Jan Bok

Postdoctoral researcher at LIMOS, University of Clermont Auvergne

Office F102, Bâtiment F
LIMOS, Campus Universitaire des Cézeaux
1 rue de la Chebarde
63178 Aubière CEDEX, France

`jan.bok@uca.fr` or `bok@iuuk.mff.cuni.cz`

`https://janbok.github.io`

Last updated March 15, 2024.

Employment

- February 2023–now: Postdoctoral researcher at LIMOS, University of Clermont Auvergne, hosted by Florent Foucaud (`https://perso.limos.fr/ffoucaud/`).
- September 2019–February 2023: Part-time research assistant at Computer Science Institute, Faculty of Mathematics and Physics, Charles University.

Education

- Doctoral degree (Ph.D.) in Discrete Models and Algorithms at the Faculty of Mathematics and Physics, Charles University (graduated December 2022)
- Advisor: Prof. Jaroslav Nešetřil
- Doctoral thesis: *Structure and complexity of homomorphisms*
- University repository: `http://hdl.handle.net/20.500.11956/179840`

- Master degree (Mgr.) in Discrete Models and Algorithms at the Faculty of Mathematics and Physics, Charles University (graduated September 2017)
- Advisor: Prof. Jaroslav Nešetřil
- Master thesis: *Structural aspects of graph homomorphisms*

- Bachelor degree (Bc.) in General Computer Science at the Faculty of Mathematics and Physics, Charles University (graduated September 2014)
- Advisor: Prof. Milan Hladík
- Bachelor thesis: *Cooperative interval games*

Research interests

- Algebraic graph theory, graph homomorphisms and colourings
- Algorithms and complexity
- Cooperative game theory
- Chemical graph theory

Publications

The publications are ordered in reverse chronological order. The list includes only accepted and submitted papers, excluding those in preparation.

1. Jan Bok, Jiří Fiala, Nikola Jedličková, Jan Kratochvíl, and Paweł Rzążewski: *List covering of regular multigraphs with semi-edges.* Algorithmica, 86:782–807, 2023.
   https://doi.org/10.1007/s00453-023-01163-7
   https://arxiv.org/abs/2204.04280
2. Jan Bok, and Martin Černý: *1-convex extensions of incomplete cooperative games and the average value.* Theory and Decision, 96:239–268, 2024.
   https://doi.org/10.1007/s11238-023-09946-8
   https://arxiv.org/abs/2107.04679
3. Jan Bok, Jiří Fiala, Petr Hliněný, Nikola Jedličková, and Jan Kratochvíl: *Computational Complexity of Covering Multigraphs with Semi-Edges: Small Cases.* Submitted, 2023.
   https://arxiv.org/abs/2103.15214
4. Jan Bok, Jiří Fiala, Nikola Jedličková, Jan Kratochvíl, and Michaela Seifrtová: *Computational Complexity of Covering Colored Mixed Multigraphs with Degree Partition Equivalence Classes of Size at Most Two.* In Graph-Theoretic Concepts in Computer Science, WG 2023, volume 14093 of Lecture Notes in Computer Science, pages 101—115, 2023.
   https://doi.org/10.1007/978-3-031-43380-1_8
5. Jan Bok, Richard C. Brewster, Tomás Feder, Pavol Hell, and Nikola Jedličková: *List homomorphisms to separable signed graphs.* Submitted, 2023.
   https://arxiv.org/abs/2306.06449
6. Jan Bok, Richard C. Brewster, Nikola Jedličková, Pavol Hell, and Arash Rafiey: *Min orderings and list homomorphism dichotomies for signed and unsigned graphs.* Submitted, 2023.
   https://arxiv.org/abs/2206.01068
7. Jan Bok, Jiří Fiala, Nikola Jedličková, Jan Kratochvíl, and Michaela Seifrtová: *Computational Complexity of Covering Disconnected Multigraphs.* Submitted, 2023.
   https://arxiv.org/abs/2306.06431
8. Jan Bok, Richard C. Brewster, Tomás Feder, Pavol Hell, and Nikola Jedličková: *List homomorphism problems for signed trees.* Discrete Mathematics, 346(3):113257, 2023.
   https://doi.org/10.1016/j.disc.2022.113257
   https://arxiv.org/abs/2005.05547
9. Jan Bok, Richard C. Brewster, Nikola Jedličková, Pavol Hell, and Arash Rafiey: *Min orderings and list homomorphism dichotomies for signed and unsigned graphs.* In LATIN 2022: Theoretical Informatics - 15th Latin American Symposium, volume 13568 of Lecture Notes in Computer Science, pages 510–526, 2022.
   https://doi.org/10.1007/978-3-031-20624-5_31
10. Jan Bok, Jiří Fiala, Nikola Jedličková, Jan Kratochvíl, and Paweł Rzążewski: *List covering of regular multigraphs.* In Combinatorial Algorithms - 33rd International Workshop, IWOCA 2022, volume 13270 of Lecture Notes in Computer Science, pages 228–242, 2022.

