

# Xi Chen

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## Research Interests

Theoretical Computer Science, including *Algorithmic Game Theory and Economics*, *Complexity Theory*, *Sublinear Algorithms* and *Computational Learning Theory*.

## Academic Training

B.S. Physics / Mathematics, Tsinghua University, Sep 1999 – Jul 2003

Ph.D. Computer Science, Tsinghua University, Sep 2003 – Jul 2007

Advisor: Professor Bo Zhang, Tsinghua University

Thesis Title: The Complexity of Two-Player Nash Equilibria

## Academic Positions

Professor, Columbia University, July 2022 – Now

Associate Professor (with tenure), Columbia University, Mar 2016 – June 2022

Associate Professor (without tenure), Columbia University, Jul 2015 – Mar 2016

Assistant Professor, Columbia University, Jan 2011 – Jun 2015

Postdoctoral Researcher, Columbia University, Aug 2010 – Dec 2010

Postdoctoral Researcher, University of Southern California, Aug 2009 – Aug 2010

Postdoctoral Researcher, Princeton University, Aug 2008 – Aug 2009

Postdoctoral Researcher, Institute for Advanced Study, Sep 2007 – Aug 2008

## Honors and Awards

Outstanding Paper Award of WINE, 2025

SIGecom Test of Time Award, 2022

Fulkerson Prize, MOS and AMS, 2021

Gödel Prize, EATCS, 2021

Best Paper Award, Computational Complexity Conference, 2017

SIAM Outstanding Paper Award, 2016

EATCS Presburger Award, 2015

Alfred P. Sloan Research Fellowship, 2012

NSF CAREER Award, 2012

Best Paper Award, International Frontiers of Algorithmics Workshop, 2010

Best Paper Award, International Symposium on Algorithms and Computation, 2009  
 Silver Prize, New World Mathematics Award (Ph.D. Thesis), 2007  
 Best Paper Award, IEEE Symposium on Foundations of Computer Science, 2006

## Publications: Books and Surveys

1. Jin-Yi Cai and Xi Chen, *Complexity Dichotomies for Counting Problems: Volume I, Boolean Domain*, Cambridge University Press, 2017.
2. Xiaotie Deng and Xi Chen, *Recent Development in Computational Complexity Characterization of Nash equilibrium*, Computer Science Review 1(2): 88–99, 2007.
3. Xi Chen, Neeraj Kayal and Avi Wigderson, *Partial Derivatives in Arithmetic Complexity and Beyond*, Foundations and Trends in Theoretical Computer Science 6(1-2): 1–158, 2011.
4. Xi Chen, *Complexity Dichotomies of Counting Problems*, ACM SIGACT News, Complexity Theory Column 72, 42(4): 54–76, December 2011.

## Publications: Conference Papers

1. Xi Chen, Shyamal Patel and Rocco A. Servedio, *A Mysterious Connection Between Tolerant Junta Testing and Agnostically Learning Conjunctions*, In Proceedings of the 58th ACM Symposium on Theory of Computing (STOC), 2026.
2. Mark Chen, Xi Chen, Hao Cui, William Pires and Jonah Stockwell, *Boolean Function Monotonicity Testing Requires (Almost)  $n^{1/2}$  Queries*, In Proceedings of the 58th ACM Symposium on Theory of Computing (STOC), 2026.
3. Julian Asilis, Xi Chen, Dutch Hansen and Shnag-Hua Teng, *Semi-Random Graphs, Robust Asymmetry, and Reconstruction*, In Proceedings of the 17th Innovations in Theoretical Computer Science Conference (ITCS), 2026.
4. Xi Chen, Anindya De, Yizhi Huang, Shivam Nadimpalli, Rocco A. Servedio and Tianqi Yang, *Halfspaces are Hard to Test with Relative Error*, In Proceedings of the 37th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2026.
5. Xi Chen and Yuhao Li, *Constant Inapproximability of Pacing Equilibria in Second-Price*, In Proceedings of the 21st Conference on Web and Internet Economics (WINE), Outstanding Paper Award, 2025.
6. Xi Chen, Shivam Nadimpalli, Tim Randolph, Rocco Servedio and Or Zamir, *Testing Sumsets is Hard*, In Proceedings of the European Symposium on Algorithms (ESA), 2025.

