Dao Chen YUAN

EDUCATION

McGill University Montreal, QC
B. Sc. Honours Probability and Statistics, Computer Science Minor, GPA: 3.98/4.00. 2019 – 2022

RESEARCH INTEREST

- **Probability Theory:** Random processes (random walks, generating processes, random structures). Markov chains. Randomized algorithms.
- **Graph Theory:** Probabilistic method. Various random graph models. Dichromatic polynomial and applications to statistical mechanics (Potts model). Graph spectra and applications.

PROJECTS

- **Spectral Gaps and Graph Polynomials for Regular Graphs** May 2021 – Dec 2021
  NSERC-sponsored project supervised by Prof. Dmitry Jakobson[1]. Studied spectral behaviour of large regular graphs and properties of their chromatic polynomial. Continuing the research into Fall 2021 co-supervised by Prof. Sergey Norin[2]
- **Study on Generation and Properties of Fractals** 2018 – 2019
  Reading project supervised by Prof. Jakobson. Studied real analysis results related to generation and properties of fractals (iterated function systems, Hausdorff dimension and measure, etc). Authored final paper and gave presentation.

ACADEMIC COURSEWORK

- **Analysis:** Real numbers. Metric spaces. Measure theory on $\mathbf{R}^n$. Basic general topology. Some functional analysis with complex-valued functions (including Fourier transforms). Multivariate calculus.
- **Probability and Statistics:** Basic discrete probability. Measure-theoretic probability. Basic concentration bounds. Hypothesis testing. Likelihood-ratio. Simple regression.
- **Computer Science:** Analysis of randomized algorithms and randomized data structures. Basic linear optimization.
- **Graph Theory:** Graph theory. Algebraic graph theory (graph spectrum, cut and cycle spaces, spanning trees). Probabilistic method (Erdős-Rényi model, thresholds, correlation inequalities).

SCHOLARSHIPS AND AWARDS

- NSERC Undergraduate Student Research Award: summer research grant, $7500 one-time May 2021 – Aug 2021
- FRQNT Supplement to NSERC: summer research grant, $1500 one-time May 2021 – Aug 2021
- Bourses Hydro-Quebec Science: merit-based, renewable, $5000 per year 2019 – 2022
- Faculty of Science Scholarship: merit-based, $700 one-time 2020 – 2021
- Dean's List 2020 – 2021

EXTRACURRICULAR ACTIVITIES

- VP Finance at Society of Undergraduate Mathematics Students 2020 – 2021
  Preparing the club's budget; coordinating with other members regarding various costs and event expenses; managing the club accounts; submitting monthly audit reports.

---

[1] Department of Math and Stats, McGill University
[2] Department of Math and Stats, McGill University