

# Bernard Lidický

## *Curriculum Vitae*

Department of Mathematics  
Iowa State University  
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### Education

PhD. [Charles University in Prague](#), Czech Republic 10/2007–07/2011  
Dissertation: *Graph coloring problems*, advisor [J. Fiala](#)

Master's degree (summa cum laude), [Charles University in Prague](#) 10/2002–09/2007  
Thesis: *Variants of the coloring problem*, advisor [J. Fiala](#)

### Appointments

Professor 08/2022–to date  
Associate Chair for Research and Faculty Development 2020–to date  
Associate Professor 08/2018–08/2022  
Assistant Professor 08/2014–07/2018  
Iowa State University, USA

J. L. Doob Research Assistant Professor (postdoc) 08/2011–08/2014  
University of Illinois at Urbana-Champaign, USA

Intern 11/2010–04/2011  
[Mitsubishi Electric Research Laboratories](#), USA

Junior researcher 10/2007–08/2011  
Charles University in Prague, Czech Republic

### Awards

- Scott Hanna Faculty Fellow \$30,000 2020–2023
- Vinograd Award for Excellence in Advising 2021  
presented by the Math Graduate Student Organization, ISU
- Award for Early Achievement in Research awarded by College of LAS, ISU 2020
- Vinograd Award for Excellence in Teaching 2020  
presented by the Math Graduate Student Organization, ISU

*Updated March 31, 2023*

**External Funding**

- PI on NSF grant, [DMS-2152490](#) \$511,449 2022–2025  
Title: FRG: Collaborative Research: Generalized Turan problems  
External research grant, to Lidický 100%.  
Applied collaboratively with proposals by PI J. Balogh (UIUC) and PI F. Pfender (CU Denver).
- PI on NSF REU Site grant [DMS-1950583](#) \$484,398 2020–2025  
Title: REU SITE: Iowa State University Mathematics REU  
co-PI S. Butler  
Mainly supporting participants of REU, to Lidický 50%.
- co-PI on NSF grant [DMS-1839918](#) \$1,500,000 2019–2024  
Title: RTG: Combinatorics, Computation and Applications at Iowa State  
PI L. Hogben, other co-PIs R. Martin, J. Newmann (replaced H. Schenck), S. Zerbib (replaced M. Young)  
External grant supporting graduate students and postdocs, to Lidický 20%.
- co-PI on NSA grant (\$24,921) 2023–2024  
Title: 2023 & 2024 Graduate Research Workshop in Combinatorics (GRWC)  
PI Steve Butler, co-PIs Pamela Harris, Tyrrell McAllister, Florian Pfender, to Lidický 20%.
- US PI on Slovenia-US collaboration grant €3000 2022–2024  
Title: From proper to strong edge-colorings  
Slovenian PI B. Lužar  
External research grant, to Lidický for local expenses in Slovenia.
- co-PI on NSF [DMS-1953445](#) \$42,581 2020–2023  
Title: Collaborative Research: Graduate Research Workshops in Combinatorics  
PI S. Butler (replaced L. Hogben), other co-PIs M. Young, S. Zerbib  
Mainly supporting participants of the workshop, to Lidický 20%.
- PI on NSF grant [DMS-1855653](#) \$125,000 2019–2022  
Title: Collaborative Research: Flag Algebra Methods  
External research grant, to Lidický 100%.  
Awarded together with a separate NSF grant [DMS-1855622](#) to PI F. Pfender.
- US PI on Slovenia-US collaboration grant €3030 2019–2021  
Title: From proper to strong edge-colorings  
Slovenian PI B. Lužar  
External research grant, to Lidický for local expenses in Slovenia €1515.

- PI on NSF grant [DMS-1600390](#) \$83,000 2016–2019  
 Title: Collaborative Research: Flag Algebra and Its Applications  
 External research grant, to Lidický 100%.  
 Awarded together with a separate NSF grant [DMS-1600483](#). to PI F. Pfender
- US PI on Slovenia-US collaboration grant €3224 2017–2019  
 Title: Revealing chromatic properties of graphs  
 Slovenian PI R. Škrekovski  
 External research grant, to Lidický for local expenses in Slovenia €1612
- co-PI on NSF grant [DMS-1603823](#) \$24,321 2016–2019  
 Title: Collaborative Research: Graduate Research Workshops in Combinatorics  
 PI L. Hogben, other co-PI's R. Martin, D. Stolee, M. Young  
 Organizing workshop, funds only for students participants, to Lidický 20%.
- co-PI on NSF grant [DMS-1266016](#) \$269,919 2013–2016  
 Title: Coloring-related problems for graphs and hypergraphs with degree restrictions  
 PI A. Kostochka  
 External research grant, \$ split 2 : 1 between PI and Lidický. \$24,126 subawarded to ISU
- IMA grant supporting the Excill II conference at UIUC, Mar 2013, (joint with J. Balogh, A. Kostochka, and D. West, \$4,000) 2013  
 Organizing conference, funds for participants only, to Lidický 20%.
- PI on AMS-Simons Travel Grant \$4,000 2012–2013  
 External research grant, to Lidický 100%

### Internal Funding

- co-PI on John Deere grant \$2,000 2019–2020  
 Title: Math Bridges: a Mathematics Postbaccalaureate program at Iowa State.  
 PI M. Young  
 Materials for [Postbaccalaureate program](#) students at ISU, to Lidický 50%
- Iowa State University - Foreign Travel Grant \$1,069 2015  
 Internal grant, to Lidický 100%
- PI on Charles University student research grant, equiv. \$30,000 2010–2011  
 Internal research grant

### Publications

In mathematics, authors are traditionally listed in alphabetical order. See [AMS Culture Statement](#) for more explanation. [doi], [pdf], and [arXiv] are clickable.