7. Xi Chen, William Pires, Toniann Pitassi and Rocco A. Servedio, *Testing Juntas and Junta Subclasses with Relative Error*, In Proceedings of the 38th Annual Conference on Learning Theory (COLT), 2025.
8. Xi Chen, William Pires, Toniann Pitassi and Rocco A. Servedio, *Relative-error Testing of Conjunctions and Decision Lists*, In Proceedings of the 52nd International Colloquium on Automata, Languages and Programming (ICALP), 2025.
9. Deeparnab Chakrabarty, Xi Chen, Simeon Ristic, C. Seshadhri and Erik Waingarten, *Monotonicity Testing of High-Dimensional Distributions with Subcube Conditioning*, In Proceedings of the 57th ACM Symposium on Theory of Computing (STOC), 2025.
10. Xi Chen, Anindya De, Shivam Nadimpalli, Rocco A. Servedio and Erik Waingarten, *Lower Bounds for Convexity Testing*, In Proceedings of the 36th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2025.
11. Xi Chen, Anindya De, Yizhi Huang, Yuhao Li, Shivam Nadimpalli, Rocco A. Servedio and Tianqi Yang, *Relative-error Monotonicity Testing*, In Proceedings of the 36th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2025.
12. Xi Chen, Anindya De, Chin Ho Lee and Rocco Servedio, *Trace Reconstruction from Local Statistical Queries*, In Proceedings of the International Conference on Randomization and Computation (RANDOM), 2024.
13. Xi Chen, Yuhao Li and Mihalis Yannakakis, *Computing a Fixed Point of Contraction Maps in Polynomial Queries*, In Proceedings of the 56th ACM Symposium on Theory of Computing (STOC), 2024.
14. Xi Chen, Yumou Fei and Shyamal Patel, *Distribution-Free Testing of Decision Lists with a Sublinear Number of Queries*, In Proceedings of the 56th ACM Symposium on Theory of Computing (STOC), 2024.
15. Xi Chen, Anindya De, Yuhao Li, Shivam Nadimpalli and Rocco A. Servedio, *Testing Intersecting and Union-Closed Families*, In Proceedings of the 15th Innovations in Theoretical Computer Science Conference (ITCS), 2024.
16. Xi Chen, Chenghao Guo, Emmanouil-Vasileios Vlatakis-Gkaragkounis and Mihalis Yannakakis, *Smoothed Complexity of SWAP in Local Graph Partitioning*, In Proceedings of the 35th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2024.
17. Xi Chen and Cassandra Marcussen, *Uniformity Testing over Hypergrids with Subcube Conditioning*, In Proceedings of the 35th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2024.

18. Xi Chen, Anindya De, Yuhao Li, Shivam Nadimpalli and Rocco A. Servedio, *Mildly Exponential Lower Bounds on Tolerant Testers for Monotonicity, Unateness, and Juntas*, In Proceedings of the 35th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2024.
19. Xi Chen, Yaonan Jin, Tim Randolph and Rocco Servedio, *Subset Sum in Time  $2^{n/2}/\text{poly}(n)$* , In Proceedings of the International Conference on Randomization and Computation (APPROX/RANDOM), 2023.
20. Xi Chen and Binghui Peng, *Memory-Query Tradeoffs for Randomized Convex Optimization*, In Proceedings of the 64th IEEE Symposium on Foundations of Computer Science (FOCS), 2023.
21. Xi Chen and Shyamal Patel, *New Lower Bounds for Adaptive Tolerant Junta Testing*, In Proceedings of the 64th IEEE Symposium on Foundations of Computer Science (FOCS), 2023.
22. Xi Chen, Yuhao Li and Mihalis Yannakakis, *Reducing Tarski to Unique Tarski (in the Black-box Model)*, In Proceedings of the Computational Complexity Conference (CCC), 2023.
23. Xi Chen, Vincent Cohen-Addad, Rajesh Jayaram, Amit Levi and Erik Waingarten, *Streaming Euclidean MST to a Constant Factor*, In Proceedings of the 55th ACM Symposium on Theory of Computing (STOC), 2023.
24. Xi Chen and Binghui Peng, *Complexity of Equilibria in First-Price Auctions under General Tie-Breaking Rules*, In Proceedings of the 55th ACM Symposium on Theory of Computing (STOC), 2023.
25. Xi Chen, Anindya De, Chin Ho Lee, Rocco Servedio and Sandip Sinha, *Approximate Trace Reconstruction from a Single Trace*, In Proceedings of the 34th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2023.
26. Xi Chen, Christos Papadimitriou and Binghui Peng, *Memory Bounds for Continual Learning*, In Proceedings of the 63rd IEEE Symposium on Foundations of Computer Science (FOCS), 2022.
27. Xi Chen and Yuhao Li, *Improved Upper Bounds for Finding Tarski Fixed Points*, In Proceedings of the 23rd ACM Conference on Economics and Computation (EC), 2022.
28. Xi Chen and Binghui Peng, *On the Complexity of Dynamic Submodular Maximization*, In Proceedings of the 54th ACM Symposium on Theory of Computing (STOC), 2022.

