Dr. Bo Huang
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RECENT EVENTS

- ISSAC 2023, Tromsø, Norway, 24–27/07/2023 (Contributed speaker)
- CASC 2023, Havana, Cuba, 28/08/2023 – 01/09/2023 (Contributed speaker)
- DESC 2023, Beijing, China, 16–17/09/2023 (Co-organizer)

RESEARCH INTERESTS

- Symbolic and Algebraic Computation
- Differential Equations and Dynamical Systems

EDUCATION

- 01/09/2016–06/01/2021. **Ph.D.** in Applied Mathematics, School of Mathematical Sciences, Beihang University, with Dongming Wang
- 23/09/2018–23/09/2020. Joint **Ph.D.** in Computer Science, Courant Institute of Mathematical Sciences, New York University, with Chee Yap
- 01/09/2014–26/06/2016. **M.S.** in Applied Mathematics, School of Mathematical Sciences, Beihang University, with Linping Peng
- 01/09/2010–06/07/2014. **B.S.** in Mathematics and Applied Mathematics, School of Mathematics and Statistics, Xuchang University

EMPLOYMENT

- 20/01/2021–present: School of Mathematical Sciences, Beihang University
  Postdoctoral, with Deren Han

PREPRINTS

1. C. Chen, **B. Huang**, D. Yu, D. Han. Optimal parameter of the SOR-like iteration method for solving absolute value equations. Under Review

2. X. Li, K. Chen, W. Niu, **B. Huang***. Stability and chaos of the duopoly model of Kopel: A study based on symbolic computations. arXiv: 2304.02136

3. **B. Huang**, D. Wang. Zero-Hopf bifurcation of limit cycles in certain differential systems. arXiv: 2205.14450

PUBLICATIONS

1. **B. Huang**, X. Li, W. Niu, S. Xie. Stability and zero-Hopf bifurcation analysis of the Lorenz–Stenflo system using symbolic methods. *Proceedings of the 2023 International Workshop on Computer Algebra in Scientific Computing*, to appear

2. **B. Huang**, L. Peng. Third-order bifurcation of limit cycles for a perturbed quartic isochronous center. *Int. J. of Dynamical Systems and Differential Equations*, to appear

3. **B. Huang**. Using symbolic computation to analyze zero-Hopf bifurcations of polynomial differential systems. *Proceedings of the 2023 International Symposium on Symbolic and Algebraic Computation*, pp. 307–314, 2023

4. **B. Huang**, C. Yap. An algorithmic approach to small limit cycles of nonlinear differential systems: The averaging method revisited. *Journal of Symbolic Computation*, **115**, 492–517, 2023, an essential improvement for the paper in *Proceedings of the 44th International Symposium on Symbolic and Algebraic Computation*, pp. 211–218, 2019

5. **B. Huang**, W. Niu, D. Wang. Symbolic computation for the qualitative theory of differential equations. *Acta Mathematica Scientia*, **42B**, 2478–2504, 2022

6. **B. Huang**, L. Peng, Y. Cui. On the number of limit cycles bifurcating from a quartic reversible center. *Mediterranean Journal of Mathematics*, **19**, 220, 2022

7. Y. Tian, **B. Huang***. Local stability and Hopf bifurcations analysis of the Muthuswamy-Chua-Ginoux system. *Nonlinear Dynamics*, **109**, 1135–1151, 2022

8. **B. Huang**, W. Niu, S. Xie. Algebraic analysis of zero-Hopf bifurcation in a Chua system. *Symmetry*, **14**, 1036-1–16, 2022

9. **B. Huang**, D. Han. Analysis of zero-Hopf bifurcation in high dimensional polynomial differential systems with algorithm derivation (in Chinese). *Journal of Systems Science and Mathematical Sciences*, **41**, 3280–3298, 2021

10. Y. Hu, W. Niu, **B. Huang***. Bounding the number of limit cycles for parametric Liénard systems using symbolic computation methods. *Communications in Nonlinear Science and Numerical Simulation*, **96**, 105716, 2021

11. **B. Huang**. Algorithmic averaging for studying periodic orbits of planar differential systems. *Proceedings of the 45th International Symposium on Symbolic and Algebraic Computation*, pp. 241–248, 2020

12. **B. Huang**. On the limit cycles for a class of discontinuous piecewise cubic polynomial differential systems. *Electronic Journal of Qualitative Theory of Differential Equations*, **25**, 1–24, 2020

13. B. Sang, **B. Huang**. Zero-Hopf bifurcations of 3D jerk quadratic system. *Mathematics*, **8**, 1454-1–19, 2020

14. D. Wang, **B. Huang**, X. Chen. On n-sectors of the angles of an arbitrary triangle. *Mathematics in Computer Science*, **14**, 757–773, 2020

15. **B. Huang**. Limit cycles for a discontinuous quintic polynomial differential system. *Qualitative Theory of Dynamical Systems*, **18**, 769–792, 2019

16. **B. Huang**, W. Niu. Analysis of snapback repellers using methods of symbolic computation. *International Journal of Bifurcation and Chaos*, **29**, 1950054-1–13, 2019

17. **B. Huang**, W. Niu. Algebraic analysis of bifurcations and chaos for discrete dynamical systems. *Proceedings of the 8th Mathematical Aspects of Computer and Information Sciences*, pp. 169–184, 2019

