

# Jan Bok

PhD student at the Computer Science Institute of Charles University.

Computer Science Institute of Charles University  
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Born September 21, 1991 in Litoměřice, Czech Republic.

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## Education

- Currently a PhD student of Discrete Models and Algorithms at the Computer Science Institute of Charles University (since 2017).
- Advisor: prof. RNDr. Jaroslav Nešetřil, DrSc. (full professor)  
<http://kam.mff.cuni.cz/~nesetril/en/>
- Doctoral Thesis: *Structure and Complexity of Homomorphisms* - in progress.
  
- Master degree in Discrete Models and Algorithms at the Computer Science Institute of Charles University (graduated in 2017).
- Advisor: prof. RNDr. Jaroslav Nešetřil, DrSc. (full professor)  
<http://kam.mff.cuni.cz/~nesetril/en/>
- Master Thesis: *Structural Aspects of Graph Homomorphisms*.
  
- Bachelor degree in General Computer Science at the Faculty of Mathematics and Physics, Charles University (graduated in 2014).
- Advisor: doc. Mgr. Milan Hladík, PhD. (associate professor)  
<http://kam.mff.cuni.cz/~hladik/index.html>
- Bachelor Thesis: *Cooperative Interval Games*.

## Employment

- September 2019-now: Part-time research assistant at the Computer Science Institute of Charles University.

## Research interests

- Algebraic graph theory and graph homomorphisms
- Cooperative game theory
- Algorithms and complexity
- Interval analysis
- Chemical graph theory

## Awards and competitions

- Best Student Paper Award for *Selection-based approach to cooperative interval games* paper at ICORES 2015 conference.

- The third prize in Best Student Paper Competition in Theoretical Economics 2018 of Czech Econometric Society.
- The first place in ŠVOČ (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.
- Participant of Central European round of ACM-ICPC programming competition in Krakow, Poland in 2012.

### Grants and funding (selected)

- Principal investigator of the grant *Computational aspects and structure of graph homomorphisms*; GAUK 1580119. Supported by the Grant Agency of Charles University, funded from 2019 to 2021.
- Investigator of the grant *Algorithmic problems for interval graphs and its generalizations*; GAUK 1198419. Supported by the Grant Agency of Charles University, funded from 2019 to 2021.
- Investigator of the grant *Cooperative games with partial information*; GAUK 341721. Supported by the Grant Agency of Charles University, funded from 2021 to 2023.
- Member of the research team of GAČR P403-18-04735S: *Novel approaches for relaxation and approximation techniques in deterministic global optimization*, funded from 2018 to 2020 by the Czech Science Foundation.
- Member of the research team of GAČR 20-15576S *Graph coverings: Symmetry and complexity*, funded from 2020 to 2022 by the Czech Science Foundation.
- Investigator of the grant *Algorithmic Game Theory*; GAUK 391715. Supported by the Grant Agency of Charles University, funded from 2016 to 2017.
- Investigator of the grant *Algorithmic, structural and complexity aspects of graph classes*; GAUK 1334217. Supported by the Grant Agency of Charles University, 2018.
- Member of the research team of GAČR P202-12-G061 CE-ITI: *Center of Excellence – Institute for Theoretical Computer Science*, 2018.
- Principal investigator of the grant *Algorithmic and Structural Aspects of Homomorphisms Between Graphs and Integers*; GAUK 1158216. Supported by the Grant Agency of Charles University, funded from 2016 to 2018.
- Twice a seconded researcher in the grant Combinatorial Structures and Processes: Research and Innovation Staff Exchange project (funded by European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 823748). <https://kam.mff.cuni.cz/rise/>
- Principal investigator for several Student Faculty Grants (small grants for undergraduate students) from 2014 to 2017.
- Supervised 6 Student Faculty Grants between 2017 and 2021.

### Research visits and stays

- Université Nice Sophia Antipolis; Nice, France, March 2016.
- Rényi Institute of Mathematics; Budapest, Hungary, November/December 2016.
- University of Ljublanja; Ljublanja, Slovenia, November 2018.

- Université Paris Diderot; Paris, France, December 2018.
- Simon Fraser University (on invitation of Prof. Pavol Hell); Vancouver, BC, Canada, February-April (2 months) 2019.
- Thompson Rivers University; Kamloops, Canada, April 2019.
- Laboratoire Bordelais de Recherche en Informatique, University of Bordeaux; Bordeaux, France, November 2019.
- Durham University; Durham, UK, December 2019.
- Simon Fraser University (on invitation of Prof. Pavol Hell); Vancouver, BC, Canada, February-July (5 months) 2020.