29. Xi Chen, Rajesh Jayaram, Amit Levi and Erik Waingarten, *New Streaming Algorithms for High Dimensional EMD and MST*, In Proceedings of the 54th ACM Symposium on Theory of Computing (STOC), 2022.
30. Xi Chen, Anindya De, Chin Ho Lee, Rocco A. Servedio and Sandip Sinha, *Near-Optimal Average-Case Approximate Trace Reconstruction from Few Traces*, In Proceedings of the 33rd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2022.
31. Xi Chen, Yaonan Jin, Tim Randolph and Rocco A. Servedio, *Average-Case Subset Balancing Problems*, In Proceedings of the 33rd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2022.
32. Thomas Chen, Xi Chen, Binghui Peng and Mihalis Yannakakis, *Computational hardness of the Hylland-Zeckhauser Scheme*, In Proceedings of the 33th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2022.
33. Xi Chen and Shyamal Patel, *Distribution-free Testing for Halfspaces Requires PAC Learning*, In Proceedings of the 33th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2022.
34. Xi Chen, Christian Kroer and Rachitesh Kumar, *Throttling Equilibria in Auction Markets*, In Proceedings of the 17th Conference on Web and Internet Economics (WINE), 2021.
35. Xi Chen, Rajesh Jayaram, Amit Levi and Erik Waingarten, *Testing and Learning  $k$ -Junta Distributions with Subcube Conditioning*, In Proceedings of the 34th Annual Conference on Learning Theory (COLT), 2021.
36. Xi Chen, Christian Kroer and Rachitesh Kumar, *The Complexity of Pacing for Second-Price Auctions*, In Proceedings of the 22nd ACM Conference on Economics and Computation (EC), 2021.
37. Xi Chen, Anindya De, Chin Ho Lee, Rocco A. Servedio and Sandip Sinha, *Polynomial-time Trace Reconstruction in the Low Deletion Rate Regime*, In Proceedings of the 12th Innovations in Theoretical Computer Science Conference (ITCS), 2021.
38. Clement Canonne, Xi Chen, Gautam Kamath, Amit Levi and Erik Waingarten, *Random Restrictions of High-Dimensional Distributions and Uniformity Testing with Subcube Conditioning*, In Proceedings of the 32th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2021.
39. Xi Chen, Anindya De, Chin Ho Lee, Rocco A. Servedio and Sandip Sinha, *Polynomial-time Trace Reconstruction in the Smoothed Complexity Model*, In

