

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Arts, Sciences, and Letters

Hyejin Kim, assistant professor of mathematics, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters, is recommended for promotion to associate professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters.

Academic Degrees:

Ph.D.	2009	Mathematics, University of Maryland, College Park, MD
B.S.	1999	Mathematics, Chung-Ang University, Seoul, Republic of Korea

Professional Record:

2014 – present	Assistant Professor of Mathematics, Department of Mathematics and Statistics, University of Michigan-Dearborn
2012 – 2014	Visiting Professor (Michigan Center for Industrial and Applied Mathematics Postdoc), Department of Mathematics, Michigan State University, Lansing, MI
2010 – 2012	Post-doctoral Assistant Professor, Department of Mathematics, University of Michigan-Ann Arbor
2009 – 2010	Post-doctoral Fellow, Institute for Applied Mathematics and its Applications, University of Minnesota

Summary of Evaluation:

Teaching: Professor Kim's teaching is rated as excellent. Professor Kim has taught fifteen lower division courses, seven upper division courses, and one independent study course since joining the faculty in fall 2014. Student assessments of her courses are uniformly high in terms of the average numerical responses. Technology plays an integral part in her teaching in the form of the use of computer software, online homework (WeBWork), and course management systems (Canvas). In recognizing her excellence in teaching, Professor Kim was awarded the Distinguished Teaching Award in winter 2018.

Research: Professor Kim's research is rated as significantly capable. Her publication record is strong both in terms of quality and quantity.

Recent and Significant Publications:

Alvarée*, Ethan J., Kim, Hyejin, "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.

Diaz-Rodriguez*, Osvaldo, Nguyen*, Tai, Kim, Hyejin, Sendova, Tsvetanka, "Competing dynamics: Analyzing market share in a duopoly," *Journal of Statistics & Management Systems*, Vol. 20, Issue 5, p. 925-937, 2017.

Hu, Xianfeng, Iwen, Mark, Kim, Hyejin, "Rapidly Computing Sparse Legendre Coefficient Expansions via Sparse Fourier Transforms," *Numerical Algorithms*, Vol. 74, Issue 4, p. 1029-1059, April, 2017.

- Castillo*, Angel, Chavez*, Jose, Kim, Hyejin, "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.
- Kim, Hyejin, "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.
- Lin, Yen Ting, Kim, Hyejin, Doering, Charles, "Demographic stochasticity and evolution of dispersion I. Spatially homogeneous environments," *Journal of Mathematical Biology*, Vol. 70, Issue 3, p.647-678, Feb. 2015.
- Lin, Yen Ting, Kim, Hyejin, Doering, Charles, "Demographic stochasticity and evolution of dispersion II. Spatially inhomogeneous environments," *Journal of Mathematical Biology*, Vol. 70, Issue 3, p.679-707, Feb. 2015.
- Lin, Yen Ting, Kim, Hyejin, Doering, Charles, "Features of Fast Living: On the Weak Selection for Longevity in Degenerate Birth-Death Processes," *Journal of Statistical Physics*, Vol. 148, Issue 4, p.646-662 (2012).
- Kim, Hyejin, Safonov, Mikhail, "Boundary Harnack Principle for Second Order Elliptic Equations with Unbounded Drift," *Journal of Mathematical Sciences*, Vol. 179, No. 1, Nov. 2011.
- Kim, Hyejin, Safonov, Mikhail, "Carleson Type Estimates for Second Order Elliptic Equations with Unbounded Drift," *Journal of Mathematical Sciences*, Vol. 176, No. 6, Aug. 2011.
- Kim, Hyejin, "On Continuous Dependence of Solution of Parabolic equations on Coefficients", *Asymptotic Analysis*, Vol. 62, Number 34, May 2009.

*Authors were undergraduate students when the research was conducted.

