

# Curriculum Vitae

## Information

- **Name:** Xingyu Zhong (钟星宇)
- **Email:** sun123zxy@qq.com
- **Homepage:** <https://scholar.sun123zxy.top/>

## Education

2022/09–2026/06 | Beijing Institute of Technology | Bachelor of Mathematics

Grades (by the end of 5th semester)

- **GPA:** 3.9 / 4.0 (93.6)
- **GPA Ranking:** 1 / 27
- **Overall Ranking:** 1 / 27
- Obtain 90+ scores in almost all the core courses in mathematics
- Obtain 80+ scores in all courses

## Undergraduate Thesis (WIP)

- **Advisor:** Prof. Xun Xie (谢迅)
- **Studying Area:** algebraic groups, Lie algebras, Young tableaux

## Awards

Date	Cycle	Award	Issued by
2023/12	2022–2023	Model Student 优秀学生标兵	Beijing Institute of Technology
2024/12	2023–2024	Outstanding Student 三好学生	Beijing Institute of Technology

## Scholarships

Date	Cycle	Scholarship	Issued by
2023/12	2022–2023	National Scholarship 国家奖学金	Ministry of Education, PRC
2025/03	2024–2025	Samsung Scholarship	Samsung Electronics China
2022–2025	1st–5th semester (for 5 times)	First Class Scholarship	Beijing Institute of Technology

## Competitions

### Competitive Programming

#### ICPC International Collegiate Programming Contest

Date	Competition	Prize
2024/11/03	2024 Asia Nanjing Regional	Bronze Medal
2023/11/25	2023 Asia Hefei Regional	Silver Medal
2023/10/22	2023 Asia Xi'an Regional	Bronze Medal

#### CCPC China Collegiate Programming Contest

Date	Competition	Prize
2024/11/17	2024 Zhengzhou National	Silver Medal
2024/05/26	2024 Guangdong National Invitational	Gold Medal
2023/11/05	2023 Harbin National	Silver Medal
2023/05/28	2023 Hunan National Invitational	Silver Medal

- Countless other university / Provincial / national level contests (BITPC, Baidu Astar, Lanqiao, etc.) in 2022–2024

### Mathematics

Date	Competition	Prize
2024/04/15	2024 Alibaba Global Mathematics Competition	Finalist
2022/10	BIT Campus Mathematics Competition for Junier Grade Group	First Prize

#### CMC The Chinese Mathematics Competitions

Date	Competition	Prize
2024/11/09	2024 National Preliminary Beijing (Mathematics Major, Type A)	Third Prize
	2024 Beijing Provincial (Mathematics Major, Type A)	Third Prize
2023/11/11	2023 National Preliminary Beijing (Mathematics Major, Type A)	Third Prize
	2023 Beijing Provincial (Mathematics Major, Type A)	Second Prize

### Modeling

Date	Competition	Prize
2023/08	2023 National Collegiate Contest on Statistical Modeling, Beijing Preliminary, Undergraduate Group	Second Prize

## Talks

Date	Title	Links
2025/09 (TBD)	<b>Classification of Quadratic Forms over <math>\mathbb{Q}</math></b>	
	<ul style="list-style-type: none"> <li>• BIT–UTokyo undergraduate exchange for outstanding students major in mathematics</li> <li>• Joint work with Shubin Xue (薛术彬). The onsite talk will be given by him.</li> </ul>	
2025/06/20	<b>Irreducible Representations of the Symmetric Group</b>	onsite (en) / latest (zh)
	<ul style="list-style-type: none"> <li>• Selection presentation for BIT–UTokyo undergraduate exchange for outstanding students major in mathematics</li> </ul>	
2025/04/16	<b>Classification of Quadratic Forms over <math>\mathbb{Q}</math></b>	onsite (en) / latest (en)
	<ul style="list-style-type: none"> <li>• 2025 spring <i>Algebraic Geometry</i> final presentation</li> <li>• <b>Lecturer:</b> Prof. Yangyu Fan (范洋宇)</li> </ul>	
2024/04/20	<b>DFT from the Perspective of Algebra Isomorphism</b> 代数同构视角下的离散 Fourier 变换	onsite (zh) / latest (zh)
	<ul style="list-style-type: none"> <li>• BIT–USTC undergraduate exchange for outstanding students major in mathematics</li> <li>• <b>Mentor:</b> Prof. Peng Cao (曹鹏)</li> </ul>	
2023/10/18	<b>The <math>\Delta</math> Discriminant of Univariate Polynomials</b> 一元多项式的 Delta 判别式	onsite (zh) / latest (zh)
	<ul style="list-style-type: none"> <li>• 2023 fall <i>Advanced Algebra II</i> course seminar</li> <li>• <b>Lecturer:</b> Prof. Peng Cao (曹鹏)</li> </ul>	
2023/08/01	<b>A Convolution-Oriented FFT Tutorial</b>	onsite (zh) / latest (zh) / suppliment (zh)
	<ul style="list-style-type: none"> <li>• 2023 BITACMCLUB Competitive Programming Summer Training</li> </ul>	
2023/05/18	<b>Space Filling Curves and Cardinality</b> 空间填充曲线与集合势理论	onsite (zh) / latest (zh)
	<ul style="list-style-type: none"> <li>• 2023 spring <i>Mathematical Analysis II</i> course seminar</li> <li>• Joint work with Chong Ning (宁冲)</li> <li>• <b>Lecturer:</b> Prof. Zhentao Lv (吕珍涛)</li> </ul>	
2023/04/23	<b>Wallis Product, Stirling's Approximation and Guassian Distributions</b> Wallis 公式、Stirling 公式与正态分布	onsite (zh) / latest (zh)
	<ul style="list-style-type: none"> <li>• 2023 spring <i>Mathematical Analysis II</i> course seminar</li> <li>• <b>Lecturer:</b> Prof. Zhentao Lv (吕珍涛)</li> </ul>	
2022/12/13	<b>Topics on the compactness of <math>\mathbb{R}</math></b> 有限覆盖定理与实数理论	latest (zh)
	<ul style="list-style-type: none"> <li>• 2022 fall <i>Mathematical Analysis I</i> course seminar</li> <li>• <b>Lecturer:</b> Prof. Pengshuai Shi (史鹏帅)</li> </ul>	

