

# Julius Zhang

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## EXPERIENCE

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**a16z** Researcher, 2025.4 - Present

- Building [Jolt](#), open-source zero-knowledge virtual machine in Rust.
- Implemented and benchmarked [torus compression](#); proved optimality with a conceptual reframing via Hilbert 90.
- [Audited](#) elliptic-curve optimizations, formalizing folklore results into rigorous [proofs](#).
- Performance engineering across the proving stack, including sum-check optimization.

**Millennium** Researcher, 2024.6 - 2025.4

- Convex optimization and robust statistical estimation for real-time trading systems.

**Stellar Development Foundation** Consultant, 2023.6 - 2023.9

- Byzantine fault tolerance, C++, [stellar-core](#).
- Improved maximum transaction rate per second by 17% via changes to the consensus protocol, reducing number of communication rounds in overlay network. Formal verification in TLA+.

**Distributed Systems and TCS Research, Stanford University** Researcher, 2023.9 - 2024.6

- Under David Mazières, research in general open membership Byzantine fault tolerance protocols ([Github](#)), with applications to certificate authority management and automatic password recovery with hardware security modules.
- Research PCP under Aviad Rubinfeld, reconstructed proof of the 2-to-2 Games Conjecture. Proved a result about Convex Continuous Class Complexity.

**Topology Research, Stanford University** Researcher, 2020.7 - 2022.5

- Floer homotopy theory under Mohammed Abouzaid; related the complex cobordism Gysin map to the Grothendieck residue symbol and derived a recursive formula for Gromov–Witten quantum product corrections.
- Research under Ciprian Manolescu. Floer theory, Seiberg-Witten, knot invariants. Produced new potential counterexamples for the smooth Poincaré conjecture.

## SELECTED PAPERS AND MANUSCRIPTS

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- **The Trace-Zero Subgroup and the Relative Trace for BN254**,  
**Julius Zhang**,  
2026.  
[pdf](#)
- **Complex Cobordism and Formal Group Law**,  
**Julius Zhang**,  
Manuscript (Undergraduate Honours Thesis), Stanford University, 2024.  
[pdf](#)

## TALKS

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- **$p$ -Ordinary Cohomology for  $SL(2)$  over Number Fields (after Hida)**,  
Hida Theory Seminar, Columbia University, 2026.

## EDUCATION

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**Courant Institute of Mathematical Sciences, New York University**, computer science *PhD.* starting 2026.9

- Verifiable systems and theoretical computer science.

**Stanford University**, computer science *M.S.* and mathematics *B.A.* 2019.9 - 2024.6

- General Yaowu Wang Scholarship.

## SKILLS

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**Computer Science:** Rust, C/C++, Python, formal verification, convex optimization, distributed systems, cryptographic protocol design, performance engineering.

**Mathematics:** number theory, algebraic geometry, symplectic topology, homotopy theory, Floer theory, gauge theory, concentration inequalities.