

# Yichen Tao

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## EDUCATION

Texas A&M University at College Station, GPA 3.774/4.0 Aug 2020 - May 2024  
*Applied Mathematical Science (B.S.), Computer Science (Minor), Upper-division GPA 3.932/4.0*  
*Dean's List, Keys to Aggieland Scholarship Recipient, College Research Grant Recipient*  
National University of Singapore, Exchange Jan 2022 - May 2022

## PRESENTATION

Tao, Y., Plute, J., Tran, E., Zhuang, C. (2023, March 25-26). *Floquet isospectrality of discrete one-dimensional periodic Schrödinger operators*. Sixth annual TX-LA undergraduate mathematics conference, Baton Rouge, LA, USA.

## RESEARCH

Optimal independent generating system May 2022 - Sep 2022  
*National University of Singapore, Dept. of Mathematics (Advisor: Dr. Ser Peow Tan)*

- Build Python codebase to generate and validate candidate solution
- Optimize generating algorithm from  $O(N^2)$  to  $O(\log N)$  using Farey Sequence
- Visualize the result with Numpy and Matplotlib library
- Part of the research result released as Arxiv preprint (<https://arxiv.org/abs/2209.13937>, listed as *acknowledged participant*)
- Co-author article incoming this fall

Inverse problem on Fermi isospectrality Sep 2022 - May 2023  
*Texas A&M University, Dept. of Mathematics (Advisor: Dr. Wencai Liu)*

- Work on complex solution of isospectrality for discrete periodic Schrödinger operators
- Utilize SageMath and Macaulay2 for numerical analysis
- Propose the combinatorial approach and further finalize with graph theory suggested by Matthew Faust, generalize and give the proof the existence of  $\Gamma$ -period isospectral potential
- Co-author article incoming this fall

STMI Lab: BoXHED 2.0 Sep 2023 - Present  
*Texas A&M University, Dept. of C.S.E (Advisor: Dr. Bobak J. Mortazavi)*

- Project detail see <https://github.com/BoXHED/BoXHED2.0>
- Develop unit testing package on preprocessor
- Evaluate model interpretability with benchmark across diverse deep learning architectures

## PROFESSIONAL COMPETENCE

- **Skills/Tools:**
  - ~1000 lines individual work experience in C++, Java/JavaFX, Python
  - Mathematical background in different topics: (stochastic) calculus, probability and measure theory, algebra, PDE/SDE