## Projects

Date	Project	Links
2022/12 – 2023/12	<b>On the Uniqueness of the DFT matrix</b> 将循环卷积转化为乘积的矩阵是否只有傅里叶矩阵?	

Date	Project	Links
	<ul style="list-style-type: none"> <li>• Innovation and Entrepreneurship Training Program for College Students (Level: Provincial &amp; Collegiate) 大学生创新创业训练计划（市、校级）</li> <li>• It is shown that the DFT matrix, in some degree, is the only linear transformation that carries circulant convolution into pointwise multiplication.</li> <li>• <b>Role:</b> Project Leader</li> <li>• <b>Advisor:</b> Prof. Feng Zhang (张峰), School of Information and Electronics, BIT</li> </ul>	

## Attendances

Date	Event	Links
2025/09/08– 2025/09/12	<b>BIT–UTokyo undergraduate exchange for outstanding students major in mathematics</b>	
	<ul style="list-style-type: none"> <li>• <b>Role:</b> (upcoming) Attendance</li> </ul>	
2025/07/01– 2025/07/20	<b>BICMR–RUC algebra and formalization summer school</b> 代数与形式化数学暑期学校	link (zh)
	<ul style="list-style-type: none"> <li>• <b>Role:</b> (upcoming) Attendance</li> </ul>	
2025/02/02– 2025/02/15	<b>2025 FRP winter programme in mordern advanced deep learning</b>	
	<ul style="list-style-type: none"> <li>• A two-week winter program held in University of Cambridge on modern deep learning theories. Group presentations on hands-on projects were required at the end of the program.</li> <li>• <b>Role:</b> Attendance / Special Award Winner (3 out of 15)</li> </ul>	
2024/09/30	<b>ComBIT24–StanleyFest</b>	link (zh/en)
	<ul style="list-style-type: none"> <li>• A conference on combinatorics at BIT in 2024</li> <li>• <b>Role:</b> Attendance</li> </ul>	
2024/04/20 – 2024/04/21	<b>BIT–USTC undergraduate exchange for outstanding students major in mathematics</b>	news (zh)
	<ul style="list-style-type: none"> <li>• <b>Role:</b> Speaker / Attendance</li> </ul>	

## Volunteering

Date	Event	Links
2024 – 2025	<b>Multiple student-organized seminar on mathematics</b>	
	<ul style="list-style-type: none"> <li>• <b>Role:</b> Organizer / Speaker. Among the organizers of the after-class seminar of the courses <i>Real Variable Functions</i>, <i>Complex Variable Functions</i> and <i>Abstarct Algebra</i>. Among the speakers of the student-organized seminar on <i>Commutative Algebra</i>.</li> </ul>	
2023 – 2024	<b>Multiple competitive programming contests</b>	
	<ul style="list-style-type: none"> <li>• <b>Role:</b> Problem Setter. Participated in the problem setting work of 2023 BITCPC and 2024 ICPC Asia Kunming Regional.</li> </ul>	
2023/07 – 2023/08	<b>2023 BITACMCLUB competitive programming summer training</b>	news (zh)
	<ul style="list-style-type: none"> <li>• A 5-week training program for BIT &amp; Yan'an Univ. students interested in competitive programming.</li> <li>• <b>Role:</b> Lecturer. Talked about DFT / FFT, its convolutional nature and mathematical background.</li> </ul>	

## Skills

- **Computer Science:** General programming language familiarity (Python / C++ / Web, etc.). Everyday user of collaborative developing tools (Git). Hands-on experience with building static websites (Quarto / Jekyll) and developing lightweight command-line tools. Github
- **Typesetting** Everyday user of Markdown and LaTeX. Proficiency in publishing systems (Pandoc / Quarto). Experience in developing Quarto Lua filters and extensions.
- **Algorithms:** Once a competitive programmer (OI / ICPC). Familiarity with most of the data structures and algorithms. Codeforces 1951
- **Formalization of Mathematics:** Understand the importance of formalization. Currently learning Lean.
- **Languages:**
  - **Chinese:** Native
  - **English:**
    - \* **IELTS Academic** 7.5 (8.5 / 8.5 / 6.5 / 6)
    - \* **CET-6** 581
    - \* **CET-4** 650
    - \* **CET-SET4** A