

## Curriculum Vitae

### **Jun Andrew Kitagawa**

Department of Mathematics, Michigan State University  
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### Professional History

- Assistant Professor, Department of Mathematics, Michigan State University, 08/2015-present
- Postdoctoral Fellow, The Fields Institute for Research in Mathematical Sciences, 07/2014-12/2014
- Postdoctoral Fellow, Department of Mathematics, University of Toronto, 01/2014-07/2015 (Sponsors: Almut Burchard, Boris Khesin, and Robert McCann)
- Postdoctoral Fellow, Mathematical Sciences Research Institute, 08/2013-12/2013
- Postdoctoral Fellow, University of British Columbia/Pacific Institute for the Mathematical Sciences, 08/2011-07/2013 (Sponsors: Nassif Ghoussoub and Young-Heon Kim)

### Education History

- Ph.D. Mathematics, Princeton University, 05/2011 (Advisor: S.Y. Alice Chang)
- B.A. Pure Mathematics, Highest Honors, University of California, Berkeley, 05/2006

### Research Interests

- Elliptic and Parabolic PDE, Optimal Transport, Numerical Methods, Applications.

### Grants

- National Science Foundation grant DMS-1700094. 2017-2020. (\$150,000)
- Simons Foundation Collaboration Grants for Mathematicians. 2017-2023. (Declined due to award of NSF grant)
- AMS-Simons Travel Grant. 2014-2016. (\$4,000)

### Awards and Honors

- J.S. Frame Teaching Excellence Award. 2018.

### Service

- Organizer: Mathematics Department Colloquium, Fall 2018-Spring 2019. Michigan State University.
- National Science Foundation, panelist (2017).
- Co-organizer (with Nestor Guillen and Robert McCann): BIRS workshop 17w5078 “Generated Jacobian Equations: from Geometric Optics to Economics”, April 2017, BIRS.
- Mentoring: Research project team of two undergraduate students, beginning Fall 2016. Michigan State University.
- Co-organizer: Analysis and PDE Seminar, Fall 2015-present. Michigan State University.
- Co-organizer: 76th Midwest PDE Seminar, November 21-22 2015. Michigan State University.

- Co-organizer: Fields Calculus of Variations and Applications postdoctoral seminar, Fall 2014. The Fields Institute for Research in Mathematical Sciences, Toronto, Canada.

### Preprints

- “An optimal transport problem with storage fees.” (with Mohit Bansil). In submission. (<https://arxiv.org/abs/1905.01249>)
- “Exponential Convergence of Parabolic Optimal Transport on Bounded Domains.” (with Farhan Abedin). In submission. (<https://arxiv.org/abs/1812.04675>)

### Peer-reviewed publications

11. “Estimates for Dirichlet-to-Neumann maps as integro-differential operators.” (with Nestor Guillen and Russell Schwab). To appear in *Potential Anal.* (<https://arxiv.org/abs/1710.03152>)
10. “Free discontinuities in optimal transport.” (with Robert McCann). *Arch. Ration. Mech. Anal.*, 232(3):1505–1541, 2019.
9. “Convergence of a newton algorithm for semi-discrete optimal transport.” (with Quentin Mérigot and Boris Thibert). To appear in *J. Eur. Math. Soc. (JEMS)*. (<http://arxiv.org/abs/1603.05579>)
8. “Pointwise estimates and regularity in geometric optics and other generated Jacobian equations.” (with Nestor Guillen). *Comm. Pure Appl. Math.*, **70**(6), pp. 1146-1220, 2017.
7. “The multi-marginal optimal partial transport problem.” (with Brendan Pass). *Forum Math. Sigma*, **3**, 2015.
6. “Prohibiting isolated singularities in optimal transport.” (with Young-Heon Kim). *Ann. Sc. Norm. Super. Pisa Cl. Sci.*, **16**(1), pp. 277-290, 2016.
5. “On the local geometry of maps with  $c$ -convex potentials.” (with Nestor Guillen). *Calc. Var. Partial Differential Equations*, **52**(1-2), pp. 345-387, 2015.
4. “On the degeneracy of optimal transportation.” (with Young-Heon Kim). *Comm. Partial Differential Equations*, **39**(7), pp. 1329-1363, 2014.
3. “An iterative scheme for solving the optimal transportation problem.” *Calc. Var. Partial Differential Equations*, **51**(1-2), pp. 243-263, 2014.
2. “Regularity for the optimal transportation problem with Euclidean distance squared cost on the embedded sphere.” (with Micah Warren). *SIAM J. Math. Anal.*, **44**(4), pp. 2871-2887, 2012.
1. “A parabolic flow toward solutions of the optimal transportation problem on domains with boundary.” *J. Reine Angew. Math.*, **672**, pp. 127-160, 2012.

