Shijie Bao

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Nationality: China ✻ *Date of birth:* 03-Sep.-1996 ✻ *Gender:* Female

Education

Doctorate degree in Mathematics — *Peking University*
School of Mathematical Sciences — *September 2017 - June 2022*
Advisor: Prof. Qi'an Guan
Thesis title: L^2 extension and effectiveness of strong openness property

Bachelor's degree in Mathematics — *University of Science and Technology of China*
School of Mathematical Sciences — *September 2013 - June 2017*
Thesis title: Hörmander's L^2 theorem for Dirac operator in complex Clifford analysis

Current position

Postdoctoral fellow — *July 2022 - Present*
Academy of Mathematics and Systems Science, Chinese Academy of Sciences — *Beijing, China*
Supervisor: Prof. Xiangyu Zhou

Research interests

Primary My work focuses on several complex variables and algebraic geometry, especially on multiplier ideal sheaves, L^2 extension problem, and Bergman kernel theory.

Secondary I am also interested in complex pluripotential theory, holomorphic dynamical systems and number theory.

Publications

L^2 extension and effectiveness of strong openness property
Acta Mathematica Sinica, English Series, 2022, 38(11): 1949–1964.
Authors: Shijie Bao and Qi'an Guan

L^2 extension and effectiveness of L^p strong openness property
Acta Mathematica Sinica, English Series, 2023, 39(5): 814–826.
Authors: Shijie Bao and Qi'an Guan

Concavity property of minimal L^2 integrals with Lebesgue measurable gain V – Fibrations over open Riemann surfaces
The Journal of Geometric Analysis, 2023, 33(6): 179–251.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan

Modules at boundary points, fiberwise Bergman kernels, and log-subharmonicity
Peking Mathematical Journal, 2024, 7: 441–470.
Authors: Shijie Bao and Qi'an Guan

A note on ξ-Bergman kernels
Frontiers of Mathematics, 2025, 3(20): 481–506.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan

Concavity property of minimal L^2 integrals with Lebesgue measurable gain VII – Negligible weights
In: Hirachi, K., Ohsawa, T., Takayama, S., Kamimoto, J. (eds) The Bergman Kernel and Related Topics. HSSCV 2022. Springer Proceedings in Mathematics & Statistics, vol 447. Springer, Singapore (2024).

Authors: Shijie Bao, Qi'an Guan, Zhitong Mi and Zheng Yuan

Boundary points, minimal L^2 integrals and concavity property
Mathematische Annalen, 2025, 391: 5809–5856.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan
Contribution: In this paper, we give a sharp effectiveness result related to Jonsson-Mustaţă's conjecture, and complete the Jonsson-Mustaţă's conjecture approach to the strong openness conjecture of multiplier ideal sheaves.

Tame maximal weights, relative types and valuations
Advances in Mathematics, 2025, 477: 110364. https://doi.org/10.1016/j.aim.2025.110364.
Authors: Shijie Bao, Qi'an Guan, Zhitong Mi and Zheng Yuan
Contribution: In this paper, we find out a class of maximal weights with tropically multiplicative and tropically additive relative types, and give an analytic proof of a theorem of Boucksom–Favre–Jonsson.

Concavity property of minimal L^2 integrals with Lebesgue measurable gain VI: Fibrations over products of open Riemann surfaces
Science China Mathematics, 2025, Online. https://doi.org/10.1007/s11425-024-2390-2.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan

Preprints

Modules at boundary points, fiberwise Bergman kernels, and log-subharmonicity II – On Stein manifolds
Preprint, arXiv: 2205.08044.
Authors: Shijie Bao and Qi'an Guan

Fiberwise Bergman kernels, vector bundles, and log-subharmonicity
Preprint, arXiv: 2210.16601.
Authors: Shijie Bao and Qi'an Guan

The log-plurisubharmonicity of fiberwise ξ-Bergman kernels for variant functionals
Preprint, arXiv: 2303.16525.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan

