concepts in Computer Science (WG2016)*, Istanbul, Turkey, LNCS 9941, pages 109-120, 2016.
2. M. Chudnovsky, J. Goedgebeur, O. Schaudt and M. Zhong, Obstructions for three-coloring graphs with one forbidden induced subgraph, in *Proc. Twenty-Seventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA16)*, Arlington, Virginia, USA, pages 1774-1783, 2016.
3. S. Demeyer, J. Goedgebeur, P. Audenaert, M. Pickavet and P. Demeester, The predecessor and the accounting algorithm speed up shortest path calculations in traffic routing applications, in *Proc. 13th International IEEE Conference on Intelligent Transportation Systems (ITSC2010)*, Madeira Island, Portugal, pages 980-985, 2010.

## Research visits

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- **TU Berlin**, Berlin, Germany
  Host: Dr. Torsten Mütze
  Period: October 2018 (4 days)
- **Comenius University**, Bratislava, Slovakia
  Host: Prof. Martin Škoviera
  Period: March 2016 (1 week), June 2018 (3 days)

- **University of Cologne**, Cologne, Germany
  Host: Prof. Oliver Schaudt
  Period: December 2014 (3 days), March 2015 (1 week), July 2015 (3 days), December 2015 (3 days), June 2016 (2 days)
- **University of Sheffield**, Sheffield, UK
  Host: Prof. Patrick W. Fowler
  Period: April 2016 (3 days)
- **Ecole Normale Supérieure de Lyon**, Lyon, France
  Host: Dr. Ararat Harutyunyan
  Period: May 2015 (4 days)
- **Rochester Institute of Technology**, Rochester, NY, USA
  Host: Prof. Stanislaw P. Radziszowski
  Period: April 2013 (2 weeks)
- **Australian National University**, Canberra, Australia
  Host: Prof. Brendan D. McKay
  Period: February - June 2011 (5 months)

## Invited seminars

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- *Obstructions for 3-colouring graphs with one forbidden induced subgraph*, TU Berlin, Berlin, 10/2018.
- *Bounds for the smallest k-chromatic graphs of given girth*, Comenius University, Slovakia, 06/2018.
- *Generation algorithms and large-scale analysis for solving mathematical and chemical problems*, Université de Mons, Belgium, 05/2017.
- *Generation of fullerenes*, University of Cologne, Germany, 06/2016.
- *Generation of cubic graphs and snarks*, Comenius University, Slovakia, 03/2016.
- *Obstructions for 3-colouring graphs with one forbidden induced subgraph*, Université libre de Bruxelles, Belgium, 12/2015.
- *Generation of cubic graphs with large girth*, University of Cologne, Germany, 12/2015.
- *Minimal obstructions to graph colouring*, University of Cologne, Germany, 07/2015.
- *Finding minimal obstructions to graph colouring through graph enumeration*, Ecole Normale Supérieure de Lyon, France, 05/2015.
- *Finding minimal obstructions to graph colouring through graph enumeration*, RWTH Aachen University, Germany, 03/2015.
- *Graph Enumeration for Solving Mathematical and Chemical Problems*, University of Cologne, Germany, 12/2014.

- *Generation Algorithms for Mathematical and Chemical Problems*, Rochester Institute of Technology, USA, 04/2013.
- *Graph Enumeration in Chemistry and Mathematics*, Université libre de Bruxelles, Belgium, 12/2012.
- *Fast Generation of Cubic Graphs, Snarks and Fullerenes*, Australian National University, Australia, 06/2011.
- *Fast Generation of Cubic Graphs and Snarks*, University of Newcastle, Australia, 02/2011.

