

# Dominik Peters

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## Bio

- **Chargé de Recherche**  
Centre National de la Recherche Scientifique (CNRS), 2022–  
LAMSADE, Université Paris Dauphine–PSL
- **Postdoctoral Fellow**  
Department of Computer Science, University of Toronto, 2021–22  
Hosted by Prof. Nisarg Shah
- **Postdoctoral Fellow**  
School of Engineering and Applied Sciences, Harvard University, 2020–21  
Hosted by Prof. Ariel D. Procaccia
- **Postdoctoral Fellow**  
Computer Science Department, Carnegie Mellon University, 2019–20  
Hosted by Prof. Ariel D. Procaccia
- **DPhil, Computer Science** (with commendation)  
Thesis: *Fair Division of the Commons* (September 2019)  
Balliol College, University of Oxford, 2015–19  
Supervised by Prof. Edith Elkind  
Examined by Prof. Michael Wooldridge and Prof. Vincent Conitzer  
EurAI Distinguished Dissertation Award 2019  
Victor Lesser Distinguished Dissertation Award 2020
- **MMathCompSci, Mathematics and Computer Science**  
Thesis: *Extending Preferences in Hedonic Games*  
St John’s College, University of Oxford, 2011–15

## Journal Papers

13. Optimized Distortion and Proportional Fairness in Voting.  
Soroush Ebadian, Anson Kahng, Dominik Peters, and Nisarg Shah. *ACM Transactions on Economics and Computation* Vol. 12, Issue 1, Article No. 3, 2024.
12. Portioning using Ordinal Preferences: Fairness and Efficiency.  
Stéphane Airiau, Haris Aziz, Ioannis Caragiannis, Justin Kruger, Jérôme Lang, and Dominik Peters. *Artificial Intelligence (AIJ)*. Vol. 314, 103809, 2023.
11. Approval Voting under Dichotomous Preferences: A Catalogue of Characterizations.  
Florian Brandl and Dominik Peters. *Journal of Economic Theory*. Vol. 205, 105532, 2022.
10. Approval-Based Apportionment.  
Markus Brill, Paul Gözl, Dominik Peters, Ulrike Schmidt-Kraepelin, and Kai-Henning

- Wilker. *Mathematical Programming, Series B. Special Issue on Mathematical Optimization and Fair Social Decisions*, 2022.
9. Funding Public Projects: A Case for the Nash Product Rule.  
Felix Brandt, Florian Brandl, Matthias Greger, Dominik Peters, Christian Stricker, and Warut Suksompong. *Journal of Mathematical Economics*. Vol. 99:102585, 2022.
  8. Almost Envy-Free Allocations with Connected Bundles.  
Vittorio Bilò, Ioannis Caragiannis, Michele Flammini, Ayumi Igarashi, Gianpiero Monaco, Dominik Peters, Cosimo Vinci, and William S. Zwicker. *Games and Economic Behavior*. Vol. 131, 2022.
  7. Preferences Single-Peaked on a Tree: Multiwinner Elections and Structural Results.  
Dominik Peters, Lan Yu, Hau Chan, and Edith Elkind. *Journal of Artificial Intelligence Research*. Vol. 73, 2022.
  6. Truthful Aggregation of Budget Proposals.  
Rupert Freeman, David M. Pennock, Dominik Peters, and Jennifer Wortman Vaughan. *Journal of Economic Theory*. Vol. 193, 2021.
  5. Preferences Single-Peaked on a Circle.  
Dominik Peters and Martin Lackner. *Journal of Artificial Intelligence Research*. Vol. 68, 2020.
  4.  $k$ -Majority Digraphs and the Hardness of Voting with a Constant Number of Voters.  
Georg Bachmeier, Felix Brandt, Christian Geist, Paul Harrenstein, Keyvan Kardel, Dominik Peters, and Hans Georg Seedig. *Journal of Computer and System Sciences* Vol. 105, 2019.
  3. Fractional Hedonic Games.  
Haris Aziz, Florian Brandl, Felix Brandt, Paul Harrenstein, Martin Olsen, and Dominik Peters. *ACM Transactions on Economics and Computation* Vol. 7(2), 2019.
  2. An Axiomatic Characterization of the Borda Mean Rule.  
Florian Brandl and Dominik Peters. *Social Choice and Welfare* Vol. 52(4), 2019.
  1. Optimal Bounds for the No-Show Paradox via SAT Solving.  
Felix Brandt, Christian Geist, and Dominik Peters. *Mathematical Social Sciences* Vol. 90, 2017.

