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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 efficient algorithms for manipulating integrals and sums of special functions and exploring rational-transcendental dichotomy phenomena in the arithmetic theory of power series.

Research Interests

[Symbolic Computation](#), [Differential and Difference Algebra](#), [Algorithmic Combinatorics](#) (with focus on [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

[2018, Member of the Youth Innovation Promotion Association](#)

Honor for young researchers awarded by 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.



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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 2014 - present, Associate editor

ACM Communications in Computer Algebra

July 2017 - July 2018, Member of Program Committee

The 43rd International Symposium on Symbolic and Algebraic Computation (ISSAC'18), New York, USA, July 16–19, 2018.

July 2015 - July 2016, Chair of Poster Committee

The 41st International Symposium on Symbolic and Algebraic Computation (ISSAC'16), Waterloo, Canada, July 20–22, 2016.

July 2013 - July 2014, Member of Program Committee

The 39th International Symposium on Symbolic and Algebraic Computation (ISSAC'14), Kobe, Japan, July 23–25, 2014.

July 2012 - July 2013, Member of Poster Committee

The 38th International Symposium on Symbolic and Algebraic Computation (ISSAC'13), Boston, USA, June 26–29, 2013.

October 2011 - October 2012, Member of Program Committee

The 10th Asian Symposium on Computer Mathematics (ASCM'12), Beijing, China, October 26–28, 2012.

Grants

National Science Foundation of China Grant

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

Ministry of Education of the People's Republic of China Grant

Zeilberger's Method and its Applications in Parameterized Differential Galois Theory, 2015–2016, PI.



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Publications

Refereed Papers

1. 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.
2. 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.
3. 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.
4. Shaoshi Chen and Manuel Kauers. Some Open Problems Related to Creative Telescoping. *Journal of Systems Science and Complexity* 30(1): pp. 154–172, 2017.
5. Shaoshi Chen and Stephen M. Watt. Combinatorics of Hybrid Sets. *Proceedings of the 18th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'16)*, pp. 60–64, IEEE, 2016.
6. 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.
7. Shaoshi Chen, Manuel Kauers, Christoph Koutschan. Reduction-Based Creative Telescoping for Algebraic Functions. *Proceedings of ISSAC'16*, pp. 175–182, ACM Press, 2016.
8. Shaoshi Chen, Manuel Kauers, Michael F. Singer. Desingularization of Ore Operators. *Journal of Symbolic Computation* 74(C): 617–626, 2016.
9. 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.
10. 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.
11. 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.
12. Shaoshi Chen, Manuel Kauers, Christoph Koutschan. A Generalized Apagodu-Zeilberger Algorithm. *Proceedings of ISSAC'14*, pp. 107–114, ACM Press, 2014.
13. Shaoshi Chen and Michael F. Singer. On the Summability of Bivariate Rational Functions. *Journal of Algebra*, 409(2):320–343, 2014.
14. Shaoshi Chen, Alin Bostan, Frédéric Chyzak, Ziming Li, Guoce Xin. Hermite Reduction and Creative Telescoping for Hyperexponential Functions. *Proceedings of ISSAC'13*, pp. 77–84, ACM Press, 2013.
15. 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.



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16. 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.
17. 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.
18. Shaoshi Chen and Michael F. Singer. Residues and Telescopers for Bivariate Rational Functions. *Advance in Applied Mathematics*, 49(2):111–133, 2012.
19. Shaoshi Chen and Manuel Kauers. Order-Degree Curves for Hypergeometric Creative Telescoping. *Proceedings of ISSAC'12*, pp. 122–129, ACM Press, 2012.
20. 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.
21. Shaoshi Chen and Manuel Kauers. Trading Order for Degree in Creative Telescoping *Journal of Symbolic Computation* 47(8):968–995, 2012.
22. 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.
23. Shaoshi Chen, Alin Bostan, Frédéric Chyzak, Ziming Li. Complexity of Creative Telescoping for Bivariate Rational Functions. *Proceedings of ISSAC'10*, pp. 203–210, ACM Press, 2010.

Papers to Appear

1. Shaoshi Chen, Hao Du and Ziming Li. Additive Decompositions in Primitive Extensions. To appear in *Proceedings of ISSAC'18*, 2018.
2. Shaoshi Chen and Christoph Koutschan. Proof of the Wilf-Zeilberger Conjecture for Mixed Hypergeometric Terms. To appear in the *Journal of Symbolic Computation*, 2018.
3. Shaoshi Chen. How to generate all possible rational Wilf-Zeilberger pairs? To appear in the ACMES special volume in the Fields Institute Communications series (dedicated to the memory of Jonathan M. Borwein and Ann Johnson), 2018.

Papers under Review

1. Shaoshi Chen, Manuel Kauers, Ziming Li, Yi Zhang. Apparent Singularities of D -finite Systems. Submitted to the *Journal of Symbolic Computation*, 2017.