#### Papers in refereed journals

70. B. Lidický, C. Mattes, F. Pfender:  *$C_5$  is almost a fractalizer*, Accepted to Journal of Graph Theory. [[arXiv](#)] [[doi](#)]
69. J. Balogh, F. Clemen, B. Lidický, S. Norin, J. Volec: *The Spectrum of Triangle-free Graphs*, Accepted to SIAM J. Discrete Math. [[arXiv](#)]
68. R. Kirsch, B. Lidický, C. Sibley, E. Sprangel: *Shortened Universal Cycles for Permutations*, Discrete Applied Mathematics 324 (2023) 219–228. [[arXiv](#)] [[doi](#)]
67. B. Lidický, T. Masařík, K. Murphy, S. Zerbib: *On Weak Flexibility in Planar Graphs*. Graphs and Combinatorics 38:180 (2022). [[arXiv](#)] [[doi](#)]
66. D. Cranston, B. Lidický, X. Liu, A. Shantanam: *Planar Turán Numbers of Cycles: A Counterexample*, Electronic Journal of Combinatorics 29 (2022) P3.31 [[arXiv](#)] [[doi](#)]
65. A. Grzesik, J. Lee, B. Lidický, J. Volec: *On tripartite common graphs*, Combinatorics, Probability and Computing 31 (2022) 907–923. [[arXiv](#)] [[doi](#)]
64. J. Balogh, F. Clemen, B. Lidický: *Maximum Number of Almost Similar Triangles in the Plane*, Computational Geometry: Theory and Applications, 105–106 (2022), 101880. [[arXiv](#)] [[doi](#)]
63. J. Balogh, F. Clemen, B. Lidický: *Hypergraph Turán Problems in  $\ell_2$ -Norm*. Surveys in Combinatorics: Invited lectures from the 29th British Combinatorial Conference. (2022) 21–63. [[arXiv](#)] [[doi](#)]
62. J. Balogh, F. Clemen, B. Lidický: *Solving Turán’s Tetrahedron Problem for the  $\ell_2$ -Norm*, Journal of the London Mathematical Society, 106 (2022) 60–84. [[arXiv](#)] [[doi](#)]
61. J. Breen, S. Butler, M. Fuentes, B. Lidický, M. Philips, A. W. N. Riasanovsky, S.-Y. Song, R. R. Villagrán, C. Wiesman, X. Zhang *Hadamard diagonalizable graphs of order at most 36*, Electronic Journal of Combinatorics 29 (2022) P2.16. [[arXiv](#)] [[doi](#)]
60. Z. Dvořák, B. Lidický: *Coloring count cones of planar graphs*, Journal of Graph Theory 100, (2022) 84–100. [[arXiv](#)] [[doi](#)]
59. A. Blumenthal, B. Lidický, R. R. Martin, S. Norin, F. Pfender, J. Volec: *Counterexamples to a conjecture of Harris on Hall ratio*, SIAM J. Discrete Math. 36 (2022), 1678–1686 [[arXiv](#)] [[doi](#)]
58. B. Lidický, K. Murphy: *Maximizing five-cycles in  $K_r$ -free graphs*, European Journal of Combinatorics, 97 (2021), 103367. [[arXiv](#)] [[doi](#)]
57. J. Balogh, F. Clemen, M. Lavrov, B. Lidický, F. Pfender: *Making  $K_{r+1}$ -free Graphs  $r$ -partite*, Combinatorics, Probability and Computing, 30(4), (2021) 609–618. [[arXiv](#)] [[doi](#)]
56. B. Lidický, F. Pfender: *Semidefinite Programming and Ramsey Numbers*, SIAM J. Discrete Math. 35, (2021), 2328–2344. [[arXiv](#)] [[doi](#)]

55. A. Blumenthal, B. Lidický, Y. Pehova, F. Pfender, O. Pikhurko, J. Volec: *Sharp bounds for decomposing graphs into edges and triangles*, *Combinatorics, Probability and Computing*, **30** (2021) 271–287. [[arXiv](#)] [[doi](#)]
  - Also at Eurocomb 2019 (*Acta Mathematica Universitatis Comenianae*, 2019, 88(3), 463–468)
54. I. Choi, B. Lidický, F. Pfender: *Inducibility of directed paths*, *Discrete Mathematics*, **343** 112015 (2020). [[arXiv](#)] [[doi](#)]
53. M. Dairyko, M. Ferrara, B. Lidický, R. R. Martin, F. Pfender, A. Uzzell: *Ore and Chvátal-type Degree Conditions for Bootstrap Percolation from Small Sets*, *Journal of Graph Theory* **94**, (2020) 252–266. [[arXiv](#)] [[doi](#)]
52. P. Bennett, A. Dudek, B. Lidický, O. Pikhurko: *Minimizing the number of 5-cycles in graphs with given edge-density*, *Combinatorics, Probability and Computing* **29**, (2020) 44–67. [[arXiv](#)] [[doi](#)]
51. B. Lidický, K. Messerschmidt, R. Škrekovski: *Facial unique-maximum colorings of plane graphs with restriction on big vertices*, *Discrete Math.* **342** (2019) 2612–2617. [[arXiv](#)] [[doi](#)]
50. J. Balogh, B. Lidický, G. Salazar: *Closing in on Hill’s Conjecture*, *SIAM J. Discrete Math.* **33** (2019) 1261–1276. [[arXiv](#)] [[doi](#)]
49. M. Bucic, B. Lidický, J. Long, A. Zsolt Wagner: *Partition problems in high dimensional boxes*, *Journal of Comb. Theory A.* **166** (2019) 315–336. [[arXiv](#)] [[doi](#)]
48. D. Král’, B. Lidický, T. L. Martins, Y. Pehova: *Decomposing graphs into edges and triangles*, *Combinatorics, Probability and Computing.* **28** (2019), 465–472. [[arXiv](#)] [[doi](#)]
47. M. Axenovich, J. Goldwasser, B. Lidický, R. R. Martin, D. Offner, J. Talbot, M. Young: *Polychromatic Colorings on the Integers*, *Integers: The Electronic Journal of Combinatorial Number Theory.* **19** (2019) A18 [[arXiv](#)] [[journal](#)]
46. B. Lidický, F. Pfender: *Pentagons in triangle-free graphs*, *European J. of Combinatorics.* **74** (2018), 85–89. [[arXiv](#)] [[doi](#)]
45. M. Kim, B. Lidický, T. Masařík, F. Pfender: *Notes on complexity of packing coloring*, *Information Processing Letters.* **137** (2018), 6–10. [[arXiv](#)] [[doi](#)]
44. B. Lidický, K. Messerschmidt, R. Škrekovski: *A counterexample to a conjecture on facial unique-maximal colorings*, *Discrete Applied Math.* **237** (2018), 123–125. [[arXiv](#)] [[doi](#)]
43. V. Andova, B. Lidický, B. Lužar, R. Škrekovski: *On facial unique-maximum (edge-)coloring*, *Discrete Applied Math.* **237** (2018), 26–32. [[arXiv](#)] [[doi](#)]
42. P. DeOrsey J. Diemunsch, M. Ferrara, N. Graber, S. G. Hartke, S. Jahanbekam, B. Lidický, L. Nelsen, D. Stolee, E. Sullivan: *On the Strong Chromatic Index of Sparse Graphs*, *Electronic Journal of Combinatorics* **25-3** (2018) P18 [[arXiv](#)] [[doi](#)]