## Conference Papers

45. Proportional Aggregation of Preferences for Sequential Decision Making.  
Nikhil Chandak, Shashwat Goel, and Dominik Peters. *AAAI 2024*. Outstanding Paper Award
44. Participatory Budgeting: Data, Tools, and Analysis.  
Piotr Faliszewski, Jarosław Flis, Dominik Peters, Grzegorz Pierczyński, Piotr Skowron, Dariusz Stolicki, Stanisław Szufa, and Nimrod Talmon. *IJCAI 2023*.
43. Rank Aggregation Using Scoring Rules.  
Niclas Boehmer, Robert Brederbeck, and Dominik Peters. *AAAI 2023*.
42. Robust Rent Division.  
Dominik Peters, Ariel D. Procaccia, and David Zhu. *NeurIPS 2022*.
41. Optimized Distortion and Proportional Fairness in Voting.  
Soroush Ebadian, Anson Kahng, Dominik Peters, and Nisarg Shah. *EC 2022*.

40. In This Apportionment Lottery, the House Always Wins.  
Paul Gözl, Dominik Peters, and Ariel D. Procaccia. EC 2022.
39. How to Fairly Allocate Easy and Difficult Chores.  
Soroush Ebadian, Dominik Peters, and Nisarg Shah. AAMAS 2022.
38. Funding Public Projects: A Case for the Nash Product Rule.  
Felix Brandt, Florian Brandl, Matthias Greger, Dominik Peters, Christian Stricker, and Warut Suksompong. WINE 2021.
37. Proportional Participatory Budgeting with Additive Utilities.  
Dominik Peters, Grzegorz Pierczyński, and Piotr Skowron. NeurIPS 2021.
36. Distribution Rules Under Dichotomous Preferences: Two Out of Three Ain't Bad.  
Florian Brandl, Felix Brandt, Dominik Peters, and Christian Stricker. EC 2021.
35. Preference Elicitation as Average-Case Sorting.  
Dominik Peters and Ariel D. Procaccia. AAAI 2021.
34. Market-Based Explanations of Collective Decisions.  
Dominik Peters, Grzegorz Pierczyński, Nisarg Shah, and Piotr Skowron. AAAI 2021.
33. Aggregating Binary Judgments Ranked By Accuracy.  
Daniel Halpern, Greg Kehne, Dominik Peters, Ariel D. Procaccia, Nisarg Shah, and Piotr Skowron. AAAI 2021.
32. District-Fair Participatory Budgeting.  
D. Ellis Hershkowitz, Anson Kahng, Dominik Peters, and Ariel D. Procaccia. AAAI 2021.
31. Axioms for Learning from Pairwise Comparisons.  
Ritesh Noothigattu, Dominik Peters, and Ariel D. Procaccia. NeurIPS 2020.
30. Explainable Voting,  
Dominik Peters, Ariel D. Procaccia, Alexandros Psomas, and Zixin Zhou. NeurIPS 2020.
29. Proportionality and the Limits of Welfarism.  
Dominik Peters and Piotr Skowron. EC 2020.
28. Approval-Based Apportionment.  
Markus Brill, Paul Gözl, Dominik Peters, Ulrike Schmidt-Kraepelin, and Kai-Henning Wilker. AAAI 2020.
27. Preventing Arbitrage from Collusion When Eliciting Probabilities.  
Rupert Freeman, David M. Pennock, Dominik Peters, and Bo Waggoner. AAAI 2020.
26. Price of Fairness in Budget Division and Probabilistic Social Choice.  
Marcin Michorzewski, Dominik Peters, and Piotr Skowron. AAAI 2020.
25. Portioning using Ordinal Preferences: Fairness and Efficiency.  
Stéphane Airiau, Haris Aziz, Ioannis Caragiannis, Justin Kruger, Jérôme Lang, and Dominik Peters. IJCAI 2019. Distinguished Paper Honorable Mention.
24. Correlating Preferences and Attributes: Nearly Single-Crossing Profiles.  
Foram Lakhani, Dominik Peters, and Edith Elkind. IJCAI 2019.
23. Truthful Aggregation of Budget Proposals.  
Rupert Freeman, David M. Pennock, Dominik Peters, and Jennifer Wortman Vaughan.

