

ZACHARY STIER
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Citizenship: United States

EDUCATION

- **University of California, Berkeley**, PhD, Mathematics 8/2020–5/2026
Thesis “Algorithms and Spectral Gaps for Quantum Problems,”
advised by Prof. Nikhil Srivastava
Supported by NSF Graduate Research Fellowship
Departmental and overall GPA: 4.0 (out of 4.0)
- **Princeton University**, AB with Honors, Mathematics 9/2016–6/2020
Certificate in Applications of Computing
Thesis “Optimal topological generators of $U(1)$ and short paths in $X^{p,q}$ and $SU(2)$,”
advised by Prof. Peter Sarnak;
received department’s Middleton Miller ’29 Prize for best independent work
Putnam Competition top 500 scorer 2017, 2019
Departmental GPA: 3.94; overall GPA: 3.86 (out of 4.0)

PROFESSIONAL EXPERIENCE

- **Hudson River Trading**, Algorithm Developer Intern Summer 2026
Built machine learning models in Python to predict short-term equity price movements
Worked with a team to turn these models into live-deployed high-frequency strategies in C++
Built data-collection binaries and ran research across thousands of threads

SKILLS: Python (NumPy, pandas, scikit-learn), C++, Linux, L^AT_EX

TEACHING EXPERIENCE

- **UC Berkeley**, Graduate Student Instructor, Math 1B (Calc. II) Fall 2020, Spring 2021
Math 53 (Calc. III) Fall 2024, Fall 2025
Math 54 (Lin. Alg. & Diff. Eq.) Spring 2026
Outstanding Graduate Student Instructor Award 2021
As Head Instructor for Math 54, organized team of 6 instructors for course of 450 students
- **UC Berkeley Mathematics Directed Reading Program**, Mentor Fall 2022, Spring 2023
Supervised undergraduates in reading mathematics texts in their areas of interest
- **Mount Tamalpais College**, Mathematics Tutor and Study Group Leader 3/2022–12/2024
Tutor for math courses at college operating in San Quentin State Prison
- **YMath**, ymathtutoring.com, Founder & Executive Director 2013–Present
501(c)(3) provides free tutoring to socioeconomically disadvantaged students
Received Diller Teen *Tikkun Olam* Award 2016

SELECTED PAPERS

- J. Garza-Vargas, N. Srivastava, **Z. Stier**. “Finite Free Entropy Inequalities.” 2026. [arXiv:2602.15822](https://arxiv.org/abs/2602.15822).
- J. Basso, S. Ganguly, A. Sinclair, N. Srivastava, **Z. Stier**, T.-D. Vuong. “On quantum to classical comparison for Davies generators.” 2025. [arXiv:2510.07267](https://arxiv.org/abs/2510.07267) and in *Quantum Information Processing* 2026.
- A. Dawkins, V. Gupta, M. Kempton, W. Linz, J. Quail, H. Richman, **Z. Stier**. “A Ricci flow on graphs from effective resistance.” 2025. *Journal of Combinatorics* 16:4, doi.org/10.4310/JOC.250923002737.
- A. Dawkins, V. Gupta, M. Kempton, W. Linz, J. Quail, H. Richman, **Z. Stier**. “Node resistance curvature in Cartesian graph products.” 2025. *Journal of Combinatorics* 16:4, doi.org/10.4310/JOC.250923003413.
- I. Detherage, N. Srivastava, **Z. Stier**. “On the Ground State Energies of Discrete and Semiclassical Schrödinger Operators.” 2024. *Pure and Applied Analysis* 6:4, doi.org/10.2140/paa.2024.6-4.
- T. Blackman, **Z. Stier**. “Fast Navigation with Icosahedral Golden Gates.” 2023. *Quantum Information & Computation* 23:11&12, doi.org/10.26421/QIC23.11-12-1.
- **Z. Stier**. “Short paths in $PU(2)$.” 2021. *Quantum Information & Computation* 21:9&10, doi.org/10.26421/QIC21.9-10-3.
- **Z. Stier**. “Optimal topological generators of $U(1)$.” 2020. In *Journal of Number Theory* 214, doi.org/10.1016/j.jnt.2020.02.003.