https://doi.org/10.1007/978-3-031-06678-8_17

11. Jan Bok, Richard C. Brewster, Tomás Feder, Pavol Hell, and Nikola Jedličková: *List homomorphisms to separable signed graphs*. In Algorithms and Discrete Applied Mathematics - 8th International Conference, CALDAM 2022, volume 13179 of Lecture Notes in Computer Science, pages 22–35, 2022.
https://doi.org/10.1007/978-3-030-95018-7_3

12. Martin Černý, Jan Bok, David Hartman, and Milan Hladík: *Positivity and convexity in incomplete cooperative games*. Submitted, 2022.
https://arxiv.org/abs/2010.08578

13. Jan Bok, Jiří Fiala, Nikola Jedličková, Jan Kratochvíl, and Michaela Seifrtová: *Computational Complexity of Covering Disconnected Multigraphs*. In Fundamentals of Computation Theory, FCT 2021, volume 12867 of Lecture Notes in Computer Science, pages 85–89, 2021.
https://doi.org/10.1007/978-3-030-86593-1_6

14. Jan Bok, Jiří Fiala, Petr Hliněný, Nikola Jedličková, and Jan Kratochvíl: *Computational Complexity of Covering Multigraphs with Semi-Edges: Small Cases*. In 46th International Symposium on Mathematical Foundations of Computer Science, MFCS 2021, volume 202 of Leibniz International Proceedings in Informatics (LIPIcs), pages 21:1–21:15, 2021.
http://doi.org/10.4230/LIPIcs.MFCS.2021.21

15. Jan Bok: *Cooperative Interval Games and Selections Revisited*. In Proceedings of the 16th International Symposium on Operational Research in Slovenia, SOR'21, pages 663–669, 2021.

16. Jan Bok, and Nikola Jedličková: *Edge-sum distinguishing labeling*. Commentationes Mathematicae Universitatis Carolinae 62(2):135–149, 2021.
http://doi.org/10.14712/1213-7243.2021.010
https://arxiv.org/abs/1804.05411

17. Jan Bok, Nikola Jedličková, Barnaby Martin, Pascal Ochem, Daniël Paulusma, and Siani Smith: *Acyclic, Star and Injective Colouring: A Complexity Picture for H-Free Graphs*. Submitted, 2021.
https://arxiv.org/abs/2008.09415

18. Jan Bok, Nikola Jedličková, Barnaby Martin, Daniël Paulusma, and Siani Smith: *Injective Colouring for H-Free Graphs*. In Computer Science – Theory and Applications, CSR 2021, volume 12730 of Lecture Notes in Computer Science, pages 18–30, 2021.
https://doi.org/10.1007/978-3-030-79416-3_2

19. Jan Bok, Nikola Jedličková, and Jana Maxová: *A Relaxed Version of Šoltés's Problem and Cactus Graphs*. Bulletin of the Malaysian Mathematical Sciences Society, 44:3733—3745, 2021.
https://doi.org/10.1007/s40840-021-01144-5
https://arxiv.org/abs/1911.10502

20. Jan Bok, Richard C. Brewster, Tomás Feder, Nikola Jedličková, and Pavol Hell: *List Homomorphism Problems for Signed Graphs*. In 45th International Symposium on Math-

ematical Foundations of Computer Science, MFCS 2020, volume 170 of Leibniz International Proceedings in Informatics (LIPIcs), pages 170:20:1–20:14, 2020.
https://doi.org/10.4230/LIPIcs.MFCS.2020.20

21. Jan Bok, Nikola Jedličková, Barnaby Martin, Daniël Paulusma, and Siani Smith: *Acyclic, Star and Injective Colouring: A Complexity Picture for H-Free Graphs.* In 28th Annual European Symposium on Algorithms, ESA 2020, volume 173 of Leibniz International Proceedings in Informatics (LIPIcs), pages 173:22:1–22:22, 2020.
https://doi.org/10.4230/LIPIcs.ESA.2020.22

22. Jan Bok, Nikola Jedličková, and Jana Maxová: *On relaxed Šoltés's problem.* Acta Mathematica Universitatis Comenianae 88(3):475–480, 2019.
http://www.iam.fmph.uniba.sk/amuc/ojs/index.php/amuc/article/view/1173