- Proceedings of the 32th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2021.
40. Xi Chen and Binghui Peng, *Hedging in Games: Faster Convergence of External and Swap Regrets*, In Advances in Neural Information Processing Systems (NeurIPS), spotlight, 2020.
  41. Xi Chen, Chenghao Guo, Emmanouil-Vasileios Vlatakis-Gkaragkounis, Mihalis Yannakakis and Xinzhi Zhang, *Smoothed Complexity of Local Max-Cut and Binary Max-CSP*, In Proceedings of the 52th ACM Symposium on Theory of Computing (STOC), 2020.
  42. Xi Chen, Tim Randolph, Rocco Servedio and Timothy Sun, *A Lower Bound on Cycle-Finding in Sparse Digraphs*, In Proceedings of the 31th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2020.
  43. Xi Chen, Amit Levi and Erik Waingarten, *Nearly Optimal Edge Estimation with Independent Set Queries*, In Proceedings of the 31th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2020.
  44. Xi Chen, Christos Papadimitriou and Tim Roughgarden, *An Axiomatic Approach to Block Rewards*, In Proceedings of the 1st ACM conference on Advances in Financial Technologies, 2019.
  45. Frank Ban, Xi Chen, Adam Freilich, Rocco A. Servedio and Sandip Sinha, *Beyond Trace Reconstruction: Population Recovery from the Deletion Channel*, In Proceedings of the 60th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2019.
  46. Frank Ban, Xi Chen, Rocco A. Servedio and Sandip Sinha, *Efficient Average-Case Population Recovery in the Presence of Insertions and Deletions*, In Proceedings of the 23rd International Conference on Randomization and Computation, 2019.
  47. Xi Chen and Erik Waingarten, *Testing Unateness Nearly Optimally*, In Proceedings of the 51th ACM Symposium on Theory of Computing (STOC), 2019.
  48. Xi Chen, Zhengyang Liu, Rocco Servedio, Ying Sheng and Jinyu Xie, *Distribution-free Junta Testing*, In Proceedings of the 50th ACM Symposium on Theory of Computing (STOC), 2018.
  49. Xi Chen, George Matikas, Dimitris Paparas and Mihalis Yannakakis, *On the Complexity of Simple and Optimal Deterministic Mechanisms for an Additive Buyer*, In Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2018.

50. Xi Chen, Erik Waingarten and Jinyu Xie, *Boolean Unateness Testing with  $O(n^{3/4})$  Adaptive Queries*, In Proceedings of the 58th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2017.
51. Xi Chen, Rocco Servedio, Li-Yang Tan and Erik Waingarten, *Adaptivity is Exponentially Powerful for Testing Monotonicity of Halfspaces*, In Proceedings of the 21st International Workshop on Randomization and Computation, 2017.
52. Xi Chen, Adam Freilich, Rocco Servedio and Timothy Sun, *Sample-Based High-Dimensional Convexity Testing*, In Proceedings of the 21st International Workshop on Randomization and Computation, 2017.
53. Xi Chen, Rocco Servedio, Li-Yang Tan, Erik Waingarten and Jinyu Xie, *Settling the Query Complexity of Non-adaptive Junta Testing*, In Proceedings of the Computational Complexity Conference (CCC), 2017.
54. Xi Chen, Erik Waingarten and Jinyu Xie, *Beyond Talagrand Functions: New Lower Bounds for Testing Monotonicity and Unateness*, In Proceedings of the 49th ACM Symposium on Theory of Computing (STOC), 2017.
55. Xi Chen, Igor C. Oliveira and Rocco A. Servedio, *Addition is Exponentially Harder than Counting for Shallow Monotone Circuits*, In Proceedings of the 49th ACM Symposium on Theory of Computing (STOC), 2017.
56. Xi Chen, Yu Cheng and Bo Tang, *Well-Supported versus Approximate Nash Equilibria: Query Complexity of Large Games*, In Proceedings of the 8th Innovations in Theoretical Computer Science Conference (ITCS), 2017.
57. Xi Chen, Yu Cheng and Bo Tang, *On the Recursive Teaching Dimension of VC Classes*, In Proceedings of the 30th Annual Conference on Neural Information Processing Systems (NIPS), 2016.
58. Xi Chen, Igor C. Oliveira, Rocco A. Servedio and Li-Yang Tan, *Near-Optimal Small-Depth Lower Bounds for Small Distance Connectivity*, In Proceedings of the 48th ACM Symposium on Theory of Computing (STOC), 2016.
59. Xi Chen and Jinyu Xie, *Tight Bounds for the Distribution-Free Testing of Monotone Conjunctions*, In Proceedings of the 27th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2016.
60. Xi Chen, Ilias Diakonikolas, Anthi Orfanou, Dimitris Paparas, Xiaorui Sun and Mihalis Yannakakis, *On the Complexity of Optimal Lottery Pricing and Randomized Mechanisms*, In Proceedings of the 56th Annual Symposium on Foundations of Computer Science (FOCS), 2015.

