

# Yihan Guo

## Education

<b>University of Chicago</b>	09/2024-Present
M.S. in Computational and Applied Mathematics · GPA: 3.87/4.00	
<b>Fudan University</b>	09/2020-06/2024
B.S. in Mathematics and Applied Mathematics · GPA: 3.81/4.00	

## Publications & Preprints

- Flag manifolds and the eigenvectors distributions of random matrix ensembles.

## Research Experience

<b>Research Assistant</b>	UChicago
Advisor: Prof. Lek-Heng Lim	
<ul style="list-style-type: none"><li>• Shown that the eigenvectors distributions of the Gaussian Orthogonal, Unitary, and Symplectic Ensembles are the unique <math>G</math>-invariant probability distributions on the complete real, complex, and quaternionic flag manifolds respectively. Also, the singular vectors distributions of Ginibre Ensembles, as well as the CS vectors distributions of Circular Ensembles are the unique <math>G</math>-invariant probability distributions on homogeneous spaces of product spaces of <math>G</math>, in real, complex, and quaternionic cases. These results yield simple and computationally efficient methods for generating uniformly random points on arbitrary flag, Grassmann, and Stiefel manifolds. Results appear in Flag manifolds and the eigenvectors distributions of random matrix ensembles.</li></ul>	

<b>Undergraduate Researcher</b>	Fudan University
Mentor: Prof. Yingzhou Li	
<ul style="list-style-type: none"><li>• Worked on near-term quantum algorithms for finding ground states of quantum Hamiltonians, such as quantum imaginary time evolution and quantum Lanczos.</li></ul>	

## Teaching

<b>Teaching Assistant, FINM 34800: Modern Applied Optimization</b>	UChicago
Duties: Creating problem sets, Grading, Holding office hours 2 hours/week.	

## Honors

<b>Ministry of Education (China)</b>	National Scholarship, 2021
The most competitive academic performance-based undergraduate honor in China.	

## Selected Coursework

- Graduate: random matrix theory, measure-theoretic probability sequence, PDEs, theoretical computer science: analysis of Boolean functions.
- Undergraduate: functional analysis, differential geometry, algebraic topology.