23. Jan Bok, and Jana Maxová: *Characterizing subclasses of cover-incomparability graphs by forbidden subposets.* Order 36(2):349–358, 2019.
https://doi.org/10.1007/s11083-018-9470-7
https://arxiv.org/abs/1801.03413

24. Jan Bok, Boris Furtula, Nikola Jedličková, and Riste Škrekovski: *On Extremal Graphs of Weighted Szeged Index.* MATCH 82(1):93–109, 2019.
https://match.pmf.kg.ac.rs/electronic_versions/Match82/n1/match82n1_93-109.pdf
https://arxiv.org/abs/1901.04764

25. Jan Bok, and Jaroslav Nešetřil: *Graph-indexed random walks on pseudotrees.* Electronic Notes in Discrete Mathematics 68:263–268, 2018.
https://doi.org/10.1016/j.endm.2018.06.045

26. Jan Bok, and Milan Hladík: *Selection-Based Approach to Cooperative Interval Games.* In Operations Research and Enterprise Systems, ICORES 2015, volume 577 of Communications in Computer and Information Science, pages 40-53, 2015.
https://doi.org/10.1007/978-3-319-27680-9_3
https://arxiv.org/abs/1410.3877

Grants and funding

- *GRALMECO: Algorithmics for metric covering problems in graphs*
  Team member, 2023–now
  ANR-JCJC project
- *Dynamics and Structure of Networks (DYNASNET)*
  Team member, December 2021–February 2023
  European Research Council (ERC) Synergy grant
- *Combinatorial Structures and Processes: Research and Innovation Staff Exchange*
  Three times a seconded researcher, 2019–2023
  European Union's Horizon 2020, Marie Skłodowska-Curie grant agreement No 823748
- *Global sensitivity analysis and stability in optimization problems*
  Team member, 2022–2023
  Czech Science Foundation (GAČR P403-22-11117S)
- *Graph coverings: Symmetry and complexity*

Team member, 2020–2022
Czech Science Foundation (GAČR 20-15576S)

- *Homomorphisms, colourings, and labellings of selected graph classes*
  Co-investigator, 2022
  Grant Agency of Charles University (GAUK 370122)
- *Cooperative games with partial information*
  Co-investigator, 2021–2022
  Grant Agency of Charles University (GAUK 341721)
- *Computational aspects and structure of graph homomorphisms*
  Principal investigator, 2019–2021
  Grant Agency of Charles University (GAUK 1580119), 30000 € in total
- *Algorithmic problems for interval graphs and its generalizations*
  Co-investigator, 2019–2021
  Grant Agency of Charles University (GAUK 1198419), 30000 € in total
- *Novel approaches for relaxation and approximation techniques in deterministic global optimization*
  Team member, 2018–2021
  Czech Science Foundation (GAČR P403-18-04735S)
- *Algorithmic Game Theory*
  Team member, 2016–2017
  Grant Agency of Charles University (GAUK 391715)
- *Algorithmic, structural and complexity aspects of graph classes*
  Co-investigator, 2018
  Grant Agency of Charles University (GAUK 1334217)
- *Center of Excellence – Institute for Theoretical Computer Science*
  Team member, 2018
  Czech Science Foundation (GAČR P202-12-G061 CE-ITI)
- *Algorithmic and Structural Aspects of Homomorphisms Between Graphs and Integers*
  Principal investigator, 2016–2018
  Grant Agency of Charles University (GAUK 1158216), 22000 € in total

- *Travel micro-grant to attend KOLKOM 2023*
  Recipient, October 2023
  MCAA (Marie Curie Alumni Association), No. 31291
- Supervisor of 6 Student Faculty Grants at Charles University, 2017–2021.
- Investigator of 7 Student Faculty Grants (small grants for undergraduate students) at Charles University, 2014–2017.

Awards and competitions

- Participant of Central European round of ACM-ICPC programming competition in Kraków, Poland in 2012.
- Best Student Paper Award for *Selection-based approach to cooperative interval games* paper at ICORES 2015 conference.

- The first place in SVOČ (Czech-Slovak Student Competition in Mathematics and Computer Science Research) in Bratislava, Slovakia, 2015, category Financial Mathematics and Econometrics, with work *Cooperative interval games*.
- The Best Teaching Assistant Award for tutorials for Linear algebra 1 at the Faculty of Mathematics and Physics, Charles University in 2015/2016.
- The third prize in Best Student Paper Competition in Theoretical Economics 2018 of Czech Econometric Society.