41. Z. Dvořák, B. Lidický: *Fine structure of 4-critical triangle-free graphs I. Planar graphs with two triangles and 3-colorability of chains*, SIAM J. Discrete Math. **32** (2018), 1775–1805. [[arXiv](#)] [[doi](#)]
40. J. Goldwasser, B. Lidický, R. Martin, D. Offner, J. Talbot, M. Young: *Polychromatic Colorings on the Hypercube*, Journal of Combinatorics **9** (2018) 631–657. [[arXiv](#)] [[doi](#)]
39. M. Axenovich, J. Goldwasser, R. Hansen, B. Lidický, R. R. Martin, D. Offner, J. Talbot, M. Young: *Polychromatic colorings of complete graphs with respect to 1-2-factors and Hamiltonian cycles*, Journal of Graph Theory, **87** (2018), 660–671. [[arXiv](#)] [[doi](#)]
38. J. Kynčl, B. Lidický, T. Vyskočil: *Irreversible 2-conversion set in graphs of bounded degree*, Discrete Math. and Theoretical Comp. Sci. **19** (2017) [[arXiv](#)] [[doi](#)]
37. Z. Dvořák, B. Lidický: *Fine structure of 4-critical triangle-free graphs III. General surfaces*, SIAM Journal on Discrete Mathematics **32** (2018), 94–105. [[arXiv](#)] [[doi](#)]
36. I. Choi, J. Ekstein, P. Holub, B. Lidický: *3-coloring triangle-free planar graphs with a precolored 9-cycle*, European J. of Combinatorics. **68** (2018), 38–65. [[arXiv](#)] [[doi](#)]
  - Also at IWOCA 2014 (*International Workshop on Combinatorial Algorithms*). Lecture Notes in Computer Science **8986** (2015), 98–109. [[doi](#)] [[pdf](#)]
35. J. Balogh, P. Hu, B. Lidický, F. Pfender, J. Volec, M. Young: *Rainbow triangles in three-colored graphs*, Journal of Comb. Theory B. **126** (2017), 83–113. [[arXiv](#)] [[doi](#)]
34. Z. Dvořák, B. Lidický: *Fine structure of 4-critical triangle-free graphs II. Planar triangle-free graphs with two precolored 4-cycles*, SIAM J. Discrete Math. **31** (2017), 865–874. [[arXiv](#)] [[doi](#)]
33. B. Brimkov, J. Edmond, R. Lazar, B. Lidický, K. Messerschmidt, S. Walker: *Injective choosability of subcubic planar graphs with girth 6*, Discrete Math. **340** (2017), 2538–2549. [[arXiv](#)] [[doi](#)]
32. Z. Berikkyzy, C. Cox, M. Dairyko, K. Hogenson, M. Kumbhat, B. Lidický, K. Messerschmidt, K. Moss, K. Nowak, K. F. Palmowski, D. Stolee: *(4,2)-choosability of planar graphs with forbidden structures*, Graphs and Combinatorics, **33** (2017), 751–787. [[arXiv](#)] [[doi](#)]
31. E. Gethner, L. Hogben, B. Lidický, F. Pfender, A. Ruiz, M. Young: *Crossing numbers of complete tripartite and balanced complete multipartite graphs*, J. of Graph Theory. **84** (2017), 552–565. [[arXiv](#)] [[doi](#)]
30. F. Cicalese, B. Keszegh, B. Lidický, D. Pálvölgyi, T. Valla: *On the Tree Search Problem with Non-uniform Costs*, Theoretical Computer Science **647** (2016), 22–32. [[doi](#)] [[pdf](#)]
  - Also at WG 2015 (*International Workshop on Graph-Theoretic Concepts in Computer Science*). Lecture Notes in Computer Science **9224** (2016), 90–102. [[arXiv](#)] [[doi](#)]

