

Xiang Fang

204 W 108TH ST, APT 21
New York, NY 10025

xf2203@columbia.edu
Phone: +1 (929) 400-3397

Interests Probability(integrable probability, stochastic analysis), Stochastic process, SDEs, Mathematical Finance

Education **Columbia University, USA**
M.A., Mathematical Finance (Expected December 2020)
GPA(4.0 scale, 4.33 maximum): 3.75(1st semester), P(2nd semester)

Zhejiang University, China
B.A., Mathematics, 2015
GPA: 3.76/4 Major GPA(third year): 3.99/4

Relevant Coursework **Columbia University**
☐ Stochastic Process-Application I ☐ Non-linear Option Pricing
☐ Stochastic Methods in Finance ☐ Honor Probability Theory
☐ Numerical Methods in Finance ☐ Time Series
Current Courses:
☐ Probability & Analysis I(PhD level) ☐ Honor Complex Variable
☐ Topology ☐ Partial Differential Equations

Zhejiang University
☐ Calculus(single and multi-variable) ☐ Linear Algebra
☐ Ordinary Differential Equation ☐ Mathematical Analysis
☐ Real Analysis ☐ Functional Analysis
☐ Stochastic Process ☐ Combinatorial Optimization
☐ Abstract Algebra ☐ Mathematical Statistics
☐ Regression Analysis ☐ Optimization Algorithm

Research **Columbia Mathematics REU, Summer 2020.**
Researched asymptotics of Bernoulli Gibbsian line ensembles under the supervision of Professor Evgeni Dimitrov. We found a sufficient mild condition for the sequence of Bernoulli Gibbsian line ensembles to be tight. Furthermore, we show that if the top curves of line ensembles converge in the finite dimensional sense to the parabolic Airy₂ process then the sequence of line ensembles converge to the parabolically shifted Airy line ensemble. I managed to prove the weak convergence of fixed time distribution of the avoiding Bernoulli line ensembles, which would be used to prove our main result.
Link: <https://arxiv.org/abs/2011.04478>

Researched paper, 2018. $G(r,s,p)$ Reward Game: A Two-opponent Stochastic Online Game from Hearthstone. Inspired by the game "Hearthstone", cooperated with my classmate Chenhe Zhang to model the score change with a modified version of random walk $G(r,s,p)$, which jumps by s steps to the right when accumulating with r consecutive 1-step right jumps, with p being the Bernoulli parameter. We studied the ruin probability, mean duration and recurrence of $G(2,2,p)$.
Link: <http://ssrn.com/abstract=3467624>

SRTP(Student Research Training Program), 2017. Used fractal interpolation to fit sample data points of stock price. We made short-term predictions of stock price based on the assumption that the box dimension of a certain stock price graph is constant.

Teaching

Directed Reading Program, Columbia University, 2020.

Mentored an undergraduate student reading about contents of measure-theory-based probability theory using selected materials.

Teaching Assistant, CIS Program, 2019. Assisted with Joseph Chang, Prof. of Statistics from Yale University about Bayesian Statistics. Gave regular 2-hours TA lessons every day, graded the homework and helped with students' research projects.

Teaching Assistant, CIS Program, 2018. Assisted with Charles Pugh, Prof. Emeritus of mathematics from UC-Berkeley about real analysis and topology topics. Gave regular TA sessions, graded homework and contributed to a research project about Kakeya problem.

References

Joseph Chang, Professor, Department of Statistics and Data Science , Yale University, joseph.chang@yale.edu.

Evgeni Dimitrov, Ritt Assistant Professor, Mathematics Department, Columbia University, esd2138@columbia.edu.

Julien Guyon, Adjunct Professor, Mathematics Department, Columbia University, julien.guyon.1977@gmail.com.

Ioannis Karatzas, Professor, Mathematics Department, Columbia University, ik@math.columbia.edu.