Research visits and stays

- Université Nice Sophia Antipolis; Nice, France, March 2016 (1 week).
- Rényi Institute of Mathematics; Budapest, Hungary, November–December 2016 (2 weeks).
- University of Ljublanja; Ljublanja, Slovenia, November 2018 (1 week).
- Université Paris Diderot; Paris, France, December 2018 (2 weeks).
- Simon Fraser University; Vancouver, BC, Canada, February-April 2019 (2 months).
- Thompson Rivers University; Kamloops, Canada, April 2019 (1 week).
- Laboratoire Bordelais de Recherche en Informatique, University of Bordeaux; Bordeaux, France, November 2019 (1 week).
- Durham University; Durham, UK, December 2019 (1 week).
- Simon Fraser University; Vancouver, BC, Canada, February–July 2020 (5 months).
- National Autonomous University of Mexico (Universidad Nacional Autónoma de México, UNAM); Mexico City, Mexico, November–December 2022 (1 month).
- Simon Fraser University; Vancouver, BC, Canada, January–February 2023 (6 weeks).

Talks and presentations

1. UECE Lisbon Meetings 2014: Game Theory and Applications; Lisbon, Portugal.
2. ICORES 2015 — International Conference on Operations Research and Enterprise Systems; Lisbon, Portugal.
3. SWIM 2015 — 8th Small Workshop on Interval Methods; Prague, Czech Republic.
4. SING-GMT 2015 — European Meeting on Game Theory; St. Petersburg, Russian Federation.
5. Highlights of Logic, Games and Automata 2015; Prague, Czech Republic.
6. 1st Croatian Combinatorial Days 2016; Zagreb, Croatia.
7. Bordeaux Graph Workshop 2016; Bordeaux, France.
8. 52nd Czech-Slovak Conference on Combinatorics and Graph Theory; 2017, Hejnice, Czech Republic.
9. PhD Summer School in Discrete Mathematics 2017; Rogla, Slovenia.
10. *(session invited speaker)* MAT TRIAD International Conference on Matrix Analysis and its Applications; 2017, Będlewo, Poland.
11. Discrete Mathematics Days 2018; Sevilla, Spain.
12. 1st Montenegrin Symposium on Graphs, Informatics and Algebra; 2018, Tivat, Montenegro.
13. 2nd Croatian Combinatorial Days (CroCoDays); 2018, Zagreb, Croatia.
14. WINE 2018: The 14th Conference on Web and Internet Economics; Oxford, UK. *(lightning talk + poster)*

15. 50th Southeastern International Conference on Combinatorics, Graph Theory and Computing 2019; Boca Raton, FL, USA.
16. 30th European Conference on Operational Research EURO-K 2019; Dublin, Ireland.
17. PhD Summer School in Discrete Mathematics 2019; Rogla, Slovenia.
18. MAT TRIAD International Conference on Matrix Analysis and its Applications; 2019, Liblice, Czech Republic.
19. 2nd Montenegrin Symposium on Graphs, Informatics and Algebra; 2019, Budva, Montenegro.
20. UECE Lisbon Meetings 2019: Game Theory and Applications; Lisbon, Portugal.
21. Bordeaux Graph Workshop 2019; Bordeaux, France.
22. 51st Southeastern International Conference on Combinatorics, Graph Theory and Computing 2020; Boca Raton, FL, USA.
23. 45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020); (online) Prague, Czech Republic.
24. 3rd Croatian Combinatorial Days 2020; Zagreb, Croatia.
25. 18th International Conference on Operational Research (KOI) 2020; Šibenik, Croatia.
26. 28th British Combinatorial Conference (BCC) 2021; (online) Durham, United Kingdom.
27. European Meeting on Game Theory 2021 (SING16); (online) Granada, Spain.
28. 46th International Symposium on Mathematical Foundations of Computer Science (MFCS 2021); Tallinn, Estonia.
29. 39th International Conference on Mathematical Methods in Economics (MME 2021); Prague, Czech Republic.
30. The 16th International Symposium on Operations Research in Slovenia (SOR'21); (online) Bled, Slovenia.
31. NORS (The Norwegian Operations Research Society) Annual Conference 2021; Bergen, Norway.
32. Combinatorial Constructions Workshop 2022; Zagreb, Croatia.
33. 32nd European Conference on Operational Research EURO 2022; Espoo, Finland.
34. Cycles and Colourings 2022; Nový Smokovec, Slovakia.
35. Maribor Graph Theory Conference (MGTC) 2022; Maribor, Slovenia.
36. 10th Workshop on Graph Classes, Optimization and Width Parameters (GROW) 2022; Koper, Slovenia.
37. 19th International Conference on Operational Research (KOI) 2020; Šibenik, Croatia.
38. Corvinus Game Theory Seminar; Corvinus University, Budapest, Hungary, November 2022.
39. The 15th Latin American Theoretical Informatics Symposium (LATIN 2022); Guanajuato, Mexico
40. NORS (The Norwegian Operations Research Society) Annual Conference 2022; Trondheim, Norway.
41. KOLKOM 2023: The 40th Colloquium on Combinatorics (Kolloqium über Kombinatorik); Heidelberg, Germany
42. Dutch Days of Combinatorics 2024; Amsterdam, The Netherlands
43. *(session invited speaker)* ISMP 2024 (International Symposium on Mathematical Programming); Montréal, Canada