61. Xi Chen, Anindya De, Rocco A. Servedio and Li-Yang Tan, *Boolean Function Monotonicity Testing Requires (Almost)  $n^{1/2}$  Non-Adaptive Queries*, In Proceedings of the 47th ACM Symposium on Theory of Computing (STOC), 2015.
62. Xi Chen, David Durfee and Anthi Orfanou, *On the Complexity of Nash Equilibria in Anonymous Games*, In Proceedings of the 47th ACM Symposium on Theory of Computing (STOC), 2015.
63. Xi Chen, Rocco A. Servedio and Li-Yang Tan, *New Algorithms and Lower Bounds for Monotonicity Testing*, In Proceedings of the 55th Annual Symposium on Foundations of Computer Science (FOCS), 2014.
64. Xi Chen, Ilias Diakonikolas, Dimitris Paparas, Xiaorui Sun and Mihalis Yannakakis, *The Complexity of Optimal Multidimensional Pricing*, In Proceedings of the 25th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2014.
65. László Babai, Xi Chen, Xiaorui Sun, Shang-Hua Teng and John Wilmes, *Faster Canonical Forms for Strongly Regular Graphs*, In Proceedings of the 54th Annual Symposium on Foundations of Computer Science (FOCS), 2013.
66. Xi Chen, Xiaorui Sun and Shang-Hua Teng, *Multi-Stage Propagation and Quasipolynomial-Time Isomorphism Testing of Steiner 2-Systems*, In Proceedings of the 45th ACM Symposium on Theory of Computing (STOC), 2013.
67. Xi Chen, Dimitris Paparas and Mihalis Yannakakis, *The Complexity of Non-Monotone Markets*, In Proceedings of the 45th ACM Symposium on Theory of Computing (STOC), 2013.
68. Xi Chen, Martin Dyer, Leslie Ann Goldberg, Mark Jerrum, Pinyan Lu, Colin McQuillan and David Richerby, *The Complexity of Approximating Conservative Counting CSPs*, In Proceedings of the 30th Symposium on Theoretical Aspects of Computer Science (STACS), 2013.
69. Jin-Yi Cai and Xi Chen, *Complexity of Counting CSP with Complex Weights*, In Proceedings of the 44th ACM Symposium on Theory of Computing (STOC), 2012.
70. Jin-Yi Cai, Xi Chen, Heng Guo and Pinyan Lu, *Inapproximability after Uniqueness Phase Transition in Two-Spin Systems*, In Proceedings of the 6th International Conference on Combinatorial Optimization and Applications (COCO), 2012.
71. Jin-Yi Cai, Xi Chen and Pinyan Lu, *Non-negatively Weighted #CSP: An Effective Complexity Dichotomy*, In Proceedings of the 26th Conference on Computational Complexity (CCC), 2011.
72. Xi Chen and Shang-Hua Teng, *A Complexity View of Markets with Social Influence*, In Proceedings of the 2nd Symposium on Innovations in Computer Science, 2011.

73. Jin-Yi Cai, Xi Chen and Pinyan Lu, *Graph Homomorphisms with Complex Values: A Dichotomy Theorem*, In Proceedings of the 37th International Colloquium on Automata, Languages and Programming (ICALP), 2010.
74. Jin-Yi Cai and Xi Chen, *A Decidable Dichotomy Theorem on Directed Graph Homomorphisms with Non-negative Weights*, In Proceedings of the 51st Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2010.
75. Boaz Barak, Mark Braverman, Xi Chen and Anup Rao, *How to Compress Interactive Communication*, In Proceedings of the 42th ACM Symposium on Theory of Computing (STOC), 2010.
76. Jin-Yi Cai, Xi Chen, Richard Lipton and Pinyan Lu, *On Tractable Exponential Sums*, In Proceedings of the 4th International Frontiers of Algorithmics Workshop (FAW), 2010, Best paper award.
77. Xi Chen and Shang-Hua Teng, *Spending is Not Easier than Trading: On the Computational Equivalence of Fisher and Arrow-Debreu Equilibria*, In Proceedings of the 20th Symposium on Algorithms and Computation, 2009, Best Paper Award.
78. Xi Chen, Decheng Dai, Ye Du and Shang-Hua Teng, *Settling the Complexity of Arrow-Debreu Equilibria in Markets with Additively Separable Utilities*, In Proceedings of the 50th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2009.
79. Jin-Yi Cai, Xi Chen and Dong Li, *A Quadratic Lower Bound for the Permanent and Determinant Problem over any Characteristic  $\neq 2$* , In Proceedings of the 40th ACM Symposium on Theory of Computing (STOC), 2008.
80. Xi Chen, Xiaoming Sun and Shang-Hua Teng, *Quantum Separation of Local Search and Fixed Point Computation*, In Proceedings of the 14th Annual International Computing and Combinatorics Conference (COCOON), 2008.
81. Xi Chen and Shang-Hua Teng, *Paths Beyond Local Search: A Tight Bound for Randomized Fixed-Point Computation*, In Proceedings of the 48th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2007.
82. Xi Chen, Shang-Hua Teng and Paul Valiant, *The Approximation Complexity of Win-Lose Games*, In Proceedings of the 18th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2007.
83. Jing Zhang, Xi Chen and Ming Li, *Computing Exact  $p$ -Value for Structured Motif*, In Proceedings of the 18th Annual Symposium on Combinatorial Pattern Matching (CPM), 2007.