29. J. Balogh, P. Hu, B. Lidický and F. Pfender: *Maximum density of induced  $C_5$  is achieved by iterated blow-ups*, European J. of Combinatorics, **52** (2016), 47–58. [[arXiv](#)] [[doi](#)]
28. J. Balogh, M. Delcourt, B. Lidický, C. Palmer: *Rainbow copies of  $C_4$  in edge-colored hypercubes*, Discrete Applied Math., **210** (2016), 35–37. [[doi](#)] [[pdf](#)]
27. Z. Dvořák, B. Lidický, B. Mohar: *5-choosability of graphs with crossings far apart*, Journal of Comb. Theory B **123** (2017), 54–96. [[arXiv](#)] [[doi](#)]
26. Z. Dvořák, B. Lidický, B. Mohar, L. Postle: *5-list-coloring planar graphs with distant precolored vertices*, Journal of Comb. Theory B **122** (2017), 311–352. [[arXiv](#)] [[doi](#)]
25. I. Choi, B. Lidický, D. Stolee: *On Choosability with Separation of Planar Graphs with Forbidden Cycles*, J. of Graph Theory, **81** (2016) 283–306. [[arXiv](#)] [[doi](#)]
24. Z. Dvořák, B. Lidický: *3-coloring triangle-free planar graphs with a precolored 8-cycle*, J. of Graph Theory, **80** (2015), 98–111. [[arXiv](#)] [[doi](#)]
23. H.A. Kierstead, B. Lidický: *On choosability with separation of planar graphs with lists of different sizes*, Discrete Math. **338** (2015), 1779–1783. [[arXiv](#)] [[doi](#)]
22. J. Balogh, P. Hu, B. Lidický, O. Pikhurko, B. Udvari, J. Volec: *Minimum number of monotone subsequences of length 4 in permutations*, Combinatorics, Probability and Computing, **24** (2015), 658–679. [[arXiv](#)] [[doi](#)]
21. J. Balogh, P. Hu, B. Lidický, H. Liu: *Upper bounds on the size of 4- and 6-cycle-free subgraphs of the hypercube*, European J. of Combinatorics, **35** (2014), 75–85. [[arXiv](#)] [[doi](#)]
20. O.V. Borodin, Z. Dvořák, A.V. Kostochka, B. Lidický, M. Yancey: *Planar 4-critical graphs with four triangles*, European J. of Combinatorics, **41** (2014), 138–151. [[arXiv](#)] [[doi](#)]
19. Z. Dvořák, B. Lidický: *4-critical graphs on surfaces without contractible ( $\leq 4$ )-cycles*. SIAM J. Discrete Math., **28** (2014), 521–552. [[arXiv](#)] [[doi](#)]
18. O.V. Borodin, A.V. Kostochka, B. Lidický, M. Yancey: *Short proofs of coloring theorems on planar graphs*, European J. of Combinatorics, **36** (2014), 314–321. [[arXiv](#)] [[doi](#)]
17. B. Lidický, H. Liu, C. Palmer: *On the Turán number of forests*, Electronic Journal of Combinatorics, **20-2** (2013) P62. [[arXiv](#)] [[doi](#)]
16. S. Har-Peled, B. Lidický: *Peeling the Grid*, SIAM J. Discrete Math. **27** (2013), 650–655. [[arXiv](#)] [[doi](#)]
15. V. Jelínek, E. Jelínková, J. Kratochvíl, B. Lidický, M. Tesař, T. Vyskočil: *The Planar Slope Number of Planar Partial 3-Trees of Bounded Degree*, Graphs and Combinatorics **29-4** (2013), 981–1005. [[arXiv](#)] [[doi](#)]

- Also at *Graph Drawing 2009*, Lecture Notes in Computer Science **5849** (2010), 304–314. [\[doi\]](#)
- 14. Z. Dvořák, B. Lidický, R. Škrekovski: *Bipartizing fullerenes*, European J. of Combinatorics **33** (2012), 1286–1293. [\[arXiv\]](#) [\[doi\]](#)
- 13. P. Golovach, B. Lidický, B. Martin, D. Paulusma: *Finding vertex-surjective graph homomorphisms*, Acta Informatica **49** (2012), 381–394. [\[arXiv\]](#) [\[doi\]](#)
  - Also at *CSR 2012 (International Computer Science Symposium in Russia)*, Lecture Notes in Computer Science **7353** (2012), 160–171. [\[doi\]](#)
- 12. J. Ekstein, P. Holub, B. Lidický: *Packing Chromatic Number of Distance Graphs*, Discrete Applied Math. **160** (2012), 518–524. [\[arXiv\]](#) [\[doi\]](#)
- 11. J. Fiala, P. Golovach, J. Kratochvíl, B. Lidický, D. Paulusma: *Distance Three Labelings of Trees*, Discrete Applied Math. **160** (2012), 764–779. [\[doi\]](#)
  - Also contains: P. Golovach, B. Lidický, D. Paulusma:  *$L(2,1,1)$ -labeling is NP-complete for trees*, Theory and Applications of Models of Computation (TAMC 2010), Lecture Notes in Computer Science **6108** (2010), 211–221. [\[doi\]](#)
- 10. J. Fiala, M. Kamiński, B. Lidický, D. Paulusma: *The  $k$ -in-a-path problem for claw-free graphs*, Algorithmica **62** (2012), 499–519. [\[doi\]](#)
  - Also at *STACS 2010*, Proceedings of the 27th International Symposium on Theoretical Aspects of Computer Science, LIPIcs **5** (2010), 371–382. [\[arXiv\]](#) [\[doi\]](#)
- 9. Z. Dvořák, B. Lidický, R. Škrekovski: *Graphs with two crossings are 5-choosable*, SIAM Journal on Discrete Mathematics **25** (2011), 1746–1753. [\[arXiv\]](#) [\[doi\]](#)
- 8. Z. Dvořák, B. Lidický, R. Škrekovski: *Randić index and the diameter of a graph*, European Journal of Combinatorics **32** (2011), 434–442. [\[doi\]](#)
- 7. R. Ertman, F. Havet, B. Lidický, O. Pangrác: *5-colouring graphs with 4 crossings*, SIAM Journal on Discrete Mathematics **25** (2011), 401–422. [\[doi\]](#)
- 6. Z. Dvořák, B. Lidický, R. Škrekovski: *3-choosability of triangle-free planar graphs with constraint on 4-cycles*, SIAM Journal on Discrete Mathematics **24** (2010), 934–945. [\[doi\]](#)
- 5. T. Kaiser, D. Král, B. Lidický, P. Nejedlý, R. Šámal: *Short cycle covers of graphs with minimum degree three*, SIAM Journal on Discrete Mathematics **24** (2010), 330–355. [\[arXiv\]](#) [\[doi\]](#)
- 4. Z. Dvořák, B. Lidický, R. Škrekovski: *On 3-choosability of plane graphs without 3-, 7- and 8-cycles*, Discrete Mathematics **309** (2009), 5899–5904. [\[doi\]](#)
- 3. K. Kawarabayashi, D. Král, J. Kynčl, B. Lidický: *6-critical graphs on the Klein bottle*, SIAM Journal on Discrete Mathematics **23** (2009), 372–383. [\[doi\]](#)

2. B. Lidický: *On 3-choosability of plane graphs having no 3-, 6-, 7- and 8-cycles*, Australasian Journal of Combinatorics **44** (2009), 77–86. [[pdf](#)]
1. J. Fiala, S. Klavžar, B. Lidický: *The packing chromatic number of infinite product graphs*, European Journal of Combinatorics **30** (2009), 1101–1113. [[doi](#)]

