DANIEL LACKER

Division of Applied Mathematics, Brown University
Room 310, 182 George St
Providence, RI 02906

E-mail: daniel_lacker@brown.edu
Web: `http://www.dam.brown.edu/people/dlacker/`

ACADEMIC POSITIONS

2015- **NSF Postdoctoral Fellow**, Brown University, Division of Applied Mathematics
Sponsor: Kavita Ramanan

EDUCATION

2010-2015 **PhD, Operations research and financial engineering**, Princeton University
Adviser: René Carmona
Thesis title: Stochastic differential mean field game theory

2006-2010 **B.S., Computational Finance**, Carnegie Mellon University
Graduated Summa Cum Laude

PUBLICATIONS, SUBMISSIONS AND PREPRINTS

1. "Mean field and n-agent games for optimal investment under relative performance criteria." D. Lacker and T. Zariphopoulou. (2017) Submitted.
2. "Rare Nash equilibria and the price of anarchy in large static games." D. Lacker and K. Ramanan. (2017) Submitted.
3. "Limit theory for controlled McKean-Vlasov dynamics." D. Lacker. (2016) To appear in *SIAM Journal on Control and Optimization*.
4. "A non-exponential extension of Sanov's theorem via convex duality." D. Lacker. (2016) Submitted.
5. "Mean field games of timing and models for bank runs." R. Carmona, F. Delarue, and D. Lacker. (2016) To appear in *Applied Mathematics & Optimization*.
6. "Liquidity, risk measures, and concentration of measure." D. Lacker. (2015) To appear in *Mathematics of Operations Research*.
7. "Law invariant risk measures and information divergences." D. Lacker. (2015) Submitted.
8. "Translation invariant mean field games with common noise." D. Lacker and K. Webster. (2015) *Electronic Communications in Probability* **20** (42), 1-13.
9. "A general characterization of the mean field limit for stochastic differential games." D. Lacker. (2016) *Probability Theory and Related Fields* **165** (3), 581-648. Winner of the **SIAG/FME Conference Paper Prize, 2014**.
10. "Mean field games with common noise." R. Carmona, F. Delarue, and D. Lacker. (2014) To appear in *The Annals of Probability*.
11. "Mean field games via controlled martingale problems: Existence of Markovian equilibria." D. Lacker. (2015) *Stochastic Processes and their Applications* **125** (7), 2856-2894.
12. "A probabilistic weak formulation of mean field games and applications." R. Carmona and D. Lacker. (2015) *The Annals of Applied Probability* **25** (3), 1189-1231 .

All papers are available for download at: `http://arxiv.org/find/math/1/au:+Lacker_D/0/1/0/all/0/1`

INVITED TALKS

1. ICERM Workshop on Robust Methods in Probability & Finance. June 19, 2017. Providence, RI.
2. Fourth Conference on Mean Field Games and Related Topics. June 16, 2017. Rome, Italy.
3. Vienna Seminar in Mathematical Finance and Probability. June 1, 2017. Vienna, Austria.
4. University of Konstanz. May 30, 2017. Konstanz, Germany.
5. Imperial College London Stochastic Analysis Seminar. May 24, 2017. London, UK.