84. Xi Chen and Xiaotie Deng, *Settling the Complexity of 2-Player Nash-Equilibrium*, In Proceedings of the 47th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2006, Best Paper Award.
85. Xi Chen, Xiaotie Deng and Shang-Hua Teng, *Computing Nash Equilibria: Approximation and Smoothed Complexity*, In Proceedings of the 47th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2006.
86. Xi Chen, Xiaotie Deng and Shang-Hua Teng, *Sparse Games are Hard*, In Proceedings of the 2nd Workshop on Internet and Network Economics, 2006.
87. Xi Chen, Li-Sha Huang and Shang-Hua Teng, *Market Equilibria with Hybrid Linear-Leontief Utilities*, In Proceedings of the 2nd Workshop on Internet and Network Economics (WINE), 2006.
88. Xi Chen and Xiaotie Deng, *A Simplicial Approach for Discrete Fixed Point Theorems*, Algorithmica, 53(2): 250–262, 2009. In Proceedings of the 12th Annual International Computing and Combinatorics Conference (COCOON), 2006.
89. Xi Chen, Xiaotie Deng and Becky Jie Liu, *On Incentive Compatible Competitive Selection Protocols*, In Proceedings of the 12th Annual International Computing and Combinatorics Conference (COCOON), 2006.
90. Xi Chen and Xiaotie Deng, *On the Complexity of 2D Discrete Fixed Point Problem*, In Proceedings of the 33rd International Colloquium on Automata, Languages and Programming (ICALP), 2006.
91. Xi Chen and Xiaotie Deng, *Lattice Embedding of Direction-Preserving Correspondence Over Integrally Convex Set*, In Proceedings of the 2nd International Conference on Algorithmic Aspects in Information and Management (AAIM), 2006.
92. Lan Liu, Xi Chen, Jing Xiao and Tao Jiang, *Complexity and Approximation of the Minimum Recombination Haplotype Configuration Problem*, In Proceedings of the 16th Annual Symposium on Algorithms and Computation (ISAAC), 2005.
93. Xi Chen and Xiaotie Deng, *Matching Algorithmic Bounds for Finding a Brouwer Fixed Point*, In Proceedings of the 37th Symposium on Theory of Computing (STOC), 2005.

## Publications: Journal Papers

1. Xi Chen, Yuhao Li, Mihalis Yannakakis, *Reducing Tarski to Unique Tarski (In the Black-Box Model)*, SIAM Journal on Computing 55(1), 1–27, 2026.
2. Xi Chen, Yuhao Li and Mihalis Yannakakis, *Computing a Fixed Point of Contraction Maps in Polynomial Queries*, Journal of the ACM 72(4), 25:1–25:20, 2025.