EC 2019.

22. Single Transferable Vote: Incomplete Knowledge and Communication Issues.  
Manel Ayadi, Nahla Ben Amor, Jérôme Lang, and Dominik Peters. AAMAS 2019.
21. Pareto-Optimal Allocation of Indivisible Goods with Connectivity Constraints.  
Ayumi Igarashi and Dominik Peters. AAI 2019.
20. Almost Envy-Free Allocations with Connected Bundles.  
Vittorio Bilò, Ioannis Caragiannis, Michele Flammini, Ayumi Igarashi, Gianpiero Monaco, Dominik Peters, Cosimo Vinci, and William S. Zwicker. ITCS 2019.
19. Proportionality and Strategyproofness in Multiwinner Elections.  
Dominik Peters. AAMAS 2018.
18. Single-Peakedness and Total Unimodularity: New Polynomial-Time Algorithms for Multi-Winner Elections.  
Dominik Peters. AAI 2018.
17. On Recognizing Nearly Single-Crossing Preferences.  
Florian Jaeckle, Dominik Peters, and Edith Elkind. AAI 2018.
16. Effective Heuristics for Committee Scoring Rules.  
Piotr Faliszewski, Martin Lackner, Dominik Peters, and Nimrod Talmon. AAI 2018.
15. Condorcet’s Principle and the Preference Reversal Paradox.  
Dominik Peters. TARK 2017.
14. Precise Complexity of the Core in Dichotomous and Additive Hedonic Games.  
Dominik Peters. ADT 2017.
13. Fair Division of a Graph.  
Sylvain Bouveret, Katarína Cechlárová, Edith Elkind, Ayumi Igarashi, and Dominik Peters. IJCAI 2017.
12. Proportional Rankings.  
Piotr Skowron, Martin Lackner, Markus Brill, Dominik Peters, and Edith Elkind. IJCAI 2017.
11. Preferences Single-Peaked on a Circle.  
Dominik Peters and Martin Lackner. AAI 2017.
10. Recognising Multidimensional Euclidean Preferences.  
Dominik Peters. AAI 2017.
9. Group Activity Selection on Social Networks.  
Ayumi Igarashi, Dominik Peters, and Edith Elkind. AAI 2017.
8. Preference Restrictions in Computational Social Choice: Recent Progress.  
Edith Elkind, Martin Lackner, and Dominik Peters. IJCAI 2016 (Early Career Spotlight Track).
7. Interdependent Scheduling Games.  
A. Abeliuk, H. Aziz, G. Berbeglia, S. Gaspers, J. Gudmundsson, P. Stursberg, P. Kalina, N. Mattei, D. Peters, P. Van Hentenryck, and T. Walsh. IJCAI 2016.