6. 8th Western Conference in Mathematical Finance. March 24, 2017. Seattle, WA.
7. University of Michigan Financial/Actuarial Mathematics Seminar. February 15, 2017. Ann Arbor, MI.
8. Carnegie Mellon Probability and Computational Finance Seminar. February 13, 2017. Pittsburgh, PA.
9. SIAM Conference on Financial Mathematics & Engineering. November 17-19, 2016. Austin, TX.
10. Worcester Polytechnic Institute Financial Mathematics and Stochastic Analysis Seminar. November 14, 2016. Worcester, MA.
11. University of Texas at Austin Financial Mathematics Seminar. September 23, 2016. Austin, TX.
12. Byrne Workshop on Stochastic Analysis in Finance and Insurance. June 6-10, 2016. Ann Arbor, MI.
13. Workshop on Stochastic Analysis and Mathematical Finance. May 22-27, 2016. Oaxaca, Mexico.
14. Courant Institute Probability Seminar. April 22, 2016. New York, NY.
15. University of Connecticut Analysis and Probability Seminar. April 15, 2016. Mansfield, CT.
16. Columbia Mathematical Finance Seminar. March 3, 2016. New York, NY.
17. Columbia University, Industrial Engineering and Operations Research Colloquium. January 12, 2016.
18. University of California, Santa Barbara, Statistics and Applied Probability Seminar. December 9, 2015. Santa Barbara, CA.
19. Univeristy of North Carolina, Chapel Hill, Statistics and Operations Research Colloquium. December 4, 2015.
20. University of Michigan Financial/Actuarial Mathematics Seminar. November 17 & 18, 2015. Ann Arbor, MI.
21. University of Texas at Austin Financial Mathematics Seminar. November 9, 2015. Austin, TX.
22. Brown University Probability Seminar. November 3, 2015. Providence, RI.
23. Broad Perspectives and New Directions in Financial Mathematics Seminar. April 6, 2015. Los Angeles, CA.
24. Workshop on Interacting Agents in Constrained Financial Markets. January 31, 2015. Austin, TX.
25. University of Southern California Math Finance Colloquium. January 26, 2015. Los Angeles, CA.
26. Carnegie Mellon Probability and Computational Finance Seminar. January 12, 2015. Pittsburgh, PA.
27. SIAM Conference on Financial Mathematics & Engineering. November 13-15, 2014. Chicago, IL.
28. Columbia Mathematical Finance Seminar. October 9, 2014. New York, NY.
29. Rutgers Mathematical Finance and Probability Seminar. October 7, 2014. New Brunswick, NJ.
30. Institute of Mathematical Statistics Annual Meeting / Australian Statistical Conference. July 7-10, 2014. Sydney, Australia.
31. MFO Workshop on Stochastic Analysis in Finance and Insurance. May 4-10, 2014. Oberwolfach, Germany.
32. 8th Oxford-Princeton Workshop on Financial Mathematics and Stochastic Analysis. March 21-22, 2014. Oxford, UK.
33. Workshop on Stochastic Games, Equilibrium, and Applications to Energy & Commodities Markets. August 27-29, 2013. Toronto, Canada.
34. 2nd Princeton-Lausanne Workshop on Quantitative Finance & Economics. May 3-4, 2013. Princeton, NJ.
35. Young Researcher's Meeting on BSDEs, Numerics and Finance. July 2-4, 2012. Oxford, UK.

Awards and Honors

2015 Invited Fellow, Institute for Pure and Applied Mathematics (IPAM) Program on Broad Perspectives and New Directions in Financial Mathematics

2014 Wu Prize for Excellence.

2009 Moore Award for Excellence in Mathematics.

Service

- Reviewer for *Annals of Applied Probability*, *Mathematics of Operations Research*, *Annales de l'Institut Henri Poincaré*, *SIAM Journal on Control and Optimization*, *SIAM Journal on Financial Mathematics*, *Statistics & Risk Modeling*, and *Systems and Control Letters*.
- Co-organizer of the Probability Seminar, Brown University, Division of Applied Mathematics, 2016-2017.
- Math CoOp (outreach program), Brown University, 2015-2017.
- Organizer of the student-led Stochastic Analysis Seminar, Princeton University, 2012-2013.

Teaching

2014 **Lecturer**, *Princeton University*
Masters in Finance Math Camp

2013-2015 **ORFE Senior Thesis Writing Group Leader**, *Princeton University*

2013 **Teaching Assistant**, *Princeton University*
ORF 527: Stochastic Calculus (Graduate Level)
ORF 407: Fundamentals of Queueing Theory (Undergraduate Level)

2008-10 **Teaching Assistant**, *Carnegie Mellon University*
21111: Calculus I
21259: Calculus in Three Dimensions
21370: Discrete Time Finance
21470: Continuous Time Finance

2007-10 **Peer Tutor**, *Carnegie Mellon University*
Calculus I, II and 3D; Matrix Algebra; Differential Equations; Real Analysis; Probability; Discrete Time Finance