



Shaoshi Chen  
schen@amss.ac.cn  
<http://mmrc.iss.ac.cn/~schen/>  
(086) 10-82541467

Address  
East Road 55,  
Zhongguancun  
Beijing 100190  
China

# Shaoshi Chen

## Associate Professor in Mathematics

**About Me** I was born in Wenzhou (a city of southern China) on July 17, 1983. I am now working at the Key Laboratory of Mathematics Mechanization, Academy of Mathematics and Systems Science, Chinese Academy of Sciences. My recent work focuses on developing fast algorithms for symbolic integration and summation and exploring the arithmetic and algorithmic aspects of D-finite power series arise from combinatorics.

## Research Interests

[Symbolic Computation](#), [Differential and Difference Algebra](#), [Algorithmic Combinatorics](#) (with focus on the Wilf–Zeilberger method).

## Education

2007 - 2011, [École Polytechnique \(France\)](#)  
PhD in Computer Science

2005 - 2010, [Chinese Academy of Sciences \(China\)](#)  
PhD in Applied Mathematics

2001 - 2005, [Jiangsu University \(China\)](#)  
BS in Mathematics

## Professional Experience

[April 2017 - present, Associate Professor , China](#)  
Academy of Mathematics and System Sciences, Chinese Academy of Sciences, Beijing, China.

[July 2013 - April 2017, Assistant Professor , China](#)  
Academy of Mathematics and System Sciences, Chinese Academy of Sciences, Beijing, China.

[October 2015 - August 2016, Fields-Ontario Postdoctoral Fellow, Canada](#)  
Postdoctoral position joint between Fields Institute (Toronto) and University of Waterloo (Waterloo), Ontario, Canada.

[August 2011 - July 2013, NSF Postdoctoral Fellow, USA](#)  
Postdoctoral position at the Department of Mathematics, North Carolina State University, Raleigh, North Carolina, USA.

[February 2011 - August 2011, Postdoctoral Fellow, Austria](#)  
Postdoctoral position at the Research Institute for Symbolic Computation (RISC-Linz) in Hagenberg, Austria.

## Awards and Honors

[2021, ISSAC2021 Distinguished Paper Award](#)  
Awarded to distinguished papers presented at the 46th International Symposium on Symbolic and Algebraic Computation (ACM ISSAC'21).

[2019, Wen-Tsun Wu Youth Research Award for Computer Mathematics](#)  
Awarded to young researchers in Computer Mathematics by Chinese Society of Computer Mathematics and Institute of Systems Science, Chinese Academy of Sciences.



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2018, [Member of the Youth Innovation Promotion Association](#)  
Honor for young researchers awarded by Chinese Academy of Sciences.

2018, [Outstanding Research Award](#)  
Awarded to researchers for their outstanding research by Academy of Mathematics and Systems Science, Chinese Academy of Sciences.

2016, [Kuan Chao-Chi Youth Research Award](#)  
Awarded to young researchers in Mathematics and Systems Science by Institute of Systems Science, Chinese Academy of Sciences.

2014, [Outstanding Research Award](#)  
Awarded to researchers for their outstanding research by Academy of Mathematics and Systems Science, Chinese Academy of Sciences.

2014, [ISSAC2014 Distinguished Poster Award](#)  
Awarded to distinguished posters presented at the 39th International Symposium on Symbolic and Algebraic Computation (ACM ISSAC'14).

2014, [Chen Jing-run Future Star](#)  
Prestigious position for young researchers of Academy of Mathematics and Systems Science, Chinese Academy of Sciences.

## Professional Activities

[July 2021 - June 2023, Secretary](#)  
ACM SIGSAM

[June 2021 - June 2025, Secretary](#)  
Chinese Society of Computer Mathematics

[July 2019 - July 2022, Member At-Large](#)  
ISSAC Steering Committee

[July 2017 - July 2018, Member](#)  
ISSAC'18 Program Committee

[July 2015 - July 2016, Chair](#)  
ISSAC'16 Poster Committee

[July 2013 - July 2014, Member](#)  
ISSAC'14 Program Committee

[June 2021 - present, Associate Editor](#)  
Maple Transactions

[January 2020 - present, Associate Editor](#)  
Journal of Systems Science and Complexity

[September 2019 - present, Associate Editor](#)  
Annals of Combinatorics

[December 2017 - December 2018, Guest Editor](#)  
Journal of Symbolic Computation special issue for MICA2016

[July 2014 - present, Associate Editor](#)  
ACM Communications in Computer Algebra

## Grants

[National Science Foundation of China Grant](#)  
Multivariate D-finite Power Series: Theory, Algorithms and Their Applications in Combinatorial Analysis, 2018–2022, PI.