#### **Papers in refereed conferences (without journal version)**

8. P. Hu, B. Lidický, T. Martins, S. Norin, J. Volec: *Large multipartite subgraphs in  $H$ -free graphs*. At Eurocomb 2021. Trends in Mathematics, Springer International Publishing (2021) 707–713. [[doi](#)] [[pdf](#)]
7. J. Balogh, F. Clemen, B. Lidický: *Max Cuts in Triangle-free Graphs*. At Eurocomb 2021. Trends in Mathematics, Springer International Publishing (2021) 509–514. [[doi](#)] [[arXiv](#)]
6. Z. Dvořák, B. Lidický: *Independent sets near the lower bound in bounded degree graphs*. At STACS 2017 (Symposium on Theoretical Aspects of Computer Science). LIPIcs **66** (2017), 28:1–28:13. [[doi](#)] [[pdf](#)]
5. D. Nikovski, B. Lidický, W. Zhang, K. Kataoka, K. Yoshimoto: *Markov decision processes for train run curve optimization*, IEEE ESARS 2012 (Electrical System for Aircraft, Railway and Ship Propulsion). [[doi](#)]
4. O. Bílka, B. Lidický, M. Tesař: *Locally injective homomorphism to the simple Weight graphs*, Theory and Applications of Models of Computation (TAMC 2011), Lecture Notes in Computer Science **6648** (2011), 471–482. [[doi](#)]
3. B. Lidický, M. Tesař: *Complexity of locally injective homomorphism to the Theta graphs*, IWOCA 2010 (International Workshop on Combinatorial Algorithms), Lecture Notes in Computer Science **6460** (2010), 326–336. [[doi](#)]
2. A. Maitos, F. Jordán, B. Lidický, K. Kabele, P. Strachan: *Coupling building simulation with a hardware real-time controller*, Simulace budov a techniky prostředí 2010 (Simulations of buildings, technology and environment), ČVUT (2010), 115–120. [[pdf](#)]
1. V. Jelínek, E. Jelínková, J. Kratochvíl, B. Lidický: *Clustered Planarity: Embedded Clustered Graphs with Two-Component Clusters*, (Graph Drawing 2008), Lecture Notes in Computer Science **5417** (2009), 121–132. [[doi](#)]

#### **Papers submitted to refereed journals or conferences**

1. Igor Araujo, Bryce Frederickson, Robert A. Krueger, Bernard Lidický, Tyrrell B. McAllister, Florian Pfender, Sam Spiro; Eric Nathan Stucky: *Triangle Percolation on the Grid*, (2023) [[arXiv](#)]

2. Caroline Bang, Zdeněk Dvořák, Emily Heath, Bernard Lidický: *Embedded graph 3-coloring and flow*, (2023) [[arXiv](#)]
3. J. Balogh, B. Domagoj, B. Lidický: *Nearly all  $k$ -SAT functions are unate*, (2023) [[arXiv](#)]
4. J. Balogh, D. Dong, B. Lidický, N. Mani, Y. Zhao: *Nearly all  $k$ -SAT functions are unate*, (2022) [[arXiv](#)] Accepted to STACS 2023.
5. E.-K. Cho, I. Choi, B. Lidický, *Relaxation of Wegner's Planar Graph Conjecture for maximum degree 4*, (2022) [[arXiv](#)]
6. Z. Dvořák, B. Lidický, L. Postle:  *$11/4$ -colorability of subcubic triangle-free graphs*, (2022). [[arXiv](#)]
7. J. Balogh, F. Clemen, B. Lidický: *10 Problems for Partitions of Triangle-free Graphs*, (2022). [[arXiv](#)]
8. D. Burke, B. Lidický, F. Pfender, M. Phillips: *Inducibility of 4-vertex tournaments*, (2021). [[arXiv](#)]

#### Other unrefereed manuscripts

- J. Ekstein, J. Fiala, P. Holub, B. Lidický: *The packing chromatic number of the square lattice is at least 12*. Available at <https://arxiv.org/abs/1003.2291> (2010).
- P. Kolman, B. Lidický, J.-S. Sereni: *Fair Edge Deletion Problems on Tree-Decomposable Graphs and Improper Colorings*, available as ITI report 333 (2010). [[pdf](#)]
- N. Chenette, L. Postle, N. Streib, R. Thomas, C. Yerger, K. Kawarabayashi, D. Král, J. Kynčl, B. Lidický: *Six-Critical Graphs on the Klein Bottle* (Topological and Geometric Graph Theory 2008), *Electronic Notes in Discrete Mathematics* **31** (2008), 235–240. [[doi](#)]

#### Editorial Service

- Member of editorial board of [SIAM Journal on Discrete Mathematics](#) Jan 2020–to date
- Associate Editor at [Discrete Mathematics](#) Nov 2020–to date

#### Professional Service

- Organizer of annual Graduate Research Workshop in Combinatorics, Ames, IA; Laramie, WY; Denver, CO; Ames, IA; Lawrence, KS; virtual 2015–to date (lead organizer S. Butler, <http://combinatoricsworkshop.org>)
- Organizer of special session at AMS meeting #1189, Omaha (with S. Butler) 2023
- Organizer of [Flag Algebras Summer School](#), Ames, IA 2023

