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Basic Information

- **Research interests:** Algebra, representation theory, Lie theory, Coxeter groups and their representations, Kazhdan–Lusztig theory.
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- **Homepage:** <https://huhongsheng.github.io>
- **Language:** Chinese (native). English.
- **Birth:** May 16, 1994. Zhangzhou, Fujian Province, China.
- **Other information:** Male. Married. No child. Political status: masses.

Education and Working Experiences

- Since Jun. 2024. Assistant professor.
School of Mathematics, Hunan University. Changsha, Hunan Province, China.
- Jul. 2022 – Jun. 2024. Postdoc.
Beijing International Center for Mathematical Research, Peking University. Beijing, China.
Mentor: Xiang Fu.
- Feb. 26, 2019 – Aug. 26, 2019. Visiting graduate student.
University of California, Riverside. California, USA. Host professor: Carl Mautner.
Funding: China Scholarship Council. No. 201804910559.
- Sep. 2016 – Jun. 2022. Ph.D.
Academy of Mathematics and Systems Science, Chinese Academy of Sciences. Beijing, China.
Major in Fundamental Mathematics.
Supervisor: Nanhua Xi.
- Sep. 2012 – Jun. 2016. B.S.
Fudan University. Shanghai, China. Major in Mathematics and Applied Mathematics.
- Sep. 2009 – Jun. 2012. Zhangzhou No. 1 High School of Fujian. Zhangzhou, Fujian, China.
- Sep. 2006 – Jun. 2009. Zhao'an Huai'en Middle School. Zhangzhou, Fujian, China.
- Sep. 2000 – Jun. 2006. Zhao'an Experimental Primary School. Zhangzhou, Fujian, China.

Ph.D. Dissertation (in Chinese)

- Title: Coxeter 群的“反射”表示. (“Reflection” representations of Coxeter groups.)

Papers and Preprints (sort by manuscript completion time)

- Weyl group symmetries of the toric variety associated with Weyl chambers.
j.w. Tao Gui and Minhua Liu. arXiv preprint. 2024.
- On exterior powers of reflection representations, II.
Accepted, Canad. J. Math., 2025.
- Asymptotic log-concavity of dominant lower Bruhat intervals via Brunn–Minkowski inequality.
j.w. Gaston Burrull and Tao Gui. arXiv preprint. 2023.
- Asymptotic log-concavity of dominant lower Bruhat intervals via Brunn–Minkowski inequality.
j.w. Gaston Burrull and Tao Gui. Extended abstract in FPSAC 2024 proceedings.
Sém. Lothar. Combin. 91B (2024), Art. 94, 12 pp.
- Strongly dominant weight polytopes are cubes.
j.w. Gaston Burrull and Tao Gui. arXiv preprint. 2023.
- Representations of Coxeter groups of Lusztig’s a -function value 1.
arXiv preprint. 2023.
- On exterior powers of reflection representations.
Bull. Aust. Math. Soc. 110 (2024), no. 1, 90–102.
- Reflection representations of Coxeter groups and homology of Coxeter graphs.
Algebr. Represent. Theory 27 (2024), no. 1, 961–994.
- 最小二乘解与高斯消元法的注记.
(A note on least squares solutions and Gaussian eliminations.)
Teaching paper, in Chinese. 大学数学 (College Mathematics), 2024, 40(4):59–62.
- Some infinite-dimensional representations of certain Coxeter groups.
Ann. Comb. 29 (2025), no. 1, 101–115.

Teaching

- Advanced Algebra B.
Spring 2025. Hunan University.
- Linear Algebra A.
Fall 2024. Hunan University.
- Linear Algebra II B. Teaching assistant. Lecturer: Ming Fang.
Spring 2022. University of Chinese Academy of Sciences.
- Algebra. Teaching assistant. Lecturer: Nanhua Xi.
Fall 2019. University of Chinese Academy of Sciences.
- Linear Algebra II A. Teaching assistant. Lecturer: Nanhua Xi.
Spring 2017. University of Chinese Academy of Sciences.
- Linear Algebra I A. Teaching assistant. Lecturer: Nanhua Xi.
Fall 2016. University of Chinese Academy of Sciences.

Professional Activities

- Since Jun. 2024. Reviewer for Mathematical Reviews.
- Since Dec. 2021. Reviewer for zbMATH Open.

Funding

- Since Jun. 2024. the Fundamental Research Funds for the Central Universities.
- Feb. 2019 – Aug. 2019. China Scholarship Council. No. 201804910559.

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