6. Optimal Bounds for the No-Show Paradox via SAT Solving.  
Felix Brandt, Christian Geist, and Dominik Peters. AAMAS 2016. Nominated for Best Paper Award.
5. Preferences Single-Peaked on Nice Trees.  
Dominik Peters and Edith Elkind. AAAI 2016.
4. Graphical Hedonic Games of Bounded Treewidth.  
Dominik Peters. AAAI 2016.
3. Complexity of Hedonic Games with Dichotomous Preferences.  
Dominik Peters. AAAI 2016.
2. Towards Structural Tractability in Hedonic Games.  
Dominik Peters. AAAI 2016 Student Abstracts (Best Presentation Award).
1. Simple Causes of Complexity in Hedonic Games.  
Dominik Peters and Edith Elkind. IJCAI 2015.

### Awards, Distinctions, Scholarships

- **Outstanding Paper Award**, AAAI 2024, for *Proportional Aggregation of Preferences for Sequential Decision Making*.
- **Member of the Council** of the Society for Social Choice and Welfare (2023–2029).
- **Best Student Paper Award**, WINE 2021, for *Funding Public Projects: A Case for the Nash Product Rule*.
- **EurAI Distinguished Dissertation Award 2019**.
- **Victor Lesser Distinguished Dissertation Award**, AAMAS 2020.
- **Outstanding Senior Program Committee (SPC) Member**, AAAI 2020.
- **Commendation** of the division of Mathematical, Physical & Life Sciences, for producing an excellent DPhil thesis. Oxford, 2019.
- **Distinguished Paper Honorable Mention**, IJCAI 2019, (one of 3 papers receiving special recognition out of 4752 submissions) for *Portioning using Ordinal Preferences: Fairness and Efficiency*.
- **Best Paper Award Nomination**, AAMAS 2016, (4 out of 550 submissions) for *Optimal Bounds for the No-Show Paradox via SAT Solving*.
- **Best Paper** at CoopMAS 2016.
- **AAAI Best Student 3-Minute Presentation Award** among 15 finalists selected from 95 submissions (*three minute thesis* format), Phoenix, AAAI 2016.
- **Gloucester Research Prize** for best computer science project in Oxford (equivalent to Master's thesis, title: *Extending Preferences in Hedonic Games*), 2015.
- **Junior Mathematics Prize** for outstanding performance in maths exams, Oxford, 2014.
- **IBM Prize** for best group design project, Oxford, 2013.
- **Casberd Scholar**, St John's College, Oxford, 2012–15.

- Scholarship from the **German Academic National Foundation**, 2010–15.

## Book Chapters

3. Dominik Peters. Economic Design for Effective Altruism. In J.-F. Laslier, H. Moulin, M.R. Sanver, W.S. Zwicker, editors, *The Future of Economic Design*. Springer, 2019.
2. Christian Geist and Dominik Peters. Computer-aided Methods for Social Choice Theory. In U. Endriss, editor, *Trends in Computational Social Choice*, chapter 13. AI Access, 2017.
1. Edith Elkind, Martin Lackner, and Dominik Peters. Structured Preferences. In U. Endriss, editor, *Trends in Computational Social Choice*, chapter 10. AI Access, 2017.

## Supervision

- Théo Delemazure, PhD student, co-supervised with Jérôme Lang, Dauphine 2021–.
- Research internships supervised: Nikhil Chandak and Shashwat Goel, Dauphine 2022.
- 1 Senior dissertation co-supervised with Ariel D. Procaccia, Harvard 2020.
- 2 Master’s theses co-supervised with Edith Elkind, Oxford 2017–18.

## Teaching

- Co-Lecturer for *Computational Social Choice* (Paris Dauphine, 2023, 2024).
- Guest Lecturer for *Optimized Democracy* (Harvard, Spring 2021).
- Guest Lecturer for *Computational Social Choice* (TU Munich, 2019).
- Guest Lecturer for *Algorithms and Data Structures* (Oxford, HT 2017).
- Class Tutor for *Computational Game Theory* (Oxford, MT 2017).
- Class Tutor for *Computational Game Theory* (Oxford, MT 2016).
- Departmental Tutorials for *Functional Programming* (Oxford, MT 2016).
- Class Tutor for *Computational Game Theory* (Oxford, HT 2016).
- Class Tutor for *Computational Learning Theory* (Oxford, MT 2015).
- Departmental Tutorials for *Functional Programming* (Oxford, MT 2015).