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National Science Foundation of China Grant

Wilf–Zeilberger Theory: Algorithms, Complexity Analysis and Applications, 2016–2018, PI.

## Publications

1. Shaoshi Chen, Lixin Du and Manuel Kauers. Lazy Hermite Reduction and Creative Telescoping for Algebraic Functions. Proceedings of ISSAC'21, pp. 75–82, ACM Press, 2021.
2. Shaoshi Chen, Ruyong Feng, Pingchuan Ma, and Michael F. Singer. Separability Problems in Creative Telescoping. Proceedings of ISSAC'21, pp. 83–90, ACM Press, 2021.
3. Shaoshi Chen, Lixin Du, Rong-hua Wang, Chaochao Zhu. On the Existence of Telescopers for Rational Functions in Three Variables. Journal of Symbolic Computation, 104: 494–522, 2021.
4. Shaoshi Chen, Lixin Du, Manuel Kauers, and Thibaut Verron. Integral Bases for P-Recursive Sequences. Proceedings of ISSAC'20, pp. 91–98, ACM Press, 2020.
5. Shaoshi Chen, Lixin Du, Chaochao Zhu. Existence Problem of Telescopers for Rational Functions in Three Variables: the Mixed Cases. Proceedings of ISSAC'19, pp. 82–89, ACM Press, 2019.
6. Shaoshi Chen, Manuel Kauers, Ziming Li, Yi Zhang. Apparent Singularities of D-finite Systems. Journal of Symbolic Computation, 95: 217–237, 2019.
7. Shaoshi Chen, Christoph Koutschan. Proof of the Wilf-Zeilberger Conjecture for Mixed Hypergeometric Terms. Journal of Symbolic Computation, 93: 133–147, 2019.
8. Shaoshi Chen. How to Generate All Possible Rational Wilf-Zeilberger Pairs?. Algorithms and Complexity in Mathematics, Epistemology, and Science, edited by N. Fillion, R. M. Corless and I. S. Kotireas, Fields Institute Communications book series, 82: 17–34, 2019, Springer New York.
9. Shaoshi Chen, Hao Du, Ziming Li. Additive Decompositions in Primitive Extensions. Proceedings of ISSAC'18, pp. 135–142, ACM Press, 2018.
10. Shaoshi Chen. Bivariate Extensions of Abramov's Algorithm for Rational Summation. Advances in Computer Algebra, In Honour of Sergei Abramov's 70th Birthday, edited by C.Schneider, E.Zima, Springer Proceedings in Mathematics and Statistics 226, 93–104, 2018.
11. Shaoshi Chen, Mark van Hoeij, Manuel Kauers, Christoph Koutschan. Reduction-based Creative Telescoping for Fuchsian D-finite Functions. Journal of Symbolic Computation, 85: 108–127, 2018.
12. Jason P. Bell and Shaoshi Chen. Power Series with Coefficients from a Finite Set. Journal of Combinatorial Theory, Series A., 151: pp. 241–253, 2017.
13. Shaoshi Chen and Manuel Kauers. Some Open Problems Related to Creative Telescoping. Journal of Systems Science and Complexity 30(1): pp. 154–172, 2017.
14. Shaoshi Chen and Stephen M. Watt. Combinatorics of Hybrid Sets. Proceedings of SYNASC'16, pp. 60–64, IEEE, 2016.
15. Shaoshi Chen, Qing-hu Hou, George Labahn, Ronghua Wang. Existence Problem of Telescopers: Beyond the Bivariate Case. Proceedings of ISSAC'16, pp. 167–174, ACM Press, 2016.



