

# Bangzheng (Benjamin) Li

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## INTRODUCTION

I am a senior at MIT majoring in mathematics whose current interest is algebra and number theory.









## EDUCATION

- **Massachusetts Institute of Technology** 2022 - Present  
*Undergrad* Cambridge, MA
  - GPA: 5.0/5.0.
- **Christian Heritage School** 2018 - 2022  
*High School* Trumbull, CT

## AWARD

- **Hartley Rogers Jr. Prize** August 2024  
*MIT* 
  - The best paper award in the Summer Program in Undergraduate Research (SPUR).

## ACTIVITIES

- **Undergraduate Research Opportunities Program Plus (UROP+)** June 2025 - August 2025  
*MIT* 
- **Undergraduate Research Opportunities Program (UROP)** 2025  
*MIT* 
- **PRIMES-USA (mentor)** 2024  
*MIT* 
- **Summer Program in Undergraduate Research (SPUR)** June 2024 - August 2024  
*MIT* 
- **Directed Reading Program (DRP)** January 2024  
*MIT* 
- **Joint Mathematics Meetings** January 2024  
*San Francisco* 
- **Conference on Rings and Factorizations** July 2023  
*University of Graz* 
- **PRIMES-USA (mentee)** 2021  
*MIT* 

## PAPERS

J=JOURNAL, A=ARXIV

- [A.1] Kac, V., Li, B. (2025). *The Quiver Problem is NP Complete*. Preprint on [arXiv:2508.02975](https://arxiv.org/abs/2508.02975)
- [A.2] Li, B., Xiao, Y. (2025). *Commutative Quantale and Localization*. Preprint on [arXiv:2508.02991](https://arxiv.org/abs/2508.02991)
- [A.3] Dani, J., Gotti, F., Hong, L., Li, B., Schlessinger, S. (2025). *On finitary power monoids of linearly orderable monoids*. Preprint on [arXiv:2501.03407](https://arxiv.org/abs/2501.03407)
- [A.4] Bu, A., Gotti, F., Li, B., Zhao, A. (2024). *One-dimensional monoid algebras and ascending chains of principal ideals*. Preprint on [arXiv:2409.00580](https://arxiv.org/abs/2409.00580)
- [A.5] Li, B., Ma, N., Wang, Z. (2024). *Rewarded Region Replay (R3) for Policy Learning with Discrete Action Space*. Preprint on [arXiv:2405.16383](https://arxiv.org/abs/2405.16383)
- [A.6] Gotti, F., Li, B. (2024). *Arithmetic properties encoded in undermonoids*. Preprint on [arXiv:2412.11199](https://arxiv.org/abs/2412.11199)
- [J.1] Ajran, K., Bringas, J., Li, B., Singer, E., Tirador, M. (2023). *Factorization in additive monoids of evaluation polynomial semirings*. Communications in Algebra, 51(10), 4347–4362. [doi.org/10.1080/00927872.2023.2208672](https://doi.org/10.1080/00927872.2023.2208672)
- [J.2] Gotti, F., Li, B. (2023). *Atomic semigroup rings and the ascending chain condition on principal ideals*. Proc. Amer. Math. Soc., 151, 2291–2302. [doi.org/10.1090/proc/16295](https://doi.org/10.1090/proc/16295)
- [J.3] Jiang, N., Li, B., Zhu, S. (2023). *On the primality and elasticity of algebraic valuations of cyclic free semirings*. International Journal of Algebra and Computation, 33:02, 197–210. [doi.org/10.1142/S021819672350011X](https://doi.org/10.1142/S021819672350011X)
- [A.7] Gotti, F., Li, B. (2022). *Divisibility and a weak ascending chain condition on principal ideals*. Preprint on [arXiv:2212.06213](https://arxiv.org/abs/2212.06213)
- [J.4] Gotti, F., Li, B. (2021). *Divisibility in rings of integer-valued polynomials*. New York J. Math. 28, 117–139.

## MATH COURSES TAKEN

F=FALL TERM, S=SPRING TERM

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- 2025 F: 18.155 Differential Analysis I
- 2025 F: 18.965 Geometry of Manifolds I
- 2025 S: 18.102 Intro to Functional Analysis
- 2025 S: 18.737 Algebraic Groups
- 2025 S: 18.821 Project Lab in Mathematics
- 2024 F: 18.745 Lie Groups and Lie Algebras I
- 2024 F: 18.785 Number Theory I
- 2024 S: 18.786 Number Theory II
- 2024 S: 18.906 Algebraic Topology II
- 2023 F: 18.101 Analysis and Manifold
- 2023 F: 18.783 Elliptic Curves
- 2023 F: 18.905 Algebraic Topology I
- 2023 S: 18.152 Intro: Partial Differential Equations
- 2023 S: 18.726 Algebraic Geometry II
- 2023 S: 18.901 Introduction to Topology
- 2022 F: 18.112 Functions of Complex Variable
- 2022 F: 18.725 Algebraic Geometry I