HYEJIN KIM

CONTACT INFORMATION

Department of Mathematics and Statistics
University of Michigan–Dearborn

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PROFESSIONAL APPOINMENT

University of Michigan–Dearborn, Department of Mathematics and Statistics
Associate Professor 09/2019 – current

University of Michigan–Dearborn, Department of Mathematics and Statistics
Assistant Professor 09/2014 – 08/2019

Michigan State University, *East Lansing*, Department of Mathematics
Visiting Assistant Professor (MCIAM Postdoc fellow) 08/2012 – 08/2014

University of Michigan, *Ann Arbor*, Department of Mathematics
Postdoctoral Assistant Professor 08/2010 – 08/2012

Institute for Mathematics and Its Applications, *Minneapolis*, University of Minnesota
Postdoctoral Fellow 09/2009 – 08/2010

EDUCATION

University of Maryland, *College Park* M.A. and Ph.D.
Department of Mathematics, (Mathematical Statistics Program) 08/2003 – 05/2009
– Academic advisor: Mark I. Freidlin.
– Thesis: Asymptotic problems for stochastic differential equations and related differential equations.

RESEARCH INTERESTS

- Stochastic Differential Equations and Probability Theory
  - Large deviations and applications
  - Stochastic dynamical systems and population dynamics
- Game Theory

SELECTED PUBLICATIONS

1. Alvarée, E.* and Kim, H., "Stochastic Tragedy of the Commons: A Markov Model of Resource Conservation and Depletion", *Journal of Statistics & Management Systems*, Vol. 21, Issue 1, p. 61–79, 2018.
2. Diaz–Rodriguez, O.*, Nguyen, T.*, Kim, H., and Sendova, T., "Competing dynamics: Analyzing market share in a duopoly", *Journal of Statistics & Management Systems*, Vol. 20, Issue 5, p. 925–937, 2017.
3. Hu, X., Iwen, M., and Kim, H., "Rapidly Computing Sparse Legendre Coefficient Expansions via Sparse Fourier Transforms", *Numerical Algorithms*, Vol. 74, Issue 4, p. 1029–1059, April, 2017.
4. Castillo, A.*, Chavez, J.*, and Kim, H., "A note on divergent Fourier series and λ–permutations", *Australian Journal of Mathematical Analysis and Applications*, Vol. 14, Issue 1, Article 3, p. 1–9, 2017.
5. Kim, H., "The boundary Harnack principle in Holder domains with a strong regularity", *Bulletin of the Korean Mathematical Society*, Vol. 53, No. 6, p. 1741–1751, Nov. 2016.

Authors with * are(were) undergraduate students when the research was conducted.

SELECTED STUDENT SUPERVISION

1. **REU Site in Mathematical Analysis and Application**, UM–Dearborn, Summer 2022
   Mentored a group of four students, Elsa Church (Macalester College), David Cruz (Texas A&M), Ashley Harrison (University of Pikeville) and Derrick Wu (Baruch College) on a project *"Eigenvalues of the Infinitesimal Generator of the Asymmetric Simple Exclusion Process"*.
2. **REU Site in Mathematical Analysis and Application**, UM–Dearborn, Summer 2019
   Mentored a group of two students, Megan Osborne(University of Scranton) and Tamantha Pizarro(Iona College) on a project *"A Stochastic Model of HIV Dynamics"*.
3. **REU Site in Mathematical Analysis and Application**, UM–Dearborn, Summer 2017
   Mentored a group of four students, Zachary Bezemek(MSU), Robert Lucas(UM–Dearborn), Casey Saenz(UM–Dearborn), and Zachary Shay(UM–Dearborn) on a project *"Stochastic Modeling of Chemotherapy Treatment for Cancer with A Large Deviation Principle"*.
4. **The MAA SUMMA program**, UM–Dearborn, Summer 2016
   Co–Mentored a group of four students on a project *"Decomposing a Function into Symmetric Pieces: Fourier Series and Spherical Harmonics"* with Yunus Zeytuncu.
5. **The MAA Preparation for Industrial Careers program**, UM–Dearborn, Winter 2016
   Co–Mentored two groups of 7 students on practical industry research projects with Mahesh Agarwal and Yulia Hristova.
6. **The MAA SUMMA program**, UM–Dearborn, Summer 2015
   Co–Mentored a group of five students on a project *"Decomposing a Function into Symmetric Pieces: Fourier Series and Self–Similarity"* with Yunus E. Zeytuncu.
7. **The MAA Preparation for Industrial Careers program**, UM–Dearborn, Winter 2015
   Co–Mentored three groups of 10 students on practical industry research projects with Yulia Hristova.

SUMMA*: Strengthening Underrepresented Minority Mathematics Achievement program

AWARDS

1. "GirlsGetMath@Dearborn", $6000, Hristova, Y. (PI), Viswanathan, A. (Co-PI), and Kim, H. (Co-PI), MAA, Tensor Program for Women and Mathematics, 2023, 2024 and 2025.
2. National Science Foundation, *DMS-1659203*, (Co-PI), $229,259, "REU Site: Mathematical Analysis and Applications", 5/1/2017–4/30/2020.
3. MAA National REU Program (NREUP) (Co-PI), $26, 400, *"Decomposing a Function into Symmetric Pieces: Fourier Series and Spherical Harmonics"*, 5/8/2016– 6/24/2016.
4. MAA Preparation for Industrial Careers program grant (PI) $3,000, 2016.
5. MAA National REU Program (NREUP) (PI), $27.000, *"Decompsing a Function into Symmetric Pieces: Fourier Seires and Self–Similarity"*, 5/11/2015– 7/3/2015.
6. MAA Preparation for Industrial Careers program (Co-PI) $5,000, 2015.

SYNERGISTIC ACTIVITIES

1. Co-organizer of GirlsGetMath@Dearborn, Summer 2021, 2023, 2024, and 2025
2. Co-organizer, a Mini-Symposium " Showcasing Undergradaute Research in Applied Mathematics" at the 2022 SIAM Great Lake Annual Meeting, Sep. 24, 2022
3. Faculty Senate First Year Experience Committee (2018 to 2020)