Yichen Tao

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EDUCATION

Texas A&M University at College Station, GPA 3.774/4.0   Aug 2020 - May 2024
Applied Mathematics (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. (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

Identities on hyperbolic trice punctured sphere   May 2022 - Sep 2022
National University of Singapore, Dept. of Mathematics (Advisor: Dr. Ser Peow Tan)
- Enumerate the index set of prime orthogeodesics to provide upper bound of multiplicity
- Optimize enumerating algorithm from $O(N^2)$ to $O(\log N)$ with Farey tessellation based algorithm
- Visualize the result with Numpy and Matplotlib library
- The result has been applied in another published research paper of Dr. Tan *(https://arxiv.org/abs/2209.13937, listed as acknowledged participant)*
- Co-author article incoming this fall

REU: 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 a combinatorial approach and further formalize with transition matrix graph suggested by Matthew Faust, generalize and show the existence of Γ-period zero-isospectral potential
- Co-author article incoming

STMI Lab: BoXHED, Tree based machine learning hazard estimator   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 data preprocessor
- Evaluate model interpretability with interpretation models (ArchDetect, SHAP, and DeepLift)
- Reconstruct a self-interpretable DeepPAMM *(https://arxiv.org/abs/2202.07423)* deep learning based survival analysis network to provide comparison