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16. Shaoshi Chen, Manuel Kauers, Christoph Koutschan. Reduction-Based Creative Telescoping for Algebraic Functions. *Proceedings of ISSAC'16*, pp. 175–182, ACM Press, 2016.
17. Shaoshi Chen, Manuel Kauers, Michael F. Singer. Desingularization of Ore Operators. *Journal of Symbolic Computation* 74(C): 617–626, 2016.
18. Shaoshi Chen, Hui Huang, Manuel Kauers, Ziming Li. A Modified Abramov-Petkovsek Reduction and Creative Telescoping for Hypergeometric Terms. *Proceedings of ISSAC'15*, pp. 117–124, ACM Press, 2015.
19. Shaoshi Chen, Frédéric Chyzak, Ruyong Feng, Guofeng Fu, Ziming Li. On the Existence of Telescopers for Mixed Hypergeometric Terms *Journal of Symbolic Computation* 68:1–26, 2015.
20. Shaoshi Chen, Ruyong Feng, Ziming Li, Michael F. Singer. Parallel Telescoping and Parameterized Picard-Vessiot Theory. *Proceedings of ISSAC'14*, pp. 99–106, ACM Press, 2014.
21. Shaoshi Chen, Manuel Kauers, Christoph Koutschan. A Generalized Apagodu-Zeilberger Algorithm. *Proceedings of ISSAC'14*, pp. 107–114, ACM Press, 2014.
22. Shaoshi Chen and Michael F. Singer. On the Summability of Bivariate Rational Functions. *Journal of Algebra*, 409(2):320–343, 2014.
23. Alin Bostan, Shaoshi Chen, Frédéric Chyzak, Ziming Li, Guoce Xin. Hermite Reduction and Creative Telescoping for Hyperexponential Functions. *Proceedings of ISSAC'13*, pp. 77–84, ACM Press, 2013.
24. Shaoshi Chen, Maximilian Jaroschek, Manuel Kauers, Michael F. Singer. Desingularization Explains Order-Degree Curves for Ore Operators. *Proceedings of ISSAC'13*, pp. 157–164, ACM Press, 2013.
25. Xiaoli Wu and Shaoshi Chen. A Note on the Diagonal Theorem of Bivariate Rational Formal Power Series (in Chinese). *Acta Mathematica Sinica Chinese Series*, 56 (2): 203–210, 2013.
26. Shaoshi Chen, Ruyong Feng, Guofeng Fu, Jin Kang. Multiplicative Decompositions of Multivariate  $q$ -Hypergeometric Terms (in Chinese). *Journal of System Science and Mathematical Science Chinese Series*, 32 (8): 1019–1032, 2012.
27. Shaoshi Chen and Michael F. Singer. Residues and Telescopers for Bivariate Rational Functions. *Advance in Applied Mathematics*, 49(2):111–133, 2012.
28. Shaoshi Chen and Manuel Kauers. Order-Degree Curves for Hypergeometric Creative Telescoping. *Proceedings of ISSAC'12*, pp. 122–129, ACM Press, 2012.
29. Shaoshi Chen, Manuel Kauers, Michael F. Singer. Telescopers for Rational and Algebraic Functions via Residues. *Proceedings of ISSAC'12*, pp. 130–137, ACM Press, 2012.
30. Shaoshi Chen and Manuel Kauers. Trading Order for Degree in Creative Telescoping *Journal of Symbolic Computation* 47(8):968–995, 2012.
31. Shaoshi Chen, Ruyong Feng, Guofeng Fu, Ziming Li. On the Structure of Compatible Rational Functions. *Proceedings of ISSAC'11*, pp. 91–98, ACM Press, 2011.
32. Alin Bostan, Shaoshi Chen, Frédéric Chyzak, Ziming Li. Complexity of Creative Telescoping for Bivariate Rational Functions. *Proceedings of ISSAC'10*, pp. 203–210, ACM Press, 2010.



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## Papers to Appear

1. Jason P. Bell, Shaoshi Chen and Ehsaan Hossain. Rational Dynamical Systems, S-units, and D-finite Power Series. 2021. To appear in Algebra and Number Theory.