## Supervised students and theses

- Martin Černý (Faculty of Mathematics and Physics, Charles University)
  - Master thesis: *Cooperative games with partial information*
  - Defended in 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 and 2015/2016.
- 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.

## Profiles

- arXiv: <https://arxiv.org/search/?query=Jan+Bok&searchtype=author>
- dblp: <http://dblp.uni-trier.de/pers/hd/b/Bok:Jan>
- Google Scholar: <https://scholar.google.cz/citations?user=N-YMakMAAAAJ&hl=en&oi=sra>
- ORCID: <https://orcid.org/0000-0002-7973-1361>

## Membership in research groups and organizations

- Interval Methods Group, <http://kam.mff.cuni.cz/gim/index.html#/about-us>
- Algorithmic Game Theory Group, <https://kam.mff.cuni.cz/agt/index.html#/about-us>
- STRUCO: Structures in Combinatorics, <https://www.irif.fr/~charbit/STRUCO/>
- Charles University Chapter of Society for Industrial and Applied Mathematics (SIAM) (since 2018)
- Czech Society for Operations Research (since 2020)
- European Association for Theoretical Computer Science (EATCS) (since 2020)
- Marie Curie Alumni Association (since 2021)
- Game Theory Society (since 2021)

## Organizing

- Member of the organizing committee for MAT TRIAD 2019 conference — <http://matriad.math.cas.cz>
- Editor of ITI Series (<http://iti.mff.cuni.cz/series/>) — preprint series of Computer Science Institute of Charles University — since 2018.
- Junior organizer of Spring School in Combinatorics 2015, held by the Department of Applied Mathematics, Faculty of Mathematics and Physics, Charles University.

## Language and programming skills

- Fluent in English and Czech.
- Programming skills in various tools and languages, mainly C/C++, Unix tools, Matlab/INTLAB,  $\text{\TeX}$ ,  $\text{\LaTeX}$ , METAPOST, advanced knowledge of Apple systems.

## Publications

The publications are ordered from newest to oldest.

1. 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.
2. 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.
3. Jan Bok: *Cooperative Interval Games and Selections Revisited*. Accepted to SOR'21, 2021.
4. Jan Bok, and Martin Černý: *1-convex extensions of partially defined cooperative games and the average value*. Submitted, 2021. <https://arxiv.org/abs/2107.04679>
5. Jan Bok, Martin Černý, David Hartman, and Milan Hladík: *Convexity and positivity in partially defined cooperative games*. Submitted, 2021. <https://arxiv.org/abs/2010.08578>
6. Jan Bok, Richard B. Brewster, Tomás Feder, Nikola Jedličková, and Pavol Hell: *List Homomorphism Problems for Signed Graphs*. Submitted, 2021. <https://arxiv.org/abs/2005.05547>
7. Jan Bok, and Nikola Jedličková: *Edge-sum distinguishing labeling*. Commentationes Mathematicae Universitatis Carolinae 62(2):135–149, 2021.
8. 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](https://doi.org/10.1007/978-3-030-79416-3_2)
9. 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.

10. Jan Bok, Nikola Jedličková, and Jana Maxová: *A Relaxed Version of Šoltés's Problem and Cactus Graphs*. Bulletin of the Malaysian Mathematical Sciences Society, online first, 2021. <https://doi.org/10.1007/s40840-021-01144-5>
11. Jan Bok, Richard B. Brewster, Tomás Feder, Nikola Jedličková, and Pavol Hell: *List Homomorphism Problems for Signed Graphs*. In 45th International Symposium on Mathematical Foundations of Computer Science, MFCS 2020, volume 170 of Leibniz International Proceedings in Informatics (LIPIcs), pages 170:20:1–20:14, 2020.
12. 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.
13. Jan Bok, Nikola Jedličková, and Jana Maxová: *On relaxed Šoltés's problem*. Acta Mathematica Universitatis Comenianae 88(3):475–480, 2019.
14. Jan Bok, and Jana Maxová: *Characterizing subclasses of cover-incomparability graphs by forbidden subposets*. Order 36(2):349–358, 2019.
15. Jan Bok, Boris Furtula, Nikola Jedličková, and Riste Škrekovski: *On Extremal Graphs of Weighted Szeged Index*. MATCH 82(1):93–109, 2019.
16. Jan Bok, and Jaroslav Nešetřil: *Graph-indexed random walks on pseudotrees*. Electronic Notes in Discrete Mathematics 68:263–268, 2018.
17. 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.