Concavity property of minimal L^2 integrals with Lebesgue measurable gain VIII – Partial linearity and log-concavity
Preprint, arXiv: 2307.07112.
Authors: Shijie Bao, Qi'an Guan and Zheng Yuan

On the multipoled global Zhou weights and semi-continuity for Zhou numbers
Preprint, arXiv: 2311.06459.
Authors: Shijie Bao, Qi'an Guan, Zhitong Mi and Zheng Yuan

Zhou valuations and jumping numbers
Preprint, arXiv: 2311.06565v2.
Authors: Shijie Bao, Qi'an Guan, and Zheng Yuan

Equivalence of the sharp effectiveness results of strong openness property
Preprint, arXiv: 2408.16372.
Authors: Shijie Bao and Qi'an Guan

Demailly's approximation of general weights
Preprint, arXiv: 2503.24109v3.
Authors: Shijie Bao and Qi'an Guan

Algebraic Zhou valuations
Preprint, arXiv: 2505.19451v3.
Authors: Shijie Bao, Qi'an Guan and Lin Zhou

Contribution: In this paper, we give an algebraic implementation of the Zhou valuations, show the relations between the Zhou valuations and the famous (algebraic version of) Jonsson–Mustaţă's conjecture, and establish the criterion of a valuation being a Zhou valuation or computing some jumping number on general schemes. This is a research bridging several complex variables and birational geometry.

On the p-Bergman kernel with respect to a functional ξ
Preprint, arXiv:2510.13144v2.
Authors: Shijie Bao, Qi'an Guan and Xun Sun

The existence of valuative interpolation
Preprint, arXiv:2510.22244.
Authors: Shijie Bao, Qi'an Guan Zhitong Mi and Zheng Yuan

Teaching experiences

Functional Analysis (I)	February 2018 - June 2018, Peking University
Mathematical Analysis (I)	September 2018 - January 2019, Peking University
Mathematical Analysis (II)	February 2019 - June 2019, Peking University
Mathematical Analysis (III)	September 2019 - January 2020, Peking University
Mathematical Analysis (I) Honors	September 2020 - January 2021, Peking University
Mathematical Analysis (II) Honors	February 2021 - June 2021, Peking University

These are all undergraduate professional courses of the School of Mathematical Sciences of Peking University, which are very difficult and demanding, especially the honors courses. During my time as a teaching assistant, I was widely praised by students and teachers.

Invited talks

HAYAMA Symposium on Complex Analysis in Several Variables XXIV
Hayama, Japan *July 15th - July 18th, 2023*

- Title of talk: An optimal L^2 extension approach to the effectiveness result of strong openness property

Young Mathematicians Workshop on Several Complex Variables 2023
Pusan, Republic of Korea *August 9th - August 11th, 2023*

- Title of talk: Generalized Bergman kernels, optimal L^2 extension, and strong openness property

National Several Complex Variables Annual Conference
Wuhan, China *August 17th - August 21st, 2023*

- Title of talk: Optimal L^2 extension and effectiveness result of strong openness property

Seminar of Progress on Analytic Minimal Model Program
Kunming, China *October 15th - October 21th, 2023*

- Title of talk: Tame maximal weights with tropically multiplicative and additive relative types

Youth Forum on Complex Geometry
Wuhan, China *November 24th - November 27th, 2023*

- Title of talk: A class of tame maximal weights measuring the singularities of plurisubharmonic functions

Social services

I am serving as a reviewer of the Mathematical Reviews of American Mathematical Society and zbMATH Open.

Language proficiencies

Chinese	Native
English	Fluent
Japanese	Intermediate

Academic links

Google scholar	https://scholar.google.com/citations?user=FKbOyUAAAAAJ
Researchgate	https://www.researchgate.net/profile/Shijie-Bao-3
ORCiD	https://orcid.org/my-orcid?orcid=0000-0002-6781-2316