## Reviewing

**Journals.** Management Science, Artificial Intelligence Journal (AIJ), Journal of Artificial Intelligence Research (JAIR), Theoretical Computer Science (TCS), Journal of Economic Theory (JET), Games and Economic Behavior (GEB), ACM Transactions on Economics and Computation (ACM TEAC), Economics Letters, Annals of Mathematics and Artificial Intelligence, Mathematics of Operations Research, Social Choice and Welfare, Network Science, Autonomous Agents and Multi-Agent Systems (JAAMAS).

**Conferences.** ECAI 2024 (PC), IJCAI 2024 (SPC), EC 2024 (PC), AAMAS 2024 (SPC), EC 2023 (area chair), AAMAS 2023 (SPC), AAAI 2023 (SPC), CPM 2022, ESA 2022, EC 2022 (PC), AAAI 2022 (SPC), AAMAS 2021 (PC), AAAI 2021 (SPC), WINE 2020, NeurIPS 2020 (PC), ACM EC 2020 (PC), AAMAS 2020 (PC), AAAI 2020 (SPC), STOC 2020, AAAI 2019 (PC),

AAAI/ACM Conference on AI, Ethics, and Society 2019 (PC), AAAI 2018, SAGT 2017, IJCAI 2017, EXPLORE 2017 (PC), AAMAS 2017, AAAI 2017, SODA 2016, ECAI 2016, COMSOC 2016, ACM EC 2016, IJCAI 2016, AAMAS 2016, AAAI 2016, AAMAS 2015, SAGT 2015.

### Invited Presentations

8. July 2024, Participatory Budgeting Workshop at the 17th Meeting of the Society for Social Choice and Welfare, Paris.
7. November 2023, Workshop on “New developments in games and social choice”, CRESE, Besançon.
6. October 2023, ILLC Workshop on Participatory Budgeting and Related Topics, Amsterdam.
5. October 2023, Conference on Voting Theory and Preference Aggregation Celebrating Klaus Nehring’s 65th, Karlsruhe Institute of Technology.
4. July 2023, Summer School on Computational Social Choice, three lectures on “computing desirable collective decisions”, University of Amsterdam.
3. April 2023, Workshop on Advances in Economic Design, CNAM, Paris.
2. November 2022, 15th OSGAD Seminar (Ordered Structures in Games and Decision), Université Paris I Panthéon-Sorbonne.
1. June 2022, Summer School on Game Theory and Social Choice, Department of Computer Science, City University of Hong Kong.

### Research Visits

- April 2022, Felix Brandt, Martin Lackner, Piotr Faliszewski, Piotr Skowron.
- February 2020, Nisarg Shah, Toronto.
- January 2020, Florian Brandl, Stanford.
- January 2020, Edith Elkind, Oxford.
- September 2019, Jérôme Lang, Paris.
- March 2019, Martin Lackner, Wien.
- January 2019, Rupert Freeman, MSR New York.
- October 2018, Markus Brill, Berlin; Piotr Skowron, Warsaw.
- October 2018, Ariel Procaccia, Carnegie Mellon.
- July 2018, Felix Brandt, Munich.
- April and May 2018, Jérôme Lang, Paris.
- September 2017, Felix Brandt, Munich.
- September 2017, Jérôme Lang, Paris.
- April 2017, Markus Brill and Piotr Skowron, Berlin.
- September 2016, Jörg Rothe, Düsseldorf.
- September 2016, William Zwicker, Union College.

- September 2016, Lirong Xia and Elliot Anshelevich, Rensselaer.
- August/September 2016, Ariel Procaccia, Carnegie Mellon.
- April 2016, Felix Brandt, Munich.
- August/September 2015, Felix Brandt, Munich.