- Organizer of special session at AMS meeting #1182, Utah (with J. Balogh) 2022
- Main organizer of [5th annual Mostly Manitoba, Michigan and Minnesota Combinatorics Graduate Students Workshop](#), Ames, IA 2022
- Organizer of [Combinatorial Meeting of Prairie and Sky](#), virtual (with J. Balogh, E. Heath, B. Kruger, C. Palmer) 2022
- Organizer of special session at AMS meeting #1171, (with S. Butler) 2021
- Organizer of invited minisymposium at SIAM DM 2021, Spokane, Washington (with F. Pfender, virtual) 2021
- Organizer of [The First Central Cornfields Combinatorial Conference](#), virtual (with J. Balogh, E. Heath, B. Kruger) 2021
- Organizer of AIM SQuaRE “Crossing numbers of complete and complete bipartite graphs” (with J. Balogh and G. Salazar) 2021–2023
- Organizer of AIM Workshop “Postbaccalaureate and bridge programs in mathematics” (with M. Young and E. Zaslow) 2020
- Organizer of special session at AMS meeting #1150, (with J. Balogh) 2019
- Main organizer of [4th annual Mostly Manitoba, Michigan and Minnesota Combinatorics Graduate Students Workshop](#), Ames, IA 2018
- Organizer of a contributed minisymposium at SIAM conference on Discrete Math, Denver, CO (with S. Butler) 2018
- Organizer of special session at AMS meeting #1124, Raleigh, NC 2016  
(with S. Hartke)
- Organizer of a contributed minisymposium at SIAM conference on Discrete Math, Atlanta, GA (with M. Young) 2016
- Organizer of special session at AMS meeting #1110, Las Vegas, NV 2015  
(with D. Stolee)
- Organizer of conference Extremal Combinatorics at Illinois 2, Urbana, IL 2013  
(with J. Balogh, A. Kostochka, D. West)
- Organizer of Midsummer Combinatorial Workshop XVII, Prague 2011  
(with J. Kratochvíl, J. Nešetřil)
- Organizer of Spring School of Combinatorics, Czech Republic 2006, 2007  
(with J. Hladký, M. Krčál)
- Grant proposal review for National Science Foundation (USA), National Information Processing Institute – National Research Institute (Poland), Grant Agency of Charles University in Prague (Czech Republic), The Dutch Research Council (NWO)

### Institutional Service

- [Post-bac program](#) (director since 2021), ISU 2018–to date
- LAS Faculty Development Committee, ISU 2019–2025
- Member of Faculty Review Board pool, ISU 2023–2025

- Executive committee for Math department, ISU 2019–to date
- Organizer of [Discrete Math seminar](#), ISU 2016–to date
- Faculty advisor to ISU ski club, ISU 2022–to date
- Member of sixteen doctoral committees, ISU 2015–to date
- Administrator of teaching material repository for Math department, ISU 2015–to date
- External member of four doctoral committees, CU Denver 2016–to date
- Tenure committee for Math department, ISU 2022, 2023
- Undergraduate committee at Math department, ISU (chair 2019–2020) 2018–2020
- Untenured faculty review committee, ISU 2019–2021
- Preliminary review committee for Math department, ISU 2019, 2021
- Graduate Qualifying exam committee for Math department, ISU 2018–2022
- Faculty search committee for Math department, ISU 2018–2019
- Lecturer review committee for Math department, ISU 2018–2019
- Advisory committee for Math department, ISU 2016–2017
- Awards committee for Math department, ISU 2015–2016
- Co-organizer of Graph Theory seminar, UIUC 2012–2014
- Member of six thesis defense committees, UIUC 2012–2014
- Member of nine prelim exam committees, UIUC 2011–2014
- Graduate coordinator for Research Experience for Undergraduates, Rutgers University, USA 2010

### Patents

- US patent 8,938,348 *Method for Optimizing Run Curve of Vehicles*, (joint with D. Nikovski) [\[pdf\]](#) 2015

### Invited Graduate School Lectures

- RTG Summer School (10 lectures and 10 recitations), University of Illinois, Urbana-Champaign, *Flag Algebras Summer School* Jun 2021
- Guest lecturer, University of Illinois, Urbana-Champaign (3 hours of lectures), *Flag Algebras Method* Mar 2018
- International Research School on Graph Limits (11 hours of lectures), Lyon, France, *Flag Algebras Method* Jan 2018

### Selected Invited Conference Talks

1. CombinaTexas: Combinatorics in the South-Central U.S., College Station, TX, TBA Apr 2023

2. 2020 One day Meeting on Extremal Combinatorics, Seoul, South Korea, *Decomposing graphs into edges and triangles* Jan 2020
3. 6th Lake Michigan Workshop on Combinatorics and Graph Theory, Kalamazoo, MI, *Introduction to flag algebras and their applications (3× 50 min)* Apr 2019
4. Atlanta Lecture Series XXIII, Atlanta, GA, *Decomposing graphs into edges and triangles (50 min)* Mar 2019
5. Cycles and Colourings, Nový Smokovec, Slovakia, *3-coloring triangle-free planar graphs (50min plenary)* Sep 2016
6. Extremal Combinatorics at Illinois 3, Chicago, IL, USA, *Decomposing Random  $d$ -regular Graphs Into Stars* Aug 2016
7. Czech-Slovak Graph Theory Conference, Boží Dar, Czech Republic, *Flag algebra and some applications (50min plenary)* Jun 2015
8. Atlanta Lecture Series, Atlanta, GA, USA, *Upper bounds on small Ramsey numbers* Feb 2015

### Invited Conference Talks

1. AMS meeting #1184, Atlanta, GA, *Nearly all  $k$ -SAT functions are unate* Mar 2023
2. Joint Math Meeting, Boston, MA, *Tuán type problems in  $\ell_2$ -norm* Jan 2023
3. AMS meeting #1182, Salt Lake City, UT, *Tuán type problems in  $\ell_2$ -norm* Oct 2022
4. AMS meeting #1177, West Lafayette, IN (virtual), *Shortening Universal Cycles for Permutations* Mar 2022
5. SIAM DM 2021, virtual, *Maximizing five-cycles in  $K_r$ -free graphs* Jul 2021
6. SIAM TXLA meeting, Virtual, *Fractional coloring in planar graphs* Oct 2020
7. AMS meeting #1161, Virtual,  *$11/4$ -colorability of subcubic triangle-free graphs* Oct 2020
8. CanaDAM, Vancouver, BC, Canada, *Coloring Count Cones of Planar Graphs* May 2019
9. AMS meeting #1143, Ann Arbor, MI, USA, *Decomposing graphs into edges and triangles* Oct 2018
10. SIAM conference on Discrete Mathematics '18, Denver, CO, USA, *Polychromatic Colorings of Complete Graphs with Respect to 1-,2-factors and Hamiltonian Cycles* Jun 2018
11. AMS meeting #1132, Buffalo, NY, USA, *On facial unique-maximum (edge-)coloring* Sep 2017
12. Mostly Manitoba, Michigan, and Minnesota Combinatorics Graduate Student Workshop, Duluth, MN, USA, *Small Ramsey Numbers* Apr 2017
13. AMS meeting #1127, Bloomington, IN, USA, *Independent sets near the lower bound in bounded degree graphs* Apr 2017
14. AMS meeting #1123, Minneapolis, MN, USA, *Independent sets near the lower bound in bounded degree graphs* Oct 2016
15. AMS meeting #1122, Denver, CO, USA, *Decomposing Random  $d$ -regular Graphs Into Stars* Oct 2016