Supervised students and theses

- Martin Černý (Faculty of Mathematics and Physics, Charles University)
  - Master thesis: *Cooperative games with partial information*
  - Defended in September 2021.
  - Awarded with *Dean's Award for the best master thesis of academic year 2020/2021*.

Teaching experience

I led tutorials for the following courses at the Faculty of Mathematics and Physics, Charles University.

- Discrete mathematics in 2014/2015 and 2015/2016.
- Linear algebra 1 in 2015/2016 and 2021/2022.
- Linear algebra 2 in 2014/2015, 2015/2016, 2021/2022.
- Algorithms and data structures 1 in 2015/2016.
- Linear algebra applications in combinatorics in 2016/2017, 2018/2019, and 2020/2021.

I also taught the following courses.

- Optimization seminar in 2019/2020, 2020/2021, and 2021/2022.
- Cooperative game theory seminar in 2021/2022.

Membership in research groups and organizations

- Mathematical Optimization Society (2004)
- Groupe de Travail AlCoLoCo (Algorithmique, Combinatoire, Logique et Complexité), `https://alcoloco.isima.fr` (February 2023–May 2024)
- Society for Social Choice and Welfare (since 2023)
- EUROYoung Forum of EURO (since 2022)
- Marie Curie Alumni Association (since 2021)
- Game Theory Society (since 2021)
- Czech Society for Operations Research (since 2020)
- Charles University Chapter of Society for Industrial and Applied Mathematics (SIAM) (since 2018)

- Interval Methods Group, `http://kam.mff.cuni.cz/gim/index.html#/about-us`
- Algorithmic Game Theory Group, `https://kam.mff.cuni.cz/agtg/`
- STRUCO: Structures in Combinatorics, `https://www.irif.fr/~charbit/STRUCO/`

Organizing and other activities

- Member of the organizing committee for 8th Czech-Slovak International Symposium on Graph Theory, Combinatorics, Algorithms and Applications in 2022. `https://kam.mff.cuni.cz/conferences/csgt2022/committees.html`.
- Member of the organizing committee for MAT TRIAD 2019 conference. `http://mattriad.math.cas.cz`.
- Technical editor of ITI Series (`http://iti.mff.cuni.cz/series/`), preprint series of Computer Science Institute of Charles University, 2018–2022.

- Junior organizer of Spring School in Combinatorics 2015 (held by the Department of Applied Mathematics, Faculty of Mathematics and Physics, Charles University).
- Occasional conference reporter for IFORS Newsletter.

Profiles and IDs

The profiles do not necessarily contain complete data. Refer to the list of publications above for a complete list.

- arXiv: `https://arxiv.org/a/bok_j_1.html`
- dblp: `http://dblp.uni-trier.de/pers/hd/b/Bok:Jan`
- Google Scholar: `https://scholar.google.com/citations?user=N-YMakMAAAAJ&hl=en&oi=sra`
- ORCID: `https://orcid.org/0000-0002-7973-1361`
- Scopus/ResearcherID: `https://www.scopus.com/authid/detail.uri?authorId=56938140600`
- zbMath: `https://zbmath.org/authors/?q=bok.jan`
- Mathematics Genealogy Project: `https://genealogy.math.ndsu.nodak.edu/id.php?id=292888`

Language and programming skills

- English (fluent), Czech (native).
- Skills in various tools and languages, mainly C/C++, Python, Unix tools, Matlab/INTLAB, TEX, LaTEX, METAPOST...

References

- Pavol Hell, Simon Fraser University, `pavol@sfu.ca`
- Jan Kratochvíl, Charles University, `honza@kam.mff.cuni.cz`
- Jaroslav Nešetřil, Charles University, `nesetril@iuuk.mff.cuni.cz`
- Richard C. Brewster, Thompson Rivers University, `rbrewster@tru.ca`
- Milan Hladík, Charles University, `hladik@kam.mff.cuni.cz`
- Florent Foucaud, University of Clermont Auvergne, `florent.foucaud@uca.fr`