

# Douglas Dow

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<https://cims.nyu.edu/~dd3103/>

## PERSONAL PROFILE

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I am a math PhD student ending my third year at Courant Institute, NYU specializing in probability theory. Currently I study directed polymers, a model that describes the statistical mechanics of disordered systems that, at zero temperature, are paths arranged so as to minimize energy accrued from contributions from a random environment and from local self-interaction. This topic relates to stochastic PDE and random growth models. I also enjoy new challenges and learning about statistics, finance, and computer science.

## EDUCATION

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- 08/2020 – Present     *Courant Institute, NYU*  
PhD in Mathematics  
Research in Probability Theory  
Advisor: Yuri Bakhtin
- 08/2016 – 06/2020     *The University of Chicago*  
BS in Mathematics with Honors  
GPA: 3.9/4.0  
Honors: Magna Cum Laude, Phi Beta Kappa

## PAPERS

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- Differentiability of the Shape Function for Directed Polymers in Continuous Space.* Joint work with Yuri Bakhtin. Submitted. Preprint available at <https://arxiv.org/abs/2303.04224>. (2023)
- Joint localization of directed polymers.* Joint work with Yuri Bakhtin. Submitted. Preprint available at <https://arxiv.org/abs/2211.05916>. (2022)
- Error bounds for dynamical spectral estimation.* Joint work with Robert Webber, Eric Thiede, Aaron Dinner, and Jonathan Weare. Available [here](#) in the SIAM Journal of Mathematical Data Science. (2021)

## WORK EXPERIENCE

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- 02/2022 – 11/2022     *Stern School of Business, NYU*  
Research Assistant
- Checked validity of probabilistic and game theoretic proofs for Assistant Prof. Xinyu Cao
- 06/2019 – 08/2019     *Bridgewater Associates*  
Investment Associate Intern
- Worked in trading department researching how one can understand and minimize costs when executing trades
  - Applied statistical techniques in R to gain insight into trading patterns from equity trade data
  - Rated above the bar and received a full-time return offer
- 02/2018 – 06/2018     *Kyber Technologies*

## Quantitative Research Intern

- Implemented topic modeling algorithms based on LDA for unstructured natural language data
- Built algorithm in python to query and sort thousands of financial documents to aid in portfolio construction

## TEACHING/OUTREACH

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- 08/2022 - Present     *Courant Institute, NYU*  
Probability and Statistics; Analysis - TA  
Taught two recitation sections, ~35 students each
- 06/2022 – Present     *Student Probability Seminar, NYU*  
Organizer
- 01/2022 - Present     *Carnegie Prep*  
Private Tutor for high school algebra up to college calculus
- 08/2021 – 11/2022     *Courant Institute, NYU*  
Introduction to PDEs (graduate level) - Grader
- 08/2017 – 06/2020     *The University of Chicago*  
Junior tutor for Elementary Functions and Calculus  
Lead tutorial sections, ~8 students each

## TALKS

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- 02/2023                 University of Virginia Probability Seminar  
02/2023                 Purdue University Probability Seminar  
11/2022                 Northeast Probability Seminar (short talk)  
09/2022                 Courant Student Probability Seminar

## AWARDS & HONORS

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- 09/2023                 Charles Newman Fellowship, *New York University*  
08/2020                 Henry M. MacCracken Fellowship, *New York University*  
05/2020                 Phi Beta Kappa, *The University of Chicago*  
05/2020                 Magna Cum Laude, *The University of Chicago*

## SKILLS

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Programming Languages in order of proficiency: Python, C, Matlab, R, Excel, Haskell

Relevant Graduate Coursework:

- Theory of Deep Learning (MATH-GA.2840)
- Dynamic Asset Pricing (MATH-GA.2793)
- Numerical Optimization (MATH-GA.2011)
- Advanced PDE (MATH-GA.2510)
- Probability Theory I, II (MATH-GA.2911)