3. Xi Chen, Anindya De, Chin Ho Lee, Rocco A. Servedio and Sandip Sinha, *Polynomial-time Trace Reconstruction in the Smoothed Complexity Model*, ACM Transactions on Algorithms 21(3), 30:1–30:28, 2025.
4. Xi Chen, Christian Kroer and Rachitesh Kumar: *The Complexity of Pacing for Second-Price Auctions*. Mathematics of Operations Research 49(4), 2109–2135, 2024.
5. Xi Chen, Ilias Diakonikolas, Anthi Orfanou, Dimitris Paparas, Xiaorui Sun and Mihalis Yannakakis, *On the Complexity of Optimal Lottery Pricing and Randomized Mechanisms for a Unit-Demand Buyer*, SIAM Journal on Computing 51(3), 492–548, 2022.
6. Xi Chen, Tim Randolph, Rocco A. Servedio and Timothy Sun, *A Lower Bound on Cycle-Finding in Sparse Digraphs*, ACM Transactions on Algorithms 18(4): 31:1–31:23, 2022.
7. Jin-Yi Cai and Xi Chen, *A Decidable Dichotomy Theorem on Directed Graph Homomorphisms with Non-negative Weights*, Computational Complexity 28, 345–408, 2019.
8. Zhengyang Liu, Xi Chen, Rocco A. Servedio, Ying Sheng and Jinyu Xie, *Distribution-free Junta Testing*. ACM Transactions on Algorithms 15(1): 1–23, 2019.
9. Xi Chen, Rocco A. Servedio, Li-Yang Tan, Erik Waingarten and Jinyu Xie, *Settling the Query Complexity of Non-adaptive Junta Testing*, Journal of the ACM 65(6): 40:1–40:18, 2018.
10. Xi Chen, Ilias Diakonikolas, Dimitris Paparas, Xiaorui Sun and Mihalis Yannakakis, *The Complexity of Optimal Multidimensional Pricing for a Unit-demand Buyer*, Games and Economic Behavior 110: 139–164, 2018.
11. Xi Chen, Dimitris Paparas and Mihalis Yannakakis, *The Complexity of Non-Monotone Markets*, Journal of the ACM 64(3): 19:1–19:39, 2017.
12. Jin-Yi Cai and Xi Chen, *Complexity of Counting CSP with Complex Weights*, Journal of the ACM 64(3): 20:1–20:56, 2017.
13. Jin-Yi Cai, Xi Chen and Pinyan Lu, *Non-negative Weighted #CSP: An Effective Complexity Dichotomy*, SIAM Journal on Computing 45(6): 2177–2198, 2016.
14. Xi Chen, Martin Dyer, Leslie Ann Goldberg, Mark Jerrum, Pinyan Lu, Colin McQuillan and David Richerby, *The Complexity of Approximating Conservative Counting CSPs*, Journal of Computer and System Sciences 81(1): 311–329, 2015.
15. Jin-Yi Cai, Xi Chen and Pinyan Lu, *Graph Homomorphisms with Complex Values: A Dichotomy Theorem*, SIAM Journal on Computing, 42(3), 924–1029, 2013.

16. Boaz Barak, Mark Braverman, Xi Chen and Anup Rao, *How to Compress Interactive Communication*, SIAM Journal on Computing 42(3): 1327–1363, 2013.
17. Xi Chen, Xiaotie Deng and Becky Jie Liu, *On Incentive Compatible Competitive Selection Protocols*, Algorithmica 61(2): 447–462, 2011.
18. Jin-Yi Cai, Xi Chen and Dong Li, *A Quadratic Lower Bound for the Permanent and Determinant Problem over any Characteristic  $\neq 2$* , Computational Complexity 19(1): 37–56, 2010.
19. Xi Chen, Xiaoming Sun, Shang-Hua Teng, *Quantum Separation of Local Search and Fixed Point Computation*, Algorithmica 56(3): 364–382, 2010.
20. Xi Chen, Xiaotie Deng and Shang-Hua Teng, *Settling the Complexity of Computing Two-Player Nash Equilibria*, Journal of the ACM, 56(3): 1–57, 2009.
21. Xi Chen, Li-Sha Huang and Shang-Hua Teng, *Market Equilibria with Hybrid Linear-Leontief Utilities*, Theoretical Computer Science, 410(17): 1573–1580, 2009.
22. Xi Chen and Xiaotie Deng, *On the Complexity of 2D Discrete Fixed Point Problem*, Theoretical Computer Science, 410(44): 4448–4456, 2009.
23. Xi Chen and Xiaotie Deng, *A Simplicial Approach for Discrete Fixed Point Theorems*, Algorithmica, 53(2): 250–262, 2009.
24. Xi Chen and Xiaotie Deng, *Matching Algorithmic Bounds for Finding a Brouwer Fixed Point*, Journal of the ACM, 55(3): 1–26, 2008.
25. Lan Liu, Xi Chen, Jing Xiao and Tao Jiang, *Complexity and Approximation of the Minimum Recombination Haplotype Configuration Problem*, Theoretical Computer Science, 378(3): 316–330, 2007.
26. Yongxi Cheng, Xi Chen and Yiqun L. Yin, *On Searching a Table Consistent with Division Poset*, Theoretical Computer Science, 370(1–3): 240–253, 2007.