16. SIAM conference on Discrete Mathematics '16, Atlanta, GA, USA, *Precoloring extension for planar graphs* Jun 2016
17. Canadian Math. Society winter meeting 2015, Montreal, QC, Canada, *Inducibility of Short Cycles* Dec 2015
18. AMS meeting #1112, Chicago, IL, USA, *Precoloring extension for planar graphs* Oct 2015
19. AMS meeting #1108, East Lansing, MI, USA, *Using flag algebras on small Ramsey numbers* Mar 2015
20. AMS meeting #1102, Eau Claire, WI, USA, *Rainbow triangles in 3-edge-colored graphs* Sep 2014
21. SUMMIT 190: Balogh, Csaba, Hajnal, and Pluhár are 190, Szeged, Hungary, *Flag Algebras and Iterated Blow-ups* Jul 2014
22. SIAM conference on Discrete Mathematics '14, Minneapolis, MN, USA, *Rainbow triangles in 3-edge-colored graphs* Jun 2014
23. 1<sup>st</sup> Lake Michigan Workshop on Combinatorics and Graph Theory, Kalamazoo, MI, USA, *Monotone subsequences in permutations* Mar 2014
24. Atlanta Lecture Series, Atlanta, GA, USA, *Number of monotone subsequences of length four in permutations* Jan 2014
25. Joint Math Meeting, Baltimore, MD, USA, *Use of flag algebras with permutations* Jan 2014
26. AMS meeting #1092, Louisville, KY, USA, *3-coloring triangle-free planar graphs with a precolored 8-cycle* Oct 2013
27. AMS meeting #1089, Boulder, CO, USA, *Short proofs of coloring theorems on planar graphs* Apr 2013
28. AMS meeting #1087, Oxford, MS, USA, *Short proofs of coloring theorems on planar graphs* Mar 2013
29. SIAM conference on Discrete Mathematics '12, Halifax, NS, Canada, *4-critical graphs on surfaces without contractible cycles of length at most 4* Jun 2012
30. SIAM conference on Discrete Mathematics '12, Halifax, NS, Canada,  *$L(2, 1, 1)$ -labeling is NP-complete for trees* Jun 2012
31. AMS meeting #1080, Washington DC, USA, *Upper bounds on the size of 4- and 6-cycle-free subgraphs of the hypercube* Mar 2012
32. 7<sup>th</sup> Slovenian International Conference on Graph Theory, Bled, Slovenia, *Packing Coloring and Grids* Jun 2011

### Contributed Talks

1. 53rd Southeastern International Conference on Combinatorics, Graph Theory & Computing, Boca Raton, FL, *Maximum Number of Almost Similar Triangles in the Plane* Mar 2022
2. WaterColor, Waterloo, ON, USA, *Coloring Count Cones of Planar Graphs* Sep 2019
3. 47th Southeastern International Conference on Combinatorics, Graph Theory & Computing, Boca Raton, FL, USA, *Inducibility of Short Cycles* Mar 2016

4. 25th International Workshop on Combinatorial Algorithms, Duluth, MN, USA, *3-coloring triangle-free planar graphs with a precolored 9-cycle* Oct 2014
5. 27<sup>th</sup> Cumberland Conference on Combinatorics, Graph Theory & Computing, Morgantown, WV, USA, *On the Tree Search Problem with Non-uniform Costs* May 2014
6. 7<sup>th</sup> Symposium on Graph Theory, Combinatorics, Algorithms and Applications, Košice, Slovakia, *4-critical planar graphs with four triangles* Jul 2013
7. Midwest Graph Theory Conference LIV, Oxford, OH, USA, *3-coloring planar graphs with four triangles* Apr 2013
8. Midwest Graph Theory Conference LIII, Ames, IA, USA, *4-critical graphs on surfaces without contractible cycles of length at most 4* Sep 2012
9. 25<sup>th</sup> Cumberland Conference, Johnson City, TN, USA, *The planar slope-number of planar partial 3-trees of bounded degree* May 2012
10. CanaDAM, Victoria, BC, Canada, *List coloring and crossings* May 2011
11. Cycles and Colourings, Tatranská Štrba, Slovakia, *Packing chromatic number for square and hexagonal lattices* Sep 2010
12. SIAM conference on Discrete Mathematics '10, Austin, TX, USA, *5-coloring graph with 4 crossing* Jun 2010
13. Algebraic, Topological and Complexity Aspects of Graph Covers 2010, Auckland, New Zealand, *Dichotomy for locally injective homomorphism to simple weight graph* Feb 2010
14. Joint Mathematical Conference CSASC 2010, Prague, Czech Republic, *k-in-a-path on claw-free graphs* Jan 2010
15. CanaDAM 2009, Montreal, QC, Canada, *On 3-choosability of triangle-free planar graphs* May 2009
16. Cycles and Colourings, Tatranská Štrba, Slovakia, *Shortest cycle cover of graphs with minimum degree three* Sep 2008
17. Cycles and Colourings, Tatranská Štrba, Slovakia, *Packing chromatic number for lattices* Sep 2007
18. Midsummer Combinatorial Workshop, Prague, Czech Republic, *6-critical graphs in the Klein bottle* Jun–Jul 2007
19. Winter School on Combinatorics, Finse, Norway, *Discharging and list coloring* Mar 2007

### Colloquia Talks

1. University of Illinois, Urbana-Champaign, IL, USA, *Flag Algebras and Applications* Sep 2021
2. University of Minnesota, Duluth, MN, USA, *Triangles and 3-coloring of Planar Graphs* Feb 2016
3. Michigan Technological University, Houghton, MI, USA, *Flag Algebras and Applications to Permutations* Nov 2014
4. Miami University, Oxford, OH, USA, *Flag algebras and its applications* Dec 2013