18. **B. Huang**, W. Niu. Limit cycles for two classes of planar polynomial differential systems with uniform isochronous centers. *Journal of Applied Analysis and Computation*, **9**, 943–961, 2019

19. **B. Huang**, W. Niu. Algebraic approach to chaos induced by snapback repeller. *ACM Communications in Computer Algebra*, **53**, 122–125, 2019

20. **B. Huang**, J.Y.Hong, G.Q.Jing, W. Niu, and L. Fang. Traveling wave solutions of the homogeneous one-dimensional FREFLO model. *AIP Advances*, **8**, 015217-1–8, 2018

21. **B. Huang**, S. Xie. Searching for traveling wave solutions of nonlinear evolution equations in mathematical physics. *Advances in Difference Equations*, **29**, 1–15, 2018

22. **B. Huang**. Bifurcation of limit cycles from the center of a quintic system via the averaging method. *International Journal of Bifurcation and Chaos*, **27**, 1750072-1–16, 2017

23. B. Sang, **B. Huang**. Bautin bifurcation of a financial system. *Electronic Journal of Qualitative Theory of Differential Equations*, **95**, 1–22, 2017

24. L. Peng, **B. Huang**. Second-order bifurcation of limit cycles from a quadratic reversible center. *Electronic Journal of Differential Equations*, **89**, 1–17, 2017

GRANTS AWARDED

- Analysis of Limit Cycles and Chaotic Behavior for Dynamical Systems Using Symbolic Computation *Principal Investigator*, Fund for Young Scientists, NSFC, 01/01/2022–31/12/2024 300,000 CNY

- Study on Nonconvex Optimization Problems Arising from Machine Learning and Artificial Intelligence *Participant*, Fund for Key Program, NSFC, 01/01/2022–31/12/2026 2520,000 CNY

- Mathematical Innovation Method and Software Module Development in Digital Circuit Physical Design Automation *Participant*, Fund for R & D Program, MST, 01/05/2022–30/04/2025 31500,000 CNY

- Academic Excellent Foundation of BUAA for PhD Students *Principal Investigator*, 01/06/2019–31/05/2020 40,000 CNY
- Qualitative Analysis of Nonlinear Systems – Applications of Symbolic Computation for Stability, Bifurcation and Limit Cycles *Principal Investigator, Open Fund of Guangxi Key Laboratory of Hybrid Computation and IC Design Analysis* (HCIC 201602), 01/12/2016–30/11/2018 20,000 CNY

RECENT TALKS

1. Using symbolic computation to analyze zero-Hopf bifurcations of polynomial differential systems. *48th International Symposium on Symbolic and Algebraic Computation* (ISSAC 2023), Tromsø, Norway, 24–27/07/2023
2. On the Number of Limit Cycles from Zero-Hopf Bifurcation for Certain Differential Systems. *Dynamical Systems Seminar at Institute of Mathematics (CAS)*, Beijing, China, 18/05/2022 (*online*)
3. Analysis of Zero-Hopf Bifurcation in High Dimensional Polynomial Differential Systems with Algorithm Derivation. *Computer Mathematics 2021*, Guilin, China, 4–7/06/2021
4. Algorithmic Averaging for Studying Periodic Orbits of Planar Differential Systems. *45th International Symposium on Symbolic and Algebraic Computation* (ISSAC 2020), Kalamata, Greece, 20–23/07/2020 (*online*)
5. An Algorithmic Approach to Limit Cycles of Nonlinear Differential Systems: The Averaging Method Revisited. *44th International Symposium on Symbolic and Algebraic Computation* (ISSAC 2019), Beijing, China, 15–18/07/2019
6. On n-sectors of the Angles of an Arbitrary Triangle. *12th International Conference on Automated Deduction in Geometry* (ADG 2018), Nanning, China, 11–14/09/2018

ACADEMIC POPULARIZATION

- The Mysterious Limit Cycles (in Chinese) http://blog.sciencenet.cn/blog-1362128-1088470.html
- The Fingerprints of God – Fractal and Chaos (in Chinese) http://blog.sciencenet.cn/blog-1362128-1104527.html

AWARDS

- 2022 Excellent Doctoral Dissertation of Beihang University
- 2021 Outstanding Graduate of Beijing Higher Education
- 2021 Postdoctoral Fellow of "Zhuoyue" Program
- 2020 Top 10 Ph.D. Students Award Nomination of Beihang University

- 2019 National Scholarship for Ph.D. Students
- 2018 Supported by China Scholarship Council, No. 201806020128
- 2015 First Prize of National Graduate Mathematical Contest in Modeling
- 2012 Second Prize of National Undergraduate Mathematical Contest in Modeling

ACADEMIC ACTIVITIES

- **Committee Member** of Chinese Society of Computer Mathematics (2021–
- JOURNAL REFEREE

  European Journal of Applied Mathematics Bulletin des Sciences Mathématiques
  Journal of Symbolic Computation Journal of Systems Science and Complexity
  International Journal of Non-Linear Mechanics Differential Equations and Dynamical Systems
  Communications in Nonlinear Science and Numerical Simulation
  Qualitative Theory of Dynamical Systems Nonlinear Dynamics

COMPUTER SKILLS

- Maple, Matlab, Latex, Adobe Photoshop

REFERENCES

Dongming Wang (Member of Academia Europaea)
Professor at Beihang University, China / Research Director at CNRS, France
School of Mathematical Sciences
Beihang University
Beijing 100191, China
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Chee Yap (Member of Academia Europaea, Foreign)
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