Service: Professor Kim's service is rated as excellent. Professor Kim's service contributions at the department level include serving on the Department Faculty Search Committees, Department Colloquium Organizer, and her work on advising students and contribution to Summer REU (Research Experience for Undergraduates). At the university level, Professor Kim currently serves on the Faculty Senate First Year Experience Committee.

External Reviewers:

Reviewer A: "The quality and impact of Dr. Kim's work is very high... The span of Dr. Kim's research is definitely larger than usual... Dr. Kim demonstrated her qualities by publishing several good papers in good journals... Dr. Kim's papers contain nontrivial theoretical approaches, which demonstrate the quality of her mathematical work... The fact that Dr. Kim has three papers co-authored by undergraduate students and published in good peer-reviewed journals is a testament of Dr. Kim's excellent work with the students... Her work is of outstanding quality and impact. There are not many assistant professors working so well with students and producing highly cited papers in excellent journals."

Reviewer B: "Dr. Kim has worked on developing asymptotic results...making it more amenable to theoretical analysis, as well as numerical illustrations...this result is original and can be considered as a useful framework, triggering and enabling subsequent research in the area by a wide variety of researchers. Indeed, the resulting paper is published in *Journal of Statistical Physics*, a highly visible and well-known journal, with about 30 citations that is quite respectable."

Reviewer C: "These three publications make an exceptionally important contribution to the field... Dr. Kim and her co-authors develop an exceptionally novel approach to addressing the role of demographic stochasticity.... In each case, Dr. Kim and her co-authors navigate these complexities with exceptional skill and derive important new in-sights... Dr. Kim is a talented probabilist and

applied mathematician... In conclusion, Dr. Kim is a very talented researcher in applied mathematics and an outstanding mentor of undergraduate research.”

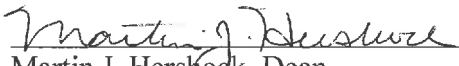
Reviewer D: “Hyejin Kim’s file is outstanding – she has managed [to] publish a variety of extremely impressive research papers (several papers a year) during her first few years at UM-Dearborn while simultaneously teaching and mentoring her undergraduate students at a remarkably high level. She has, at the same time, received numerous research grants. I am not sure how she has the time, but Hyejin Kim does it all, and does it all well... Her calculation demonstrated a high level of technical sophistication...”

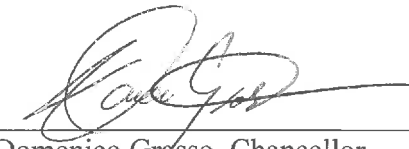
Reviewer E: “...the beautiful, deep, and difficult work (2009-2016) of Kim and Safonov enters the scene... Impressed by the above mentioned papers, I asked Safonov: “Who is Hyejin Kim?”... I realized Hyejin started on stochastic process and probability, and am amazed by the fact that by now she has already branched out to partial differential equations (both elliptic and parabolic), harmonic analysis, and game theory.”

Reviewer F: “Moreover, the trajectory of her publication record shows a strong upward trend (three papers in 2017!). Her articles appeared in highly respectable journals... Her publication record clearly shows her ability to collaborate and contribute in a wide range of disciplines... What she has accomplished clearly shows a very strong research productivity... Dr. Kim’s work in stochastic competing dynamics and demographic stochasticity and evolution of dispersion are outstanding with high impact... Through her published works, Dr. Kim demonstrated that she can effectively develop an active research potential to secure external funding.”

Summary of Recommendation:

Professor Kim has been rated excellent in the areas of teaching and service; and significantly capable in research. She has been an outstanding instructor in the classroom and has done some cutting-edge research work with her collaborators and many undergraduate students. She has made important service contributions to the department and the university. We are very pleased to recommend, with strong support of the College of Arts, Sciences, and Letters Executive Committee, Hyejin Kim for promotion to associate professor of mathematics, with tenure, Department of Mathematics and Statistics, College of Arts, Sciences, and Letters.


Martin J. Hershey, Dean
College of Arts, Sciences, and Letters


Domenico Grasso, Chancellor
University of Michigan-Dearborn

May 2019