

Hao Sun

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Research Interests	Primary research interest is <i>algebraic geometry</i> . When I was Ph.D, I focused on <i>Hurwitz number</i> . Now I am working on <i>Higgs bundles</i> and its related field from the viewpoint of algebraic geometry.	
Education	<ul style="list-style-type: none">• Ph.D., University of Illinois at Urbana-Champaign <i>Advisor: Maarten Bergvelt</i>• M.A.¹, University of Illinois at Urbana-Champaign• B.S., South China University of Technology,	<ul style="list-style-type: none">2013-20182012-20132008-2012
Professional Experience	<ul style="list-style-type: none">• Associate Professor², South China University of Technology,• Postdoc, Sun Yat-Sen University <i>Mentor: Changzheng Li</i>	<ul style="list-style-type: none">2020-now2018 - 2020
Research Visit	<ul style="list-style-type: none">• Institute of Geometry and Physics• Oberwolfach Research Institute for Mathematics, No. 2424q	<ul style="list-style-type: none">April, 2023June, 2024
Publications Preprints	<ol style="list-style-type: none">1. A formula about W-operator and its application to Hurwitz number, <i>Discrete Math.</i> 342(3), 715-722 (2019).2. Degree of the W-operator and Noncrossing Partitions, <i>Bull. Aust. Math. Soc.</i> 101(2), 186-200 (2020).3. Deformation of Locally Free Sheaves and Hitchin Pairs over Nodal Curve, <i>J. Korean Math. Soc.</i> 57(4), 809-823 (2020).4. Topological invariants of parabolic G-Higgs bundles (with G. Kydonakis and L. Zhao) <i>Math. Z.</i> 297(1), 585-632 (2021).5. The Beauville-Narasimhan-Ramanan correspondence for twisted Higgs V-bundles and components of parabolic $Sp(2n, R)$-Higgs moduli, (with G. Kydonakis and L. Zhao) <i>Trans. Amer. Math. Soc.</i> 374(6), 4023-4057 (2021).6. Moduli Problem of Hitchin Pairs over Deligne-Mumford Stack, <i>Proc. Amer. Math. Soc.</i> 150(1), 131-143 (2022).7. Monodromy of Rank 2 Parabolic Hitchin Systems, (with G. Kydonakis and L. Zhao) <i>J. Geom. Phys.</i> 171, Paper No. 104411, 18pp (2022).8. Meromorphic Parahoric Higgs Torsors and Filtered Stokes G-Local Systems on Curves, (with P. Huang) <i>Adv. Math.</i> 429, Paper No. 109183, 38 pp (2023).	

¹I transferred from master program to Ph.D program in 2013 without obtaining a master degree. Prof. Laugesen, who was the director of graduate studies at UIUC, told me that it does not matter, do not worry about it. I am also curious about whether I got a master degree.

²I was employed as an assistant professor (new system of position track) in 2020, which is equivalent to associate professor in the old track. In 2022, it seems that the new track changes the position's title.

9. On the image of Hitchin morphism for algebraic surfaces: The case GL_n ,
(with L. Song) *Int. Math. Res. Not.* IMRN 2024, no. 1, 492–514 (2024).
10. Logahoric Higgs Torsors for a Complex Reductive Group,
(with G. Kydonakis and L. Zhao) *Math. Ann.* 388, no. 3, 3183–3228 (2024).
11. Poisson Structures on Moduli Spaces of Higgs Bundles over Stacky Curves,
(with G. Kydonakis and L. Zhao) *Adv. Geom.*, vol. 24, no. 2, 163–182 (2024).
12. Tame Parahoric Nonabelian Hodge Correspondence in Positive Characteristic
over Algebraic Curves,
(with M. Li) *Selecta Math.* 30, no. 4, Paper No. 60, 36 pp (2024).
13. On the Gr-semistable Filtration of Orthogonal/Symplectic λ -connections,
(with M. Sheng and J. Wang) *J. Éc. polytech. Math.* 11, 1181–1218 (2024).
14. Moduli Space of Λ -modules on Projective Deligne-Mumford Stacks,
arXiv: 2003.11674 (2020).
15. Tame Parahoric Nonabelian Hodge Correspondence on Curves,
(with P. Huang, G. Kydonakis and L. Zhao) arXiv: 2205.15475 (2022).
16. Moduli Spaces of Filtered G -local Systems on Curves,
(with P. Huang) arXiv: 2304.09999 (2023).
17. Filtered Stokes G -local Systems in Nonabelian Hodge Theory on Curves,
(with P. Huang) arXiv: 2404.13553 (2024).
18. A Nonabelian Hodge Correspondence for Principal Bundles in Positive Char-
acteristic,
(with M. Sheng and J. Wang) arXiv: 2405.09947.
19. Rigid G -connections and Nilpotency of p -curvatures,
(with P. Huang and Y. Qin) arXiv: 2410.09929.