## Talks at conferences

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- Colloquium on Combinatorics 2018, Paderborn, Germany, 23-24/11/18.
- Bucharest Graph Theory Workshop, Bucharest, Roumania, 15-17/08/18.
- 10th International Colloqium on Graph Theory and Combinatorics, Lyon, France, 09-13/07/18.
- Colloquium on Combinatorics 2017, Paderborn, Germany, 24-25/11/17.
- Computers in Scientific Discovery 7, Mons, Belgium, 23-25/08/17.
- Canadian Discrete and Algorithmic Mathematics Conference 2017, Toronto, Canada, 12-15/06/17.
- Bordeaux Graph Workshop, Bordeaux, France, 07-10/11/16.
- Graph Theory Workshop on Longest Paths and Longest Cycles, Ghent, Belgium, 01-02/08/16.
- Twenty-Seventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA16), Arlington, Virginia, USA, 10-12/01/16.
- Colloquium on Combinatorics 2015, Ilmenau, Germany, 06-07/11/15.
- Canadian Discrete and Algorithmic Mathematics Conference 2015, Saskatoon, Canada, 01-04/06/15.
- Colloquium on Combinatorics 2014, Ilmenau, Germany, 07-08/11/14.
- Canadian Discrete and Algorithmic Mathematics Conference 2013, St. John's, Canada, 10-13/06/13.
- Colloquium on Combinatorics 2012, Berlin, Germany, 16-17/11/12.
- Computers in Scientific Discovery 6, Portorož, Slovenia, 21-25/08/12.
- International Congress on Computational and Applied Mathematics 2012, Ghent, Belgium, 09-13/07/12.
- SIAM Conference on Discrete Mathematics 2012, Halifax, Canada, 18-21/06/12.

- Colloquium on Combinatorics 2011, Magdeburg, Germany, 11-12/11/11.
- Colloquium on Combinatorics 2010, Saarbrücken, Germany, 12-13/11/10.
- Workshop on Discrete Mathematics and Algorithms, Brussels, Belgium, 05/10/10.
- Computers in Scientific Discovery 5, Sheffield, UK, 20-23/07/10.
- 8th French Combinatorial Conference, Orsay, France, 28/06 - 02/07/10.
- Colloquium on Combinatorics 2009, Magdeburg, Germany, 13-14/11/09.

## Teaching

I am/was lecturer for the following courses at Ghent University:

- C002352 - *Cross-course Project* (third year B.Sc. in Informatics): 2015, 2016, 2017.
- C003784 - *Software Engineering Lab 2* (third year B.Sc. in Informatics): 2018, 2019.

I acted as teaching assistant for the following courses at Ghent University:

- C002794 - *Algorithms and Data Structures* (second and third year B.Sc. in Mathematics): 2014, 2015, 2016, 2017, 2018.
- C002692 - *Algorithms and Data Structures II* (second year B.Sc. in Informatics): 2009, 2010, 2011, 2012.
- C000407 - *Mathematical Optimisation* (third year B.Sc. in Mathematics): 2012, 2013.

I was mentor of 2 M.Sc. students and (co)supervisor of 5 M.Sc. students.

## Academic service

I have performed reviews for amongst others the following A1 journals:

- Central European Journal of Mathematics
- Discrete Applied Mathematics
- Discrete Mathematics
- European Journal of Combinatorics
- Journal of Graph Theory

## Other

- Co-organiser of the *Ghent Graph Theory Workshop* which took place on 16-18 August 2017. (See: `http://www.ggtw.ugent.be/` for details).
- Organiser of the *"Computational combinatorics"* minisymposium at the *Canadian Discrete and Algorithmic Mathematics Conference* (held in Toronto, Canada on 12-15 June 2017).
- Secretary of the computer science examination committee at Ghent University (since October 2016).
- Representative of postdocs and Ph.D. students in the department council at Ghent University.
- Organiser of the *"Algorithmic construction of combinatorial objects"* minisymposium at the *Canadian Discrete and Algorithmic Mathematics Conference* (held in Saskatoon, Canada on 1-4 June 2015).
- Member of the organising committee of the *Computers in Scientific Discovery 5* conference (held in Sheffield, UK on 20-23 July 2010).
- Webmaster of the *House of Graphs*. Available online at: `http://hog.grinvin.org/`