### Minicourses / Lecture series

- 2019: May *2019 NCTS & Sinica Summer Course: Topics on Mathematical Foundation of Machine Learning*, National Center for Theoretical Sciences, Taipei, Taiwan.
- 2018: June *2018 NCTS Summer Course: Theoretical Foundation of Data Science, with Application*, National Center for Theoretical Sciences, Taipei, Taiwan.
- 2014: May *Regularity of the Monge-Ampère equation and the optimal transportation problem*, Chinese University of Hong Kong, Hong Kong.

### Invited Talks (funded)

- 2019: June *Workshop on Transport at Metropolitan*, Tokyo Metropolitan University, Tokyo, Japan.  
 June *Applied analysis seminar*, The University of Tokyo, Tokyo, Japan.  
 June *Geometry seminar*, Osaka University  
 May *Colloquium*, National Cheng Kung University, Tainan, Taiwan.  
 Apr. *Colloquium*, University of Michigan-Dearborn.  
 Mar. *Analysis seminar*, University of Texas at Austin.  
 Feb. *PDE seminar*, Wayne State University.  
 Jan. *Geometry and Probability*, Fukuoka University, Fukuoka, Japan.  
 Jan. *Probability seminar*, Kansai University, Osaka, Japan.
- 2018: Dec. *Analysis and Partial Differential Equations Seminar*, Johns Hopkins University.  
 Oct. *Applied math and Analysis seminar*, Duke University.  
 July *Probability seminar*, Kansai University, Osaka, Japan.  
 July *Seminar*, RIKEN Center for Advanced Intelligence Project / Osaka University, Osaka, Japan.  
 July *Mathematics seminar*, National Taiwan University, Taipei, Taiwan.  
 June *Variational Problems in Optical Engineering and Free Material Design*, Banach Center, Warsaw, Poland.
- 2017: July *CMC conference: Optimal transport and related topics*, KIAS, Seoul, South Korea.  
 May French ANR *Monge-Ampère et Géométrie Algorithmique* meeting, Grenoble, France.  
 May *Séminaire Analyse Numérique et E.D.P.*, Université Paris-Sud, Paris, France.  
 May *Optimal Transport meets Probability, Statistics and Machine Learning (17w5093)*, CMO, Oaxaca, Mexico.  
 Mar. *Analysis and Applied Mathematics Seminar*, University of Illinois, Chicago.
- 2016: Oct. *Geometry and Analysis seminar*, Columbia University.  
 Oct. *Differential Geometry & Geometric Analysis Seminar*, Princeton University.  
 July *Workshop on Computational Optimal Transportation*, CRM, Montreal, Canada.  
 Apr. *Analysis seminar*, University of Texas at Austin.
- 2015: Nov. *Applied analysis & computation seminar*, University of Massachusetts, Amherst.  
 June *ANR OPTIFORM meeting*, CEREMADE-Université Paris Dauphine.  
 May *Analysis and PDE seminar*, University of California, Los Angeles.  
 Mar. *Montreal Analysis Seminar*, McGill University, Montreal, Canada.  
 Jan. *Mathematics Colloquium*, University of Virginia.  
 Jan. *Colloquium*, Michigan State University.  
 Jan. *Mathematics Colloquium*, University of Wisconsin, Madison.
- 2014: Nov. *PDE/Analysis seminar*, McMaster University, Hamilton, Canada.  
 June *Probability theory seminar*, Kansai University, Osaka, Japan.  
 May *Seminar*, Chinese University of Hong Kong.  
 Apr. *Applied Math and PDE Seminar*, Michigan State University.  
 Apr. *Analysis and PDE seminar*, University of California, Los Angeles.  
 Mar. *Analysis seminar*, University of Texas at Austin.

- 2013: Nov. *Analysis / PDE seminar*, University of California, Berkeley.  
Aug. *Workshop ID1332: Partial Differential Equations*, MFO, Oberwolfach, Germany.  
July *Analysis seminar*, University of Edinburgh, Scotland.  
July *Séminaires LJK-Géométrie-Images: Calcul des variations*, Université Joseph Fourier, Grenoble, France.  
June *Probability theory seminar*, Kansai University, Osaka, Japan.  
June *BIBUNHOUTEISHIKI (PDE) seminar*, Osaka University, Japan.
- 2012: Dec. *Analysis and PDE seminar*, University of California, Los Angeles.  
Nov. *Differential Geometry & Geometric Analysis Seminar*, Princeton University.  
May *Optimal Transportation and Differential Geometry (12w5118)*, BIRS, Banff, Canada.  
Mar. *Analysis and PDE seminar*, University of California, Los Angeles.
- 2011: July *37th Osaka University Finance and Insurance Seminar Series (CSFI-CREST joint seminar)*, Center for the Study of Finance and Insurance, Osaka University, Japan.
- 2010: Nov. *Workshop on Geometric Probability and Optimal Transportation*, Fields Institute, Toronto.