

Shihan Kanungo

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725 Chimalus Dr. Palo Alto, CA 94306
US citizen

Education

- 2023–2026 **San José State University**, San José, CA, GPA: 4.0.
2022–2026 **Henry M. Gunn High School**, Palo Alto, CA., GPA: 3.96UW, 4.46W.

Contests & Test Scores

- Aug 2022 **SAT**, 1550 (790 M, 760 EBRW) (99th percentile).
Jun 2024 **USAPhO (USA Physics Olympiad)**, US Physics Team (Top 20 in USA).
Feb 2023 **USAMTS (USA Mathematical Talent Search)**, 74/75, Gold medal.
Apr 2022 **USAMO (USA Mathematical Olympiad)**, 8/42, (65th percentile).
Feb 2022 **Math Kangaroo, Level 12**, 4th in USA, (at age 12).

Fellowships & Awards

- 2024 **S.-T. Yau High School Science Award**, USA Bronze Medalist in Mathematics.
2024 **World Science Scholar (WSS)**.
Selects a small group of high school students with extraordinary mathematical talent to solve problems in a range of scientific fields in projects led by world-renowned scientists.
2023 **Spirit of Ramanujan Fellow**.
The Spirit of Ramanujan STEM Talent Initiative grants about 35 winners, globally, each year, up to \$5,000 USD each to fund participation in research.

Research Experience

- 2024 **MIT PRIMES–USA**, (with Sidarth Erat, Arun Kannan).
Mixed Tensor Products, Capelli Berezinians, and Newton's Formula for $\mathrm{gl}(m|n)$. [[arXiv](#)]
2024 **San José State University (SJSU)**, (with Jordan Schettler).
On Product Formulas of Guillera and Sondow. [[arXiv](#)]
2023 **MIT PRIMES–USA**, (with Henry Jiang, Harry Kim).
A weaker notion of the finite factorization property. Commun. Korean Math. Soc. **39** (2024), No. 2, 313–329. [[arXiv](#)] Reference: Felix Gotti (MIT)

Publications and preprints

- 2024 **Mixed Tensor Products, Capelli Berezinians & Newton's Formula for $\mathrm{gl}(m|n)$** , S. Erat, A. Kannan, S. Kanungo, Submitted to Transformation Groups. [[arXiv](#)].
2024 **On Product Formulas of Guillera and Sondow**, S. Kanungo, J. Schettler. Submitted to American Mathematics Monthly. [[arXiv](#)]

- 2024 **A weaker notion of the finite factorization property**, H. Jiang, S. Kanungo, H. Kim.
Commun. Korean Math. Soc. **39** (2024), no. 2, 313-329. [[arXiv](#)]

Expository Papers

- Jun 2024 **Large Gaps Between Primes**, *Analytic Number Theory*.
Mar 2024 **Dynamical Billiards**, *Ergodic Theory*.
Dec 2023 **Arithmetic Dynamics**, *Number Theory*.
Jun 2022 **Minimal surfaces**, *Differential Geometry*.
Dec 2021 **Herbert Wilf's snake-oil method**, *Generating Functions*.
Dec 2020 **Mixing-time estimates for the riffle shuffle**, *Markov Chains*.
Mar 2020 **Classifying groups of certain orders**, *Abstract Algebra*.

Camps & Conferences

- Jun 2024 **U.S. Physics Team Training Camp**, *University of Maryland*.
Selection based on two exams: " $F = ma$ " and USAPhO. The top ~ 20 finishers are invited.
Aug 2024 **MAA MathFest 2024, Research in Motion**, *Presenter*.
Jan 2024 **JMM 2024, AMS-PME Student Poster Session**, *Presenter*.
Oct 2023 **MIT PRIMES Fall Conference**, *Presenter*.
H. Jiang, S. Kanungo, H. Kim, *A weaker notion of the finite factorization property*.
Summer 2023 **Special Lectures, Kharkiv-Vienna International Science School**, *Invitee*.
Lectures by Martin Hairer, Günter M Ziegler, et al. Participation is by invitation only.
Reference: Michael Eichmair. 2 weeks
Summer 2023 **The Summer Workshop for Intrepid Mathematicians**, *Presenter*.
Henry Jiang, Shihan Kanungo, Harry Kim, *The length-finite factorization property*.
Reference: Felix Gotti, MIT. 4 weeks

Computer/Coding

- Python **Fluent coder**, *Intermediate Programming with Python*, AoPS, Grade: A+.
Java **Fluent coder**, *Functional & Object-oriented Programming (H)*, Grade: A.
L^AT_EX **Proficient**, Written multiple scientific papers.
Spreadsheet **Good at analyzing data**.

Music

- Summer 2024 **Duke Ellington award**, *Stanford Jazz Workshop*.
Outstanding Musicianship award, *Stanford Jazz Workshop*.
Spring 2024 **Composed music for**, *Midsummer Night's Dream*, Gunn Theatre Spring Show.
Fall 2023 **First place**, *Northern California Young Talents Competition*, solo violin.
2022 – 2023 **Assistant concertmaster**, *Camilla Kolchinsky Orchestra*, GSYO.
2020 – 2022 **Concertmaster**, *Camerata Orchestra; Chamber Players Orchestra*, GSYO.
2014 – 2020 **Piano**, studied classical piano for 6 years.