**Seminar Talks**

1. Karlsruhe Institute of Technology, Germany, (online) *Feb 2023*
2. Middle Tennessee State University, Murfreesboro, TN, USA *Apr 2022*
3. Warwick DIMAP seminar, online *Feb 2022*
4. Extremal and probabilistic combinatorics webinar, online *Nov 2021*
5. University of Illinois, Urbana-Champaign, IL, USA *Oct 2021*
6. Texas State, San Marcos, TX (online) *Aug 2021*
7. Georgia Tech, Atlanta, GA (online) *Apr 2021*
8. Shanghai Center for Mathematical Sciences, Shanghai, China (online) *Mar 2021*
9. Czech Technical University, Prague, Czech Republic (online) *Mar 2021*
10. University of Bordeaux, Bordeaux France (online) *Jan 2021*
11. University of Illinois, Urbana-Champaign, IL, USA (online) *Jun 2020*
12. University of Colorado Denver, Denver, CO, USA *Jul 2019*
13. University of Illinois, Urbana-Champaign, IL, USA *Jun 2019*
14. Hankuk University of Foreign Studies, Yongin-si, South Korea *Apr 2018*
15. Princeton University, Princeton, NJ, USA *Mar 2018*
16. University of Illinois, Urbana-Champaign, IL, USA *Mar 2018*
17. Western Michigan University, Kalamazoo, MI, USA *Nov 2017*
18. Charles University, Prague, Czech Republic *Jun 2017*
19. KAIST, Daejeon, South Korea *Mar 2017*
20. Charles University, Prague, Czech Republic *Sep 2016*
21. University of Colorado Denver, Denver, CO, USA *Apr 2016*
22. University of Colorado Denver, Denver, CO, USA *Jul 2015*
23. University of Waterloo, Waterloo, Canada *Jun 2015*
24. University of West Bohemia, Pilsen, Czech Republic *May 2015*
25. University of Illinois at Urbana-Champaign, Urbana, IL, USA *Mar 2015*
26. University of Colorado Denver, Denver, CO, USA *Mar 2014*
27. Miami University, Oxford, OH, USA *Dec 2013*
28. University of Szeged, Szeged, Hungary *Jul 2013*
29. Arizona State University, Tempe, AZ, USA *Jun 2013*
30. Simon Fraser University, Vancouver, BC, Canada *May 2013*
31. University of Illinois at Chicago, Chicago, IL, USA *Apr 2013*
32. Georgia Institute of Technology, Atlanta, GA, USA *Mar 2013*
33. Emory University, Atlanta, GA, USA *Mar 2013*
34. Illinois State University, Bloomington-Normal, IL, USA *Oct 2012*
35. Charles University, Prague, Czech Republic *Jan 2012*
36. Mitsubishi Electric Research Laboratories, Cambridge, MA, USA *Mar 2011*
37. Durham University, Durham, United Kingdom *Nov 2009*

38. INRIA, Nice, France Dec 2007  
 39. University of Ljubljana, Ljubljana, Slovenia May 2007

### Internal Seminar Talks

- Iowa State University 6×
- University of Illinois at Urbana-Champaign 8×

### Teaching Experience

Evaluations from ISU available at <https://lidicky.name/oldteaching/>

*Instructor (at ISU, Iowa):*

- *DS 201 - Introduction to Data Science* *fall 2022*
- *MATH 143 - Precalculus* *winter 2020/1*
- *MATH 165 - Calculus 1* *fall 2016, 2018, 2021*
- *MATH 166 - Calculus 2* *spring 2022*
- *MATH 201 - Introduction to Proofs* *spring 2015(2×)*
- *MATH 304 - Combinatorics* *fall 2015*
- *MATH 314 - Graph Theory* *spring 2016*
- *MATH 492 - Undergraduate Seminar* *fall 2016*
- *MATH 566 - Discrete Optimization (graduate course)* *fall 2015, 2016, 2018, 2022*
- *MATH 567 - Graph Theory (graduate course)* *fall 2021*
- *MATH 569x - Introduction to Discrete Mathematics (graduate course)* *spring 2020*
- *MATH 608 - Extremal Graph Theory (graduate course)* *spring 2018*
- *MATH 680D - Graph Coloring (graduate course)* *fall 2020*

*Instructor (at UIUC, Illinois):*

- *MATH 213 - Basic Discrete Mathematics* *spring 2012*
- *MATH 413 - Introduction to Combinatorics* *spring 2012, 2013, 2014(2×)*
- *MATH 484 - Nonlinear Programming* *fall 2011, 2012, 2013*
- *MATH 589 - Nonlinear Programming (graduate course)* *fall 2012*
- *MATH 598 - Literature Seminar in Math (graduate course)* *spring 2012*

*Teaching assistant (at Charles University, Prague):*

- *Algorithms and Data Structures I* *spring 2009*
- *Combinatorics and Graph Theory II* *fall 2008, 2009*
- *Combinatorics and Graph Theory III* *fall 2010*
- *Discrete mathematics* *fall 2005*

- *Linear Algebra I* fall 2007, 2008
- *Linear Algebra II* spring 2008, 2009, 2010
- *Mathematical skills* fall 2009

### Advising and mentoring

*Advised graduate students (at ISU, Iowa):*

1. Christian McRoberts *PhD* expected 2023–2024
2. Caroline Bang *PhD*, coadvised with J. Smith, expected spring 2023
3. Alejandra Marcelino *MS* summer 2022
4. Kyle Murphy *PhD*, currently Assistant Professor at Dakota State University Spring 2021
5. Adam Blumenthal *PhD* coadvised with M. Young, currently Assistant Professor at [Westminster College](#) Summer 2020
6. Kacy Messerschmidt *PhD*, currently Mathematician II at [IGT](#) Summer 2018
7. Neha Bora *MS*, currently Data Scientist at [Capital One](#) Summer 2017
8. Kevin Moss *PhD* coadvised with S. Butler, currently Data Engineer at Facebook Spring 2017

*Postdoctoral Mentor (at ISU, Iowa):*

- Emily Heath (co-mentored with R. Martin) 2021–2024
- Rachel Kirsch, currently Assistant Professor at George Mason University 2020–2021