

# Daesung Kim

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## Employment

J. L. Doob Research Assistant Professor, University of Illinois at Urbana–Champaign, August 2019–Present

## Education

Ph.D. Mathematics, Purdue University (Advisor: Prof. Rodrigo Bañuelos), August 2019.

M.A. Mathematics, Seoul National University (Advisor: Prof. Panki Kim), August 2013.

B.S. Mathematics & B.A. Economics, Seoul National University, August 2011.

## Research Interests

Geometric and functional inequalities

Singular integrals, Fourier multipliers, nonlocal operators from stochastic analysis

Probability theory

## Papers

1. *Martingale transforms and the Hardy–Littlewood–Sobolev inequality for semigroups*, **Potential Anal.** **45** (2016), no. 4, 795–807. MR 3558361
2. (with Rodrigo Bañuelos) *Hardy–Stein identity for non-symmetric Lévy processes and Fourier multipliers*, **J. Math. Anal. Appl.** **480** (2019), no. 1, 123383.
3. (with Emanuel Indrei) *Deficit estimates for the logarithmic Sobolev inequality*, **submitted**, arXiv:1805.06107 (2018)
4. *Instability results for the logarithmic Sobolev inequality and its application to the Beckner–Hirschman inequality*, **submitted**, arXiv:1805.06272 (2018)
5. *Quantitative inequalities for the expected lifetime of the Brownian motion*, **Michigan Math. J.**, -1: 1-20 (2021). <https://doi.org/10.1307/mmj/1593136867>

## Talks

Theory of Markov Semigroups and Schrödinger Operators, Wrocław University of Technology in Zoom, Mar 2021

Geometric and functional inequalities and recent topics in nonlinear PDEs, in Zoom, Mar 2021

Seminar on non-local operators, probability and singularities, in Zoom, Oct 2020

Minisymposium at International Conference on Elliptic and Parabolic Problems, Gaeta, Italy, May 2019

AMS sectional meeting Special session on Stochastic processes, Hartford, April 2019

Probability seminar, University of Illinois at Urbana–Champaign, April 2019

Probability seminar, Purdue University, February 2019

Probability seminar, Seoul National University, March 2018

Probability seminar, Purdue University, September 2017

Probability seminar, University of Illinois at Urbana–Champaign, March 2017

Probability seminar, Purdue University, February 2016

## Conferences

Northeast Probability Seminar, CUNY, November 2019 (short talk session)

Functional inequalities in Probability, University of Connecticut, November 2018 (short talk session)

The 82nd Midwest PDE Seminar, Purdue University, October 2018

Recent Trends in Continuous and Discrete Probability, Georgia Institute of Technology, June 2018 (short talk session)

Seminar on Stochastic Processes, Brown University, May 2018

Summer School in Probability, Northwestern University, July 2016

3rd Conference on Nonlocal Operators and Partial Differential Equations, Bedlewo, Poland, June 2016

Conference on New Developments in Probability, Northwestern University, May 2016

Seminar on Stochastic processes, University of Maryland, March 2016 (short talk session)

Northeast Probability Seminar, New York University, November 2015 (short talk session)

37th Midwest Probability Colloquium, Northwestern University, October 2015

Conference in Stochastic Analysis and Related Topics, Purdue University, May 2015

Seymour Sherman Lecture and Conference, Indiana University, May 2015

10th Cornell Probability Summer School, Cornell University, July 2014

Seminar on Stochastic Processes, University of California at San Diego, March 2014

35th Midwest Probability Colloquium, Northwestern University, October 2013

## Grants

Graduate Student International Travel Grant, Purdue University, 2019

Purdue University Graduate School Summer Research Grant, 2015–2018

BK21 Grant, National Research Foundation of Korea, 2011–2012

National Science Scholarship, Korean Student Aid Foundation, 2006–2011

Last updated: March 4, 2021